FOR REVIEW ONLY

Adelanto Industrial Park
City of Adelanto, County of San Bernardino, California

Preliminary Drainage Study
Volume 1

Prepared for:
Mileski Holdings
1971 W. 190th Street, Suite 100
Torrance, CA 90504
(310) 715-1300

Prepared By:

ALBERT A. WEBB ASSOCIATES
3788 McCray Street
Riverside, CA 92506

Original Date Prepared: May 2025
Revision Date(s): June 2026

DRAFT

Sarah Kowalski, PE
Senior Engineer

TABLE OF CONTENTS

VOLUME 1 – PRELIMINARY DRAINAGE STUDY

SECTION 1 - SUMMARY 1-1

PURPOSE 1-1
DESCRIPTION OF WATERSHED 1-1
PROPOSED CONDITIONS 1-2
METHODOLOGY 1-4

FIG. 1 VICINITY MAP
FIG. 2 USGS TOPOGRAPHY MAP
FIG. 3 AERIAL PHOTOGRAPH
FIG. 4 RECEIVING WATERBODIES
FIG. 5 SOILS MAP

SECTION 2 - HYDROLOGY ANALYSIS 2-1

HYDROLOGY PARAMETERS 2-1
OFF-SITE EXISTING RATIONAL METHOD HYDROLOGY 2-2
ON-SITE PROPOSED RATIONAL METHOD HYDROLOGY 2-4

SECTION 3 - HYDRAULIC ANALYSIS 3-1

ON-SITE STORM DRAIN FACILITIES 3-1
OFF-SITE STORM DRAIN FACILITIES 3-3

SECTION 4 - BASIN AND DETENTION SYSTEM ANALYSIS 4-1

ON-SITE UNIT HYDROGRAPH METHOD HYDROLOGY 4-1
BASIN ROUTING ANALYSIS 4-3

SECTION 5 - CONCLUSION 5-1

APPENDIX A – HYDROLOGY & HYDRAULIC ANALYSIS EXHIBITS ..... A

WEB SOIL SURVEY (WSS) HYDROLOGIC SOIL GROUP MAP
STORMWATER FACILITY MAPPING TOOL EXHIBIT
MASTER PLAN OF DRAINAGE BOUNDARIES EXHIBIT
FEMA FIRM PANELS (06071C5785H AND 06071C5805H)
BEST AVAILABLE MAP (BAM) PRINT PAGE
RATIONAL METHOD HYDROLOGY MAPS
UNIT HYDROGRAPH HYDROLOGY MAPS
CHAMBER/BASIN SUMMARY
DRAINAGE FACILITIES EXHIBIT

VOLUME 2 .....

APPENDIX B – HYDROLOGY ANALYSIS CALCULATIONS ..... B

RAINFALL DATA (NOAA ATLAS 14)
10-YEAR HYDROLOGY (RATIONAL METHOD), OFF-SITE EXISTING CONDITION
10-YEAR HYDROLOGY (RATIONAL METHOD), ON-SITE PROPOSED CONDITION
100-YEAR HYDROLOGY (RATIONAL METHOD), OFF-SITE EXISTING CONDITION
100-YEAR HYDROLOGY (RATIONAL METHOD), ON-SITE PROPOSED CONDITION

APPENDIX C – HYDRAULIC ANALYSIS CALCULATIONS C

ON-SITE UNDERGROUND DETENTION CHAMBERS SIZING CALCULATIONS
ON-SITE INLET SIZING CALCULATIONS
OFF-SITE PIPE SIZING CALCULATIONS
OFF-SITE CHANNEL SIZING CALCULATIONS
PRELIMINARY CHANNEL 1 WSPG CALCULATIONS

APPENDIX D – BASIN ANALYSIS CALCULATIONS ..... D

EXISTING CONDITION UNIT HYDROGRAPHS
EXISTING CONDITION 10-YEAR, 24-HOUR UNIT HYDROGRAPH
EXISTING CONDITION 100-YEAR, 24-HOUR UNIT HYDROGRAPH
PROPOSED CONDITION UNIT HYDROGRAPHS
PROPOSED CONDITION 10-YEAR, 24-HOUR UNIT HYDROGRAPH
PROPOSED CONDITION 100-YEAR, 24-HOUR UNIT HYDROGRAPH

APPENDIX E – REFERENCES ..... E

EXCERPTS OF CITY OF ADELANTO DRAINAGE MASTER PLAN (UPDATED MAY 2012)

SECTION 1 - SUMMARY

PURPOSE

The purpose of this report is to document the hydrologic and hydraulic analyses performed in support of the Adelanto Industrial Park project located in City of Adelanto, County of San Bernardino, California. The project site is located south of the Southern California Logistics Airport. The project is bounded by Air Expressway to the north, the Victorville Federal Correctional Complex to the east, Powerline Road to the South, and Adelanto Road to the west. The project proposes to build seven (7) industrial buildings on approximately 470 acres. This report will summarize the hydrologic and hydraulic analyses that were conducted in order to determine the necessary drainage improvements required to provide flood protection for the proposed buildings and safely convey the runoff through the site.

The scope of this report will include the following:

- Determine the peak 100-year and 10-year flow rates for the existing and developed conditions using the San Bernardino County Flood Control District (SBCFCD) Rational Method.
- Determine the required storm drain facilities, alignments, and sizes required to flood protect the project site.
- Determine the necessary basin or underground detention areas and volumes required to mitigate for increases in runoff.
- Prepare a preliminary report summarizing the hydrology and hydraulic results.

DESCRIPTION OF WATERSHED

As previously described, the project is proposing an industrial development on approximately 470 acres of vacant land. Existing elevations across the site vary from 2926.6 in the southeast to 2894.4 at a low point along the northern boundary (NGVD29 datum). The site currently slopes down at approximately 1.0% grade to the north. The existing drainage pattern for the site and the general area is characterized by overland sheet flow that is conveyed further to the north by existing culverts in Air Expressway.

The project is currently impacted by considerable off-site tributary flows from the south and the east. While the tributary area is largely zoned Light Manufacturing and Manufacturing/Industrial per the City of Adelanto General Plan Land Use & Zoning Map, the existing condition is predominantly vacant with a mix of unpaved and paved roads without gutters. The off-site tributary flows travel via overland sheet flow, hit the southern and eastern project boundaries, and continue to travel via overland sheet flow through the project site and towards Air Expressway along the northern project boundary. A series of existing reinforced concrete box (RCB) culverts convey the combined off-site and on-site flows to outlet north into the Southern California Logistics Airport (SCLA). Ultimate drainage conditions for the SCLA are described in the SCLA MPD (dated September 2020).

The project area and its surroundings are in an interim condition. Ultimate drainage conditions for the project site are described in the City of Adelanto Drainage Master Plan (ADMP) (updated May 2012). Two of these ultimate drainage facilities fall within the project boundary, Channel 1 and Channel 1A.

- Channel 1 is a regional channel proposed to run through the northeast of the City of Adelanto starting at Rancho Road, south of this proposed project, and extending northwest to the Fremont Wash Flowline, north of the proposed project. The channel design is split into three reaches, with only Reach 1 located partially within the project boundary. Flows from the southwest of the City are proposed to be picked up in Channel 1, Reach 1 along Rancho Road, conveyed north along Emerald Road, and outlet north of Air Expressway. Per the ADMP, the design capacity of Channel 1, Reach 1 is 781 cfs with a base width of 25 feet and a channel depth of 9 feet.
    - The SCLA MPD revises the portion of Channel 1 design south of Air Expressway and within the SCLA boundary. It proposes a channel along the north of Air Expressway to

intercept existing RCB culvert flows and convey them to a basin at the southeast corner of Gateway Drive and Innovation Drive. Further channels and storm drain facilities are proposed to convey storm water to the north, to an outlet north of Chamberlaine Avenue. This outlet location is consistent with where ADMP shows the beginning to Channel 1, Reach 3. Flows continue north towards the Fremont Wash, which ultimately outlets into the Mojave River.

- Channel 1A is a regional channel proposed to run along Adelanto Road starting at Rancho Road, south of this proposed project, and extending north to a connection with Channel 1 between Reach 2 and Reach 3. Per the ADMP, the design capacity of the channel is 1,028 cfs with a base width of 12 feet and a channel depth of 12 feet.

Excerpts from the ADMP are included in Appendix E for reference.

In the existing condition and south of the project boundary, flows that would be conveyed by the future Channel 1A are conveyed under US-395 via culverts near Primrose Avenue and Rancho Road. These flows then continue north via an existing watercourse identified in the San Bernardino County Flood Control and Water Conservation (SBCFCD) Redbook 2023 as Channel 4-355-1B (Adelanto East Channel), a non-system facility. This existing watercourse is located west of Adelanto Road and west of the project boundary, as shown on the Storm Water Facility Mapping Tool Exhibit in in Appendix A. In the existing condition, the ultimate Channel 1A flows are not tributary to the project site.

An elevated area south of Rancho Road, between Adelanto Road and Mesa Linda Road, splits existing flows to the east and west. Flows that split to the east continue to the project site, consistent with the ADMP delineation. Flows that split to the west continue to the existing watercourse, Adelanto East Channel, which is not tributary to the project site.

A ridgeline to the southeast of the project serves as the boundary of the Victorville Master Plan of Drainage (VMPD). This ridgeline largely coincides with the ADMP boundary. However, there is a gap between the areas covered by these two master plans of drainage. This gap area includes the northeast corner of the project site as well areas tributary to the eastern project boundary. An exhibit showing the ADMP and VMPD boundaries is included in Appendix A for reference.

The project is located within FEMA Flood Zone X Shaded and Zone D per FIRM Panels 06071C5785H and 06071C5805H. Per FEMA, Flood Zone X Shaded signifies "areas of 0.2% chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood." Within the County of San Bernardino, Zone X Shaded requires that the first floor of buildings to be elevated a minimum of 1 foot above the natural highest adjacent ground. Zone D signifies areas that have not been studied. Flood hazards are undetermined, but possible. Per the California Department of Water Resources (DWR) Best Available Map (BAM), the project site is located within a FEMA effective 500-year floodplain and a DWR Awareness floodplain. The FEMA Firm Panels and BAM Print Page are included in Appendix A for reference.

PROPOSED CONDITIONS

The project site is impacted by off-site tributary flows from the south and east. To intercept these flows, multiple inlets are proposed along the southern project boundary within Joshua Avenue and Yucca Road. A concrete interceptor ditch is proposed along the eastern project boundary to intercept flows and convey them to proposed inlets. These off-site inlets will connect to proposed storm drain lines that convey flows north to Air Expressway, connecting to existing RCB culverts to continue existing flow patterns. Additionally, portions of the ADMP Channels 1 and 1A are proposed within the project site. The project proposes to construct the portion of Channel 1 within the project site, with a connection to existing culvert #7 (seven 7'WX3'H RCB) within Air Expressway. The project proposes an 80-foot-wide easement for the future Channel 1A along Adelanto Road, as the flows described by the ADMP currently bypass the project site via the existing non-system facility, Adelanto East Channel, west of the project boundary.

An exhibit showing the proposed storm drain lines, easements, channels, and interceptor drains is included in Appendix A for reference.

On-site flows generated by the project buildings will surface flow through the site utilizing ribbon gutters, and then be captured by a network of catch basins and drainage inlets provided at low points. Proposed private subsurface storm drain lines will be used to convey flows into proposed infiltration basins and underground detention chambers. At this preliminary design stage, these facilities are sized to retain the full 100-year, 24-hour storm event. It is assumed that basin routing will be performed in Final Engineering to refine the design as necessary to meet requirements to mitigate hydromodification and increased runoff impacts. The ADMP proposes that peak post-development 10-year storm flows be retained by local facilities per development.

The SBCFCD Detention Basin Design Criteria and an Interoffice Memo dated September 1987 outline the detention basin design guidelines within San Bernardino County. Per those documents, detention basins shall be sized to accept the differential or increase in runoff for a series of design year storms (2, 10, 25, and 100-year) such that the mitigated flow rate generated by the site shall be less than or equal to 90% of the existing condition flow rate. Additionally, these documents state that pre-development peak flow rates will be calculated such that 10-year peak flow rates calculated using 5-year rainfall, 25-year peak flow rates calculated using 10-year rainfall, and 100-year peak flow rates calculated using 25-year rainfall and AMC II.

Descriptions of the hydromodification requirements are provided in the Stormwater and Water Quality Treatment section below.

The project site is located within the Airport Influence Area of the SCLA, and subject to their design guidelines. While basins are not recommended in close proximity to airports, the Federal Aviation Administration (FAA) provides guidelines intended to minimize the interactions between aircraft and wildlife. These deterrents include maximum drawdown times, minimized vegetation, and physical barriers.

All flows captured on-site are then conveyed towards proposed public storm drain lines or channels. These storm drain facilities are preliminarily sized using the rational method hydrology results within this report. These backbone storm drain facilities convey flows towards the northern project boundary at Air Expressway, connect to existing RCB culverts, and outlet flows in a manner consistent with the existing flow patterns.

STORMWATER AND WATER QUALITY TREATMENT

The project site is within the Mojave River Watershed, but it is not included in the Phase II MS4 Permit boundary area, as the City of Adelanto is not a jurisdiction covered by the permit. A PWQMP has been prepared as part of this project to identify the proposed best management practices (BMPs) for the project site, including source control BMPs, site design BMPs, and treatment BMPs.

The project site will implement a variety of non-structural source control BMPs including Education of Property Owners, Tenants and Occupants of Stormwater BMPs; Activity Restrictions; Landscape Management BMPs; BMP Maintenance; Litter/Debris Control Program; Employee Training; Housekeeping of Loading Docks; Catch Basin Inspection Program; and Vacuum Sweeping of Private Streets and Parking Lots. Additionally, the project site will implement a variety of structural source control BMPs including storm drain stenciling and signage; covered trash and waste storage areas; efficient irrigation systems and landscape design, water conservation, smart controllers, and source control; finish grade of landscaped areas at a minimum 1-2 inches below top of curb, sidewalk, or pavement; protection of slopes and channels for energy dissipation; and covered dock areas.

The project site will also evaluate ways to incorporate site design practices associated with LID requirements including minimization of impervious areas; maximization of natural infiltration capacity; preservation of existing drainage patterns and times of concentration; disconnection of impervious areas;

minimization of unnecessary compaction in stormwater retention/infiltration basin/trench areas; and minimization of compaction of landscaped areas during construction.

In addition to Source Control BMPs and Site Design BMP measures, treatment BMPs are proposed to allow for infiltration of runoff. Each building is proposed to outlet flows to infiltrations basins and/or underground detention chambers. These will promote infiltration of the water quality storm event and provide hydromodification mitigation of the 10-year storm event.

The Mojave River Watershed Technical Guidance Document for Water Quality Management Plans specifies the metrics for compliance with hydromodification requirements. Per that document, mitigation of the post-development runoff volume, time of concentration, and peak flow velocity for the 10-year, 24-hour frequency storm event should not exceed that of the pre-development condition by more than 5%. These calculations can be prepared using computer software analyses following the SBCFCD Hydrology Manual.

METHODOLOGY

HYDROLOGY

Hydrologic calculations were performed in accordance with the SBCFCD Hydrology Manual, dated August 1986. The Rational Method was utilized in determining peak flow rates and times of concentration for the existing and proposed conditions.

The hydrological parameters, including rainfall values and soil types were derived from the SBCFCD Hydrology Manual. Per the Addendum to SBCFCD Hydrology Manual, dated April 2010, NOAA Atlas 14 precipitation values shall be used rather than the NOAA Atlas 2 rainfall data in the SBCFCD Hydrology Manual. Per that same Addendum and based on the NOAA Atlas 14 rainfall data, the Antecedent Moisture Condition (AMC) designations for use in arid region hydrology studies were updated. According to Figure ADD-1, an AMC of 2 shall be used for all storm frequencies based on the project site location. Lastly, the Addendum required that soil grouping information be accessed through the National Resources Conservation Service (NRCS) Web Soil Survey rather than the information contained in the SBCFCD Hydrology Manual. The rainfall data and soil map have been included in Section 2.

Rational Method calculations were performed using a computer program developed by CivilDesign Corporation and Joseph E. Bonadiman and Associates Inc. The computer program is commonly referred to as CivilD which incorporates the hydrological parameters outlined in the SBCFCD Hydrology Manual.

The Rational Method was used to determine the peak flow rates to size and design the drainage facilities needed to convey on-site flows through the site to the proposed infiltration basins, underground detention chambers, and channels. The flow rates were computed by generating a hydrologic "link-node" model in which the overall area is divided into separate drainage sub-areas, each tributary to a concentration point (node) determined by the proposed layout and grading.

The Unit Hydrograph Method was used to determine the peak flow rates and volumes associated with the 10-year, 24-hour and 100-year, 24-hour storm events for the site. Calculations were performed for both the existing condition and developed condition to be used in the analysis of the proposed infiltration basins, underground detention chambers, and channels. See Section 4 for additional information and results regarding the hydrologic analyses performed for this project.

HYDRAULICS

Water quality basin calculations were performed using sizing per the Mojave River WQMP Report template. Final calculations and additional details can be found in the Preliminary-WQMP.

Additional hydraulic calculations were prepared using the Federal Highway Administration's Hydraulic Toolbox, version 5.4. The Hydraulic Toolbox analysis provides unpressurized flow depths for curb & gutters, catch basins, grated inlets, and conduits. Supporting equations and calculations programed into

the Hydraulic Toolbox software are based on the FHA Urban Drainage Design (HEC-22). Hydraulic Toolbox results are provided in Appendix C.

FIG. 1 VICINITY MAP

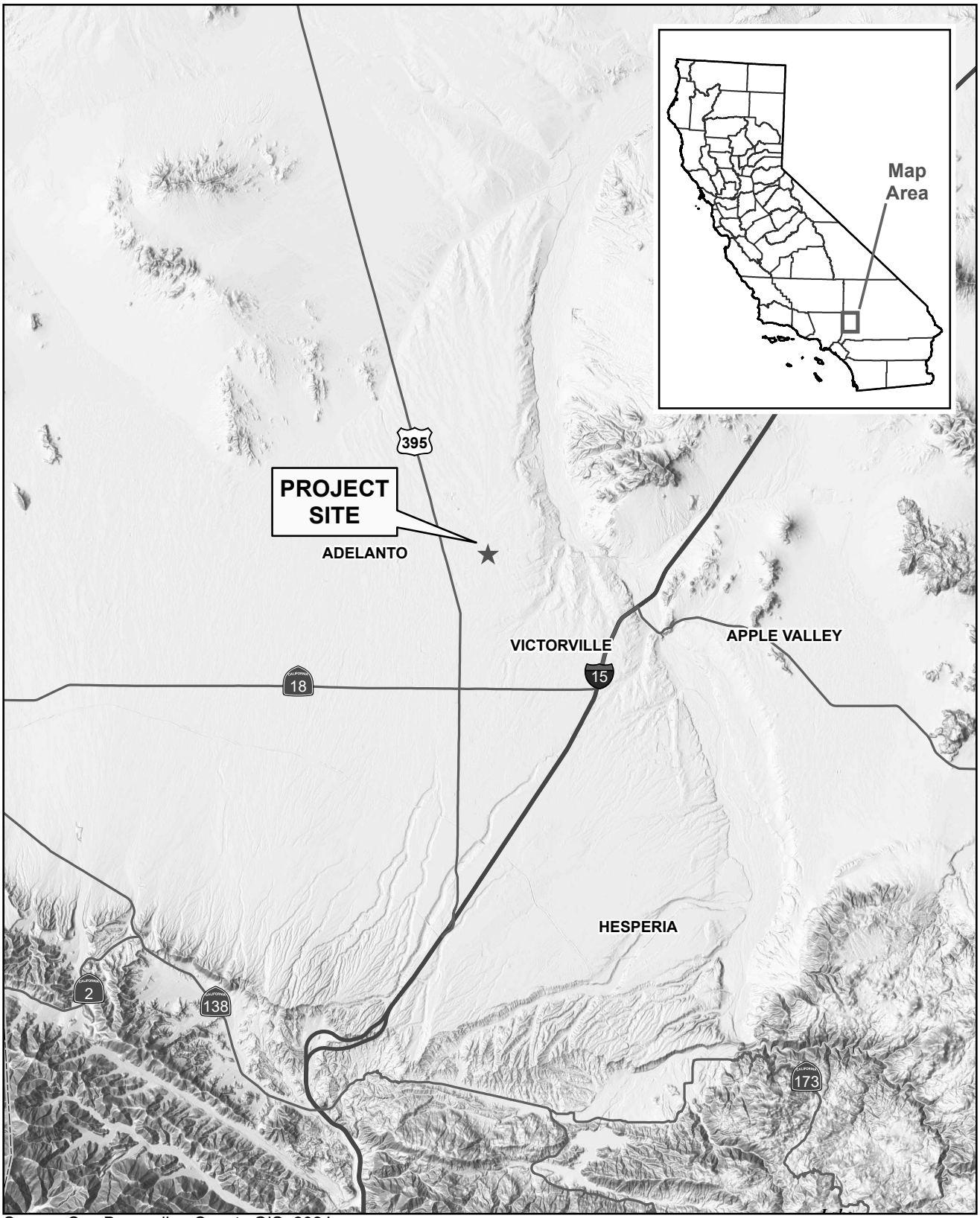
FIG. 2 USGS TOPOGRAPHY MAP

FIG. 3 AERIAL PHOTOGRAPH

FIG. 4 RECEIVING WATERBODIES

FIG. 5 SOILS MAP

FIG. 6 EXISTING CULVERTS



H:\2024\24-0505\GIS\Pro\Pro.aprx; Map created 17 Jan 2025

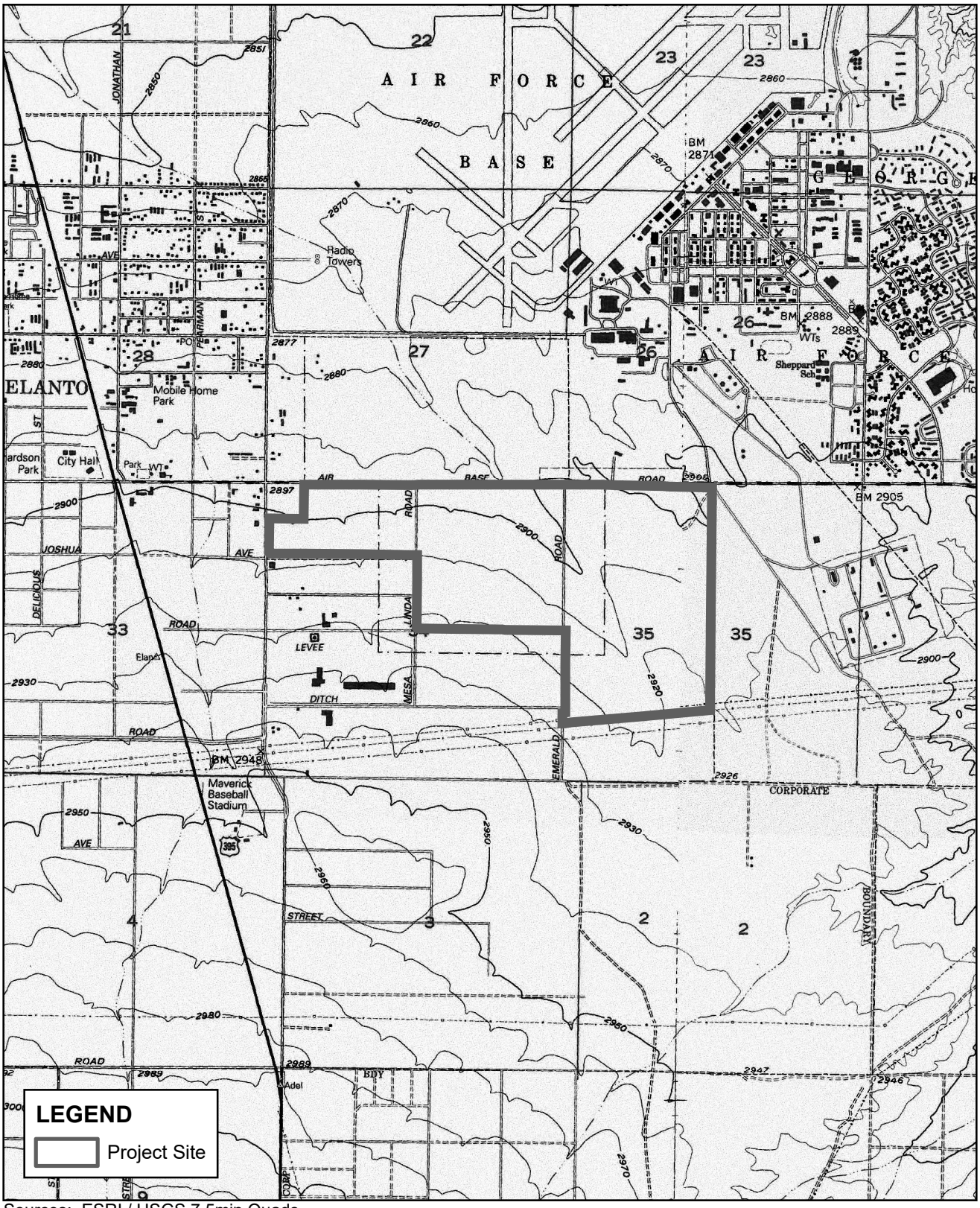
Source: San Bernardino County GIS, 2024.

0 2 4 6 Miles

Vicinity Map

Adelanto Industrial Park

ALBERT A. WEBB ASSOCIATES



H:\2024\24-0505\GIS\Pro\Pro.aprx; Map created 22 Jan 2025; jays

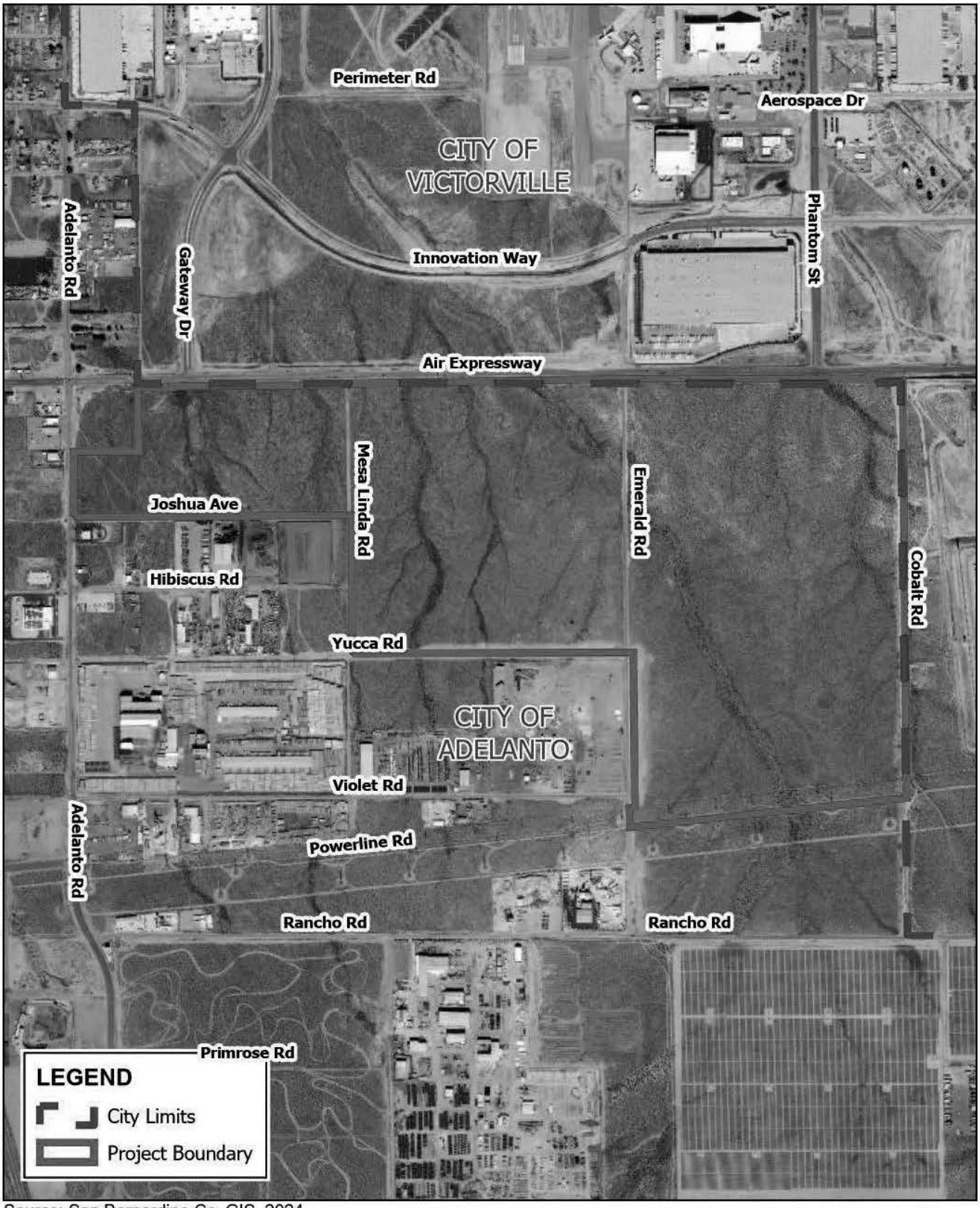
Sources: ESRI / USGS 7.5min Quads

0 1,500 3,000 4,500 Feet

USGS Map

Adelanto Industrial Park

ALBERT A. WEBB ASSOCIATES



H:\2024\24-0505\GIS\Pro\Pro\Pro.aprx; Map created 08 Jun 2026

Source: San Bernardino Co. GIS, 2024.

0 800 1,600 2,400 Feet

Aerial Map

Adelanto Industrial Park

ALBERT A. WEBB ASSOCIATES



H:\2024\24-0505\GIS\Pro\Pro.aprx; Map created 17 Jan 2025

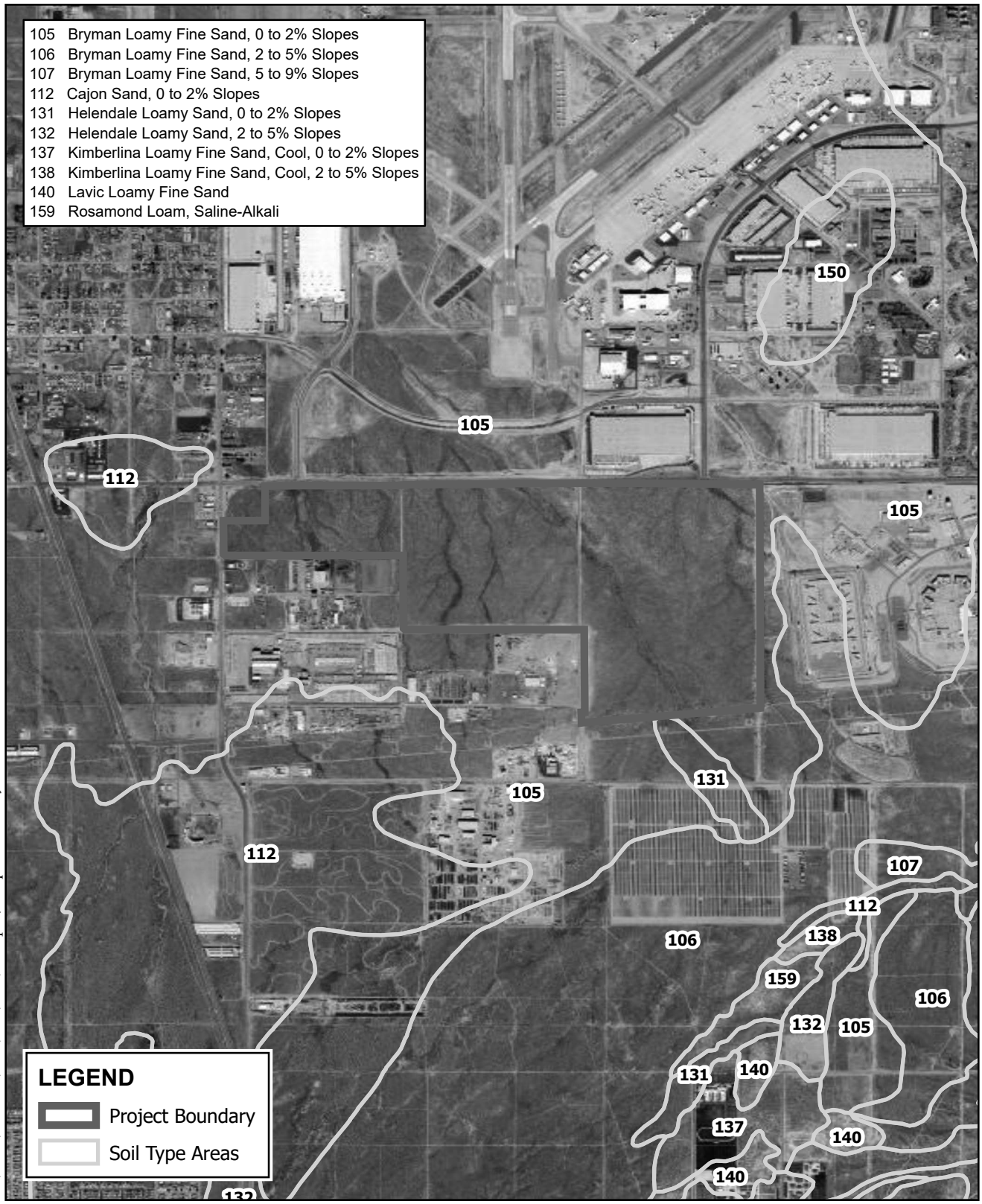
Sources: USGS DLG; USGS 30m DEM

0 2 4 6 8 Miles

Receiving Waterbodies

Adelanto Industrial Park

ALBERT A. WEBB ASSOCIATES



H:\2024\24-0505\GIS\Pro\Pro\Pro.aprx; Map created 22 Jan 2025

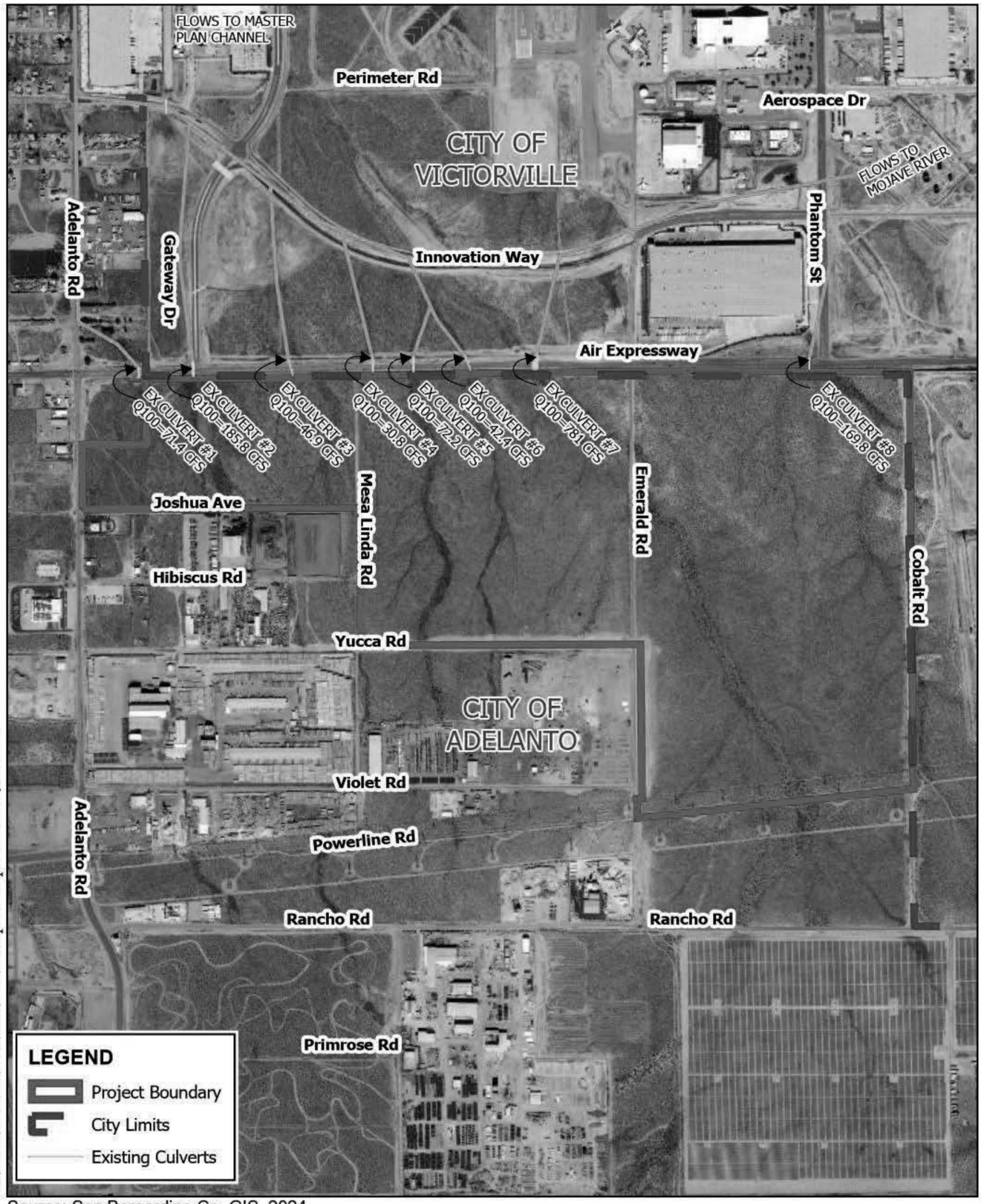
Sources: USDA NRCS SSURGO, 2015;
San Bernardino Co. GIS, 2024; USDA NAIP, 2016.

0 1,500 3,000 4,500 Feet

Soils Map

Adelanto Industrial Park

ALBERT A. WEBB ASSOCIATES



H:\2024\24-0505\GIS\Pro\Pro\Pro.aprx; Map created 17 Jun 2026

Source: San Bernardino Co. GIS, 2024.

0 800 1,600 2,400 Feet

Aerial Map

Adelanto Industrial Park

ALBERT A. WEBB ASSOCIATES

SECTION 2 - HYDROLOGY ANALYSIS

HYDROLOGY PARAMETERS

The SBCFCD Hydrology Manual and Addendum were used to determine several of the hydrological parameters. The following rainfall depths were utilized in the hydrology analyses, which were obtained from NOAA Atlas 14 rainfall data, as recommended by the Addendum to the SBCFCD Hydrology Manual:

Table 1 – Precipitation Values

	Duration		
Storm Event	**1-Hour (inches)**	**6-Hour (inches)**	**24-Hour (inches)**
2-Year	0.34	0.72	1.
10-Year	0.58	1.2	1.9
100-Year	1.2	2.0	3.4

The value for slope of intensity was determined to be 0.6, by plotting rainfall data on Intensity-Duration Curves Calculation Sheet, Figure D-3 in the SBCFCD Hydrology Manual. This differs from the 0.7 slope value used in the ADMP, but 0.6 more accurately reflects the NOAA Atlas 14 rainfall data for this project site. The rainfall data and calculation sheet have been included in Appendix B.

Based on the NRCS Web Soil Survey, as recommended in the Addendum to the SBCFCD Hydrology Manual, the project site is classified as soil type C. This is consistent with the ADMP. The soils map is included in Appendix A.

The cover type was determined based on the existing land cover and proposed land use of the site. Hydrological computations for the existing condition were largely done using 'Undeveloped (Poor)'. Some off-site tributary areas are developed in the existing condition and were modeled using the 'Commercial Landscaping' cover type to reflect the Manufacturing/Industrial (MI) and Light Manufacturing (LM) zoning. The 'Commercial Landscaping' cover type was used to represent the on-site developed condition. The table below summarizes the runoff index values and the recommended values for percentage of impervious cover for each category:

Table 2 – Cover Type

Cover Type	**Soil Group A**	**Soil Group B**	**Soil Group C**	**Soil Group D**	**Percentage of Impervious Cover**
Grass, Annual or Perennial (Poor)	67	78	86	89	10%
Commercial Landscaping	32	56	69	75	90%

OFF-SITE EXISTING RATIONAL METHOD HYDROLOGY

The rational method was used to determine peak flow rates in order to adequately preliminarily size the proposed subsurface storm drains and associated inlets used to convey off-site flows to the existing RCB culverts. Additionally, the rational method was used to determine time of concentration to be used in unit hydrograph calculations. The design of the required subsurface storm drain lines and associated inlets used to convey off-site flows through and around the site and to the existing RCB culverts will be provided in final engineering.

The off-site rational method evaluated the existing condition for the off-site tributary flows in conjunction with the on-site existing flows. These calculations broke out areas based on what was tributary to the existing RCB culverts located within Air Expressway at the northern project boundary. In the existing condition, these areas are largely undeveloped areas that experience sheet flow. To model existing sheet flow in these areas, the rational method utilized the CivilD Program input of "improved channel" with 4:1 side slopes, a Manning's n-value of 0.025 to model earthen ground, and a variable base width to maintain a flow depth under 1-foot.

The off-site existing rational method was broken out as follows:

- **RATEXOFF** (approximately 1,715 acres) drains to existing culvert #7 (seven 7'WX3'H RCB) and reflects the largely undeveloped area covered under the ADMP as tributary to Channel 1, Reach 1. It extends from west of US-395 to the south of Air Expressway. The ridgeline that serves as a boundary for the Victorville MPD also serves as a southeastern boundary for this area. It is modeled with series 100 and 200 nodes.
- **RATEXEASTOFF** (approximately 202 acres) drains to existing culvert #8 (one 8'WX4'H RCB) and reflects the largely undeveloped area tributary to the eastern project boundary. It extends from south of Rancho Road to the south of Air Expressway. Subareas were broken up at the project boundary in order to evaluate off-site tributary flows to size interceptor ditches. It is modeled with series 800 nodes.
- **RATEXWESTOFF** (approximately 39 acres) drains to the open space at the southeast corner of Adelanto Road and Air Expressway, which is outlet by existing culvert #1 (two 4'WX2'H RCB). This area reflects a portion of the largely undeveloped area covered under the ADMP as tributary to Channel 1A. Adelanto Road serves as a ridgeline boundary for this area that extends from Rancho Road to the northern project boundary. It is modeled with series 90 nodes.
- **RATEX01CUL** (approximately 76 acres) drains to existing culvert #1 (two 4'WX2'H RCB) and reflects a moderately developed area. It extends from south of Rancho Road to the south of Air Expressway. It is modeled with series 100 nodes.
- **RATEX02CUL** (approximately 224 acres) drains to existing culvert #2 (three 5'WX2'H RCB) and reflects a moderately developed area. It extends from south of Rancho Road to the south of Air Expressway. It is modeled with series 200 nodes.
- **RATEX03CUL** (approximately 40 acres) drains to existing culvert #3 (one 4'WX2'H RCB) and reflects a largely undeveloped area. It extends from Yucca Road to the south of Air Expressway, with the Mesa Linda Road right of way serving as a ridgeline boundary. It is modeled with series 300 nodes.
- **RATEX04CUL** (approximately 25 acres) drains to existing culvert #4 (two 18" RCP) and reflects a largely undeveloped area. It extends from Violet to the south of Air Expressway, with the Mesa Linda Road right of way serving as a ridgeline boundary. It is modeled with series 400 nodes.
- **RATEX05CUL** (approximately 96 acres) drains to existing culvert #5 (two 5'WX2'H RCB) and reflects a largely undeveloped area. It extends from south of Rancho Road to the south of Air Expressway. It is modeled with series 500 nodes.

- **RATEX06CUL** (approximately 40 acres) drains to existing culvert #6 (one 5'WX2'H RCB) and reflects a largely undeveloped area. It extends from Violet to the south of Air Expressway. It is modeled with series 600 nodes.

The following table summarizes the off-site rational method results at key points:

Table 3 – Off-Site Existing Rational Method Results

Point of Interest	10-Year Peak Flow Rate (cfs)	100-Year Peak Flow Rate (cfs)	Time of Concentration, TC (min)
RATEXOFF			
Node 118 – Flows from south at project boundary	215.2	735.8	n/a
Node 205 – Flows from south at Emerald/Yucca	50.9	124.5	n/a
Node 120 – Cumulative flows to Culvert #7	344	819	94.8
RATEXEASTOFF			
Node 806 – Flows from south at project boundary	2.6	5.1	n/a
Node 822 – Cumulative flows to Culvert #8	80	170	28.4
RATEXWESTOFF			
Node 94 – Flows from south at project boundary	16.0	16.2	n/a
Node 95 – Flows outlet to open space	17	40	37.0
RATEX01CUL			
Node 105 – Flows from south at project boundary	34.5	70.4	n/a
Node 107 – Cumulative flows to Culvert #1	34	71	46.1
RATEX02CUL			
Node 210 – Flows from south at project boundary	85.4	181.4	n/a
Node 212 – Cumulative flows to Culvert #2	85	186	47.7
RATEX03CUL			
Node 303 – Flows from south at project boundary	10.6	21.4	n/a
Node 306 – Cumulative flows to Culvert #3	21	47	29.2
RATEX04CUL			
Node 403 – Flows from south at project boundary	6.0	11.6	n/a
Node 406 – Cumulative flows to Culvert #4	14	31	27.8

Point of Interest	10-Year Peak Flow Rate (cfs)	100-Year Peak Flow Rate (cfs)	Time of Concentration, TC (min)
RATEX05CUL			
Node 506 – Flows from south at project boundary	22.6	50.3	n/a
Node 509 – Cumulative flows to Culvert #5	28	72	55.1
RATEX06CUL			
Node 602 – Flows from south at project boundary	4.5	8.9	n/a
Node 605 – Cumulative flows to Culvert #6	19	42	33.6

See Appendix B for the output files of the off-site rational method analysis.

ON-SITE PROPOSED RATIONAL METHOD HYDROLOGY

The rational method was used to determine peak flow rates in order to adequately preliminarily size the proposed subsurface storm drains and associated inlets used to convey on-site flows to the proposed basins and underground detention chambers. Additionally, the rational method was used to determine time of concentrations to be used in unit hydrograph calculations. The design of the required subsurface storm drain lines and associated inlets used to convey on-site flows to the underground detention chambers and infiltration basins will be provided in final engineering.

Subareas within the rational method have been broken out per proposed building and subsequently based on the area tributary to the existing RCB culverts in Air Expressway. Area were further broken up based on the location of localized low points throughout the site. In final engineering, areas will be further broken up to determine the 100-year flow rates entering any proposed inlets located on-site. The majority of flows are directed towards proposed inlets via ribbon gutters and/or curbs and gutters. Most subareas consist of a combination of the proposed building, parking stalls, drive aisles, concrete walkways, and landscaped areas. The proposed areas were modeled as commercial land use, which assumes a 10% pervious cover. Further explanation is provided below:

- **1APROPRAT** (approximately 10.0 acres) reflects the proposed building 1 area. Runoff captured in this area will be conveyed to proposed underground detention chambers east of the building before outletting to the mainline storm drain Line A, which is ultimately tributary to existing culvert #2 (three 5'WX2'H RCB). It is modeled with series 110 nodes.
- **2APROPRAT** (approximately 22.4 acres) reflects the proposed northwest building 2 area. Runoff captured in this area will be conveyed to proposed underground detention chambers north of the building before outletting to the mainline storm drain Line A, which is ultimately tributary to existing culvert #2 (three 5'WX2'H RCB). It is modeled with series 210 nodes.
- **2BPROPRAT** (approximately 12.5 acres) reflects the proposed northeast building 2 area. Runoff captured in this area will be conveyed to proposed underground detention chambers north of the building before outletting to the mainline storm drain Line B, which is ultimately tributary to existing culvert #3 (one 4'WX2'H RCB). It is modeled with series 230 nodes.
- **2CPROPRAT** (approximately 18.3 acres) reflects the proposed southwest building 2 area. Runoff captured in this area will be conveyed to proposed underground detention chambers south of the

building before outletting to the mainline storm drain Line A, which is ultimately tributary to existing culvert #2 (three 5'WX2'H RCB). It is modeled with series 250 nodes.

- **2DPROPRAT** (approximately 8.8 acres) reflects the proposed southeast building 2 area. Runoff captured in this area will be conveyed to proposed underground detention chambers south of the building before outletting to the mainline storm drain Line B, which is ultimately tributary to existing culvert #3 (one 4'WX2'H RCB). It is modeled with series 270 nodes.
- **3APROPRAT** (approximately 22.8 acres) reflects the proposed northwest building 3 area. Runoff captured in this area will be conveyed to proposed underground detention chambers north of the building before outletting to the mainline storm drain Line C, which is ultimately tributary to existing culvert #5 (two 5'WX2'H RCB). It is modeled with series 310 nodes.
- **3BPROPRAT** (approximately 20.9 acres) reflects the proposed northeast building 3 area. Runoff captured in this area will be conveyed to proposed underground detention chambers north of the building before outletting to the proposed MPD Channel 1, which is ultimately tributary to existing culvert #7 (seven 7'WX3'H RCB). It is modeled with series 330 nodes.
- **3CPROPRAT** (approximately 20.9 acres) reflects the proposed southwest building 3 area. Runoff captured in this area will be conveyed to proposed underground detention chambers south of the building before outletting via pumps to the mainline storm drain Line C, which is ultimately tributary to existing culvert #5 (two 5'WX2'H RCB). It is modeled with series 350 nodes.
- **3DPROPRAT** (approximately 19.5 acres) reflects the proposed southeast building 3 area. Runoff captured in this area will be conveyed to proposed underground detention chambers south of the building before outletting to the proposed MPD Channel 1, which is ultimately tributary to existing culvert #7 (seven 7'WX3'H RCB). It is modeled with series 370 nodes.
- **4APROPRAT** (approximately 21.4 acres) reflects the proposed northwest building 4 area. Runoff captured in this area will be conveyed to a proposed infiltration basin north of the building before outletting to the mainline storm drain Line C, which is ultimately tributary to existing culvert #5 (two 5'WX2'H RCB). It is modeled with series 410 nodes.
- **4BPROPRAT** (approximately 20.7 acres) reflects the proposed northeast building 4 area. Runoff captured in this area will be conveyed to a proposed infiltration basin north of the building before outletting to the proposed MPD Channel 1, which is ultimately tributary to existing culvert #7 (seven 7'WX3'H RCB). It is modeled with series 430 nodes.
- **4CPROPRAT** (approximately 21.6 acres) reflects the proposed southwest building 4 area. Runoff captured in this area will be conveyed to proposed underground detention chambers south of the building before outletting to the mainline storm drain Line C, which is ultimately tributary to existing culvert #5 (two 5'WX2'H RCB). It is modeled with series 450 nodes.
- **4DPROPRAT** (approximately 18.1 acres) reflects the proposed southeast building 4 area. Runoff captured in this area will be conveyed to proposed underground detention chambers south of the building before outletting to the proposed MPD Channel 1, which is ultimately tributary to existing culvert #7 (seven 7'WX3'H RCB). It is modeled with series 470 nodes.
- **5APROPRAT** (approximately 23.3 acres) reflects the proposed northwest building 5 area. Runoff captured in this area will be conveyed to a proposed infiltration basin north of the building before outletting to the proposed MPD Channel 1, which is ultimately tributary to existing culvert #7 (seven 7'WX3'H RCB). It is modeled with series 510 nodes.
- **5BPROPRAT** (approximately 37.0 acres) reflects the proposed northeast building 5 area. Runoff captured in this area will be conveyed to proposed underground detention chambers north of the building before outletting to the mainline storm drain Line D, which is ultimately tributary to existing culvert #8 (one 8'WX4'H RCB). It is modeled with series 530 nodes.

- **5CPROPRAT** (approximately 13.0 acres) reflects the proposed southwest building 5 area. Runoff captured in this area will be conveyed to proposed underground detention chambers south of the building before outletting to the proposed MPD Channel 1, which is ultimately tributary to existing culvert #7 (seven 7'WX3'H RCB). It is modeled with series 550 nodes.
- **5DPROPRAT** (approximately 28.5 acres) reflects the proposed southeast building 5 area. Runoff captured in this area will be conveyed to proposed underground detention chambers south of the building before outletting via pumps to the mainline storm drain storm drain Line D, which is ultimately tributary to existing culvert #8 (one 8'WX4'H RCB). It is modeled with series 570 nodes.
- **6APROPRAT** (approximately 21.0 acres) reflects the proposed northwest building 6 area. Runoff captured in this area will be conveyed to proposed underground detention chambers north of the building before outletting to the proposed MPD Channel 1, which is ultimately tributary to existing culvert #7 (seven 7'WX3'H RCB). It is modeled with series 610 nodes.
- **6BPROPRAT** (approximately 19.1 acres) reflects the proposed northeast building 6 area. Runoff captured in this area will be conveyed to proposed underground detention chambers north of the building before outletting to the mainline storm drain storm drain Line D, which is ultimately tributary to existing culvert #8 (one 8'WX4'H RCB). It is modeled with series 630 nodes.
- **6CPROPRAT** (approximately 18.2 acres) reflects the proposed southwest building 6 area. Runoff captured in this area will be conveyed to proposed underground detention chambers south of the building before outletting to the proposed MPD Channel 1, which is ultimately tributary to existing culvert #7 (seven 7'WX3'H RCB). It is modeled with series 650 nodes.
- **6DPROPRAT** (approximately 16.5 acres) reflects the proposed southeast building 6 area. Runoff captured in this area will be conveyed to proposed underground detention chambers south of the building before outletting to the mainline storm drain storm drain Line D, which is ultimately tributary to existing culvert #8 (one 8'WX4'H RCB). It is modeled with series 670 nodes.
- **7APROPRAT** (approximately 22.5 acres) reflects the proposed northwest building 7 area. Runoff captured in this area will be conveyed to proposed underground detention chambers north of the building before outletting to the proposed MPD Channel 1, which is ultimately tributary to existing culvert #7 (seven 7'WX3'H RCB). It is modeled with series 710 nodes.
- **7BPROPRAT** (approximately 9.4 acres) reflects the proposed northeast building 7 area. Runoff captured in this area will be conveyed to proposed underground detention chambers north of the building before outletting to the mainline storm drain storm drain Line D, which is ultimately tributary to existing culvert #8 (one 8'WX4'H RCB). It is modeled with series 730 nodes.
- **7CPROPRAT** (approximately 25.9 acres) reflects the proposed southwest building 7 area. Runoff captured in this area will be conveyed to proposed underground detention chambers south of the building before outletting to the proposed MPD Channel 1, which is ultimately tributary to existing culvert #7 (seven 7'WX3'H RCB). It is modeled with series 750 nodes.
- **7DPROPRAT** (approximately 13.0 acres) reflects the proposed southeast building 7 area. Runoff captured in this area will be conveyed to proposed underground detention chambers east of the building before outletting to the mainline storm drain storm drain Line D, which is ultimately tributary to existing culvert #8 (one 8'WX4'H RCB). It is modeled with series 770 nodes.

The following table summarizes the on-site rational method results at key points:

Table 4 – On-Site Proposed Rational Method Results

Point of Interest	10-Year Peak Flow Rate (cfs)	100-Year Peak Flow Rate (cfs)	Time of Concentration, TC (min)
Building 1			
Node 116 – Flows from building	15.4	27.1	9.8
Building 2			
Node 223 – Flows from NW portion of building	30.6	54.0	11.1
Node 240 – Flows from NE portion of building	18.1	32.0	11.2
Node 261 – Flows from SW portion of building	26.3	46.4	10.7
Node 276 – Flows from SE portion of building	13.3	23.4	11.3
Building 3			
Node 322 – Flows from NW portion of building	34.9	61.7	10.0
Node 342 – Flows from NE portion of building	31.6	55.7	10.0
Node 362 – Flows from SW portion of building	30.8	54.3	11.2
Node 382 – Flows from SE portion of building	28.8	50.9	10.9
Building 4			
Node 424 – Flows from NW portion of building	30.6	54.8	6.3
Node 444 – Flows from NE portion of building	27.5	49.3	11.5
Node 462 – Flows from SW portion of building	32.7	57.6	10.7
Node 479 – Flows from SE portion of building	26.7	47.0	11.8
Building 5			
Node 521 – Flows from NW portion of building	30.4	53.9	12.5
Node 542 – Flows from NE portion of building	47.6	85.3	12.8
Node 558 – Flows from SW portion of building	19.6	34.4	11.1
Node 582 – Flows from SE portion of building	38.6	69.0	13.0
Building 6			
Node 622 – Flows from NW portion of building	32.2	56.4	11.2

Point of Interest	10-Year Peak Flow Rate (cfs)	100-Year Peak Flow Rate (cfs)	Time of Concentration, TC (min)
Node 639 – Flows from NE portion of building	27.8	49.1	11.4
Node 661 – Flows from SW portion of building	29.2	51.7	10.5
Node 679 – Flows from SE portion of building	25.4	44.7	10.3
Building 7			
Node 721 – Flows from NW portion of building	33.9	59.8	11.4
Node 736 – Flows from NE portion of building	14.2	25.0	10.5
Node 764 – Flows from SW portion of building	40.2	70.9	9.7
Node 782 – Flows from SE portion of building	19.4	34.3	12.1

The rational method output files and hydrology map have been included in Appendix B and Appendix A, respectively.

SECTION 3 - HYDRAULIC ANALYSIS

ON-SITE STORM DRAIN FACILITIES

The project proposes subsurface storm drain lines and will utilize curbs and gutters, curb cuts, and ribbon gutters to convey on-site flows to low points for collection. The on-site storm drain lines will outlet into their respective infiltration basin or underground detention chambers. A summary of each system has been provided below. Hydraulic calculations will be performed for all proposed on-site storm drain facilities 12 inches in diameter or greater in the final engineering.

Per the Geotechnical Exploration prepared by Leighton (dated February 5, 2024), due to high fines silt layers throughout the site, "infiltration is not recommended at depths deeper than 15 feet below existing ground." Leighton provided a raw infiltration rate of 15 inches per hour that can be utilized for infiltration systems with a maximum bottom depth of 13 feet. Using a factor of safety of 4.4, a design infiltration rate of 3.4 inches per hour was used in the design of the proposed infiltration systems.

Infiltration Basins

To mitigate for increased runoff and hydromodification, infiltration basins are proposed for building areas 4A, 4B, and 5A. These are proposed as earthen basins with 4:1 side slopes and a 15 foot access road around the top perimeter. For this study, the proposed basins were sized to contain the entire 100-year, 24-hour storm event volume: 4A (234,479 cf), 4B (226,808 cf), and 5A (255,292 cf). An outlet structure will be designed for each infiltration basin in final engineering to mitigate the peak flow rate.

These basins are proposed within the Airport Influence Area of the SCLA, specifically within Compatibility Review Area 2. In this close proximity to the airport runways, drainage detention basins are not recommended, due to the potential attraction of wildlife, specifically birds. The Federal Aviation Administration (FAA) recommends that where detention basins are proposed, they should be designed to drawdown within a maximum of 48 hours following a major storm event. Furthermore, the FAA recommends that proposed stormwater basins should be steep-sided, narrow, and linearly shaped. These, in addition to the use of riprap, will prevent vegetation that could provide food or cover for hazardous wildlife. Physical barriers, such as bird balls, wire grids, pillows, or netting, can also be utilized to minimize interactions between aircraft and wildlife.

Underground Detention Chambers

To mitigate for increased runoff and hydromodification, underground detention chambers are proposed throughout the project. Perforated chambers are utilized to encourage infiltration. A typical size of 96" CMP was utilized, but smaller sizes are proposed to ensure the chamber bottom isn't deeper than 13 feet from existing. In some locations, the maximum bottom depth exceeds the 13 feet recommended by the geotechnical engineer. Since the chambers are designed to retain the full 100-year, 24-hour storm event volume, it is expected that these storm flows will be able to infiltrate at a trickle. Further coordination with the geotechnical engineer should be pursued during final engineering to refine the infiltration rate for the deeper systems. An outlet structure will be designed for each chamber system in final engineering to mitigate the peak flow rate to match existing conditions.

Sizing considerations for the various chambers are included in the table below:

Table 5 – Proposed Chamber Sizing

Chamber System	100-year, 24-hour Storm Volume (cf)	Barrel Diameter Size (in)	Number of Barrels	System Length (ft)
Building 1				
1A	109,575	96	5	306
Building 2				
2A	245,434	96	5	684
2B	136,966	96	8	240
2C	200,515	96	5	559
2D	96,424	96	5	270
Building 3				
3A	249,817	96	5	696
3B	228,999	96	5	638
3C	228,999	72	10	522
3D*	213,662	96	7	426
Building 4				
4C	236,670	60	11	687
4D	198,320	72	9	503
Building 5				
5B	405,382	96	7	805
5C	142,446	72	8	406
5D*	312,264	96	5	870
Building 6				
6A	231,173	96	5	644
6B	209,262	86	5	583
6C	199,418	96	5	556
6D	180,774	72	6	687

Chamber System	100-year, 24-hour Storm Volume (cf)	Barrel Diameter Size (in)	Number of Barrels	System Length (ft)
Building 7				
7A	246,528	96	5	687
7B	102,998	86	5	288
7C	283,780	72	8	808
7D	142,446	96	3	662
**Insufficient cover to gravity outlet. Pump required to outlet chambers.*				

The CMP detention chamber sizing sheets have been included in Appendix C.

Inlet Capacities

Grate inlets are proposed at the low points within ribbon gutters to capture onsite flows. For larger flows, a series of 3'x3' or 2'x3' grates are proposed in ribbon gutters to prevent excessive ponding from occurring.

OFF-SITE STORM DRAIN FACILITIES

As part of this project, Air Expressway, Adelanto Road, Joshua Avenue, Mesa Linda Road, Yucca Road, and Emerald Road will be improved/constructed for the half-width along the project frontage. Existing culverts in Air Expressway will be extended with the road widening. Public storm drain will be added in Joshua Avenue, Mesa Linda Road, and Yucca Road. Per the ADMP, Channel 1A is proposed in the project frontage parallel Adelanto Road and Channel 1 is proposed parallel to Emerald Road. The project proposes to construct the portion of Channel 1 within the project site, connecting to an existing RCB culvert at Air Expressway. The project proposes an easement for the future Channel 1A along Adelanto Road, as the existing flows currently bypass the project site. An interceptor ditch along the eastern project boundary is proposed to accommodate off-site runoff. The storm drain facilities are designed using the greater of either existing flow rates as calculated in this report, or, where applicable, ADMP flow rates.

Line A

Line A will begin in Joshua Avenue, travel west then run south between proposed Buildings 1 and 2, and outlet to existing culvert #2 (three 5'WX2'H RCB). It will pick up off-site flows intercepted by proposed inlets in Joshua Avenue, as well as mitigated on-site runoff from building areas 1A, 2A, and 2C. Due to limited slope capacity from minimal cover at the pipe outlet, a wide and shallow cross-section is required downstream. Line A will be three 5'WX2'H RCB and convey a 100-year flowrate of 185.8 cfs. Where there is sufficient cover upstream, Line A will be a 72" RCP, conveying a 100-year flowrate of 185.8 cfs. Preliminary pipe sizing using normal depth calculations are included in Appendix C. A hydraulic model for Line A will be provided during final engineering to further assess the storm drain design.

Line B

Line B will begin in Joshua Avenue, travel east then run south in Mesa Linda Road, and outlet to existing culvert #3 (one 4'WX2'H RCB). To maintain existing flow patterns, Line B will be one of two public storm drain lines in Mesa Linda Road, each with a separate outlet culvert. It will pick up off-site flows intercepted by proposed inlets in Joshua Avenue, as well as mitigated on-site runoff from building areas 2B and 2D. Due to limited slope capacity from minimal cover at the pipe outlet, a wide and shallow cross-

section is required downstream. Line B will be a 4'WX2'H RCB and convey a 100-year flowrate of 46.9 cfs. Where there is sufficient cover upstream, Line B will be a 42" RCP, conveying a 100-year flowrate of 46.9 cfs. Preliminary pipe sizing using normal depth calculations are included in Appendix C. A hydraulic model for Line B will be provided during final engineering to further assess the storm drain design.

Line C

Line C will begin in Yucca Road, travel west then run south in Mesa Linda Road, and outlet to existing culvert #5 (two 5'WX2'H RCB). To maintain existing flow patterns, Line C will be one of two public storm drain lines in Mesa Linda Road, each with a separate outlet culvert. It will pick up off-site flows intercepted by proposed inlets in Yucca Road, as well as mitigated on-site runoff from building areas 3A, 3C, 4A, and 4C. Due to limited slope capacity from minimal cover at the pipe outlet, a wide and shallow cross-section is required downstream. Line C will be two 5'WX2'H RCB and convey a 100-year flowrate of 72.2 cfs. Where there is sufficient cover upstream, Line C will be a 48" RCP, conveying a 100-year flowrate of 72.2 cfs. Preliminary pipe sizing using normal depth calculations are included in Appendix C. A hydraulic model for Line C will be provided during final engineering to further assess the storm drain design.

Line D

Line D will begin along the eastern project boundary, continue south, and outlet to existing culvert #8 (one 8'WX4'H RCB). It will pick up off-site flows intercepted by the proposed concrete interceptor ditch along the eastern project boundary, as well as mitigated on-site runoff from building areas 5B, 5D, 6B, 6D, 7B, and 7D. Due to limited slope capacity from minimal cover at the pipe outlet, a wide and shallow cross-section is required downstream. Line D will be a 8'WX4'H RCB and convey a 100-year flowrate of 169.8 cfs. Where there is sufficient cover upstream, Line D will be a 66" RCP, conveying a 100-year flowrate of 169.8 cfs. Preliminary pipe sizing using normal depth calculations are included in Appendix C. A hydraulic model for Line D will be provided during final engineering to further assess the storm drain design.

ADMP Channels

Per the ADMP, two regional channels are proposed through the project site: Channel 1A along Adelanto Road and Channel 1 along Emerald Road. The project proposes to construct the portion of Channel 1 within the project site, connecting to existing culvert #7 (seven 7'WX3'H RCB) at Air Expressway. The project proposes an easement for the future Channel 1A along Adelanto Road, as the existing flows currently bypass the project site. Both regional channels will ultimately convey flows from south to north, with Channel 1A ultimately connecting to a junction with Channel 1 and then Channel 1 ultimately discharging into the Fremont Wash.

As directed by the City of Adelanto Engineering staff in January 2025, the VMPD Open Channel Design Guidelines have been utilized, which are more robust than the ADMP guidelines, in the preliminary design of Channel 1 and the determination of easement width for Channel 1A.

The following table summarizes the differences in design parameters used in hydraulic calculations:

Table 6 – Open Channel Design Guidelines

	ADMP	VMPD
Assumed Material	Concrete (n=0.015)	Concrete (n=0.015)
Side Slope Ratio	1:1	1.5:1
Lining Thickness	n/a	Invert - 8″ minimum Side Slope – 6″ minimum
Channel Height Calculation	(1.5 x Normal Depth) + Freeboard (Where Freeboard is not less than 2.5′)	Normal Depth + Freeboard (Where Freeboard is not less than 2.5′)
Access Road Requirements	n/a	Channels with a base width of 10′ or more will have a 20′ access road along each side of the channel

ADMP CHANNEL 1A

In the existing condition, the off-site flows identified by the ADMP do not impact the project site. Additionally, there is no outlet for the proposed channel location. To preserve the intention of the ADMP, an 80′ wide easement along Adelanto Road within the Building 1 parcel is proposed as a placeholder for a future ADMP Channel 1A. The easement width respects the 1,028 cfs flow rate and 12-foot base width identified in the ADMP while incorporating the VMPD design guidelines. A 1.5:1 side slope with a 0.3% longitudinal slope results in a normal depth of 5 feet. For preliminary design, a freeboard of 3 feet was used, which exceeds the 2.5 minimum, resulting in an 8-foot channel depth. The remainder space allows for an access road along each side of the channel, and some buffer space for slopes. Preliminary channel sizing is included in Appendix C. A hydraulic model for ADMP Channel 1A will be provided during final engineering associated with its construction to further assess the storm drain design.

ADMP CHANNEL 1

ADMP Channel 1 is designed to convey the greater of either existing off-site flows as calculated in this report or the MPD flow rates. To that end, an evaluation of the existing tributary off-site area was prepared. This identified that additional areas to the southeast, extending to the boundary of the VMPD, and to the southwest, beyond the US-395, were tributary to the project site. Additionally, an elevated area south of Ranch Road diverted some off-site flows towards an existing watercourse, identified by SBCFCD as a non-system facility "Adelanto East Channel." While the ADMP sized the channel to 781 cfs, rational method hydrology calculations prepared in this report determined the existing off-site flow rate tributary to existing culvert #7 (seven 7′WX3′H RCB) to be 819 cfs.

The proposed ADMP Channel 1 utilizes the larger, calculated design flow rate of 819 cfs with the 25-foot base width identified in the ADMP while incorporating the VMPD design elements. A 1.5:1 side slope with a 0.1% longitudinal slope results in a normal depth of 4 feet. For preliminary design, a freeboard of 3 feet was used, which exceeds the 2.5 feet minimum, resulting in a 7-foot channel depth. Where ADMP Channel 1 parallels Emerald Road, it is assumed that maintenance access could be achieved from the street and that only one access road would be required. Where ADMP Channel 1 runs parallel to the north and south project boundary, 20-foot access roads are proposed along each side of the channel.

ADMP Channel 1 will begin along the southern project boundary, travel west until it hits Emerald Road then run south parallel to the street, then travel west along the northern project boundary before connecting to existing culvert #7 (seven 7′WX3′H RCB). The upstream terminus will include a proposed

concrete interceptor ditch for smaller flows before the channel section widens to accept the bulk of off-site flows that sheet flow across the LADWP parcel. Rip-rapped or concreted side slope channels will direct flows to the concrete channel section on the southern boundary. It will pick up off-site flows intercepted at the southern project boundary and in inlets prior to the Yucca Road/Emerald Road intersection, as well as mitigated on-site runoff from building areas 5A, 5C, 6A, 6C, 7A, and 7C. Due to limited slope capacity from minimal cover at the pipe outlet, a wide and shallow cross-section is required. Multiple driveways cross ADMP Channel 1 to access proposed Buildings 5, 6, and 7. In those locations, a culvert design of four 6'WX4'H RCB will convey a 100-year flowrate of 819 cfs. Preliminary channel sizing and WSPG runs are included in Appendix C. A final hydraulic model for ADMP Channel 1 will be provided during final engineering to further assess the storm drain design.

Catch Basin Capacities

Catch basins and local depressions are proposed at the low points within proposed streets in order to capture street flows. For larger flows, a wider catch basin will be required to prevent ponding from occurring. A hydraulic model will be provided during final engineering to further assess the storm drain design.

SECTION 4 - BASIN AND DETENTION SYSTEM ANALYSIS

ON-SITE UNIT HYDROGRAPH METHOD HYDROLOGY

The unit hydrograph method was used to determine the peak flow rates and volumes in order to adequately size the proposed basins and underground detention chambers to address increased runoff and hydromodification mitigation. Unit hydrographs were performed for both the existing condition and developed condition. The existing condition is used to establish a baseline for comparative purposes. The developed condition is used for design purposes.

In accordance with the SBCFCD Detention Basin Design Criteria and an Interoffice Memo dated September 1987, detention basins and underground detention chambers are sized to accept the differential or increase in runoff for a series of design year storms (2, 10, 25, and 100-year) between 90% of the existing condition and the proposed condition. The post-development condition peak flow rates are calculated in accordance with the SBCFCD Hydrology Manual. Pre-development condition peak flow rates are calculated in accordance with SBCFCD Hydrology Manual, with the following exceptions:

a. 10-year peak flow rates shall be calculated using 5-year rainfall

b. 25-year peak flow rates shall be calculated using 10-year rainfall

c. 100-year peak flow rates shall be calculated using 25-year rainfall and AMC 2

The existing condition analysis evaluated the existing condition for the off-site tributary areas in conjunction with the on-site existing flows. The analyses broke out areas based on what was tributary to the existing RCB culverts located within Air Expressway at the northern project boundary.

The following table summarizes the results of the unit hydrograph analysis:

Table 7 – Unit Hydrograph Results, Existing Condition

Storm Event	UHEXOFF	UHEXEASTOFF	UHEXWESTOFF	UHEX01CUL	UHEX02CUL	UHEX03CUL	UHEX04CUL	UHEX05CUL	UHEX06CUL
10-year, 24-hour*									
Volume (AC-ft)	104.1	12.5	2.7	7.1	19.1	2.5	1.5	6.8	2.5
Peak Flow (cfs)	359.5	82.1	13.6	25.6	70.3	15.9	9.9	24.3	14.1
90% Peak Flow (cfs)	323.5	73.9	12.2	23.1	63.3	14.3	8.9	21.8	12.7
100-Year, 24-Hour*									
Volume (AC-ft)	209.9	25.0	5.2	12.3	34.1	5.0	3.1	12.9	5.0
Peak Flow (cfs)	532.6	155.2	26.2	48.4	134.6	30.1	19.7	49.3	27.9
90% Peak Flow (cfs)	479.4	139.7	23.5	43.6	121.1	27.1	17.7	44.4	25.1

**Note: Existing condition 100-year peak flow rates were calculated using 25-year rainfall. Likewise, existing condition 10-year peak flow rates were calculated using 5-year rainfall.*

The proposed condition analysis evaluated the on-site areas. Subareas were broken out per proposed building and subsequently based on the area tributary to the existing RCB culverts in Air Expressway. The on-site proposed analyses reflect a smaller area within the larger existing condition analyses.

The following tables summarize the results of the proposed condition unit hydrograph analysis:

Table 8 – Unit Hydrograph Results, Proposed Condition, Buildings 1, 2, and 3

Storm Event	PROP 1A	PROP 2A	PROP 2B	PROP 2C	PROP 2D	PROP 3A	PROP 3B	PROP 3C	PROP 3D
10-year, 24-hour									
Volume (AC-ft)	1.5	3.3	1.8	2.7	1.3	3.4	3.1	3.1	2.9
Peak Flow (cfs)	14.7	31.1	17.4	25.3	12.3	31.2	29.2	29.1	26.9
100-Year, 24-Hour									
Volume (AC-ft)	2.5	5.6	3.1	4.6	2.2	5.7	5.3	5.3	4.9
Peak Flow (cfs)	24.9	52.8	29.5	42.8	20.7	53.9	49.4	49.2	45.6

Table 9 – Unit Hydrograph Results, Proposed Condition, Buildings 4 and 5

Storm Event	PROP 4A	PROP 4B	PROP 4C	PROP 4D	PROP 5A	PROP 5B	PROP 5C	PROP 5D
10-year, 24-hour								
Volume (AC-ft)	3.2	3.1	3.2	2.7	3.4	5.5	1.9	4.2
Peak Flow (cfs)	39.5	28.8	29.8	25.1	31.9	50.7	19.1	38.4
100-Year, 24-Hour								
Volume (AC-ft)	5.4	5.2	5.4	4.6	5.9	9.3	3.3	7.2
Peak Flow (cfs)	66.7	48.8	50.5	42.4	54.1	85.8	30.6	65.1

Table 10 – Unit Hydrograph Results, Proposed Condition, Buildings 6 and 7

Storm Event	PROP 6A	PROP 6B	PROP 6C	PROP 6D	PROP 7A	PROP 7B	PROP 7C	PROP 7D
10-year, 24-hour								
Volume (AC-ft)	3.2	2.8	2.7	2.4	3.3	1.4	3.8	1.9
Peak Flow (cfs)	29.4	26.6	25.2	23.0	31.3	13.0	38.1	18.0
100-Year, 24-Hour								
Volume (AC-ft)	5.3	4.8	4.6	4.2	5.7	2.4	6.5	3.3
Peak Flow (cfs)	49.7	45.0	42.6	39.0	53.0	22.0	64.5	30.5

The unit hydrograph output files and hydrology map have been included in Appendix D.

BASIN ROUTING ANALYSIS

For this preliminary study, proposed basins and underground detention chambers are sized to contain the full 100-year, 24-hour storm event volume for the proposed condition. A routing analysis will be prepared in final engineering to demonstrate that the proposed basins and underground detention chambers have the proper outlet structure design and storage volume needed to mitigate flows down to existing condition peak flow rates.

In accordance with the SBCFCD Detention Basin Design Criteria and an Interoffice Memo dated September 1987, detention basins will be sized such that the mitigated post-development peak flow rate generated for the site shall be less than or equal to 90% of the pre-development peak flow rate. As stated in the previous section, pre-development peak flow rates are calculated with rainfalls from different storm events such that peak flow rate comparisons are determined as follows:

a. Q,post 10-year rainfall < 90% x Q,pre 5-year rainfall
b. Q,post 25-year rainfall < 90% x Q,pre 10-year rainfall
c. Q,post 100-year rainfall < 90% x Q,pre 25-year rainfall

Since the proposed on-site analyses reflect a smaller portion within the larger existing condition analyses, the target peak flow rate was taken as a percentage of the overall flow rate. This value proportions the peak flow rate based on tributary area to equitably account for existing flows to the existing culverts. The target peak flow rate will be utilized in final engineering as a comparison for routing analyses to size outlet structures and demonstrate the detention basins and chambers have sufficient volume to route flows down to existing condition peak flow rates. For this preliminary study, the proposed basins and underground detention chambers are sized to contain the full 100-year, 24-hour storm event volume for the proposed condition. This is a conservative sizing, which may be reduced once flows are routed during final design engineering.

The following tables present the necessary comparison flow rate values for the 10-year, 24-hour and 100-year, 24-hour storm events to demonstrate that the basins and underground detention chambers provide the necessary storage volume needed to restrict the outflow to existing condition flow rates.

Table 11 – Basin Routing Design Values, 10-year, 24-hour Storm Event

	Existing Condition*			Proposed Condition		Routed Condition	
Area	Volume (AC-ft)	Peak Flow (cfs)	90% Peak Flow (cfs)	Volume (AC-ft)	Peak Flow (cfs)	Detention Volume*** (AC-ft)	Target Peak Flow** (cfs)
UHEXOFF	104.1	359.5	323.5				
1.2% UHEXOFF (PROP 3B)			3.88	3.1	29.2	5.3	3.88
1.0% UHEXOFF (PROP 3D)			3.24	2.9	26.9	4.9	3.24
0.8% UHEXOFF (PROP 4B)			2.59	3.1	28.8	5.4	2.59
1.1% UHEXOFF (PROP 4D)			3.56	2.7	25.1	4.6	3.56
1.2% UHEXOFF (PROP 5A)			3.88	3.4	31.9	5.9	3.88
0.6% UHEXOFF (PROP 5C)			1.94	1.9	19.1	3.3	1.94
1.1% UHEXOFF (PROP 6A)			3.56	3.2	29.4	5.3	3.56
1.1% UHEXOFF (PROP 6C)			3.56	2.7	25.2	4.6	3.56
1.3% UHEXOFF (PROP 7A)			4.21	3.3	31.3	5.7	4.21
1.5% UHEXOFF (PROP 7C)			4.85	3.8	38.1	6.5	4.85
UHEXEASTOFF	12.5	82.1	73.9				
18.2% UHEXEASTOFF (PROP 5B)			3.88	5.5	50.7	9.3	3.88
14.1% UHEXEASTOFF (PROP 5D)			3.24	4.2	38.4	7.2	3.24
9.3% UHEXEASTOFF (PROP 6B)			2.59	2.8	26.6	4.8	2.59
7.4% UHEXEASTOFF (PROP 6D)			3.56	2.4	23.0	4.2	3.56
5.9% UHEXEASTOFF (PROP 7B)			3.88	1.4	13.0	2.4	3.88
4.2% UHEXEASTOFF (PROP 7D)			1.94	1.9	18.0	3.3	1.94
UHEXWESTOFF	2.7	13.6	12.2				
17.5% UHEXWESTOFF (PROP 1A)			2.14	1.5	14.7	2.5	2.14
UHEX01CUL	7.1	25.6	23.1				
UHEX02CUL	19.1	70.3	63.3				
6.5% UHEX02CUL (PROP 2A)			4.11	3.3	31.1	5.6	4.11
6.6% UHEX02CUL (PROP 2C)			4.18	2.7	25.3	4.6	4.18

	Existing Condition*			Proposed Condition		Routed Condition	
Area	Volume (AC-ft)	Peak Flow (cfs)	90% Peak Flow (cfs)	Volume (AC-ft)	Peak Flow (cfs)	Detention Volume*** (AC-ft)	Target Peak Flow** (cfs)
UHEX03CUL	2.5	15.9	14.3				
31.4% UHEX03CUL (PROP 2B)			4.48	1.8	17.4	3.1	4.48
21.7% UHEX03CUL (PROP 2D)			3.10	1.3	12.3	2.2	3.10
UHEX04CUL	1.5	9.9	8.9				
UHEX05CUL	6.8	24.3	21.8				
8.5% UHEX05CUL (PROP 3A)			1.86	3.4	31.2	5.7	1.86
10.9% UHEX05CUL (PROP 3C)			2.38	3.1	29.1	5.3	2.38
13.1% UHEX05CUL (PROP 4A)			2.86	3.2	39.5	5.4	2.86
11.8% UHEX05CUL (PROP 4C)			2.58	3.2	29.8	5.4	2.58
UHEX06CUL	2.5	14.1	12.7				

**Note: Existing condition 10-year peak flow rates were calculated using 5-year rainfall.*

***Note: Peak Mitigated Flow will be calculated in final engineering. Value presented in table is target value per SBCFCD requirements.*

****Note: Detention volume is preliminarily sized for the full 100-year, 24-hour storm event for the purposes of this study.*

Table 12 – Basin Routing Design Values, 100-year, 24-hour Storm Event

	Existing Condition*			Proposed Condition		Routed Condition	
Area	Volume (AC-ft)	Peak Flow (cfs)	90% Peak Flow (cfs)	Volume (AC-ft)	Peak Flow (cfs)	Detention Volume*** (AC-ft)	Target Peak Flow** (cfs)
UHEXOFF	209.9	532.6	479.4				
1.2% UHEXOFF (PROP 3B)			5.75	5.3	49.4	5.3	5.75
1.0% UHEXOFF (PROP 3D)			4.79	4.9	45.6	4.9	4.79
0.8% UHEXOFF (PROP 4B)			3.83	5.2	48.8	5.4	3.83
1.1% UHEXOFF (PROP 4D)			5.27	4.6	42.4	4.6	5.27
1.2% UHEXOFF (PROP 5A)			7.75	5.9	54.1	5.9	7.75
0.6% UHEXOFF (PROP 5C)			2.88	3.3	30.6	3.3	2.88
1.1% UHEXOFF (PROP 6A)			5.27	5.3	49.7	5.3	5.27
1.1% UHEXOFF (PROP 6C)			5.27	4.6	42.6	4.6	5.27
1.3% UHEXOFF (PROP 7A)			6.23	5.7	53.0	5.7	6.23
1.5% UHEXOFF (PROP 7C)			7.19	6.5	64.5	6.5	7.19
UHEXEASTOFF	25.0	155.2	139.7				
18.2% UHEXEASTOFF (PROP 5B)			25.4	9.3	85.8	9.3	25.4
14.1% UHEXEASTOFF (PROP 5D)			19.7	7.2	65.1	7.2	19.7
9.3% UHEXEASTOFF (PROP 6B)			13.0	4.8	45.0	4.8	13.0
7.4% UHEXEASTOFF (PROP 6D)			10.3	4.2	39.0	4.2	10.3
5.9% UHEXEASTOFF (PROP 7B)			8.24	2.4	22.0	2.4	8.24
4.2% UHEXEASTOFF (PROP 7D)			5.87	3.3	30.5	3.3	5.87
UHEXWESTOFF	5.2	26.2	23.5				
17.5% UHEXWESTOFF (PROP 1A)			4.12	2.5	24.9	2.5	4.12
UHEX01CUL	12.3	48.4	43.6				
UHEX02CUL	34.1	134.6	121.1				
6.5% UHEX02CUL (PROP 2A)			7.87	5.6	52.8	5.6	7.87
6.6% UHEX02CUL (PROP 2C)			7.99	4.6	42.8	4.6	7.99

	Existing Condition*			Proposed Condition		Routed Condition	
Area	Volume (AC-ft)	Peak Flow (cfs)	90% Peak Flow (cfs)	Volume (AC-ft)	Peak Flow (cfs)	Detention Volume*** (AC-ft)	Target Peak Flow** (cfs)
UHEX03CUL	5.0	30.1	27.1				
31.4% UHEX03CUL (PROP 2B)			8.50	3.1	29.5	3.1	8.50
21.7% UHEX03CUL (PROP 2D)			5.88	2.2	20.7	2.2	5.88
UHEX04CUL	3.1	19.7	17.7				
UHEX05CUL	12.9	49.3	44.4				
8.5% UHEX05CUL (PROP 3A)			3.77	5.7	53.9	5.7	3.77
10.9% UHEX05CUL (PROP 3C)			4.84	5.3	49.2	5.3	4.84
13.1% UHEX05CUL (PROP 4A)			5.81	5.4	66.7	5.4	5.81
11.8% UHEX05CUL (PROP 4C)			5.24	5.4	50.5	5.4	5.24
UHEX06CUL	5.0	27.9	25.1				

**Note: Existing condition 100-year peak flow rates were calculated using 25-year rainfall.*

***Note: Peak Mitigated Flow will be calculated in final engineering. Value presented in table is target value per SBCFCD requirements.*

****Note: Detention volume is preliminarily sized for the full 100-year, 24-hour storm event for the purposes of this study.*

The unit hydrograph calculations have been provided in Appendix D.

SECTION 5 - CONCLUSION

Based on the analyses and results of this report, the following conclusions were derived from the hydrology and hydraulic results:

- The proposed drainage improvements will adequately convey flows to the basins or underground detention chambers and provide flood protection for the 100-year storm event.
- The proposed drainage improvements will adequately convey off-site flows through the site and provide flood protection for the 100-year storm event.
- The proposed basins and underground detention chambers will provide adequate water quality treatment and provide adequate volume to mitigate hydromodification and increased runoff impacts.
- The proposed project will not impact flooding condition to upstream or downstream properties.

APPENDIX A – HYDROLOGY & HYDRAULIC ANALYSIS EXHIBITS

WEB SOIL SURVEY (WSS) HYDROLOGIC SOIL GROUP MAP



Map Scale: 1:21,600 if printed on B portrait (11" x 17") sheet.

N

Meters
0 300 600 1200 1800

Feet
0 1000 2000 4000 6000

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil 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: San Bernardino County, California, Mojave River Area
Survey Area Data: Version 16, Aug 30, 2024

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

Date(s) aerial images were photographed: Mar 17, 2022—Jun 12, 2022

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
105	BRYMAN LOAMY FINE SAND, 0 TO 2 PERCENT SLOPES	C	1,146.7	53.5%
106	BRYMAN LOAMY FINE SAND, 2 TO 5 PERCENT SLOPES	C	418.9	19.5%
112	CAJON SAND, 0 TO 2 PERCENT SLOPES	A	393.9	18.4%
131	HELENDALE LOAMY SAND, 0 TO 2 PERCENT SLOPES	A	14.1	0.7%
132	HELENDALE LOAMY SAND, 2 TO 5 PERCENT SLOPES	A	169.1	7.9%
Totals for Area of Interest			**2,142.7**	**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

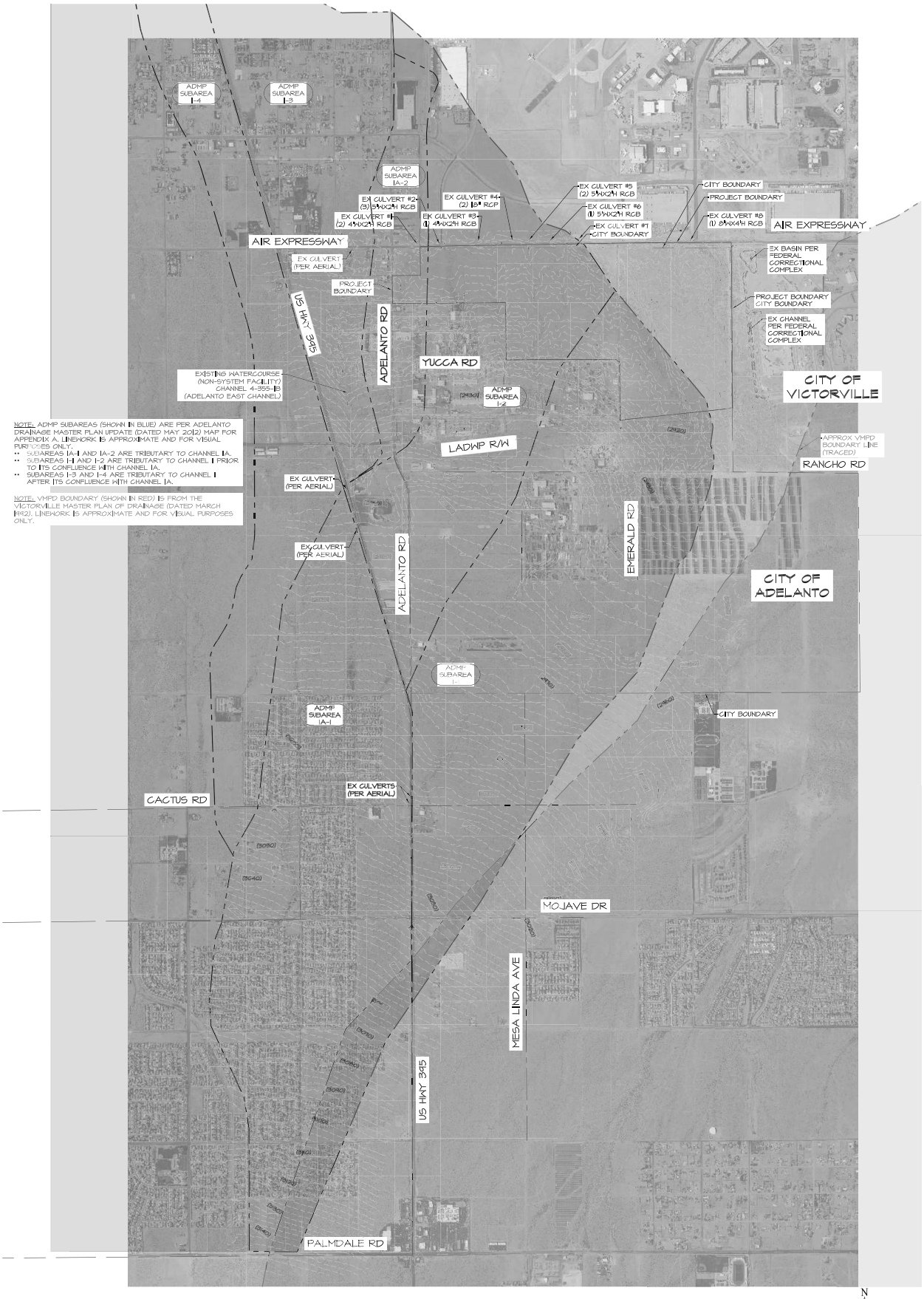
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

STORMWATER FACILITY MAPPING TOOL EXHIBIT


Stormwater Facility Mapping Tool
Find address or place
CITY OF VICTORVILLE
CITY OF ADELANTO
Adelanto Mileski Project Site
Adelanto West Channel
Adelanto East Channel
Adelanto Elementary School
Marconi Park
Howard Loy Park
High Desert Mavericks
Adelanto Solar II LLC
Adelanto Solar LLC
Perimeter Rd
Aerospace
Aerospace Dr
Pol Access Rd
Innovation
Innovation Way
Gateway Dr
Air Base Rd
Hardy Ave
Bartlett Ave
Brockman Ave
Aztec Ln
Lawson Ave
Cortez Ave
Cholla Ave
Joshua Ave
Hibiscus Rd
Yucca Rd
Violet Rd
Rancho Rd
Powerline Rd
Primrose Rd
El Dorado St
Delicious St
Jonathan St
Concord St
Adelanto Rd
Mesa Linda Rd
Adelanto Airport Rd
Lilac Rd
Fremontia Rd
Montezuma St
Bellflower St
395
Legend
County Boundaries
Redbook - Channels Layer
Interim
Non-System Facility
Ultimate
Watercourse
<all other values>
Drainage Facilities
EHM
Non-EHM (Low)
Non-EHM (Medium)
Non-EHM (High)
Non-EHM (default-high)
City Boundaries
Esri Community Maps Contributors, City of Victor
0.2mi
34.5702 -117.3954 Degrees

MASTER PLAN OF DRAINAGE BOUNDARIES EXHIBIT



NOTE: ADMP SUBAREAS (SHOWN IN BLUE) ARE PER ADELANTO DRAINAGE MASTER PLAN UPDATE (DATED MAY 2012) MAP FOR APPENDIX A. LINEWORK IS APPROXIMATE AND FOR VISUAL PURPOSES ONLY.

- SUBAREAS IA-1 AND IA-2 ARE TRIBUTARY TO CHANNEL IA.
- SUBAREAS I-1 AND I-2 ARE TRIBUTARY TO CHANNEL I PRIOR TO ITS CONFLUENCE WITH CHANNEL IA.
- SUBAREAS I-3 AND I-4 ARE TRIBUTARY TO CHANNEL I AFTER ITS CONFLUENCE WITH CHANNEL IA.

NOTE: VMPD BOUNDARY (SHOWN IN RED) IS FROM THE VICTORVILLE MASTER PLAN OF DRAINAGE (DATED MARCH 1982). LINEWORK IS APPROXIMATE AND FOR VISUAL PURPOSES ONLY.

MASTER PLAN DRAINAGE AREA DELINEATIONS

N W E S

1" = 1000'

1000 0 1000 2000 3000

PRELIMINARY

ALBERT A WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O. 24-0505
SHEET 1
OF 1 SHEETS

FEMA FIRM PANELS (06071C5785H AND 06071C5805H)

These FEMA Firm Panels identify the 100-year floodplain and are included for reference in the vicinity of the project, however there are no existing Floodplains encumbering the site. The project site does fall within the 500-year floodplain as shown by the California Department of Water Resources Best Available Map (BAM) which is included in the subsequent section.

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

This map may reflect more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to confirm to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)—(A)	Cross section line
(23)- - - -(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
2476000mN	1000-meter Universal Transverse Mercator grid values, zone 11N
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
March 18, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
August 28, 2008 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 5785H

FIRM
FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA
AND INCORPORATED AREAS
PANEL 5785 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ADELANTO, CITY OF	060639	5785	H
SAN BERNARDINO COUNTY	060270	5785	H
VICTORVILLE, CITY OF	065068	5785	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06071C5785H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

This map may reflect more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to confirm to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 Base Flood Elevation line and value; elevation in feet*

(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

Cross section line

Transect line

87°07'45", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

"76"000"N 1000-meter Universal Transverse Mercator grid values, zone 11N

600000 FT 5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection

DX5510 × Bench mark (see explanation in Notes to Users section of this FIRM panel)

●M1.5 River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
March 18, 1998

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
August 28, 2008 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas; to update map format; to add roads and road names; and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 5795H

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS
PANEL 5795 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
ADELANTO, CITY OF	060639	5795	H
SAN BERNARDINO COUNTY	060270	5795	H
VICTORVILLE, CITY OF	065068	5795	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06071C5795H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

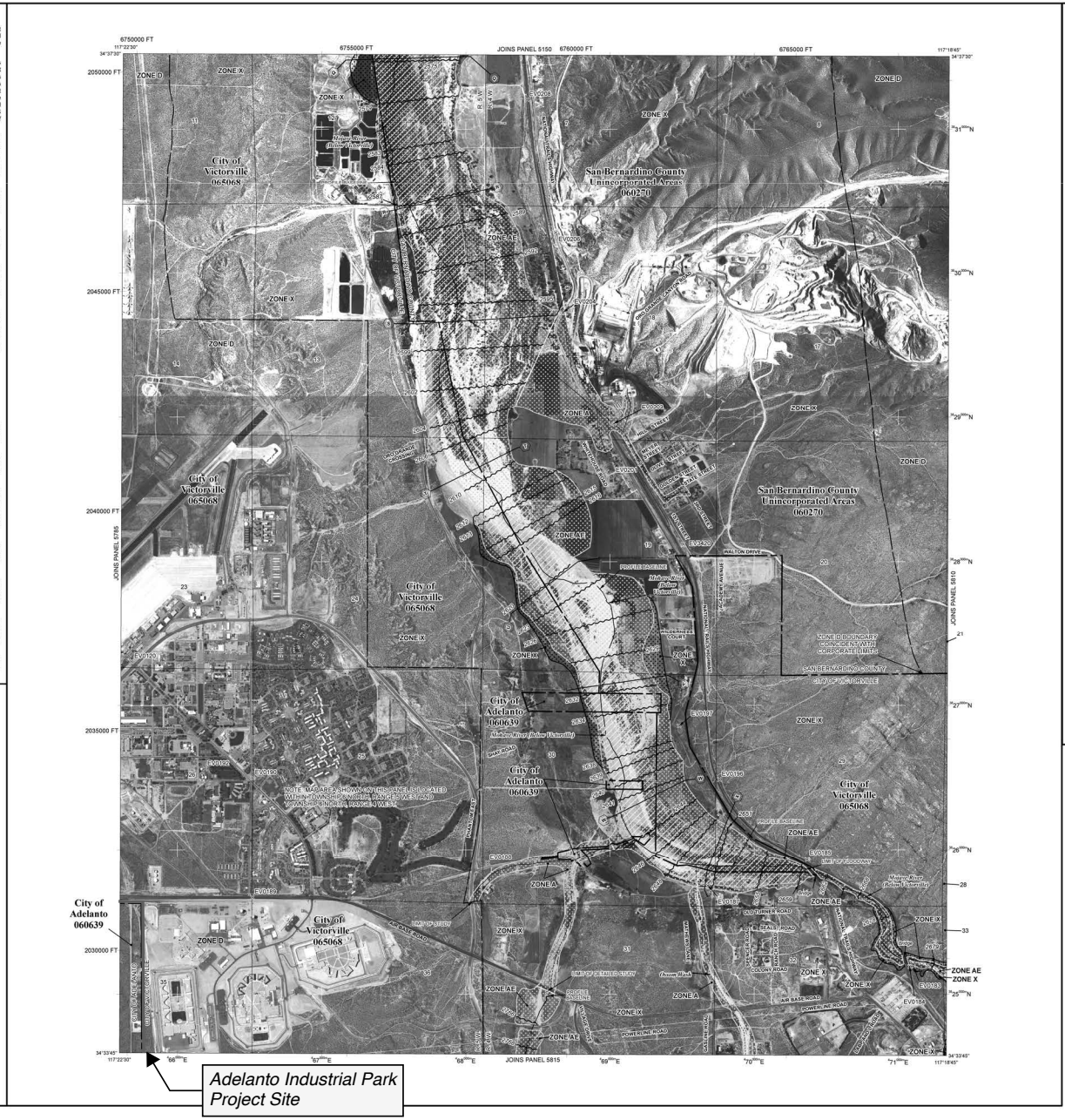
This map may reflect more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to confirm to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL. 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- B — B — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone 11N
- 600000 FT — 5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
March 16, 1998

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
August 28, 2008 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 5805H

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 5805 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ADELANTO, CITY OF	060639	5805	H
SAN BERNARDINO COUNTY	060270	5805	H
VICTORVILLE, CITY OF	065068	5805	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06071C5805H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

BEST AVAILABLE MAP (BAM) PRINT PAGE

The project site falls within the 500-year floodplain as shown by the BAM in this section. However, the project does not fall within the 100-year FEMA floodplain per the previous section.

CALIFORNIA DEPARTMENT OF
WATER RESOURCES

Floodplain Information

Latitude: 34.57043, Longitude: -117.38405



Adelanto Industrial Park Project Site

County: San Bernardino (34.57043, -117.38405)

Floodplain Layer	100-YR	200-YR	500-YR
FEMA Effective	N	N/A	X✓ *
DWR Awareness	Y✓	N/A	N/A
Regional/Special Studies	N	N/A	N
USACE Comp. Study	N	N	N

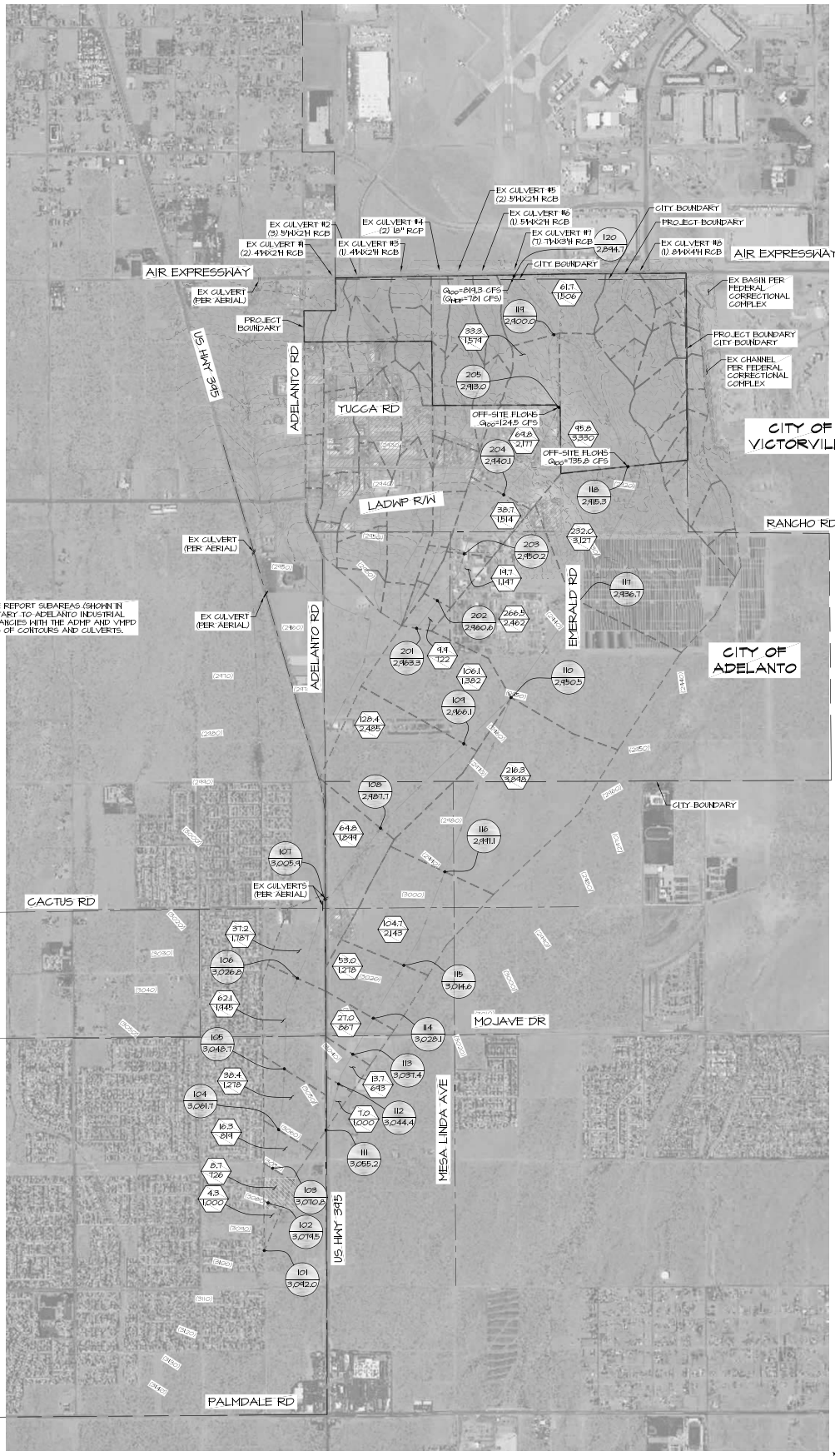
Y: The location is within the floodplain
N: The location is not within the floodplain
N/A: Data not available
✓ = Active Layer(s)

* 500-Year Floodplains - FEMA Flood Zones
X (Protected by levee)*=Area protected from the 1% annual chance flood by levees. No Base Flood Elevations or depths are shown within this zone. *The X (Protected by levee), X500, and 500-IC are categorized as part of the FEMA Flood Zone Regional/Special Studies = Floodplains developed from approximate assessment procedures from local agencies.

Floodplains are displayed using semi transparent colors. When viewing overlapping floodplains, the combination of multiple semi transparent colors will not match the legend colors. For accurate color representation, view floodplains individually.

DWR Awareness
FEMA Effective
PROJECT BOUNDARY
RIVER/STREAM CENTERLINE

RATIONAL METHOD HYDROLOGY MAPS



LEGEND

EXISTING LAND USE
VACANT/UNDEVELOPED/DIRT LOTS
(NO HATCH)

EXISTING LAND USE
MANUFACTURING/INDUSTRIAL (M1)
(DOES NOT INCLUDE DIRT LOTS)

EXISTING LAND USE SINGLE
FAMILY RESIDENTIAL (R-1)

PRELIMINARY RATIONAL METHOD MAP
EXISTING CONDITION

N
W E
S

1" = 1000'

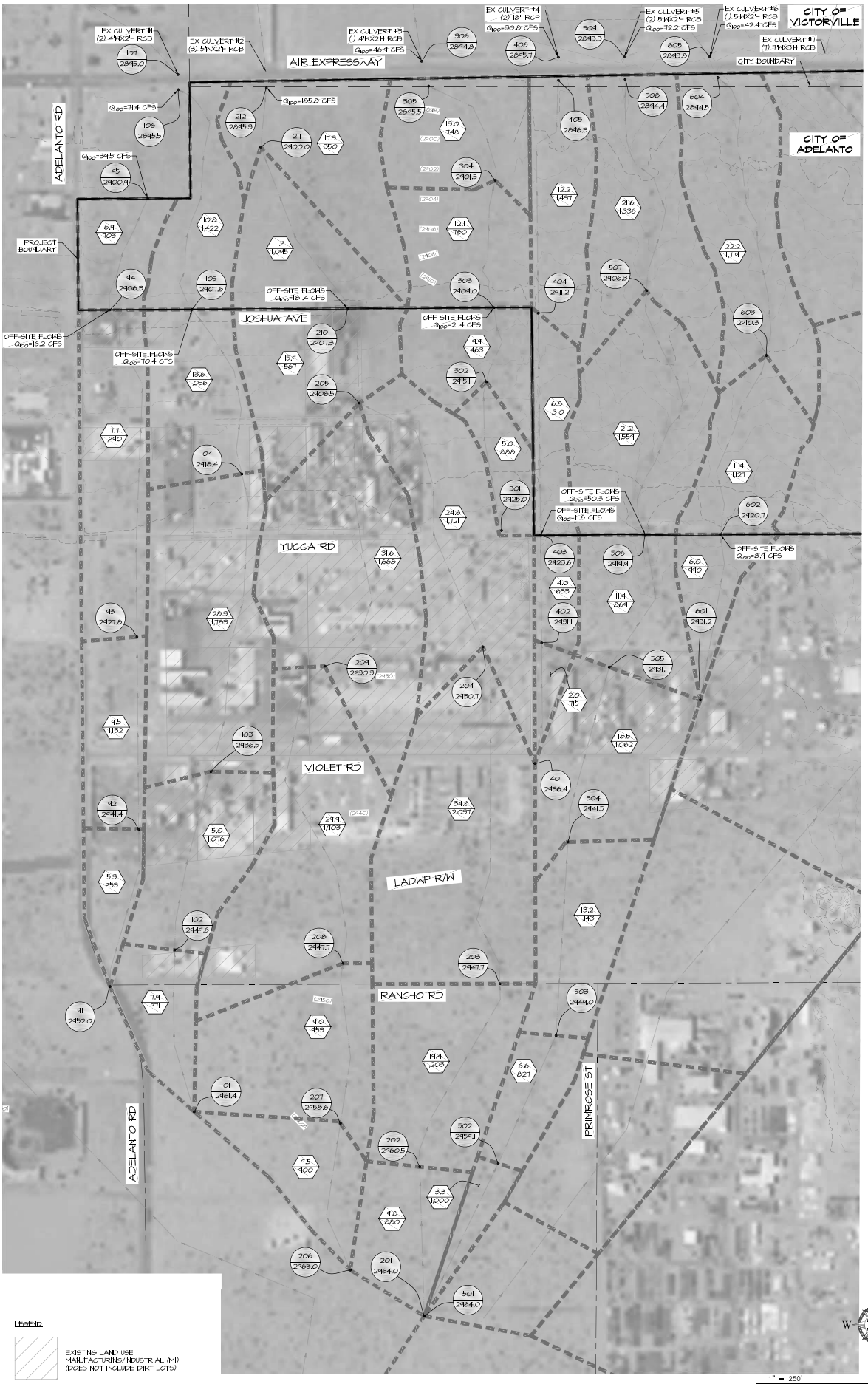
1000 0 1000 2000 3000

PRELIMINARY

H:\2024\24-0505\Hydrology\Figures\Tributary\24-0505-Tributary-Existing.dwg 6/10/2026 12:04 PM

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O. 24-0505
SHEET 1
OF 3 SHEETS



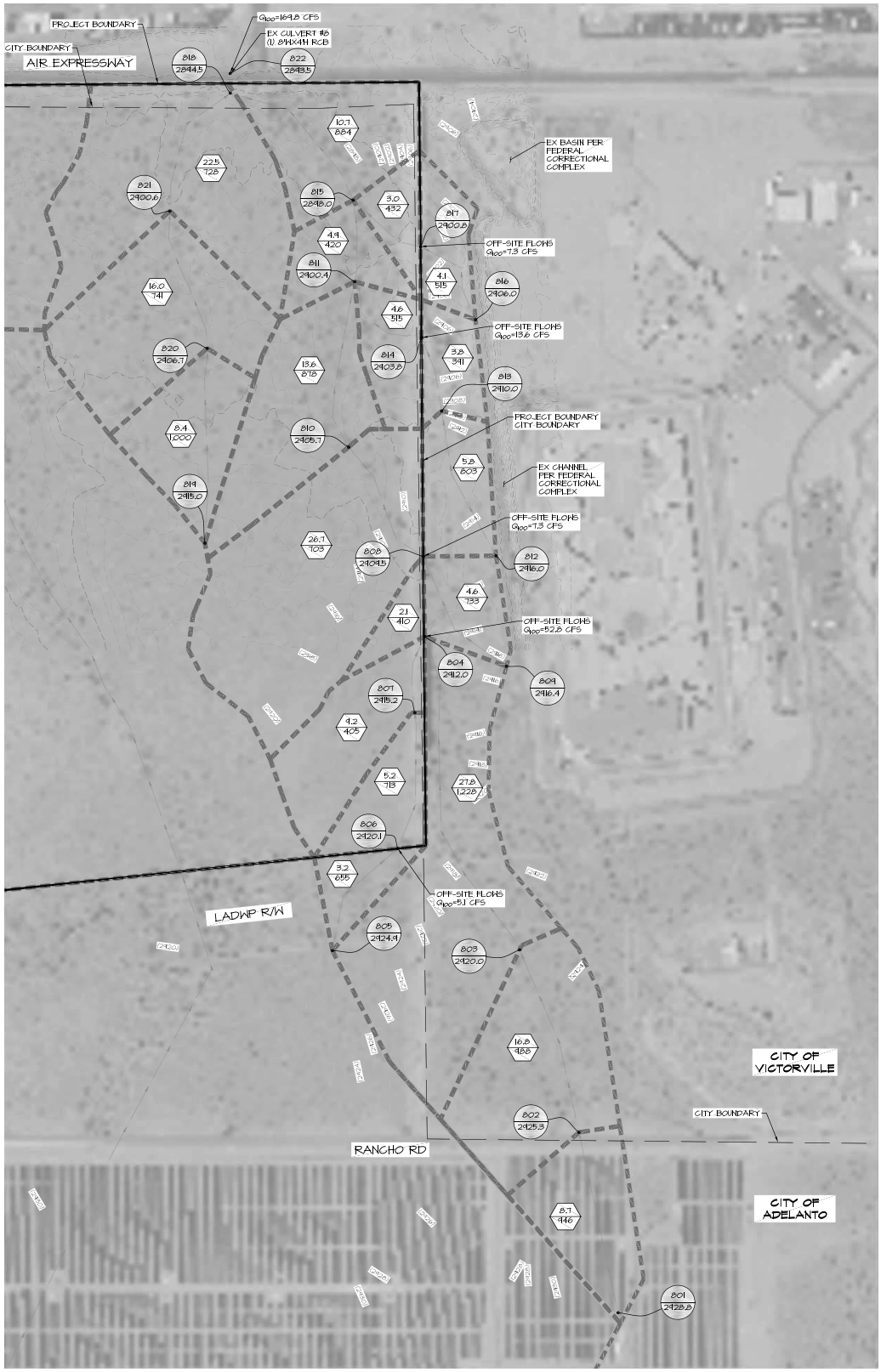
PRELIMINARY RATIONAL METHOD MAP
EXISTING CONDITION

PRELIMINARY

H:\2024\24-0505\Exhibits\Hydrology\Exhibits\24-0505 EX-HYDRO.dwg 6/10/2026 12:04 PM

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O. 24-0505
SHEET 2
OF 3 SHEETS



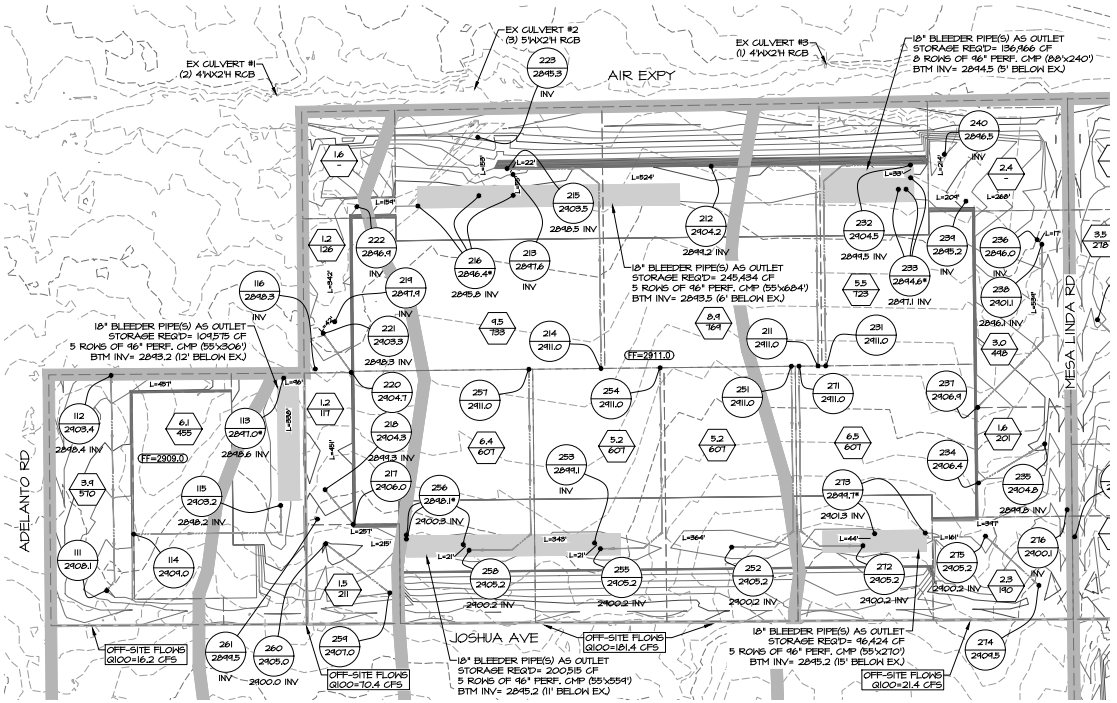
PRELIMINARY RATIONAL METHOD MAP
EXISTING CONDITION

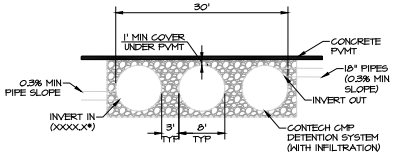
PRELIMINARY

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O. 24-0505
SHEET 3
OF 3 SHEETS

H:\24\24-0505\Active Files\Hydrology\Mxd Files\24-0505_EX_RM.mxd 6/10/2026 12:04 PM





CONTECH CMP UNDERGROUND DETENTION SYSTEM

TYPICAL ROW CROSS SECTION
NOT TO SCALE

NOTES:
1. THROUGHOUT THE DESIGN OF ADELANTO INDUSTRIAL PARK, THE INVERT OUT IS OFFSET HIGHER THAN THE INVERT IN (XXXX.X*) FOR THE DETENTION SYSTEMS. THE INVERT OUT IS SET RELATIVE TO THE MAINLINE STORM DRAIN ELEVATIONS. THIS OFFSET ALLOWS FOR INFILTRATION AND DETENTION OF STORM FLOWS FOR WATER QUALITY TREATMENT AND HYDROMODIFICATION MITIGATION (10-YR STORM EVENT).
2. IN CASES WHERE THE INVERT OUT CANNOT GRAVITY DRAIN TO THE MAINLINE, A PUMP IS REQUIRED TO OUTLET FLOWS.
3. IN ENTITLEMENT, CHAMBERS ARE SIZED TO CONTAIN THE FULL POST-DEVELOPMENT 100YR-24HR STORM EVENT VOLUME. ROUTING TO CONFIRM SIZING AND OUTLET CONFIGURATIONS WILL OCCUR DURING FINAL ENGINEERING.
4. GEOTECHNICAL REPORT PREPARED BY LEIGHTON DATED 2/5/2024 STATES THAT "INFILTRATION IS NOT RECOMMENDED AT DEPTHS DEEPER THAN 15 FEET BELOW EXISTING GROUND."

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- PROJECT BOUNDARY
- EXISTING DRAINAGE BOUNDARY
- PROPOSED CMP CHAMBERS
- XXX / XXXX.X — NODE DESIGNATION / NODE ELEVATION
- XXXX.X INV — INVERT ELEVATION
- XX / XXX — WATERSHED AREA (ACRES) / LONGEST FLOWPATH (FEET)

NOTE: GEOTECHNICAL REPORT PREPARED BY LEIGHTON DATED 2/5/2024 STATES THAT "INFILTRATION IS NOT RECOMMENDED AT DEPTHS DEEPER THAN 15 FEET BELOW EXISTING GROUND."



1" = 150'

75 0 150 300 450

CITY OF ADELANTO

PRELIMINARY RATIONAL METHOD MAP
DEVELOPED CONDITION
ADELANTO INDUSTRIAL PARK
BUILDINGS 1-2

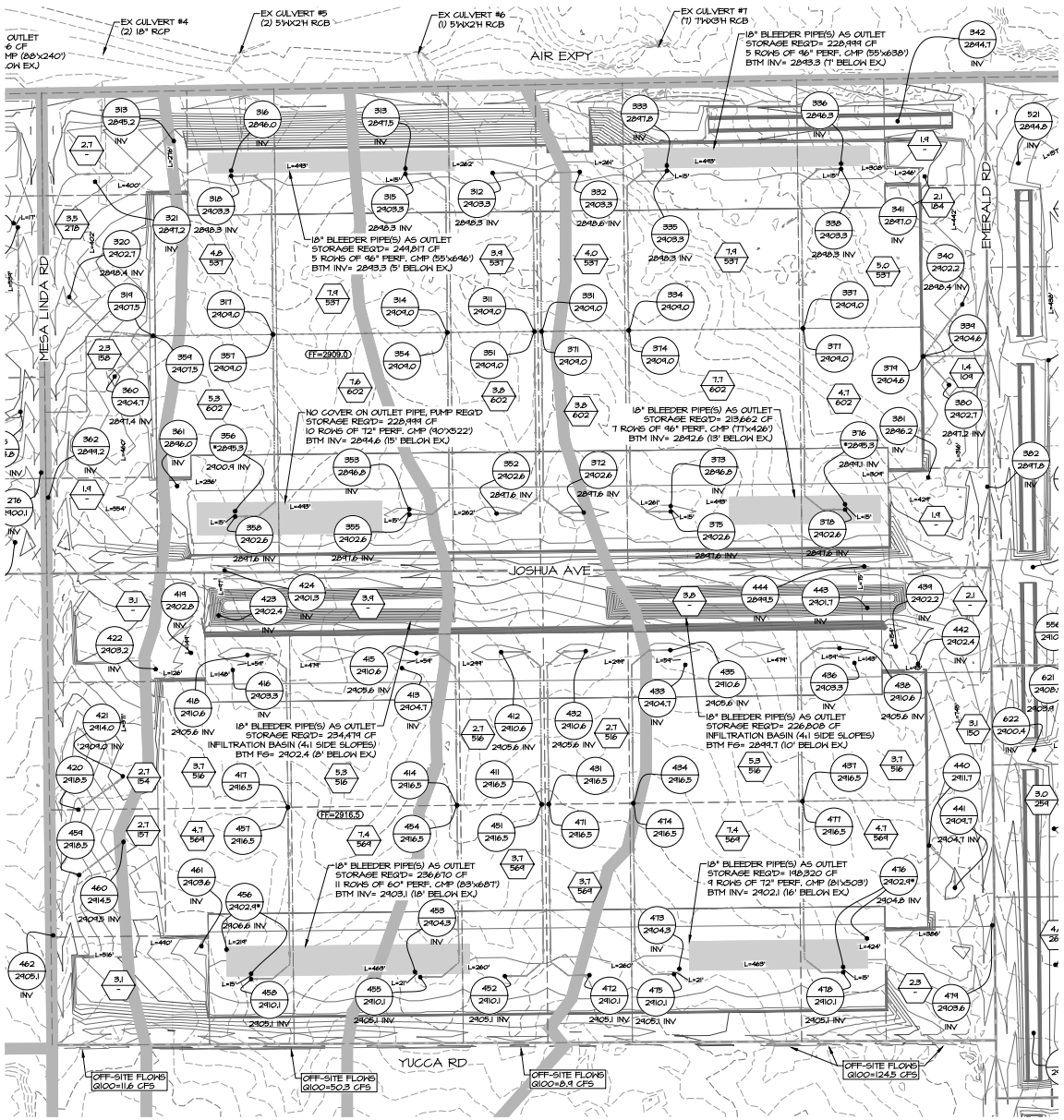
SCALE:	1" = 150'
DATE:	6/10/26
DESIGNED:	ABE
CHECKED:	SKK
PLN CK REF:	
F.B.	

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O. 24-0505
SHEET 1
OF 4 SHEETS
DWG. NO.

H:\2024\24-0505\WATER RESOURCES\ENTITLEMENT\DRAINAGE\LUPE\HYD\DWG FOLDER\24-0505-PHYD-RATIONAL-ONSITE-PROP.DWG 4/21/2025 1:46:27 PM

AUTODESK



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- PROJECT BOUNDARY
- EXISTING DRAINAGE BOUNDARY
- PROPOSED CMP CHAMBERS
- XXX / XXXX.X — NODE DESIGNATION / NODE ELEVATION
- XXXX.X INV — INVERT ELEVATION
- XX / XXX — WATERSHED AREA (ACRES) / LONGEST FLOWPATH (FEET)

NOTE: GEOTECHNICAL REPORT PREPARED BY LEIGHTON DATED 2/5/2024 STATES THAT "INFILTRATION IS NOT RECOMMENDED AT DEPTHS DEEPER THAN 15 FEET BELOW EXISTING GROUND."

CITY OF ADELANTO

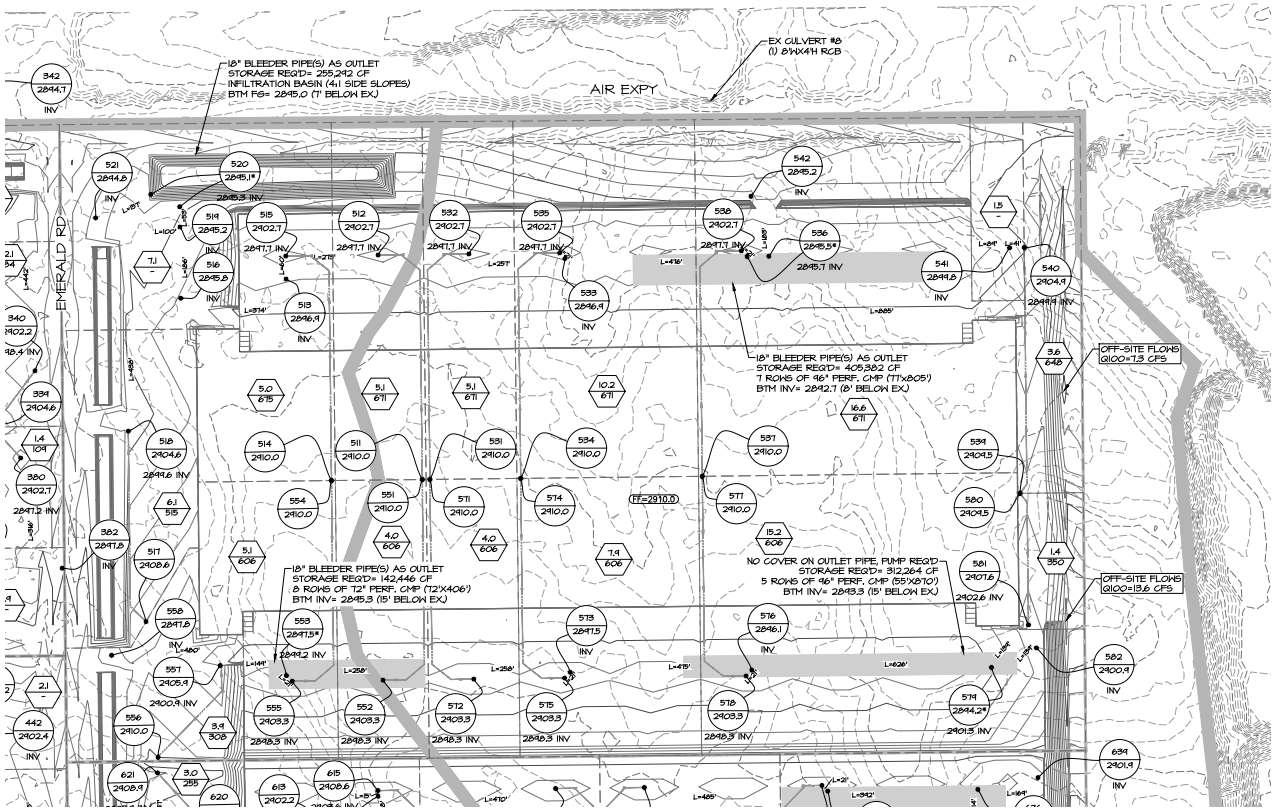
PRELIMINARY RATIONAL METHOD MAP
DEVELOPED CONDITION
ADELANTO INDUSTRIAL PARK
BUILDINGS 3-4

SCALE:	1" = 150'
DATE:	6/10/26
DESIGNED:	ABE
CHECKED:	SKK
PLN CK REF:	
F.B.	

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O.	24-0505
SHEET	2
OF	4 SHEETS
DWG. NO.	

H:\2024\24-0505\WATER RESOURCES\ENTITLEMENT\DRAINAGE\LUPE\HYD\DWG FOLDER\24-0505-PHYD-RATIONAL-ONSITE-PROP.DWG 4/21/2025 1:46:27 PM



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- PROJECT BOUNDARY
- EXISTING DRAINAGE BOUNDARY
- PROPOSED CMP CHAMBERS
- XXX / XXXX.X — NODE DESIGNATION / NODE ELEVATION
- XXXX.X INV — INVERT ELEVATION
- XX / XXX — WATERSHED AREA (ACRES) / LONGEST FLOWPATH (FEET)

NOTE: GEOTECHNICAL REPORT PREPARED BY LEIGHTON DATED 2/5/2024 STATES THAT "INFILTRATION IS NOT RECOMMENDED AT DEPTHS DEEPER THAN 15 FEET BELOW EXISTING GROUND."

N W E S

1" = 150'

75 0 150 300 450

CITY OF ADELANTO

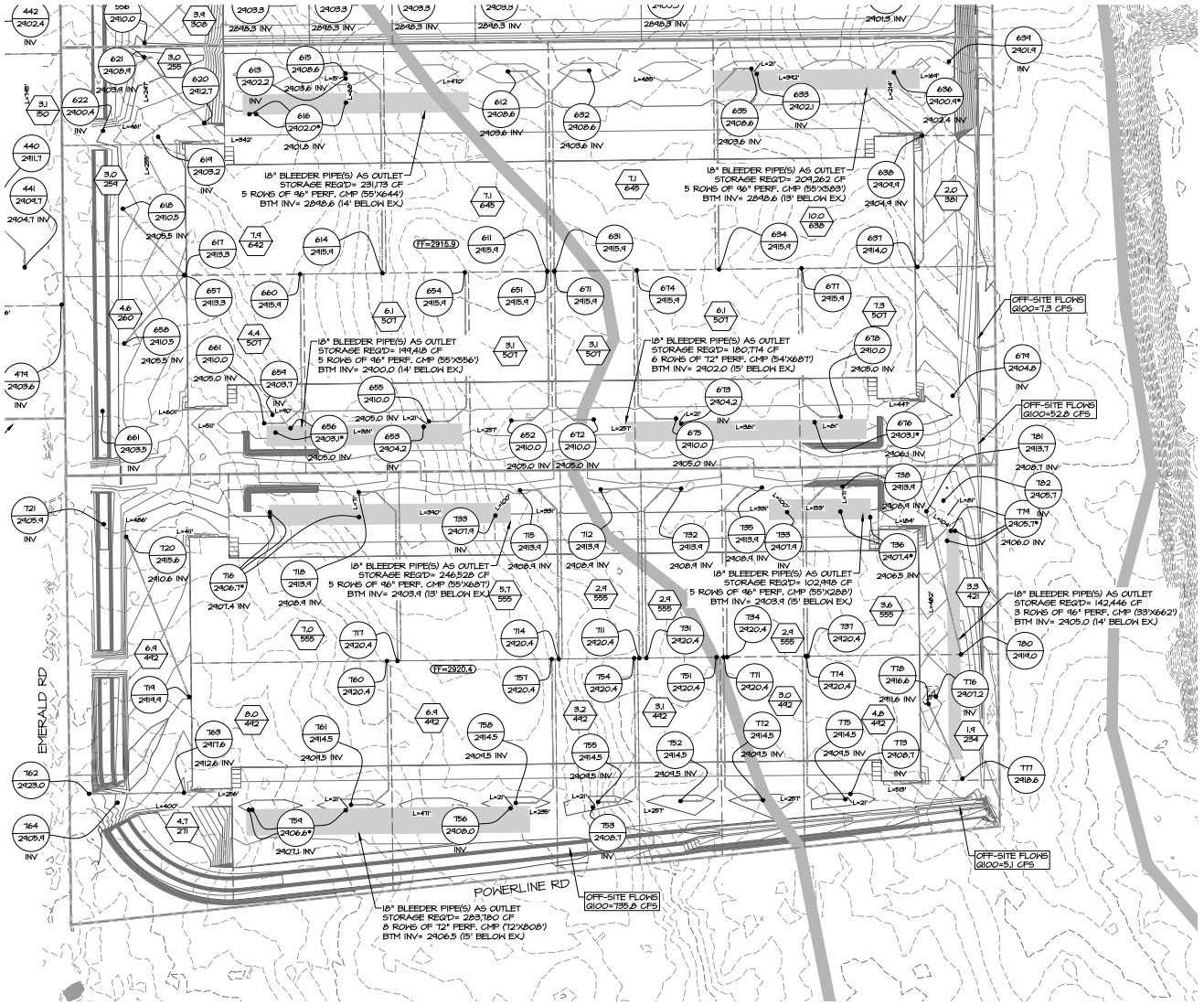
PRELIMINARY RATIONAL METHOD MAP
DEVELOPED CONDITION
ADELANTO INDUSTRIAL PARK
BUILDING 5

SCALE:	1" = 150'
DATE:	6/10/26
DESIGNED:	ABE
CHECKED:	SKK
PLN CK REF:	
F.B.	

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O.	24-0505
SHEET	3
OF	4 SHEETS
DWG. NO.	

H:\2024\24-0505\WATER RESOURCES\ENTITLEMENT\DRAINAGE\LUPE\HYD\DWG FOLDER\24-0505-HYD-RATIONAL-ONSITE-PROP.DWG 4/21/2025 1:46:27 PM



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- PROJECT BOUNDARY
- EXISTING DRAINAGE BOUNDARY
- PROPOSED CMP CHAMBERS
- XXX / XXXX.X — NODE DESIGNATION / NODE ELEVATION
- XXXX.X INV — INVERT ELEVATION
- XX / XXX — WATERSHED AREA (ACRES) / LONGEST FLOWPATH (FEET)

NOTE: GEOTECHNICAL REPORT PREPARED BY LEIGHTON DATED 2/5/2024 STATES THAT "INFILTRATION IS NOT RECOMMENDED AT DEPTHS DEEPER THAN 15 FEET BELOW EXISTING GROUND."

N W E S

1" = 150'

75 0 150 300 450

CITY OF ADELANTO

PRELIMINARY RATIONAL METHOD MAP
DEVELOPED CONDITION
ADELANTO INDUSTRIAL PARK
BUILDINGS 6-7

SCALE:	1" = 150'
DATE:	6/10/26
DESIGNED:	ABE
CHECKED:	SKK
PLN CK REF:	
F.B.	

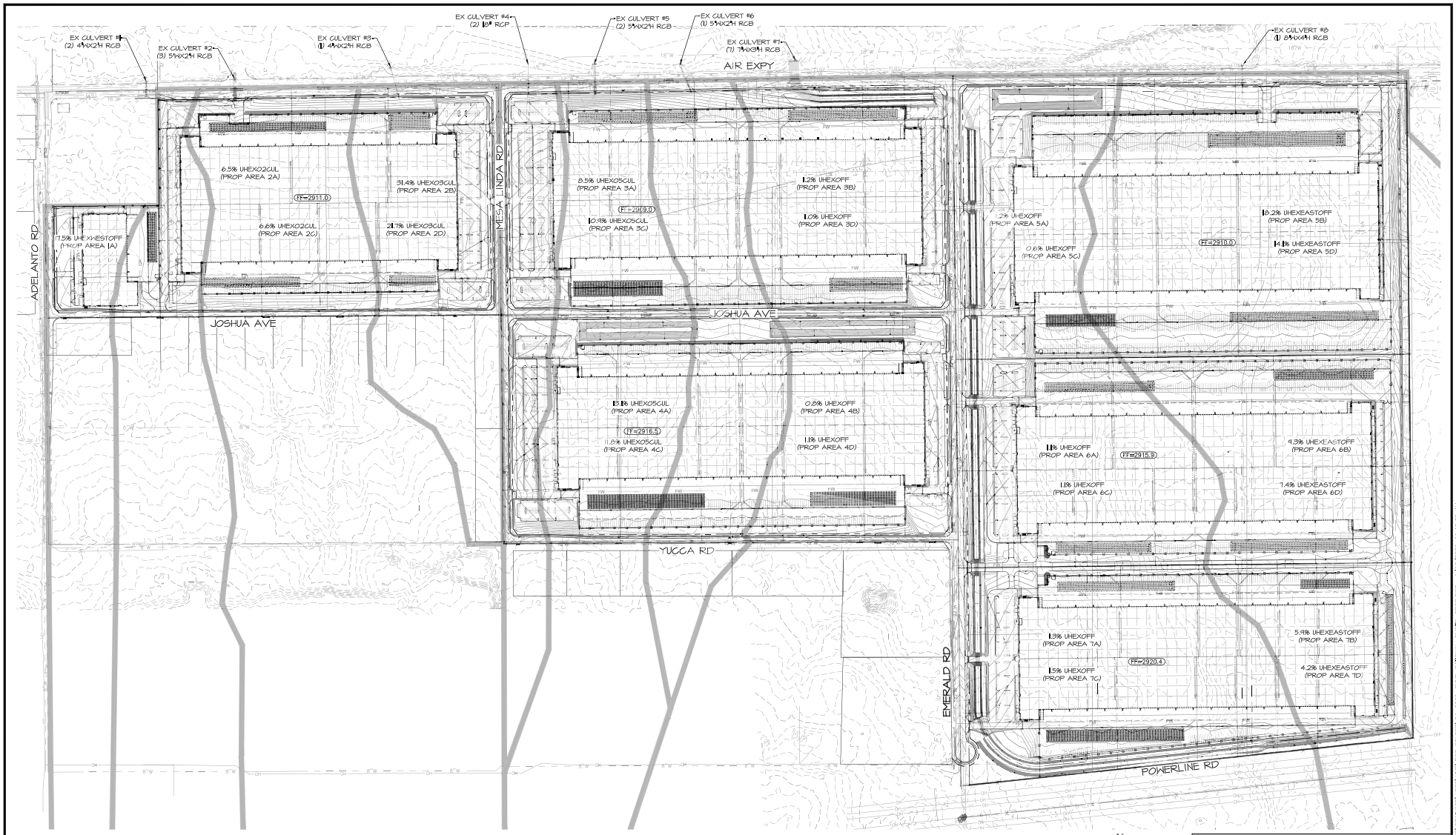
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O. 24-0505
SHEET 4
OF 4 SHEETS
DWG. NO.

H:\2024\24-0505\WATER RESOURCES\ENTITLEMENT\DRAINAGE\LIPE\HYD\DWG FOLDER\24-0505-PHYD-RATIONAL-ONSITE-PROP.DWG 4/21/2025 1:46:27 PM

XREFS:

UNIT HYDROGRAPH HYDROLOGY MAPS



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- PROJECT BOUNDARY
- EXISTING DRAINAGE BOUNDARY

N
W E
S

1" = 250'

125 0 250 500 750

CITY OF ADELANTO

PRELIMINAY UNIT HYDROGRAPH METHOD MAP
DEVELOPED CONDITION
ADELANTO INDUSTRIAL PARK

SCALE:	1" = 250'
DATE:	4/17/25
DESIGNED:	ABE
CHECKED:	SKK
PLN CK REF:	
F.B.	

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

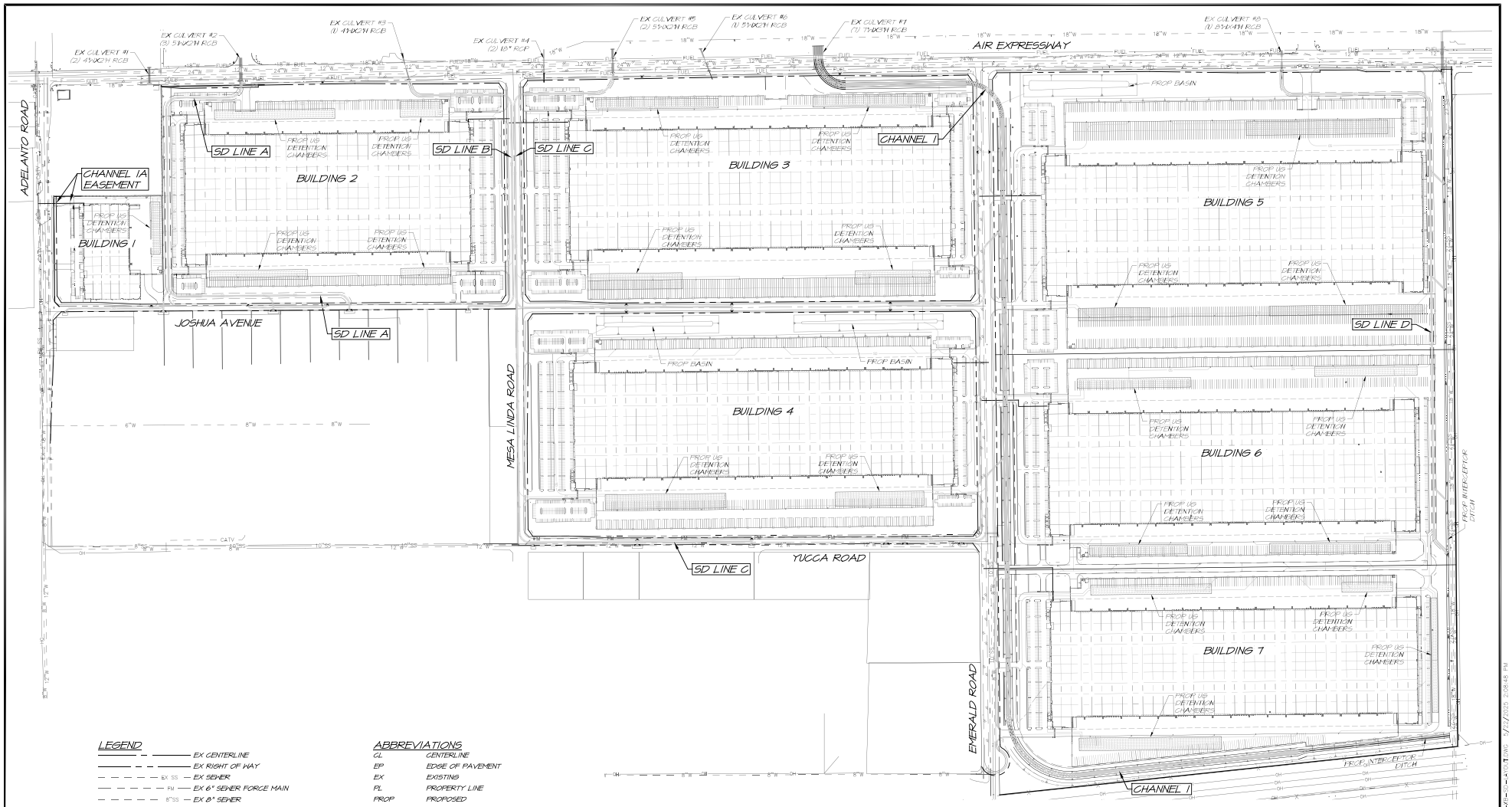
W.O.	24-0505
SHEET	1
OF	1 SHEETS
DWG. NO.	

N:\2024\24-0505\WP\Figures\Preliminary\Exhibits\PRELIM-UHMP-DEV.dwg 4/17/2025 11:48:38 AM

CHAMBER/BASIN SUMMARY

Building	Detention Basin / Chamber ID	Basin / Chamber Length	Basin / Chamber Width	Basin Depth	Chamber Diameter	Storage Capacity (CF)	Associated Culvert #s	Culvert Locations	Culvert Capacities
1	Chamber 1A (NE)	306'	55'	-	96"	109,575	2	North of Bldg 2	185.8
2	Chamber 2A (NW)	684'	55'	-	96"	245,434	2	North of Bldg 2	185.8
	Chamber 2B (NE)	240'	88'	-	96"	136,966	3	North of Bldg 2	46.9
	Chamber 2C (SW)	559'	55'	-	96"	200,515	2	North of Bldg 2	185.8
	Chamber 2D (SE)	270'	55'	-	96"	96,424	3	North of Bldg 2	46.9
3	Chamber 3A (NW)	696'	55'	-	96"	249,817	5	North of Bldg 3	72.2
	Chamber 3B (NE)	638'	55'	-	96"	228,999	7	North of Bldg 3	781
	Chamber 3C (SW)	522'	90'	-	72"	228,999	5	North of Bldg 3	72.2
	Chamber 3D (SE)	426'	77'	-	96"	213,662	7	North of Bldg 3	781
4	Basin 4A (NW)	696'	100'	7.9'	-	234,479	5	North of Bldg 3	72.2
	Basin 4B (NE)	687'	83'	-	60"	236,670	7	North of Bldg 3	781
	Chamber 4C (SW)	850'	97'	7.4'	-	226,808	5	North of Bldg 3	72.2
	Chamber 4D (SE)	503'	81'	-	72"	198,320	7	North of Bldg 3	781
5	Basin 5A (NW)	645'	123'	7.5'	-	255,292	7	North of Bldg 5	781
	Chamber 5B (NE)	805'	77'	-	96"	405,382	8	North of Bldg 5	169.8
	Chamber 5C (SW)	406'	72'	-	72"	142,446	7	North of Bldg 5	781
	Chamber 5D (SE)	870'	55'	-	96"	312,264	8	North of Bldg 5	169.8
6	Chamber 6A (NW)	644'	55'	-	96"	231,173	7	North of Bldg 5	781
	Chamber 6B (NE)	583'	55'	-	96"	209,262	8	North of Bldg 5	169.8
	Chamber 6C (SW)	556'	55'	-	96"	199,418	7	North of Bldg 5	781
	Chamber 6D (SE)	687'	54'	-	72"	180,774	8	North of Bldg 5	169.8
7	Chamber 6A (NW)	687'	55'	-	96"	246,528	7	North of Bldg 5	781
	Chamber 6B (NE)	288'	55'	-	96"	102,998	8	North of Bldg 5	169.8
	Chamber 6C (SW)	808'	72'	-	72"	283,780	7	North of Bldg 5	781
	Chamber 6D (SE)	662'	33'	-	96"	142,446	8	North of Bldg 5	169.8

DRAINAGE FACILITIES EXHIBIT



LEGEND

- EX CENTERLINE
- EX RIGHT OF WAY
- EX SS — EX SEWER
- FM — EX 6" SEWER FORCE MAIN
- 8"SS — EX 8" SEWER
- 10"SS — EX 10" SEWER
- 27"SS — EX 27" SEWER
- 18"SD — EX 18" STORM DRAIN
- 24"SD — EX 24" STORM DRAIN
- 36"SD — EX 36" STORM DRAIN
- 48"SD — EX 48" STORM DRAIN
- 8"W — EX 8" WATER
- 12"W — EX 12" WATER
- 18"W — EX 18" WATER
- 24"W — EX 24" WATER
- PROP RIGHT OF WAY
- PROP STORM DRAIN, BACKBONE
- PROP STORM DRAIN, ONSITE
- PROP CHAMBERS, ONSITE

ABBREVIATIONS

CL	CENTERLINE
EP	EDGE OF PAVEMENT
EX	EXISTING
PL	PROPERTY LINE
PROP	PROPOSED
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
R/W	RIGHT OF WAY
SD	STORM DRAIN
UG	UNDERGROUND

N W E S

1" = 250'

250 0 250 500 750

CITY OF ADELANTO

PROPOSED DRAINAGE FACILITIES

ADELANTO INDUSTRIAL PARK

SCALE:	1" = 250'
DATE:	5/22/25
DESIGNED:	ABE
CHECKED:	SKK
PLN CK REF:	
F.B.	

ALBERT A WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH: (951) 686-1070
FAX (951) 788-1256

W.O. 24-0505
SHEET 1
OF 1 SHEETS
DWG. NO.

H:\ADELANTO\24-0505\EXHIBITS\24-0505-EXHIBIT.DWG 5/22/2025 2:08:48 PM

VOLUME 2
TECHNICAL APPENDICES

APPENDIX B – HYDROLOGY ANALYSIS CALCULATIONS

RAINFALL DATA (NOAA ATLAS 14)

NOAA Atlas 14, Volume 6, Version 2
Location name: Adelanto, California, USA*
Latitude: 34.5678°, Longitude: -117.3823°
Elevation: 2905 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	**0.087** (0.072-0.107)	**0.121** (0.100-0.148)	**0.168** (0.138-0.206)	**0.208** (0.169-0.257)	**0.265** (0.209-0.339)	**0.311** (0.240-0.406)	**0.360** (0.271-0.482)	**0.412** (0.302-0.567)	**0.486** (0.342-0.697)	**0.545** (0.371-0.810)
10-min	**0.125** (0.103-0.153)	**0.174** (0.143-0.213)	**0.241** (0.198-0.296)	**0.298** (0.243-0.369)	**0.380** (0.299-0.486)	**0.445** (0.344-0.582)	**0.515** (0.389-0.690)	**0.590** (0.433-0.813)	**0.696** (0.490-0.999)	**0.782** (0.532-1.16)
15-min	**0.151** (0.125-0.185)	**0.210** (0.173-0.257)	**0.291** (0.239-0.358)	**0.360** (0.294-0.446)	**0.459** (0.362-0.588)	**0.539** (0.416-0.704)	**0.623** (0.470-0.835)	**0.714** (0.524-0.983)	**0.842** (0.593-1.21)	**0.945** (0.643-1.40)
30-min	**0.205** (0.169-0.251)	**0.284** (0.234-0.349)	**0.394** (0.324-0.485)	**0.488** (0.398-0.604)	**0.622** (0.491-0.796)	**0.730** (0.564-0.954)	**0.844** (0.637-1.13)	**0.967** (0.709-1.33)	**1.14** (0.803-1.64)	**1.28** (0.871-1.90)
60-min	**0.244** (0.202-0.299)	**0.339** (0.280-0.416)	**0.471** (0.387-0.578)	**0.582** (0.475-0.721)	**0.742** (0.585-0.950)	**0.871** (0.673-1.14)	**1.01** (0.760-1.35)	**1.15** (0.846-1.59)	**1.36** (0.958-1.95)	**1.53** (1.04-2.27)
2-hr	**0.340** (0.280-0.416)	**0.457** (0.377-0.561)	**0.620** (0.510-0.762)	**0.759** (0.619-0.940)	**0.957** (0.755-1.23)	**1.12** (0.864-1.46)	**1.29** (0.971-1.72)	**1.47** (1.08-2.02)	**1.72** (1.21-2.47)	**1.92** (1.31-2.86)
3-hr	**0.405** (0.335-0.496)	**0.541** (0.446-0.663)	**0.727** (0.598-0.893)	**0.886** (0.723-1.10)	**1.11** (0.879-1.43)	**1.30** (1.00-1.70)	**1.49** (1.12-2.00)	**1.70** (1.24-2.34)	**1.98** (1.40-2.85)	**2.22** (1.51-3.29)
6-hr	**0.540** (0.446-0.661)	**0.717** (0.591-0.878)	**0.959** (0.788-1.18)	**1.16** (0.949-1.44)	**1.46** (1.15-1.86)	**1.69** (1.31-2.21)	**1.94** (1.46-2.60)	**2.20** (1.61-3.03)	**2.57** (1.81-3.69)	**2.86** (1.95-4.25)
12-hr	**0.674** (0.556-0.825)	**0.911** (0.751-1.12)	**1.24** (1.02-1.52)	**1.51** (1.23-1.86)	**1.89** (1.49-2.42)	**2.19** (1.69-2.86)	**2.51** (1.89-3.36)	**2.84** (2.08-3.91)	**3.30** (2.33-4.74)	**3.67** (2.50-5.45)
24-hr	**0.862** (0.765-0.992)	**1.20** (1.06-1.38)	**1.65** (1.46-1.90)	**2.02** (1.77-2.36)	**2.55** (2.16-3.07)	**2.96** (2.46-3.64)	**3.38** (2.74-4.26)	**3.83** (3.02-4.96)	**4.45** (3.36-6.01)	**4.94** (3.61-6.90)
2-day	**0.971** (0.861-1.12)	**1.37** (1.21-1.57)	**1.90** (1.68-2.20)	**2.35** (2.06-2.73)	**2.96** (2.51-3.57)	**3.45** (2.86-4.24)	**3.95** (3.20-4.98)	**4.48** (3.53-5.80)	**5.21** (3.94-7.03)	**5.78** (4.22-8.08)
3-day	**1.05** (0.932-1.21)	**1.49** (1.32-1.71)	**2.08** (1.84-2.41)	**2.58** (2.26-3.00)	**3.26** (2.76-3.92)	**3.80** (3.15-4.67)	**4.35** (3.53-5.48)	**4.94** (3.89-6.40)	**5.75** (4.34-7.76)	**6.39** (4.67-8.93)
4-day	**1.11** (0.988-1.28)	**1.58** (1.40-1.82)	**2.22** (1.96-2.56)	**2.75** (2.41-3.20)	**3.48** (2.95-4.19)	**4.05** (3.36-4.98)	**4.64** (3.76-5.85)	**5.26** (4.14-6.82)	**6.12** (4.63-8.27)	**6.80** (4.96-9.50)
7-day	**1.18** (1.04-1.36)	**1.67** (1.48-1.92)	**2.34** (2.07-2.71)	**2.90** (2.54-3.38)	**3.68** (3.12-4.43)	**4.28** (3.55-5.26)	**4.90** (3.96-6.17)	**5.53** (4.36-7.17)	**6.40** (4.84-8.65)	**7.08** (5.17-9.89)
10-day	**1.24** (1.10-1.42)	**1.75** (1.55-2.02)	**2.47** (2.18-2.85)	**3.06** (2.68-3.56)	**3.88** (3.29-4.67)	**4.52** (3.75-5.56)	**5.17** (4.19-6.52)	**5.84** (4.60-7.57)	**6.77** (5.12-9.14)	**7.47** (5.46-10.4)
20-day	**1.40** (1.24-1.61)	**2.02** (1.79-2.33)	**2.89** (2.56-3.34)	**3.62** (3.18-4.22)	**4.66** (3.95-5.62)	**5.48** (4.55-6.74)	**6.33** (5.12-7.97)	**7.20** (5.67-9.33)	**8.38** (6.33-11.3)	**9.28** (6.78-13.0)
30-day	**1.57** (1.39-1.80)	**2.28** (2.02-2.62)	**3.30** (2.92-3.81)	**4.18** (3.66-4.87)	**5.45** (4.62-6.56)	**6.46** (5.36-7.94)	**7.50** (6.07-9.44)	**8.58** (6.76-11.1)	**10.1** (7.60-13.6)	**11.2** (8.16-15.6)
45-day	**1.81** (1.60-2.08)	**2.65** (2.35-3.05)	**3.88** (3.43-4.48)	**4.96** (4.35-5.78)	**6.56** (5.56-7.90)	**7.86** (6.52-9.66)	**9.22** (7.47-11.6)	**10.6** (8.38-13.8)	**12.6** (9.52-17.0)	**14.1** (10.3-19.7)
60-day	**1.98** (1.76-2.28)	**2.91** (2.58-3.35)	**4.30** (3.79-4.96)	**5.53** (4.85-6.45)	**7.38** (6.25-8.88)	**8.91** (7.40-11.0)	**10.5** (8.54-13.3)	**12.3** (9.66-15.9)	**14.7** (11.1-19.8)	**16.6** (12.1-23.1)

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

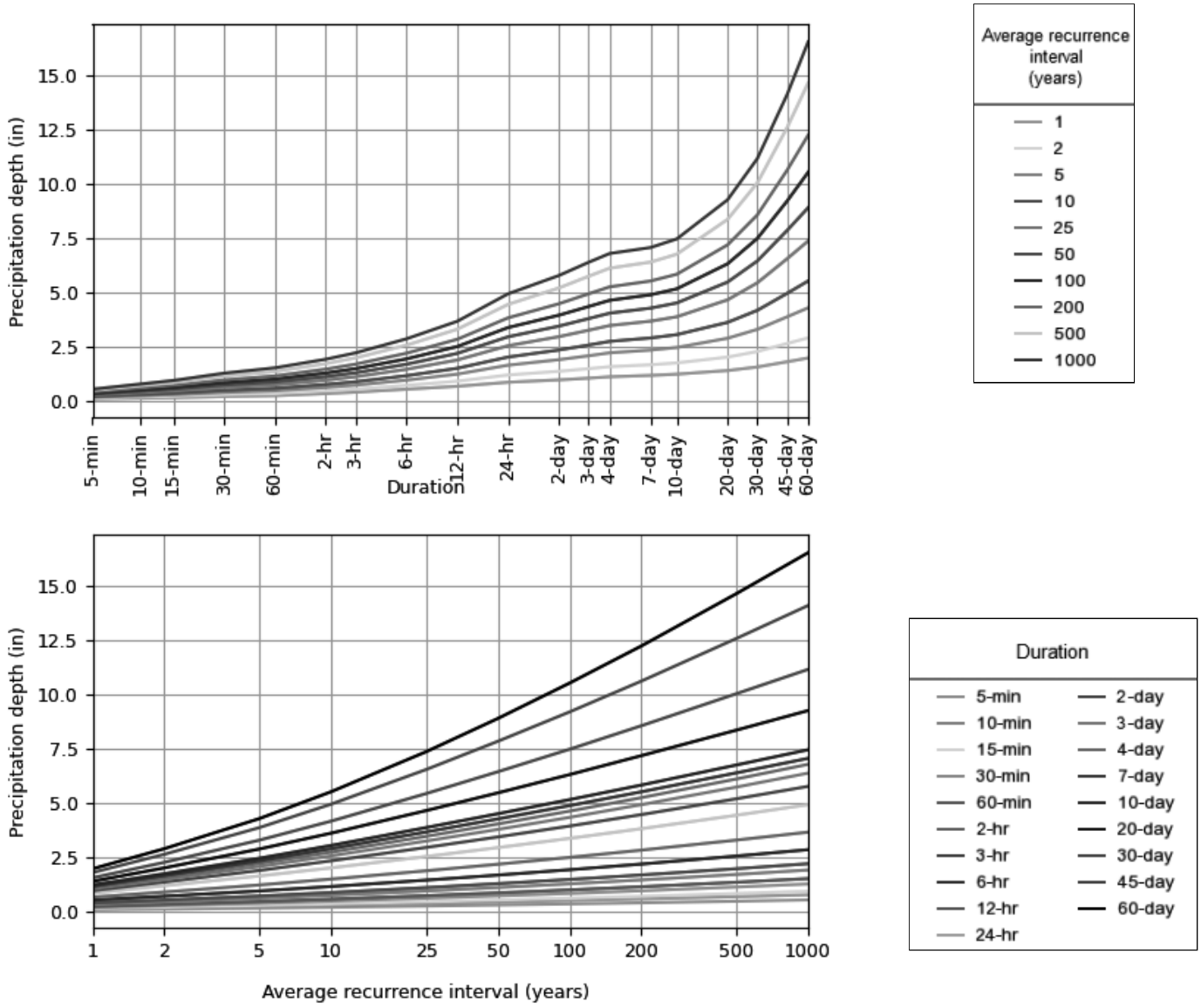
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper 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.

Back to Top

PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 34.5678°, Longitude: -117.3823°



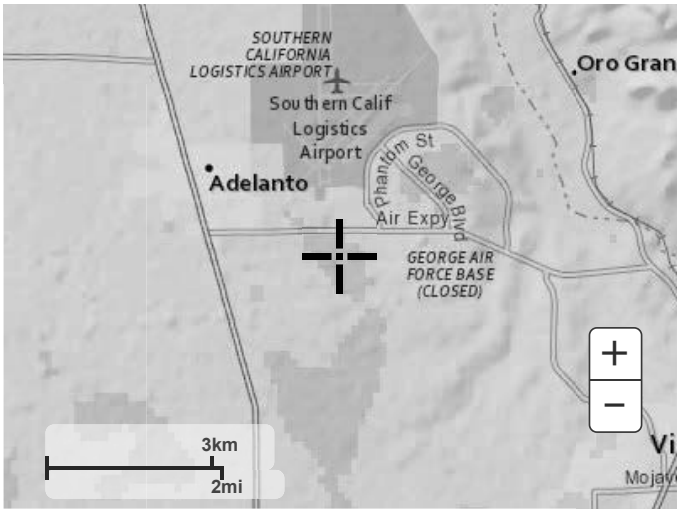
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Thu Jan 9 00:30:09 2025

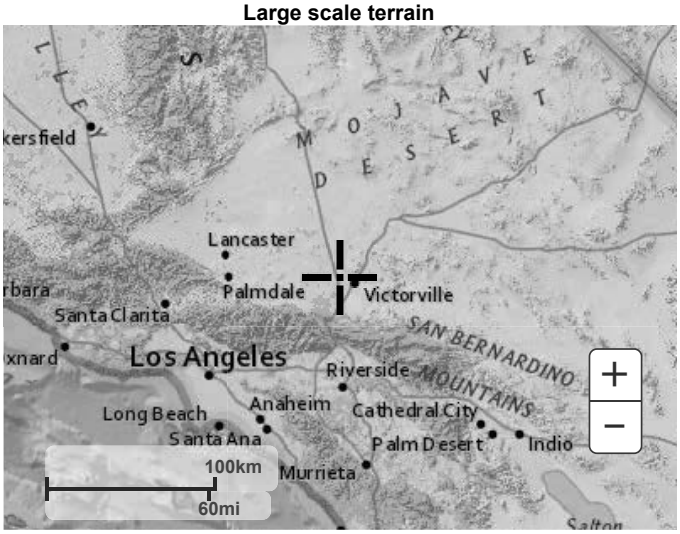
Back to Top

Maps & aerials

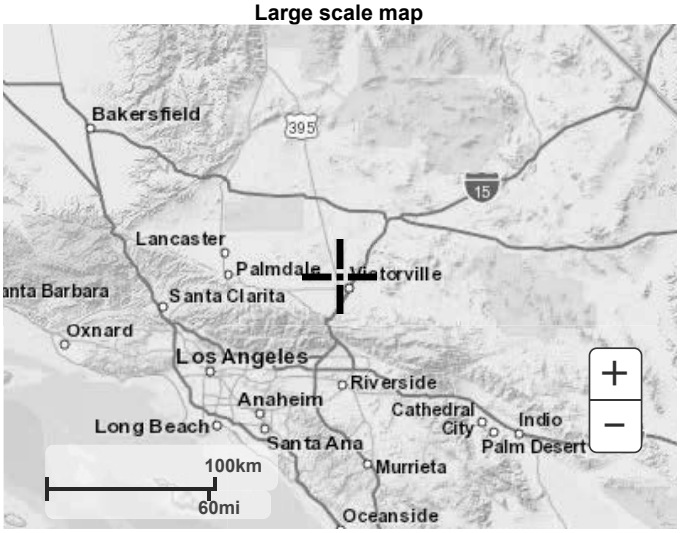
Small scale terrain



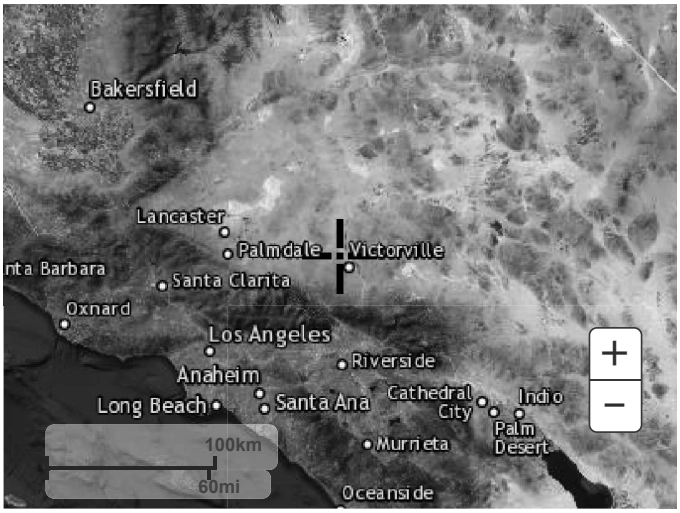
Large scale terrain



Large scale map



Large scale aerial



Back to Top

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

NOAA Atlas 14, Volume 6, Version 2
Location name: Adelanto, California, USA*
Latitude: 34.5678°, Longitude: -117.3823°
Elevation: 2905 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/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.04** (0.864-1.28)	**1.45** (1.20-1.78)	**2.02** (1.66-2.47)	**2.50** (2.03-3.08)	**3.18** (2.51-4.07)	**3.73** (2.88-4.87)	**4.32** (3.25-5.78)	**4.94** (3.62-6.80)	**5.83** (4.10-8.36)	**6.54** (4.45-9.72)
10-min	**0.750** (0.618-0.918)	**1.04** (0.858-1.28)	**1.45** (1.19-1.78)	**1.79** (1.46-2.21)	**2.28** (1.79-2.92)	**2.67** (2.06-3.49)	**3.09** (2.33-4.14)	**3.54** (2.60-4.88)	**4.18** (2.94-5.99)	**4.69** (3.19-6.97)
15-min	**0.604** (0.500-0.740)	**0.840** (0.692-1.03)	**1.16** (0.956-1.43)	**1.44** (1.18-1.78)	**1.84** (1.45-2.35)	**2.16** (1.66-2.82)	**2.49** (1.88-3.34)	**2.86** (2.10-3.93)	**3.37** (2.37-4.83)	**3.78** (2.57-5.62)
30-min	**0.410** (0.338-0.502)	**0.568** (0.468-0.698)	**0.788** (0.648-0.970)	**0.976** (0.796-1.21)	**1.24** (0.982-1.59)	**1.46** (1.13-1.91)	**1.69** (1.27-2.26)	**1.93** (1.42-2.66)	**2.28** (1.61-3.27)	**2.56** (1.74-3.80)
60-min	**0.244** (0.202-0.299)	**0.339** (0.280-0.416)	**0.471** (0.387-0.578)	**0.582** (0.475-0.721)	**0.742** (0.585-0.950)	**0.871** (0.673-1.14)	**1.01** (0.760-1.35)	**1.15** (0.846-1.59)	**1.36** (0.958-1.95)	**1.53** (1.04-2.27)
2-hr	**0.170** (0.140-0.208)	**0.228** (0.188-0.280)	**0.310** (0.255-0.381)	**0.379** (0.309-0.470)	**0.478** (0.377-0.613)	**0.559** (0.432-0.730)	**0.643** (0.485-0.861)	**0.733** (0.538-1.01)	**0.860** (0.605-1.23)	**0.962** (0.654-1.43)
3-hr	**0.134** (0.111-0.165)	**0.180** (0.148-0.220)	**0.242** (0.199-0.297)	**0.295** (0.240-0.365)	**0.370** (0.292-0.474)	**0.431** (0.333-0.564)	**0.496** (0.374-0.664)	**0.565** (0.414-0.777)	**0.661** (0.465-0.948)	**0.737** (0.501-1.10)
6-hr	**0.090** (0.074-0.110)	**0.119** (0.098-0.146)	**0.160** (0.131-0.196)	**0.194** (0.158-0.240)	**0.243** (0.191-0.311)	**0.282** (0.218-0.369)	**0.323** (0.244-0.433)	**0.367** (0.269-0.506)	**0.429** (0.302-0.615)	**0.478** (0.325-0.709)
12-hr	**0.055** (0.046-0.068)	**0.075** (0.062-0.092)	**0.102** (0.084-0.125)	**0.124** (0.101-0.154)	**0.156** (0.123-0.200)	**0.181** (0.140-0.237)	**0.208** (0.157-0.278)	**0.235** (0.173-0.324)	**0.274** (0.193-0.393)	**0.304** (0.207-0.452)
24-hr	**0.035** (0.031-0.041)	**0.049** (0.044-0.057)	**0.068** (0.060-0.079)	**0.084** (0.073-0.098)	**0.106** (0.089-0.127)	**0.123** (0.102-0.151)	**0.141** (0.114-0.177)	**0.159** (0.125-0.206)	**0.185** (0.140-0.250)	**0.205** (0.150-0.287)
2-day	**0.020** (0.017-0.023)	**0.028** (0.025-0.032)	**0.039** (0.035-0.045)	**0.048** (0.042-0.056)	**0.061** (0.052-0.074)	**0.071** (0.059-0.088)	**0.082** (0.066-0.103)	**0.093** (0.073-0.120)	**0.108** (0.082-0.146)	**0.120** (0.087-0.168)
3-day	**0.014** (0.012-0.016)	**0.020** (0.018-0.023)	**0.028** (0.025-0.033)	**0.035** (0.031-0.041)	**0.045** (0.038-0.054)	**0.052** (0.043-0.064)	**0.060** (0.048-0.076)	**0.068** (0.054-0.088)	**0.079** (0.060-0.107)	**0.088** (0.064-0.124)
4-day	**0.011** (0.010-0.013)	**0.016** (0.014-0.018)	**0.023** (0.020-0.026)	**0.028** (0.025-0.033)	**0.036** (0.030-0.043)	**0.042** (0.035-0.051)	**0.048** (0.039-0.060)	**0.054** (0.043-0.071)	**0.063** (0.048-0.086)	**0.070** (0.051-0.098)
7-day	**0.007** (0.006-0.008)	**0.009** (0.008-0.011)	**0.013** (0.012-0.016)	**0.017** (0.015-0.020)	**0.021** (0.018-0.026)	**0.025** (0.021-0.031)	**0.029** (0.023-0.036)	**0.032** (0.025-0.042)	**0.038** (0.028-0.051)	**0.042** (0.030-0.058)
10-day	**0.005** (0.004-0.005)	**0.007** (0.006-0.008)	**0.010** (0.009-0.011)	**0.012** (0.011-0.014)	**0.016** (0.013-0.019)	**0.018** (0.015-0.023)	**0.021** (0.017-0.027)	**0.024** (0.019-0.031)	**0.028** (0.021-0.038)	**0.031** (0.022-0.043)
20-day	**0.002** (0.002-0.003)	**0.004** (0.003-0.004)	**0.006** (0.005-0.006)	**0.007** (0.006-0.008)	**0.009** (0.008-0.011)	**0.011** (0.009-0.014)	**0.013** (0.010-0.016)	**0.014** (0.011-0.019)	**0.017** (0.013-0.023)	**0.019** (0.014-0.027)
30-day	**0.002** (0.001-0.002)	**0.003** (0.002-0.003)	**0.004** (0.004-0.005)	**0.005** (0.005-0.006)	**0.007** (0.006-0.009)	**0.008** (0.007-0.011)	**0.010** (0.008-0.013)	**0.011** (0.009-0.015)	**0.013** (0.010-0.018)	**0.015** (0.011-0.021)
45-day	**0.001** (0.001-0.001)	**0.002** (0.002-0.002)	**0.003** (0.003-0.004)	**0.004** (0.004-0.005)	**0.006** (0.005-0.007)	**0.007** (0.006-0.008)	**0.008** (0.006-0.010)	**0.009** (0.007-0.012)	**0.011** (0.008-0.015)	**0.013** (0.009-0.018)
60-day	**0.001** (0.001-0.001)	**0.002** (0.001-0.002)	**0.002** (0.002-0.003)	**0.003** (0.003-0.004)	**0.005** (0.004-0.006)	**0.006** (0.005-0.007)	**0.007** (0.005-0.009)	**0.008** (0.006-0.011)	**0.010** (0.007-0.013)	**0.011** (0.008-0.016)

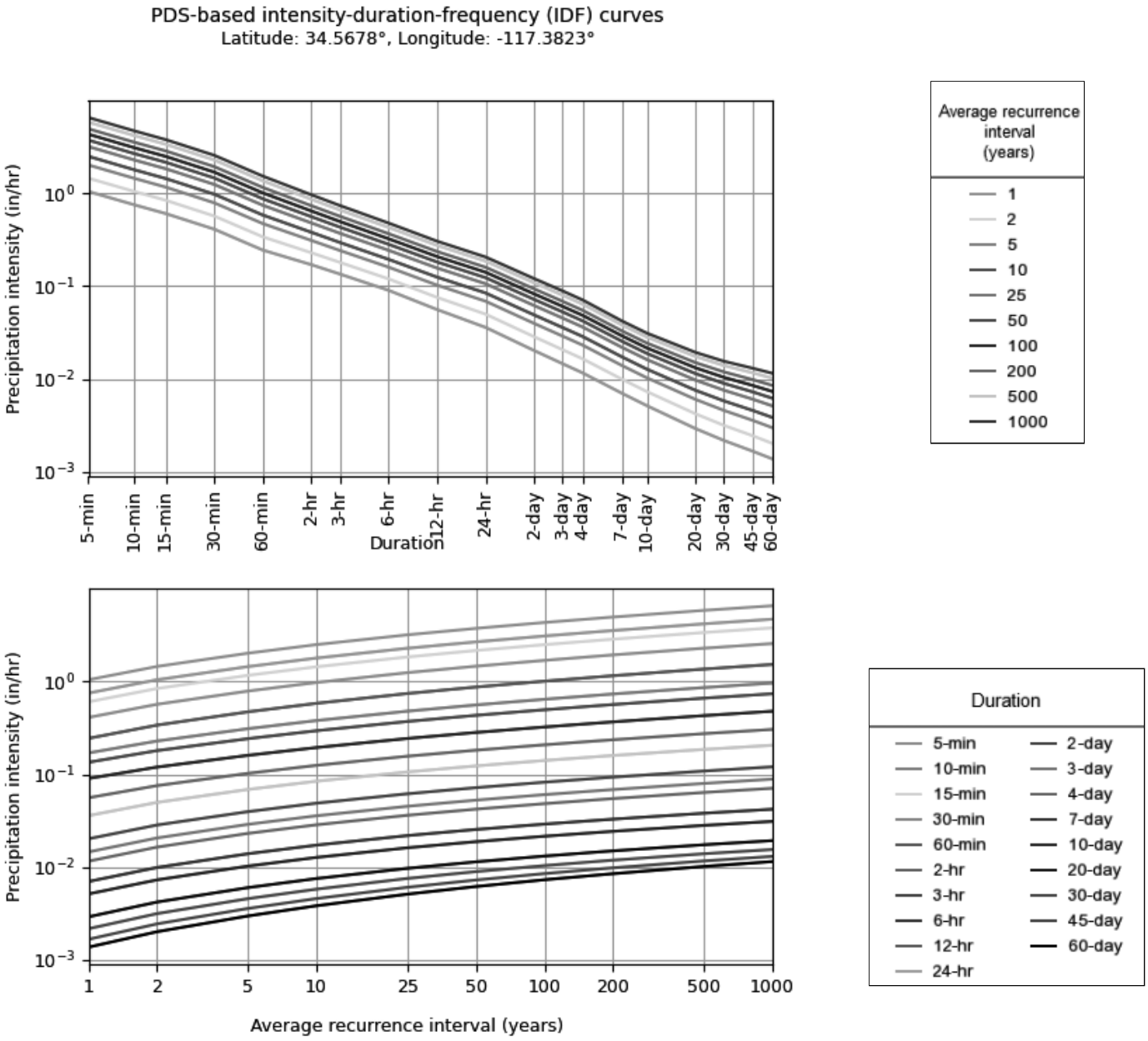
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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.

Back to Top

PF graphical



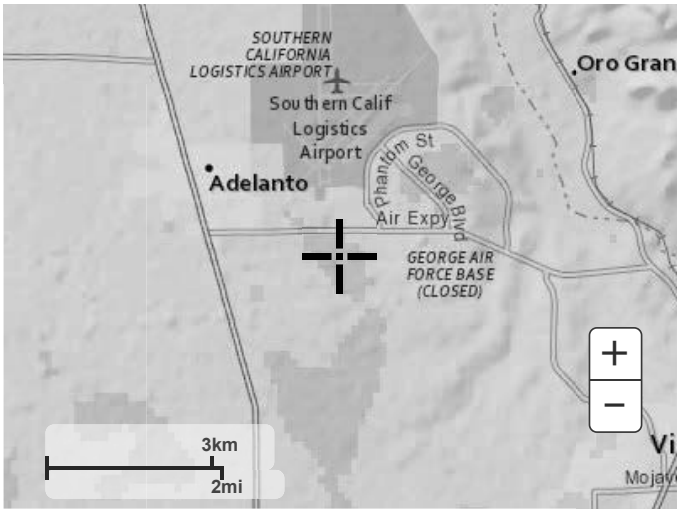
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Tue Jan 14 19:27:02 2025

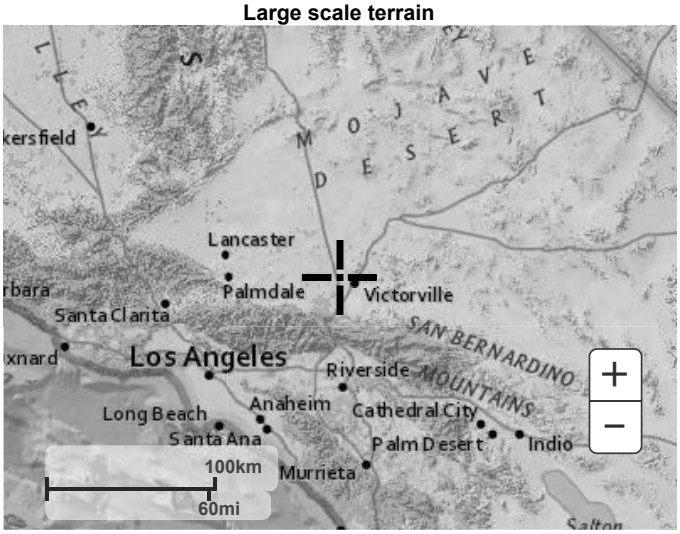
Back to Top

Maps & aerials

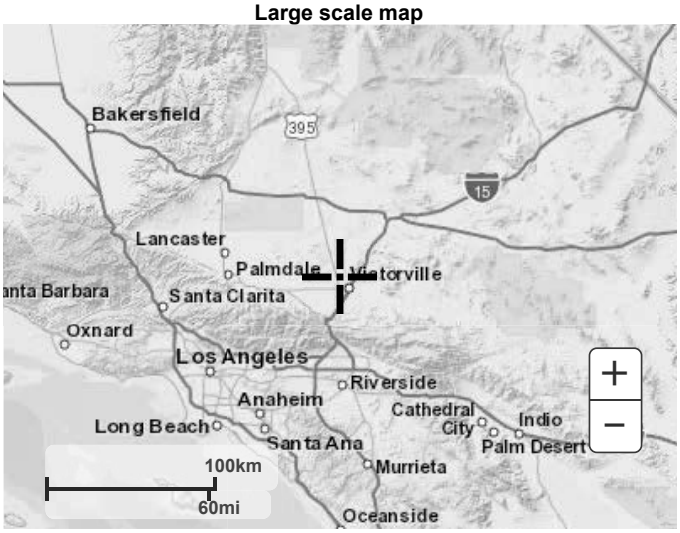
Small scale terrain



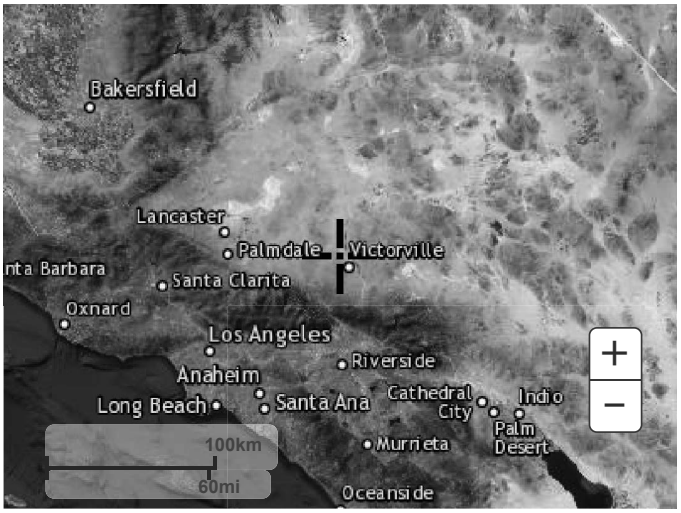
Large scale terrain



Large scale map



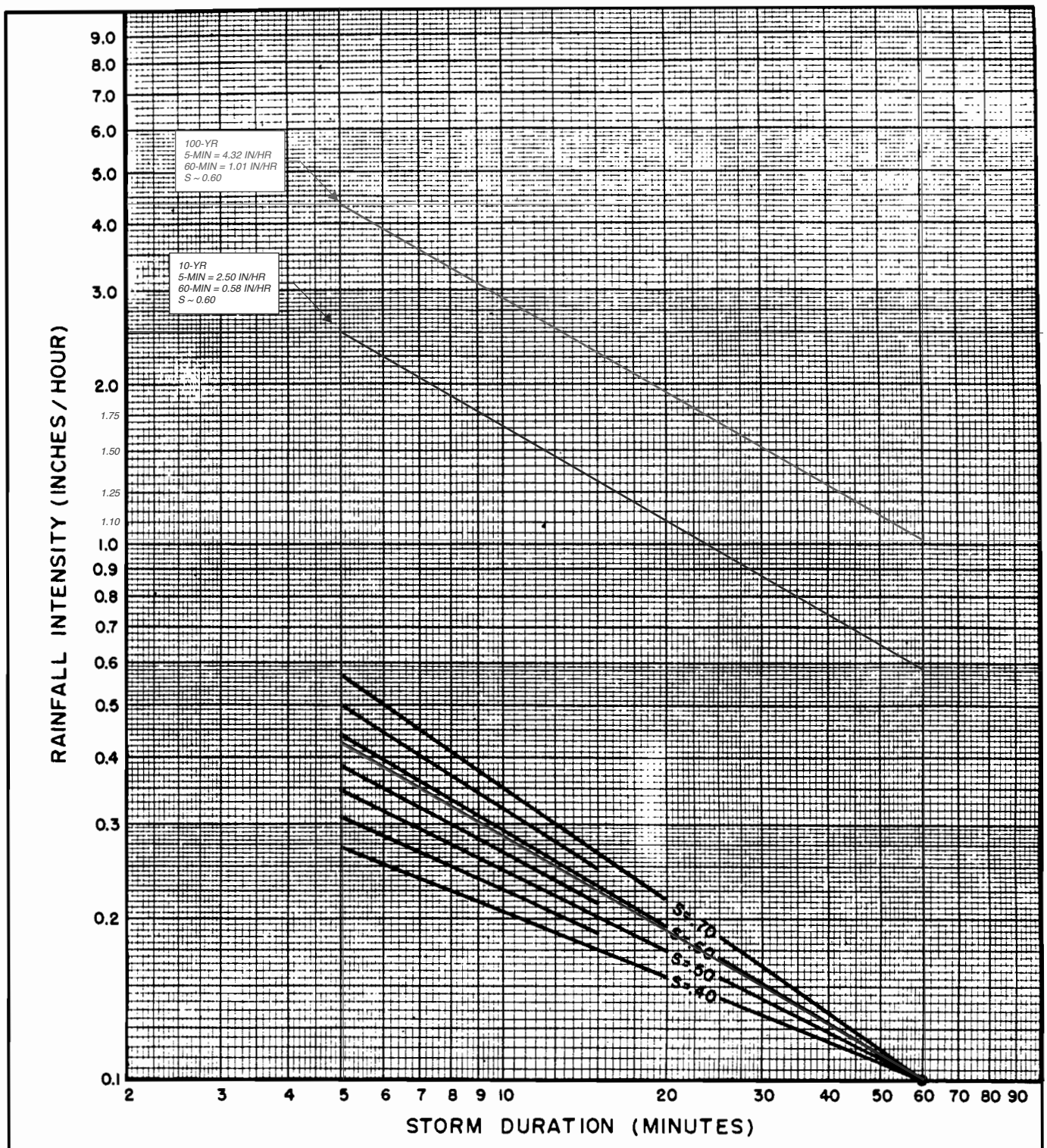
Large scale aerial



Back to Top

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



DESIGN STORM FREQUENCY = _____ YEARS

ONE HOUR POINT RAINFALL = _____ INCHES

LOG-LOG SLOPE = _____

PROJECT LOCATION = _____

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

INTENSITY - DURATION CURVES CALCULATION SHEET

FIGURE D-3

10-YEAR HYDROLOGY (RATIONAL METHOD), OFF-SITE EXISTING CONDITION

RATEXOFF

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/18/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY
10 YEAR STORM EVENT
FN: RATEXOFF10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 3092.000(Ft.)
Bottom (of initial area) elevation = 3079.500(Ft.)
Difference in elevation = 12.500(Ft.)
Slope = 0.01250 s(%)= 1.25
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 19.988 min.
Rainfall intensity = 1.126(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.688
Subarea runoff = 3.330(CFS)
Total initial stream area = 4.300(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++

Process from Point/Station 102.000 to Point/Station 103.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 3079.500(Ft.)
Downstream point elevation = 3070.800(Ft.)
Channel length thru subarea = 726.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 5.964(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 5.964(CFS)
Depth of flow = 0.309(Ft.), Average velocity = 2.663(Ft/s)
Channel flow top width = 8.475(Ft.)
Flow Velocity = 2.66(Ft/s)
Travel time = 4.54 min.
Time of concentration = 24.53 min.
Critical depth = 0.293(Ft.)

```
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.995(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.660
Subarea runoff =      5.214(CFS) for    8.700(Ac.)
Total runoff =      8.544(CFS)
Effective area this stream =       13.00(Ac.)
Total Study Area (Main Stream No. 1) =       13.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.379(Ft.), Average velocity =   2.996(Ft/s)
Critical depth =      0.367(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  3070.800(Ft.)
Downstream point elevation =  3061.700(Ft.)
Channel length thru subarea  =   819.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     12.775(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     12.775(CFS)
Depth of flow =   0.485(Ft.), Average velocity =   3.317(Ft/s)
Channel flow top width =    9.881(Ft.)
Flow Velocity =    3.32(Ft/s)
Travel time  =    4.12 min.
Time of concentration =   28.65 min.
Critical depth =      0.469(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.907(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.637
Subarea runoff =      8.381(CFS) for   16.300(Ac.)
Total runoff =     16.925(CFS)
Effective area this stream =       29.30(Ac.)
Total Study Area (Main Stream No. 1) =       29.30(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.566(Ft.), Average velocity =   3.617(Ft/s)
Critical depth =      0.551(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  3061.700(Ft.)
Downstream point elevation =  3048.700(Ft.)
Channel length thru subarea  =  1278.000(Ft.)
Channel base width     =   12.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     25.016(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     25.016(CFS)
Depth of flow =   0.511(Ft.), Average velocity =   3.483(Ft/s)
```

```
Channel flow top width =   16.091(Ft.)
Flow Velocity =    3.48(Ft/s)
Travel time  =    6.12 min.
Time of concentration =   34.76 min.
Critical depth =      0.484(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.808(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.605
Subarea runoff =     16.125(CFS) for   38.400(Ac.)
Total runoff =     33.049(CFS)
Effective area this stream =       67.70(Ac.)
Total Study Area (Main Stream No. 1) =       67.70(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.600(Ft.), Average velocity =   3.826(Ft/s)
Critical depth =      0.578(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  3048.700(Ft.)
Downstream point elevation =  3026.800(Ft.)
Channel length thru subarea  =  1945.000(Ft.)
Channel base width    =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     42.390(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     42.390(CFS)
Depth of flow =   0.509(Ft.), Average velocity =   3.778(Ft/s)
Channel flow top width =   24.073(Ft.)
Flow Velocity =    3.78(Ft/s)
Travel time  =    8.58 min.
Time of concentration =   43.34 min.
Critical depth =      0.500(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.707(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.563
Subarea runoff =     18.621(CFS) for   62.100(Ac.)
Total runoff =     51.671(CFS)
Effective area this stream =      129.80(Ac.)
Total Study Area (Main Stream No. 1) =      129.80(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.572(Ft.), Average velocity =   4.055(Ft/s)
Critical depth =      0.570(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  3026.800(Ft.)
Downstream point elevation =  3005.900(Ft.)
Channel length thru subarea  =  1787.000(Ft.)
Channel base width    =   25.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
```

```
Estimated mean flow rate at midpoint of channel =     54.199(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     54.199(CFS)
Depth of flow =   0.512(Ft.), Average velocity =   3.910(Ft/s)
Channel flow top width =   29.100(Ft.)
Flow Velocity =    3.91(Ft/s)
Travel time  =    7.62 min.
Time of concentration =   50.96 min.
Critical depth =      0.512(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.642(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.528
Subarea runoff =      4.965(CFS) for   37.200(Ac.)
Total runoff =     56.636(CFS)
Effective area this stream =      167.00(Ac.)
Total Study Area (Main Stream No. 1) =      167.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.526(Ft.), Average velocity =   3.973(Ft/s)
Critical depth =      0.523(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  3005.900(Ft.)
Downstream point elevation =  2987.700(Ft.)
Channel length thru subarea  =  2485.000(Ft.)
Channel base width    =   35.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     58.998(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     58.998(CFS)
Depth of flow =   0.510(Ft.), Average velocity =   3.125(Ft/s)
Channel flow top width =   39.078(Ft.)
Flow Velocity =    3.13(Ft/s)
Travel time  =   13.25 min.
Time of concentration =   64.21 min.
Critical depth =      0.438(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.559(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.473
Subarea runoff =      4.633(CFS) for   64.800(Ac.)
Total runoff =     61.269(CFS)
Effective area this stream =      231.80(Ac.)
Total Study Area (Main Stream No. 1) =      231.80(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.521(Ft.), Average velocity =   3.170(Ft/s)
Critical depth =      0.449(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2987.700(Ft.)
```

```
Downstream point elevation =  2966.100(Ft.)
Channel length thru subarea  =  2485.000(Ft.)
Channel base width    =   45.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     68.856(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     68.856(CFS)
Depth of flow =   0.458(Ft.), Average velocity =   3.207(Ft/s)
Channel flow top width =   48.668(Ft.)
Flow Velocity =    3.21(Ft/s)
Travel time  =   12.92 min.
Time of concentration =   77.13 min.
Critical depth =      0.414(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.501(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.423
Subarea runoff =     15.075(CFS) for  128.400(Ac.)
Total runoff =     76.344(CFS)
Effective area this stream =      360.20(Ac.)
Total Study Area (Main Stream No. 1) =      360.20(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.488(Ft.), Average velocity =   3.335(Ft/s)
Critical depth =      0.441(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2966.100(Ft.)
Downstream point elevation =  2950.500(Ft.)
Channel length thru subarea  =  1382.000(Ft.)
Channel base width    =   50.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     82.717(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     82.717(CFS)
Depth of flow =   0.445(Ft.), Average velocity =   3.592(Ft/s)
Channel flow top width =   53.558(Ft.)
Flow Velocity =    3.59(Ft/s)
Travel time  =    6.41 min.
Time of concentration =   83.54 min.
Critical depth =      0.434(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.477(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.400
Subarea runoff =     12.659(CFS) for  106.100(Ac.)
Total runoff =     89.004(CFS)
Effective area this stream =      466.30(Ac.)
Total Study Area (Main Stream No. 1) =      466.30(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.465(Ft.), Average velocity =   3.695(Ft/s)
Critical depth =      0.453(Ft.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    466.300(Ac.)
Runoff from this stream =     89.004(CFS)
Time of concentration =   83.54 min.
Rainfall intensity =     0.477(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  3055.200(Ft.)
Bottom (of initial area) elevation =  3044.400(Ft.)
Difference in elevation =    10.800(Ft.)
Slope =    0.01080  s(%)=       1.08
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   20.581 min.
Rainfall intensity =      1.106(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.684
Subarea runoff =      5.297(CFS)
Total initial stream area =        7.000(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      113.000
**** IMPROVED CHANNEL TRAVEL TIME ****
----------------------------------------------------------------------------
Upstream point elevation =  3044.400(Ft.)
Downstream point elevation =  3037.400(Ft.)
Channel length thru subarea  =   693.000(Ft.)
Channel base width    =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =      9.487(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      9.487(CFS)
Depth of flow =   0.422(Ft.), Average velocity =   2.923(Ft/s)
Channel flow top width =    9.377(Ft.)
Flow Velocity =    2.92(Ft/s)
Travel time  =    3.95 min.
Time of concentration =   24.53 min.
Critical depth =      0.391(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.995(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.660
Subarea runoff =      8.307(CFS) for   13.700(Ac.)
Total runoff =     13.604(CFS)
Effective area this stream =       20.70(Ac.)
Total Study Area (Main Stream No. 1) =      487.00(Ac.)
```

```
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.516(Ft.), Average velocity =   3.273(Ft/s)
Critical depth =      0.484(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      114.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  3037.400(Ft.)
Downstream point elevation =  3028.100(Ft.)
Channel length thru subarea  =   867.000(Ft.)
Channel base width    =   10.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     20.589(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     20.589(CFS)
Depth of flow =   0.496(Ft.), Average velocity =   3.463(Ft/s)
Channel flow top width =   13.969(Ft.)
Flow Velocity =    3.46(Ft/s)
Travel time  =    4.17 min.
Time of concentration =   28.70 min.
Critical depth =      0.477(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.906(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.637
Subarea runoff =     13.902(CFS) for   27.000(Ac.)
Total runoff =     27.506(CFS)
Effective area this stream =       47.70(Ac.)
Total Study Area (Main Stream No. 1) =      514.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.585(Ft.), Average velocity =   3.810(Ft/s)
Critical depth =      0.570(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      115.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  3028.100(Ft.)
Downstream point elevation =  3014.600(Ft.)
Channel length thru subarea  =  1278.000(Ft.)
Channel base width    =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     38.436(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     38.436(CFS)
Depth of flow =   0.490(Ft.), Average velocity =   3.574(Ft/s)
Channel flow top width =   23.918(Ft.)
Flow Velocity =    3.57(Ft/s)
Travel time  =    5.96 min.
Time of concentration =   34.67 min.
Critical depth =      0.469(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.809(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

```
rational method)(Q=KCIA) is C = 0.605
Subarea runoff =     21.776(CFS) for   53.000(Ac.)
Total runoff =     49.282(CFS)
Effective area this stream =      100.70(Ac.)
Total Study Area (Main Stream No. 1) =      567.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.567(Ft.), Average velocity =   3.906(Ft/s)
Critical depth =      0.555(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      116.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  3014.600(Ft.)
Downstream point elevation =  2991.100(Ft.)
Channel length thru subarea  =  2143.000(Ft.)
Channel base width    =   30.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     65.053(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     65.053(CFS)
Depth of flow =   0.524(Ft.), Average velocity =   3.869(Ft/s)
Channel flow top width =   34.191(Ft.)
Flow Velocity =    3.87(Ft/s)
Travel time  =    9.23 min.
Time of concentration =   43.90 min.
Critical depth =      0.516(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.702(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.560
Subarea runoff =     31.487(CFS) for  104.700(Ac.)
Total runoff =     80.769(CFS)
Effective area this stream =      205.40(Ac.)
Total Study Area (Main Stream No. 1) =      671.70(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.595(Ft.), Average velocity =   4.190(Ft/s)
Critical depth =      0.594(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      110.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2991.100(Ft.)
Downstream point elevation =  2950.500(Ft.)
Channel length thru subarea  =  3898.000(Ft.)
Channel base width    =   70.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     96.735(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     96.735(CFS)
Depth of flow =   0.410(Ft.), Average velocity =   3.294(Ft/s)
Channel flow top width =   73.279(Ft.)
Flow Velocity =    3.29(Ft/s)
Travel time  =   19.72 min.
Time of concentration =   63.62 min.
Critical depth =      0.387(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
```

```
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.562(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.475
Subarea runoff =     31.878(CFS) for  216.300(Ac.)
Total runoff =    112.647(CFS)
Effective area this stream =      421.70(Ac.)
Total Study Area (Main Stream No. 1) =      888.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.449(Ft.), Average velocity =   3.495(Ft/s)
Critical depth =      0.430(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =    421.700(Ac.)
Runoff from this stream =    112.647(CFS)
Time of concentration =   63.62 min.
Rainfall intensity =     0.562(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     89.00   466.300     83.54    0.265      0.477
2    112.65   421.700     63.62    0.265      0.562
Qmax(1) =
          1.000 *    1.000 *    89.004) +
          0.715 *    1.000 *   112.647) + =     169.494
Qmax(2) =
          1.400 *    0.762 *    89.004) +
          1.000 *    1.000 *   112.647) + =     207.506

Total of 2 streams to confluence:
Flow rates before confluence point:
      89.004     112.647
Maximum flow rates at confluence using above data:
      169.494      207.506
Area of streams before confluence:
      466.300      421.700
Effective area values after confluence:
      888.000      776.809
Results of confluence:
Total flow rate =    207.506(CFS)
Time of concentration =    63.619 min.
Effective stream area after confluence =    776.809(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =     888.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      117.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2950.500(Ft.)
Downstream point elevation =  2936.700(Ft.)
Channel length thru subarea  =  2462.000(Ft.)
Channel base width     =  160.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    211.443(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    211.443(CFS)
Depth of flow =   0.482(Ft.), Average velocity =   2.711(Ft/s)
Channel flow top width =  163.853(Ft.)
```

```
Flow Velocity =    2.71(Ft/s)
Travel time  =   15.13 min.
Time of concentration =   78.75 min.
Critical depth =      0.375(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.494(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.417
Subarea runoff =      7.780(CFS) for  266.500(Ac.)
Total runoff =    215.285(CFS)
Effective area this stream =     1043.31(Ac.)
Total Study Area (Main Stream No. 1) =     1154.50(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.487(Ft.), Average velocity =   2.731(Ft/s)
Critical depth =      0.383(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      117.000 to Point/Station      118.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2936.700(Ft.)
Downstream point elevation =  2915.300(Ft.)
Channel length thru subarea  =  3127.000(Ft.)
Channel base width     =  160.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    215.332(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    215.332(CFS)
Depth of flow =   0.459(Ft.), Average velocity =   2.901(Ft/s)
Channel flow top width =  163.669(Ft.)
Flow Velocity =    2.90(Ft/s)
Travel time  =   17.96 min.
Time of concentration =   96.72 min.
Critical depth =      0.383(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =    197.343(CFS)
therefore the upstream flow rate of Q =    215.285(CFS) is being used
Rainfall intensity =      0.437(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.354
Subarea runoff =      0.000(CFS) for  232.000(Ac.)
Total runoff =    215.285(CFS)
Effective area this stream =     1275.31(Ac.)
Total Study Area (Main Stream No. 1) =     1386.50(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.459(Ft.), Average velocity =   2.901(Ft/s)
Critical depth =      0.383(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2915.300(Ft.)
Downstream point elevation =  2900.000(Ft.)
Channel length thru subarea  =  3330.000(Ft.)
Channel base width     =  200.000(Ft.)
```

```
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    215.317(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    215.317(CFS)
Depth of flow =   0.452(Ft.), Average velocity =   2.359(Ft/s)
Channel flow top width =  203.618(Ft.)
Flow Velocity =    2.36(Ft/s)
Travel time  =   23.53 min.
Time of concentration =  120.24 min.
Critical depth =      0.328(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =    146.122(CFS)
therefore the upstream flow rate of Q =    215.285(CFS) is being used
Rainfall intensity =      0.384(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.278
Subarea runoff =      0.000(CFS) for   95.800(Ac.)
Total runoff =    215.285(CFS)
Effective area this stream =     1371.11(Ac.)
Total Study Area (Main Stream No. 1) =     1482.30(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.452(Ft.), Average velocity =   2.359(Ft/s)
Critical depth =      0.328(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =   1371.109(Ac.)
Runoff from this stream =    215.285(CFS)
Time of concentration =  120.24 min.
Rainfall intensity =     0.384(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   722.000(Ft.)
Top (of initial area) elevation =  2963.300(Ft.)
Bottom (of initial area) elevation =  2960.600(Ft.)
Difference in elevation =     2.700(Ft.)
Slope =    0.00374  s(%)=       0.37
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   22.336 min.
Rainfall intensity =      1.053(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.673
Subarea runoff =      7.020(CFS)
Total initial stream area =        9.900(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2960.600(Ft.)
Downstream point elevation =  2950.200(Ft.)
Channel length thru subarea  =  1147.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     12.102(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     12.102(CFS)
Depth of flow =   0.498(Ft.), Average velocity =   3.041(Ft/s)
Channel flow top width =    9.984(Ft.)
Flow Velocity =    3.04(Ft/s)
Travel time  =    6.29 min.
Time of concentration =   28.62 min.
Critical depth =      0.453(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.907(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.637
Subarea runoff =     10.090(CFS) for   19.700(Ac.)
Total runoff =     17.110(CFS)
Effective area this stream =       29.60(Ac.)
Total Study Area (Main Stream No. 1) =     1511.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.602(Ft.), Average velocity =   3.381(Ft/s)
Critical depth =      0.555(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2950.200(Ft.)
Downstream point elevation =  2940.100(Ft.)
Channel length thru subarea  =  1514.000(Ft.)
Channel base width     =   15.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     24.154(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     24.154(CFS)
Depth of flow =   0.501(Ft.), Average velocity =   2.832(Ft/s)
Channel flow top width =   19.012(Ft.)
Flow Velocity =    2.83(Ft/s)
Travel time  =    8.91 min.
Time of concentration =   37.53 min.
Critical depth =      0.414(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.771(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.591
Subarea runoff =     14.001(CFS) for   38.700(Ac.)
Total runoff =     31.111(CFS)
Effective area this stream =       68.30(Ac.)
Total Study Area (Main Stream No. 1) =     1550.60(Ac.)
```

```
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.581(Ft.), Average velocity =   3.092(Ft/s)
Critical depth =      0.488(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2940.100(Ft.)
Downstream point elevation =  2913.000(Ft.)
Channel length thru subarea  =  2177.000(Ft.)
Channel base width    =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     41.020(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     41.020(CFS)
Depth of flow =   0.485(Ft.), Average velocity =   3.856(Ft/s)
Channel flow top width =   23.879(Ft.)
Flow Velocity =    3.86(Ft/s)
Travel time  =    9.41 min.
Time of concentration =   46.94 min.
Critical depth =      0.492(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.674(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.546
Subarea runoff =     19.753(CFS) for   69.800(Ac.)
Total runoff =     50.865(CFS)
Effective area this stream =      138.10(Ac.)
Total Study Area (Main Stream No. 1) =     1620.40(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.550(Ft.), Average velocity =   4.165(Ft/s)
Critical depth =      0.563(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      119.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2913.000(Ft.)
Downstream point elevation =  2900.000(Ft.)
Channel length thru subarea  =  1579.000(Ft.)
Channel base width    =   25.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     52.555(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     52.555(CFS)
Depth of flow =   0.558(Ft.), Average velocity =   3.458(Ft/s)
Channel flow top width =   29.465(Ft.)
Flow Velocity =    3.46(Ft/s)
Travel time  =    7.61 min.
Time of concentration =   54.55 min.
Critical depth =      0.500(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.616(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

```
rational method)(Q=KCIA) is C = 0.513
Subarea runoff =      3.298(CFS) for   33.300(Ac.)
Total runoff =     54.162(CFS)
Effective area this stream =      171.40(Ac.)
Total Study Area (Main Stream No. 1) =     1653.70(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.568(Ft.), Average velocity =   3.496(Ft/s)
Critical depth =      0.512(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      119.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =    171.400(Ac.)
Runoff from this stream =     54.162(CFS)
Time of concentration =   54.55 min.
Rainfall intensity =     0.616(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1    215.29  1371.109    120.24    0.265      0.384
2     54.16   171.400     54.55    0.265      0.616
Qmax(1) =
          1.000 *    1.000 *   215.285) +
          0.337 *    1.000 *    54.162) + =     233.552
Qmax(2) =
          2.965 *    0.454 *   215.285) +
          1.000 *    1.000 *    54.162) + =     343.768

Total of 2 streams to confluence:
Flow rates before confluence point:
     215.285      54.162
Maximum flow rates at confluence using above data:
      233.552      343.768
Area of streams before confluence:
     1371.109      171.400
Effective area values after confluence:
     1542.509      793.444
Results of confluence:
Total flow rate =    343.768(CFS)
Time of concentration =    54.552 min.
Effective stream area after confluence =    793.444(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =    1542.51(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      119.000 to Point/Station      120.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2900.000(Ft.)
Downstream point elevation =  2894.700(Ft.)
Channel length thru subarea  =  1506.000(Ft.)
Channel base width     =  250.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    343.795(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    343.795(CFS)
Depth of flow =   0.567(Ft.), Average velocity =   2.402(Ft/s)
Channel flow top width =  254.540(Ft.)
Flow Velocity =    2.40(Ft/s)
Travel time  =   10.45 min.
Time of concentration =   65.00 min.
Critical depth =      0.387(Ft.)
 Adding area flow to channel
```

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q = 222.882(CFS)
therefore the upstream flow rate of Q = 343.768(CFS) is being used
Rainfall intensity = 0.555(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.470
Subarea runoff = 0.000(CFS) for 61.700(Ac.)
Total runoff = 343.768(CFS)
Effective area this stream = 855.14(Ac.)
Total Study Area (Main Stream No. 1) = 1715.40(Ac.)
Area averaged Fm value = 0.265(In/Hr)
Depth of flow = 0.567(Ft.), Average velocity = 2.402(Ft/s)
Critical depth = 0.387(Ft.)
End of computations, Total Study Area = 1715.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 86.0

RATEXWESTOFF

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/18/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, WESTERNMOST
10 YEAR STORM EVENT
FN: RATEXWESTOFF10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 91.000 to Point/Station 92.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 953.000(Ft.)
Top (of initial area) elevation = 2952.000(Ft.)
Bottom (of initial area) elevation = 2941.400(Ft.)
Difference in elevation = 10.600(Ft.)
Slope = 0.01112 s(%)= 1.11
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 20.070 min.
Rainfall intensity = 1.123(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.687
Subarea runoff = 4.091(CFS)
Total initial stream area = 5.300(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++

Process from Point/Station 92.000 to Point/Station 93.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2941.400(Ft.)
Downstream point elevation = 2927.800(Ft.)
Channel length thru subarea = 1132.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 6.595(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 6.595(CFS)
Depth of flow = 0.327(Ft.), Average velocity = 2.756(Ft/s)
Channel flow top width = 8.619(Ft.)
Flow Velocity = 2.76(Ft/s)
Travel time = 6.85 min.
Time of concentration = 26.92 min.
Critical depth = 0.313(Ft.)

```
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.941(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.647
Subarea runoff =      4.918(CFS) for    9.500(Ac.)
Total runoff =      9.009(CFS)
Effective area this stream =       14.80(Ac.)
Total Study Area (Main Stream No. 1) =       14.80(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.391(Ft.), Average velocity =   3.050(Ft/s)
Critical depth =      0.375(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       93.000 to Point/Station       94.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2927.800(Ft.)
Downstream point elevation =  2906.300(Ft.)
Channel length thru subarea  =  1990.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     12.555(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     12.555(CFS)
Depth of flow =   0.484(Ft.), Average velocity =   3.267(Ft/s)
Channel flow top width =    9.873(Ft.)
Flow Velocity =    3.27(Ft/s)
Travel time  =   10.15 min.
Time of concentration =   37.07 min.
Critical depth =      0.461(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.7500     Max loss rate(Fm)=     0.199(In/Hr)
Rainfall intensity =      0.777(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.635
Subarea runoff =      7.019(CFS) for   17.700(Ac.)
Total runoff =     16.029(CFS)
Effective area this stream =       32.50(Ac.)
Total Study Area (Main Stream No. 1) =       32.50(Ac.)
Area averaged Fm value =    0.229(In/Hr)
Depth of flow =   0.554(Ft.), Average velocity =   3.523(Ft/s)
Critical depth =      0.531(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       94.000 to Point/Station       95.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2906.300(Ft.)
Downstream point elevation =  2900.900(Ft.)
Channel length thru subarea  =   793.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     16.764(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     16.764(CFS)
Depth of flow =   0.643(Ft.), Average velocity =   3.040(Ft/s)
Channel flow top width =   11.146(Ft.)
Flow Velocity =    3.04(Ft/s)
Travel time  =    4.35 min.
```

```
Time of concentration =   41.42 min.
Critical depth =      0.547(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.727(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.609
Subarea runoff =      1.405(CFS) for    6.900(Ac.)
Total runoff =     17.434(CFS)
Effective area this stream =       39.40(Ac.)
Total Study Area (Main Stream No. 1) =       39.40(Ac.)
Area averaged Fm value =    0.235(In/Hr)
Depth of flow =   0.657(Ft.), Average velocity =   3.075(Ft/s)
Critical depth =      0.563(Ft.)
End of computations, Total Study Area =           39.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.888
Area averaged SCS curve number =  86.0
```

RATEXEASTOFF

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/18/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, EAST BOUNDARY
10 YEAR STORM EVENT
FN: RATEXEASTOFF10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 801.000 to Point/Station 802.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 946.000(Ft.)
Top (of initial area) elevation = 2928.800(Ft.)
Bottom (of initial area) elevation = 2925.300(Ft.)
Difference in elevation = 3.500(Ft.)
Slope = 0.00370 s(%)= 0.37
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 24.939 min.
Rainfall intensity = 0.986(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.658
Subarea runoff = 5.641(CFS)
Total initial stream area = 8.700(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++

Process from Point/Station 802.000 to Point/Station 803.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2925.300(Ft.)
Downstream point elevation = 2920.000(Ft.)
Channel length thru subarea = 988.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 9.561(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 9.561(CFS)
Depth of flow = 0.505(Ft.), Average velocity = 2.358(Ft/s)
Channel flow top width = 10.043(Ft.)
Flow Velocity = 2.36(Ft/s)
Travel time = 6.98 min.
Time of concentration = 31.92 min.
Critical depth = 0.391(Ft.)

```
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.850(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.619
Subarea runoff =      7.780(CFS) for   16.800(Ac.)
Total runoff =     13.421(CFS)
Effective area this stream =       25.50(Ac.)
Total Study Area (Main Stream No. 1) =       25.50(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.608(Ft.), Average velocity =   2.616(Ft/s)
Critical depth =      0.480(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      803.000 to Point/Station      804.000
**** IMPROVED CHANNEL TRAVEL TIME ****
____________________________________________________________________________
Upstream point elevation =  2920.000(Ft.)
Downstream point elevation =  2912.000(Ft.)
Channel length thru subarea  =  1228.000(Ft.)
Channel base width    =   12.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     18.341(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     18.341(CFS)
Depth of flow =   0.486(Ft.), Average velocity =   2.705(Ft/s)
Channel flow top width =   15.889(Ft.)
Flow Velocity =    2.71(Ft/s)
Travel time  =    7.57 min.
Time of concentration =   39.49 min.
Critical depth =      0.398(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.748(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.581
Subarea runoff =      9.747(CFS) for   27.800(Ac.)
Total runoff =     23.169(CFS)
Effective area this stream =       53.30(Ac.)
Total Study Area (Main Stream No. 1) =       53.30(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.556(Ft.), Average velocity =   2.929(Ft/s)
Critical depth =      0.461(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      803.000 to Point/Station      804.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     53.300(Ac.)
Runoff from this stream =     23.169(CFS)
Time of concentration =   39.49 min.
Rainfall intensity =     0.748(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      805.000 to Point/Station      806.000
```

```
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   655.000(Ft.)
Top (of initial area) elevation =  2924.900(Ft.)
Bottom (of initial area) elevation =  2920.100(Ft.)
Difference in elevation =     4.800(Ft.)
Slope =    0.00733  s(%)=       0.73
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   18.778 min.
Rainfall intensity =      1.168(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.696
Subarea runoff =      2.602(CFS)
Total initial stream area =        3.200(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      806.000 to Point/Station      807.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2920.100(Ft.)
Downstream point elevation =  2915.200(Ft.)
Channel length thru subarea  =   713.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =      4.079(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      4.079(CFS)
Depth of flow =   0.292(Ft.), Average velocity =   1.950(Ft/s)
Channel flow top width =    8.335(Ft.)
Flow Velocity =    1.95(Ft/s)
Travel time  =    6.10 min.
Time of concentration =   24.87 min.
Critical depth =      0.230(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.987(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.658
Subarea runoff =      2.857(CFS) for    5.200(Ac.)
Total runoff =      5.458(CFS)
Effective area this stream =        8.40(Ac.)
Total Study Area (Main Stream No. 1) =       61.70(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.345(Ft.), Average velocity =   2.147(Ft/s)
Critical depth =      0.277(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      807.000 to Point/Station      804.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2915.200(Ft.)
Downstream point elevation =  2912.000(Ft.)
Channel length thru subarea  =   405.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
```

```
Estimated mean flow rate at midpoint of channel =      8.017(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      8.017(CFS)
Depth of flow =   0.411(Ft.), Average velocity =   2.548(Ft/s)
Channel flow top width =    9.292(Ft.)
Flow Velocity =    2.55(Ft/s)
Travel time  =    2.65 min.
Time of concentration =   27.52 min.
Critical depth =      0.352(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.929(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.643
Subarea runoff =      5.057(CFS) for    9.200(Ac.)
Total runoff =     10.516(CFS)
Effective area this stream =       17.60(Ac.)
Total Study Area (Main Stream No. 1) =       70.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.479(Ft.), Average velocity =   2.776(Ft/s)
Critical depth =      0.414(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      807.000 to Point/Station      804.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     17.600(Ac.)
Runoff from this stream =     10.516(CFS)
Time of concentration =   27.52 min.
Rainfall intensity =     0.929(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     23.17    53.300     39.49    0.265      0.748
2     10.52    17.600     27.52    0.265      0.929
Qmax(1) =
          1.000 *    1.000 *    23.169) +
          0.728 *    1.000 *    10.516) + =      30.819
Qmax(2) =
          1.375 *    0.697 *    23.169) +
          1.000 *    1.000 *    10.516) + =      32.713

Total of 2 streams to confluence:
Flow rates before confluence point:
      23.169      10.516
Maximum flow rates at confluence using above data:
       30.819       32.713
Area of streams before confluence:
       53.300       17.600
Effective area values after confluence:
       70.900       54.751
Results of confluence:
Total flow rate =     32.713(CFS)
Time of concentration =    27.523 min.
Effective stream area after confluence =     54.751(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =      70.90(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      804.000 to Point/Station      808.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2912.000(Ft.)
Downstream point elevation =  2909.500(Ft.)
Channel length thru subarea  =   410.000(Ft.)
Channel base width     =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     32.752(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     32.752(CFS)
Depth of flow =   0.524(Ft.), Average velocity =   2.829(Ft/s)
Channel flow top width =   24.191(Ft.)
Flow Velocity =    2.83(Ft/s)
Travel time  =    2.42 min.
Time of concentration =   29.94 min.
Critical depth =      0.422(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =     31.628(CFS)
therefore the upstream flow rate of Q =     32.713(CFS) is being used
Rainfall intensity =      0.883(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.630
Subarea runoff =      0.000(CFS) for    2.100(Ac.)
Total runoff =     32.713(CFS)
Effective area this stream =       56.85(Ac.)
Total Study Area (Main Stream No. 1) =       73.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.524(Ft.), Average velocity =   2.828(Ft/s)
Critical depth =      0.422(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      804.000 to Point/Station      808.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     56.851(Ac.)
Runoff from this stream =     32.713(CFS)
Time of concentration =   29.94 min.
Rainfall intensity =     0.883(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      809.000 to Point/Station      808.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   733.000(Ft.)
Top (of initial area) elevation =  2916.400(Ft.)
Bottom (of initial area) elevation =  2909.500(Ft.)
Difference in elevation =     6.900(Ft.)
Slope =    0.00941  s(%)=       0.94
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   18.683 min.
Rainfall intensity =      1.172(In/Hr) for a    10.0 year storm
```

```
Effective runoff coefficient used for area (Q=KCIA) is C = 0.696
Subarea runoff =      3.755(CFS)
Total initial stream area =        4.600(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      809.000 to Point/Station      808.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      4.600(Ac.)
Runoff from this stream =      3.755(CFS)
Time of concentration =   18.68 min.
Rainfall intensity =     1.172(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     32.71    56.851     29.94    0.265      0.883
2      3.75     4.600     18.68    0.265      1.172
Qmax(1) =
          1.000 *    1.000 *    32.713) +
          0.682 *    1.000 *     3.755) + =      35.272
Qmax(2) =
          1.467 *    0.624 *    32.713) +
          1.000 *    1.000 *     3.755) + =      33.707

Total of 2 streams to confluence:
Flow rates before confluence point:
      32.713       3.755
Maximum flow rates at confluence using above data:
       35.272       33.707
Area of streams before confluence:
       56.851        4.600
Effective area values after confluence:
       61.451       40.079
Results of confluence:
Total flow rate =     35.272(CFS)
Time of concentration =    29.938 min.
Effective stream area after confluence =     61.451(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =      61.45(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      808.000 to Point/Station      810.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2909.500(Ft.)
Downstream point elevation =  2905.700(Ft.)
Channel length thru subarea  =   703.000(Ft.)
Channel base width    =   30.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     39.332(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     39.332(CFS)
Depth of flow =   0.480(Ft.), Average velocity =   2.569(Ft/s)
Channel flow top width =   33.837(Ft.)
Flow Velocity =    2.57(Ft/s)
Travel time  =    4.56 min.
Time of concentration =   34.50 min.
Critical depth =      0.371(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
```

```
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.811(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.606
Subarea runoff =      8.055(CFS) for   26.700(Ac.)
Total runoff =     43.327(CFS)
Effective area this stream =       88.15(Ac.)
Total Study Area (Main Stream No. 1) =      104.30(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.508(Ft.), Average velocity =   2.663(Ft/s)
Critical depth =      0.395(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      810.000 to Point/Station      811.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2905.700(Ft.)
Downstream point elevation =  2900.400(Ft.)
Channel length thru subarea  =   878.000(Ft.)
Channel base width     =   30.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     43.649(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     43.649(CFS)
Depth of flow =   0.494(Ft.), Average velocity =   2.765(Ft/s)
Channel flow top width =   33.949(Ft.)
Flow Velocity =    2.77(Ft/s)
Travel time  =    5.29 min.
Time of concentration =   39.79 min.
Critical depth =      0.398(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.745(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.580
Subarea runoff =      0.588(CFS) for   13.600(Ac.)
Total runoff =     43.915(CFS)
Effective area this stream =      101.75(Ac.)
Total Study Area (Main Stream No. 1) =      117.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.495(Ft.), Average velocity =   2.771(Ft/s)
Critical depth =      0.398(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      810.000 to Point/Station      811.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    101.751(Ac.)
Runoff from this stream =     43.915(CFS)
Time of concentration =   39.79 min.
Rainfall intensity =     0.745(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      812.000 to Point/Station      813.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
```

```
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   803.000(Ft.)
Top (of initial area) elevation =  2916.000(Ft.)
Bottom (of initial area) elevation =  2910.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.00747  s(%)=       0.75
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   20.294 min.
Rainfall intensity =      1.115(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.686
Subarea runoff =      4.438(CFS)
Total initial stream area =        5.800(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      813.000 to Point/Station      814.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2910.000(Ft.)
Downstream point elevation =  2903.800(Ft.)
Channel length thru subarea  =   391.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =      5.633(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      5.633(CFS)
Depth of flow =   0.276(Ft.), Average velocity =   2.868(Ft/s)
Channel flow top width =    8.211(Ft.)
Flow Velocity =    2.87(Ft/s)
Travel time  =    2.27 min.
Time of concentration =   22.57 min.
Critical depth =      0.281(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.047(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.672
Subarea runoff =      2.313(CFS) for    3.800(Ac.)
Total runoff =      6.751(CFS)
Effective area this stream =        9.60(Ac.)
Total Study Area (Main Stream No. 1) =      127.50(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.307(Ft.), Average velocity =   3.047(Ft/s)
Critical depth =      0.316(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      814.000 to Point/Station      811.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2903.800(Ft.)
Downstream point elevation =  2900.400(Ft.)
Channel length thru subarea  =   515.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =      7.838(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      7.838(CFS)
```

```
Depth of flow =   0.427(Ft.), Average velocity =   2.380(Ft/s)
Channel flow top width =    9.418(Ft.)
Flow Velocity =    2.38(Ft/s)
Travel time  =    3.61 min.
Time of concentration =   26.17 min.
Critical depth =      0.348(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.957(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.651
Subarea runoff =      2.097(CFS) for    4.600(Ac.)
Total runoff =      8.848(CFS)
Effective area this stream =       14.20(Ac.)
Total Study Area (Main Stream No. 1) =      132.10(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.457(Ft.), Average velocity =   2.472(Ft/s)
Critical depth =      0.375(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      814.000 to Point/Station      811.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     14.200(Ac.)
Runoff from this stream =      8.848(CFS)
Time of concentration =   26.17 min.
Rainfall intensity =     0.957(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     43.92   101.751     39.79    0.265      0.745
2      8.85    14.200     26.17    0.265      0.957
Qmax(1) =
          1.000 *    1.000 *    43.915) +
          0.693 *    1.000 *     8.848) + =      50.044
Qmax(2) =
          1.444 *    0.658 *    43.915) +
          1.000 *    1.000 *     8.848) + =      50.551

Total of 2 streams to confluence:
Flow rates before confluence point:
      43.915       8.848
Maximum flow rates at confluence using above data:
       50.044       50.551
Area of streams before confluence:
      101.751       14.200
Effective area values after confluence:
      115.951       81.129
Results of confluence:
Total flow rate =     50.551(CFS)
Time of concentration =    26.173 min.
Effective stream area after confluence =     81.129(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =     115.95(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      811.000 to Point/Station      815.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2900.400(Ft.)
```

```
Downstream point elevation =  2898.000(Ft.)
Channel length thru subarea  =   420.000(Ft.)
Channel base width    =   40.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     50.599(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     50.599(CFS)
Depth of flow =   0.463(Ft.), Average velocity =   2.609(Ft/s)
Channel flow top width =   43.707(Ft.)
Flow Velocity =    2.61(Ft/s)
Travel time  =    2.68 min.
Time of concentration =   28.86 min.
Critical depth =      0.363(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =     49.389(CFS)
therefore the upstream flow rate of Q =     50.551(CFS) is being used
Rainfall intensity =      0.903(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.636
Subarea runoff =      0.000(CFS) for    4.900(Ac.)
Total runoff =     50.551(CFS)
Effective area this stream =       86.03(Ac.)
Total Study Area (Main Stream No. 1) =      137.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.463(Ft.), Average velocity =   2.608(Ft/s)
Critical depth =      0.363(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      811.000 to Point/Station      815.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     86.029(Ac.)
Runoff from this stream =     50.551(CFS)
Time of concentration =   28.86 min.
Rainfall intensity =     0.903(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      816.000 to Point/Station      817.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   515.000(Ft.)
Top (of initial area) elevation =  2906.000(Ft.)
Bottom (of initial area) elevation =  2900.800(Ft.)
Difference in elevation =     5.200(Ft.)
Slope =    0.01010  s(%)=       1.01
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.997 min.
Rainfall intensity =      1.286(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.715
Subarea runoff =      3.769(CFS)
Total initial stream area =        4.100(Ac.)
Pervious area fraction = 1.000
```

```
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      817.000 to Point/Station      815.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2900.800(Ft.)
Downstream point elevation =  2898.000(Ft.)
Channel length thru subarea  =   432.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =      4.709(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      4.709(CFS)
Depth of flow =   0.322(Ft.), Average velocity =   2.005(Ft/s)
Channel flow top width =    8.578(Ft.)
Flow Velocity =    2.01(Ft/s)
Travel time  =    3.59 min.
Time of concentration =   19.59 min.
Critical depth =      0.252(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.139(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.691
Subarea runoff =      1.817(CFS) for    3.000(Ac.)
Total runoff =      5.586(CFS)
Effective area this stream =        7.10(Ac.)
Total Study Area (Main Stream No. 1) =      144.10(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.355(Ft.), Average velocity =   2.121(Ft/s)
Critical depth =      0.281(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      817.000 to Point/Station      815.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      7.100(Ac.)
Runoff from this stream =      5.586(CFS)
Time of concentration =   19.59 min.
Rainfall intensity =     1.139(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     50.55    86.029     28.86    0.265      0.903
2      5.59     7.100     19.59    0.265      1.139
Qmax(1) =
          1.000 *    1.000 *    50.551) +
          0.730 *    1.000 *     5.586) + =      54.627
Qmax(2) =
          1.370 *    0.679 *    50.551) +
          1.000 *    1.000 *     5.586) + =      52.612

Total of 2 streams to confluence:
Flow rates before confluence point:
      50.551       5.586
Maximum flow rates at confluence using above data:
       54.627       52.612
Area of streams before confluence:
```

```
       86.029        7.100
Effective area values after confluence:
       93.129       65.498
Results of confluence:
Total flow rate =     54.627(CFS)
Time of concentration =    28.855 min.
Effective stream area after confluence =     93.129(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =      93.13(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      815.000 to Point/Station      818.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2898.000(Ft.)
Downstream point elevation =  2894.500(Ft.)
Channel length thru subarea  =   884.000(Ft.)
Channel base width     =   40.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     54.676(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     54.676(CFS)
Depth of flow =   0.541(Ft.), Average velocity =   2.397(Ft/s)
Channel flow top width =   44.328(Ft.)
Flow Velocity =    2.40(Ft/s)
Travel time  =    6.15 min.
Time of concentration =   35.00 min.
Critical depth =      0.383(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =     50.376(CFS)
therefore the upstream flow rate of Q =     54.627(CFS) is being used
Rainfall intensity =      0.804(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.603
Subarea runoff =      0.000(CFS) for   10.700(Ac.)
Total runoff =     54.627(CFS)
Effective area this stream =      103.83(Ac.)
Total Study Area (Main Stream No. 1) =      154.80(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.541(Ft.), Average velocity =   2.396(Ft/s)
Critical depth =      0.383(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      815.000 to Point/Station      818.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    103.829(Ac.)
Runoff from this stream =     54.627(CFS)
Time of concentration =   35.00 min.
Rainfall intensity =     0.804(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      819.000 to Point/Station      820.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
```

```
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  2915.000(Ft.)
Bottom (of initial area) elevation =  2906.700(Ft.)
Difference in elevation =     8.300(Ft.)
Slope =    0.00830  s(%)=       0.83
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   21.694 min.
Rainfall intensity =      1.072(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.677
Subarea runoff =      6.097(CFS)
Total initial stream area =        8.400(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      820.000 to Point/Station      821.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2906.700(Ft.)
Downstream point elevation =  2900.600(Ft.)
Channel length thru subarea  =   741.000(Ft.)
Channel base width    =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     10.722(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     10.722(CFS)
Depth of flow =   0.478(Ft.), Average velocity =   2.833(Ft/s)
Channel flow top width =    9.827(Ft.)
Flow Velocity =    2.83(Ft/s)
Travel time  =    4.36 min.
Time of concentration =   26.05 min.
Critical depth =      0.422(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.960(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.651
Subarea runoff =      9.164(CFS) for   16.000(Ac.)
Total runoff =     15.261(CFS)
Effective area this stream =       24.40(Ac.)
Total Study Area (Main Stream No. 1) =      179.20(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.581(Ft.), Average velocity =   3.158(Ft/s)
Critical depth =      0.516(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      821.000 to Point/Station      818.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2900.600(Ft.)
Downstream point elevation =  2894.500(Ft.)
Channel length thru subarea  =   728.000(Ft.)
Channel base width    =   12.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     20.676(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     20.676(CFS)
Depth of flow =   0.484(Ft.), Average velocity =   3.062(Ft/s)
```

```
Channel flow top width =   15.876(Ft.)
Flow Velocity =    3.06(Ft/s)
Travel time  =    3.96 min.
Time of concentration =   30.02 min.
Critical depth =      0.430(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.882(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.629
Subarea runoff =     10.772(CFS) for   22.500(Ac.)
Total runoff =     26.033(CFS)
Effective area this stream =       46.90(Ac.)
Total Study Area (Main Stream No. 1) =      201.70(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.553(Ft.), Average velocity =   3.311(Ft/s)
Critical depth =      0.500(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      821.000 to Point/Station      818.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     46.900(Ac.)
Runoff from this stream =     26.033(CFS)
Time of concentration =   30.02 min.
Rainfall intensity =     0.882(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     54.63   103.829     35.00    0.265      0.804
2     26.03    46.900     30.02    0.265      0.882
Qmax(1) =
          1.000 *    1.000 *    54.627) +
          0.874 *    1.000 *    26.033) + =      77.382
Qmax(2) =
          1.144 *    0.858 *    54.627) +
          1.000 *    1.000 *    26.033) + =      79.629

Total of 2 streams to confluence:
Flow rates before confluence point:
      54.627      26.033
Maximum flow rates at confluence using above data:
       77.382       79.629
Area of streams before confluence:
      103.829       46.900
Effective area values after confluence:
      150.729      135.941
Results of confluence:
Total flow rate =     79.629(CFS)
Time of concentration =    30.017 min.
Effective stream area after confluence =    135.941(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =     150.73(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      818.000 to Point/Station      822.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2894.500(Ft.)
Downstream point/station elevation =  2893.500(Ft.)
```

Pipe length =   100.00(Ft.)   Manning's N = 0.013
No. of pipes = 1 Required pipe flow =   79.629(CFS)
Nearest computed pipe diameter =   39.00(In.)
Calculated individual pipe flow =   79.629(CFS)
Normal flow depth in pipe =   30.80(In.)
Flow top width inside pipe =   31.79(In.)
Critical Depth =   33.64(In.)
Pipe flow velocity =   11.34(Ft/s)
Travel time through pipe =   0.15 min.
Time of concentration (TC) =   30.16 min.
End of computations, Total Study Area =   201.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 86.0

RATEX01CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/18/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #1
10 YEAR STORM EVENT
FN: RATEX01CUL10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 971.000(Ft.)
Top (of initial area) elevation = 2961.400(Ft.)
Bottom (of initial area) elevation = 2949.600(Ft.)
Difference in elevation = 11.800(Ft.)
Slope = 0.01215 s(%)= 1.22
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 19.866 min.
Rainfall intensity = 1.130(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.689
Subarea runoff = 6.147(CFS)
Total initial stream area = 7.900(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++

Process from Point/Station 102.000 to Point/Station 103.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2949.600(Ft.)
Downstream point elevation = 2936.500(Ft.)
Channel length thru subarea = 1076.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 11.352(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 11.352(CFS)
Depth of flow = 0.443(Ft.), Average velocity = 3.298(Ft/s)
Channel flow top width = 9.543(Ft.)
Flow Velocity = 3.30(Ft/s)
Travel time = 5.44 min.
Time of concentration = 25.30 min.
Critical depth = 0.434(Ft.)

```
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.5000     Max loss rate(Fm)=     0.133(In/Hr)
Rainfall intensity =      0.977(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.736
Subarea runoff =     10.315(CFS) for   15.000(Ac.)
Total runoff =     16.462(CFS)
Effective area this stream =       22.90(Ac.)
Total Study Area (Main Stream No. 1) =       22.90(Ac.)
Area averaged Fm value =    0.178(In/Hr)
Depth of flow =   0.544(Ft.), Average velocity =   3.702(Ft/s)
Critical depth =      0.543(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2936.500(Ft.)
Downstream point elevation =  2918.400(Ft.)
Channel length thru subarea  =  1783.000(Ft.)
Channel base width     =   30.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     24.080(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     24.080(CFS)
Depth of flow =   0.297(Ft.), Average velocity =   2.598(Ft/s)
Channel flow top width =   32.378(Ft.)
Flow Velocity =    2.60(Ft/s)
Travel time  =   11.44 min.
Time of concentration =   36.74 min.
Critical depth =      0.270(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.027(In/Hr)
Rainfall intensity =      0.781(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.791
Subarea runoff =     15.181(CFS) for   28.300(Ac.)
Total runoff =     31.643(CFS)
Effective area this stream =       51.20(Ac.)
Total Study Area (Main Stream No. 1) =       51.20(Ac.)
Area averaged Fm value =    0.094(In/Hr)
Depth of flow =   0.350(Ft.), Average velocity =   2.882(Ft/s)
Critical depth =      0.320(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2918.400(Ft.)
Downstream point elevation =  2907.600(Ft.)
Channel length thru subarea  =  1056.000(Ft.)
Channel base width     =   40.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     33.098(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     33.098(CFS)
Depth of flow =   0.303(Ft.), Average velocity =   2.654(Ft/s)
Channel flow top width =   42.421(Ft.)
Flow Velocity =    2.65(Ft/s)
Travel time  =    6.63 min.
Time of concentration =   43.37 min.
Critical depth =      0.273(Ft.)
 Adding area flow to channel
```

```
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.7500     Max loss rate(Fm)=     0.199(In/Hr)
Rainfall intensity =      0.707(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.752
Subarea runoff =      2.811(CFS) for   13.600(Ac.)
Total runoff =     34.454(CFS)
Effective area this stream =       64.80(Ac.)
Total Study Area (Main Stream No. 1) =       64.80(Ac.)
Area averaged Fm value =    0.116(In/Hr)
Depth of flow =   0.310(Ft.), Average velocity =   2.696(Ft/s)
Critical depth =      0.281(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2907.600(Ft.)
Downstream point elevation =  2895.500(Ft.)
Channel length thru subarea  =  1422.000(Ft.)
Channel base width     =   50.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     34.499(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     34.499(CFS)
Depth of flow =   0.287(Ft.), Average velocity =   2.349(Ft/s)
Channel flow top width =   52.297(Ft.)
Flow Velocity =    2.35(Ft/s)
Travel time  =   10.09 min.
Time of concentration =   53.46 min.
Critical depth =      0.244(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =     33.077(CFS)
therefore the upstream flow rate of Q =     34.454(CFS) is being used
Rainfall intensity =      0.624(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.701
Subarea runoff =      0.000(CFS) for   10.800(Ac.)
Total runoff =     34.454(CFS)
Effective area this stream =       75.60(Ac.)
Total Study Area (Main Stream No. 1) =       75.60(Ac.)
Area averaged Fm value =    0.138(In/Hr)
Depth of flow =   0.287(Ft.), Average velocity =   2.348(Ft/s)
Critical depth =      0.242(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2895.500(Ft.)
Downstream point/station elevation =  2895.000(Ft.)
Pipe length  =   100.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    34.454(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    34.454(CFS)
Normal flow depth in pipe =   24.98(In.)
Flow top width inside pipe =   28.30(In.)
Critical Depth =   23.44(In.)
Pipe flow velocity =      7.15(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =    53.70 min.
```

End of computations, Total Study Area = 75.60 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.519
Area averaged SCS curve number = 86.0

RATEX02CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/18/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #2
10 YEAR STORM EVENT
FN: RATEX02CUL10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 880.000(Ft.)
Top (of initial area) elevation = 2964.000(Ft.)
Bottom (of initial area) elevation = 2960.500(Ft.)
Difference in elevation = 3.500(Ft.)
Slope = 0.00398 s(%)= 0.40
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 23.880 min.
Rainfall intensity = 1.012(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.664
Subarea runoff = 6.584(CFS)
Total initial stream area = 9.800(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++

Process from Point/Station 202.000 to Point/Station 203.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2960.500(Ft.)
Downstream point elevation = 2947.700(Ft.)
Channel length thru subarea = 1203.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 11.377(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 11.377(CFS)
Depth of flow = 0.460(Ft.), Average velocity = 3.152(Ft/s)
Channel flow top width = 9.683(Ft.)
Flow Velocity = 3.15(Ft/s)
Travel time = 6.36 min.
Time of concentration = 30.24 min.
Critical depth = 0.434(Ft.)

```
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.878(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.628
Subarea runoff =      9.521(CFS) for   19.400(Ac.)
Total runoff =     16.105(CFS)
Effective area this stream =       29.20(Ac.)
Total Study Area (Main Stream No. 1) =       29.20(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.558(Ft.), Average velocity =   3.509(Ft/s)
Critical depth =      0.535(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2947.700(Ft.)
Downstream point elevation =  2930.700(Ft.)
Channel length thru subarea  =  2037.000(Ft.)
Channel base width    =   15.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     22.293(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     22.293(CFS)
Depth of flow =   0.448(Ft.), Average velocity =   2.961(Ft/s)
Channel flow top width =   18.587(Ft.)
Flow Velocity =    2.96(Ft/s)
Travel time  =   11.47 min.
Time of concentration =   41.71 min.
Critical depth =      0.395(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.7500     Max loss rate(Fm)=     0.199(In/Hr)
Rainfall intensity =      0.724(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.615
Subarea runoff =     12.304(CFS) for   34.600(Ac.)
Total runoff =     28.409(CFS)
Effective area this stream =       63.80(Ac.)
Total Study Area (Main Stream No. 1) =       63.80(Ac.)
Area averaged Fm value =    0.229(In/Hr)
Depth of flow =   0.516(Ft.), Average velocity =   3.224(Ft/s)
Critical depth =      0.461(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2930.700(Ft.)
Downstream point elevation =  2908.500(Ft.)
Channel length thru subarea  =  1721.000(Ft.)
Channel base width    =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     32.857(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     32.857(CFS)
Depth of flow =   0.421(Ft.), Average velocity =   3.598(Ft/s)
Channel flow top width =   23.369(Ft.)
Flow Velocity =    3.60(Ft/s)
Travel time  =    7.97 min.
```

```
Time of concentration =   49.68 min.
Critical depth =      0.426(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.2500     Max loss rate(Fm)=     0.066(In/Hr)
Rainfall intensity =      0.652(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.646
Subarea runoff =      8.822(CFS) for   24.600(Ac.)
Total runoff =     37.231(CFS)
Effective area this stream =       88.40(Ac.)
Total Study Area (Main Stream No. 1) =       88.40(Ac.)
Area averaged Fm value =    0.184(In/Hr)
Depth of flow =   0.453(Ft.), Average velocity =   3.765(Ft/s)
Critical depth =      0.461(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     88.400(Ac.)
Runoff from this stream =     37.231(CFS)
Time of concentration =   49.68 min.
Rainfall intensity =     0.652(In/Hr)
Area averaged loss rate (Fm) =    0.1838(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6934


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      207.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   900.000(Ft.)
Top (of initial area) elevation =  2963.000(Ft.)
Bottom (of initial area) elevation =  2958.600(Ft.)
Difference in elevation =     4.400(Ft.)
Slope =    0.00489  s(%)=       0.49
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   23.121 min.
Rainfall intensity =      1.031(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.669
Subarea runoff =      6.551(CFS)
Total initial stream area =        9.500(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2958.600(Ft.)
Downstream point elevation =  2947.700(Ft.)
Channel length thru subarea  =    19.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     13.103(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     13.103(CFS)
Depth of flow =   0.159(Ft.), Average velocity =  12.398(Ft/s)
Channel flow top width =    7.274(Ft.)
```

```
Flow Velocity =   12.40(Ft/s)
Travel time  =    0.03 min.
Time of concentration =   23.15 min.
Critical depth =      0.473(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.031(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.669
Subarea runoff =     13.085(CFS) for   19.000(Ac.)
Total runoff =     19.637(CFS)
Effective area this stream =       28.50(Ac.)
Total Study Area (Main Stream No. 1) =      116.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.202(Ft.), Average velocity =  14.306(Ft/s)
Critical depth =      0.602(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2947.700(Ft.)
Downstream point elevation =  2930.900(Ft.)
Channel length thru subarea  =  1903.000(Ft.)
Channel base width     =   15.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     26.551(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     26.551(CFS)
Depth of flow =   0.488(Ft.), Average velocity =   3.207(Ft/s)
Channel flow top width =   18.907(Ft.)
Flow Velocity =    3.21(Ft/s)
Travel time  =    9.89 min.
Time of concentration =   33.04 min.
Critical depth =      0.441(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.5000     Max loss rate(Fm)=     0.133(In/Hr)
Rainfall intensity =      0.833(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.687
Subarea runoff =     13.756(CFS) for   29.900(Ac.)
Total runoff =     33.393(CFS)
Effective area this stream =       58.40(Ac.)
Total Study Area (Main Stream No. 1) =      146.80(Ac.)
Area averaged Fm value =    0.197(In/Hr)
Depth of flow =   0.558(Ft.), Average velocity =   3.473(Ft/s)
Critical depth =      0.512(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      205.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2930.300(Ft.)
Downstream point elevation =  2908.500(Ft.)
Channel length thru subarea  =  1668.000(Ft.)
Channel base width     =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     41.524(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     41.524(CFS)
```

```
Depth of flow =   0.481(Ft.), Average velocity =   3.933(Ft/s)
Channel flow top width =   23.852(Ft.)
Flow Velocity =    3.93(Ft/s)
Travel time  =    7.07 min.
Time of concentration =   40.10 min.
Critical depth =      0.492(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.0100     Max loss rate(Fm)=     0.003(In/Hr)
Rainfall intensity =      0.741(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.743
Subarea runoff =     16.197(CFS) for   31.600(Ac.)
Total runoff =     49.590(CFS)
Effective area this stream =       90.00(Ac.)
Total Study Area (Main Stream No. 1) =      178.40(Ac.)
Area averaged Fm value =    0.129(In/Hr)
Depth of flow =   0.534(Ft.), Average velocity =   4.193(Ft/s)
Critical depth =      0.555(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      205.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     90.000(Ac.)
Runoff from this stream =     49.590(CFS)
Time of concentration =   40.10 min.
Rainfall intensity =     0.741(In/Hr)
Area averaged loss rate (Fm) =    0.1289(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4863
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     37.23    88.400     49.68    0.184      0.652
2     49.59    90.000     40.10    0.129      0.741
Qmax(1) =
          1.000 *    1.000 *    37.231) +
          0.854 *    1.000 *    49.590) + =      79.583
Qmax(2) =
          1.191 *    0.807 *    37.231) +
          1.000 *    1.000 *    49.590) + =      85.383

Total of 2 streams to confluence:
Flow rates before confluence point:
      37.231      49.590
Maximum flow rates at confluence using above data:
       79.583       85.383
Area of streams before confluence:
       88.400       90.000
Effective area values after confluence:
      178.400      161.361
Results of confluence:
Total flow rate =     85.383(CFS)
Time of concentration =    40.105 min.
Effective stream area after confluence =    161.361(Ac.)
Study area average Pervious fraction(Ap) =  0.589
Study area average soil loss rate(Fm) =    0.156(In/Hr)
Study area total (this main stream) =     178.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      210.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2908.500(Ft.)
Downstream point elevation =  2907.300(Ft.)
Channel length thru subarea  =   567.000(Ft.)
Channel base width     =  100.000(Ft.)
```

```
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     85.416(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     85.416(CFS)
Depth of flow =   0.496(Ft.), Average velocity =   1.690(Ft/s)
Channel flow top width =  103.966(Ft.)
Flow Velocity =    1.69(Ft/s)
Travel time  =    5.59 min.
Time of concentration =   45.70 min.
Critical depth =      0.281(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.5000     Max loss rate(Fm)=     0.133(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =     84.759(CFS)
therefore the upstream flow rate of Q =     85.383(CFS) is being used
Rainfall intensity =      0.685(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.698
Subarea runoff =      0.000(CFS) for   15.900(Ac.)
Total runoff =     85.383(CFS)
Effective area this stream =      177.26(Ac.)
Total Study Area (Main Stream No. 1) =      194.30(Ac.)
Area averaged Fm value =    0.154(In/Hr)
Depth of flow =   0.496(Ft.), Average velocity =   1.689(Ft/s)
Critical depth =      0.281(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2907.300(Ft.)
Downstream point elevation =  2900.000(Ft.)
Channel length thru subarea  =  1095.000(Ft.)
Channel base width     =  100.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     85.428(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     85.428(CFS)
Depth of flow =   0.352(Ft.), Average velocity =   2.395(Ft/s)
Channel flow top width =  102.814(Ft.)
Flow Velocity =    2.39(Ft/s)
Travel time  =    7.62 min.
Time of concentration =   53.32 min.
Critical depth =      0.281(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =     78.948(CFS)
therefore the upstream flow rate of Q =     85.383(CFS) is being used
Rainfall intensity =      0.625(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.668
Subarea runoff =      0.000(CFS) for   11.900(Ac.)
Total runoff =     85.383(CFS)
Effective area this stream =      189.16(Ac.)
Total Study Area (Main Stream No. 1) =      206.20(Ac.)
Area averaged Fm value =    0.161(In/Hr)
Depth of flow =   0.352(Ft.), Average velocity =   2.394(Ft/s)
Critical depth =      0.281(Ft.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      212.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2900.000(Ft.)
Downstream point elevation =  2895.300(Ft.)
Channel length thru subarea  =   350.000(Ft.)
Channel base width     =  100.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     85.414(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     85.414(CFS)
Depth of flow =   0.285(Ft.), Average velocity =   2.961(Ft/s)
Channel flow top width =  102.282(Ft.)
Flow Velocity =    2.96(Ft/s)
Travel time  =    1.97 min.
Time of concentration =   55.29 min.
Critical depth =      0.281(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =     82.047(CFS)
therefore the upstream flow rate of Q =     85.383(CFS) is being used
Rainfall intensity =      0.611(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.650
Subarea runoff =      0.000(CFS) for   17.300(Ac.)
Total runoff =     85.383(CFS)
Effective area this stream =      206.46(Ac.)
Total Study Area (Main Stream No. 1) =      223.50(Ac.)
Area averaged Fm value =    0.170(In/Hr)
Depth of flow =   0.285(Ft.), Average velocity =   2.961(Ft/s)
Critical depth =      0.281(Ft.)
End of computations, Total Study Area =          223.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.636
Area averaged SCS curve number =  86.0
```

RATEX03CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/18/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #3
10 YEAR STORM EVENT
FN: RATEX03CUL10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 301.000 to Point/Station 302.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 888.000(Ft.)
Top (of initial area) elevation = 2925.000(Ft.)
Bottom (of initial area) elevation = 2915.100(Ft.)
Difference in elevation = 9.900(Ft.)
Slope = 0.01115 s(%)= 1.11
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 19.502 min.
Rainfall intensity = 1.142(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.691
Subarea runoff = 3.947(CFS)
Total initial stream area = 5.000(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++
Process from Point/Station 302.000 to Point/Station 303.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2915.100(Ft.)
Downstream point elevation = 2909.000(Ft.)
Channel length thru subarea = 463.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 7.334(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 7.334(CFS)
Depth of flow = 0.339(Ft.), Average velocity = 2.943(Ft/s)
Channel flow top width = 8.710(Ft.)
Flow Velocity = 2.94(Ft/s)
Travel time = 2.62 min.
Time of concentration = 22.12 min.
Critical depth = 0.332(Ft.)

```
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.059(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.675
Subarea runoff =      6.699(CFS) for    9.900(Ac.)
Total runoff =     10.646(CFS)
Effective area this stream =       14.90(Ac.)
Total Study Area (Main Stream No. 1) =       14.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.418(Ft.), Average velocity =   3.320(Ft/s)
Critical depth =      0.418(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** IMPROVED CHANNEL TRAVEL TIME ****
____________________________________________________________________________
Upstream point elevation =  2909.000(Ft.)
Downstream point elevation =  2901.500(Ft.)
Channel length thru subarea  =   780.000(Ft.)
Channel base width    =   10.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     13.671(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     13.671(CFS)
Depth of flow =   0.405(Ft.), Average velocity =   2.908(Ft/s)
Channel flow top width =   13.237(Ft.)
Flow Velocity =    2.91(Ft/s)
Travel time  =    4.47 min.
Time of concentration =   26.59 min.
Critical depth =      0.367(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.948(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.648
Subarea runoff =      5.956(CFS) for   12.100(Ac.)
Total runoff =     16.602(CFS)
Effective area this stream =       27.00(Ac.)
Total Study Area (Main Stream No. 1) =       27.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.452(Ft.), Average velocity =   3.107(Ft/s)
Critical depth =      0.414(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      305.000
**** IMPROVED CHANNEL TRAVEL TIME ****
____________________________________________________________________________
Upstream point elevation =  2901.500(Ft.)
Downstream point elevation =  2895.500(Ft.)
Channel length thru subarea  =   748.000(Ft.)
Channel base width    =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     18.973(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     18.973(CFS)
Depth of flow =   0.350(Ft.), Average velocity =   2.530(Ft/s)
```

```
Channel flow top width =   22.803(Ft.)
Flow Velocity =    2.53(Ft/s)
Travel time  =    4.93 min.
Time of concentration =   31.52 min.
Critical depth =      0.297(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.856(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.621
Subarea runoff =      4.683(CFS) for   13.000(Ac.)
Total runoff =     21.285(CFS)
Effective area this stream =       40.00(Ac.)
Total Study Area (Main Stream No. 1) =       40.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.375(Ft.), Average velocity =   2.640(Ft/s)
Critical depth =      0.320(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      305.000 to Point/Station      306.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2895.500(Ft.)
Downstream point/station elevation =  2894.800(Ft.)
Pipe length  =   150.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.285(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    21.285(CFS)
Normal flow depth in pipe =   19.55(In.)
Flow top width inside pipe =   28.59(In.)
Critical Depth =   18.82(In.)
Pipe flow velocity =      6.28(Ft/s)
Travel time through pipe =    0.40 min.
Time of concentration (TC) =    31.92 min.
End of computations, Total Study Area =           40.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  86.0
```

RATEX04CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/18/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #4
10 YEAR STORM EVENT
FN: RATEX04CUL10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 401.000 to Point/Station 402.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 715.000(Ft.)
Top (of initial area) elevation = 2936.400(Ft.)
Bottom (of initial area) elevation = 2931.100(Ft.)
Difference in elevation = 5.300(Ft.)
Slope = 0.00741 s(%)= 0.74
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.236 min.
Rainfall intensity = 1.590(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.869
Subarea runoff = 2.764(CFS)
Total initial stream area = 2.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 402.000 to Point/Station 403.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2931.100(Ft.)
Downstream point elevation = 2923.600(Ft.)
Channel length thru subarea = 633.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 4.420(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 4.420(CFS)
Depth of flow = 0.261(Ft.), Average velocity = 2.399(Ft/s)
Channel flow top width = 8.091(Ft.)
Flow Velocity = 2.40(Ft/s)
Travel time = 4.40 min.
Time of concentration = 15.63 min.
Critical depth = 0.242(Ft.)

```
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.304(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.765
Subarea runoff =      3.227(CFS) for    4.000(Ac.)
Total runoff =      5.991(CFS)
Effective area this stream =        6.00(Ac.)
Total Study Area (Main Stream No. 1) =        6.00(Ac.)
Area averaged Fm value =    0.195(In/Hr)
Depth of flow =   0.311(Ft.), Average velocity =   2.657(Ft/s)
Critical depth =      0.293(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      403.000 to Point/Station      404.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2923.600(Ft.)
Downstream point elevation =  2911.200(Ft.)
Channel length thru subarea  =  1310.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =      7.525(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      7.525(CFS)
Depth of flow =   0.377(Ft.), Average velocity =   2.655(Ft/s)
Channel flow top width =    9.020(Ft.)
Flow Velocity =    2.65(Ft/s)
Travel time  =    8.22 min.
Time of concentration =   23.86 min.
Critical depth =      0.336(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.012(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.693
Subarea runoff =      2.994(CFS) for    6.800(Ac.)
Total runoff =      8.985(CFS)
Effective area this stream =       12.80(Ac.)
Total Study Area (Main Stream No. 1) =       12.80(Ac.)
Area averaged Fm value =    0.232(In/Hr)
Depth of flow =   0.417(Ft.), Average velocity =   2.810(Ft/s)
Critical depth =      0.375(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      404.000 to Point/Station      405.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2911.200(Ft.)
Downstream point elevation =  2896.300(Ft.)
Channel length thru subarea  =  1437.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     11.369(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     11.369(CFS)
Depth of flow =   0.464(Ft.), Average velocity =   3.123(Ft/s)
```

```
Channel flow top width =    9.708(Ft.)
Flow Velocity =    3.12(Ft/s)
Travel time  =    7.67 min.
Time of concentration =   31.53 min.
Critical depth =      0.434(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.856(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.639
Subarea runoff =      4.695(CFS) for   12.200(Ac.)
Total runoff =     13.680(CFS)
Effective area this stream =       25.00(Ac.)
Total Study Area (Main Stream No. 1) =       25.00(Ac.)
Area averaged Fm value =    0.248(In/Hr)
Depth of flow =   0.513(Ft.), Average velocity =   3.308(Ft/s)
Critical depth =      0.484(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      405.000 to Point/Station      406.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2896.300(Ft.)
Downstream point/station elevation =  2895.700(Ft.)
Pipe length  =   130.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.680(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    13.680(CFS)
Normal flow depth in pipe =   17.63(In.)
Flow top width inside pipe =   21.20(In.)
Critical Depth =   15.99(In.)
Pipe flow velocity =      5.53(Ft/s)
Travel time through pipe =    0.39 min.
Time of concentration (TC) =    31.92 min.
End of computations, Total Study Area =           25.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.928
Area averaged SCS curve number =  84.6
```

RATEX05CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/18/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #5
10 YEAR STORM EVENT
FN: RATEX05CUL10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 501.000 to Point/Station 502.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 2964.000(Ft.)
Bottom (of initial area) elevation = 2959.100(Ft.)
Difference in elevation = 4.900(Ft.)
Slope = 0.00490 s(%)= 0.49
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 24.106 min.
Rainfall intensity = 1.006(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.663
Subarea runoff = 2.200(CFS)
Total initial stream area = 3.300(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++

Process from Point/Station 502.000 to Point/Station 503.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2959.100(Ft.)
Downstream point elevation = 2949.000(Ft.)
Channel length thru subarea = 827.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 3.884(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 3.884(CFS)
Depth of flow = 0.241(Ft.), Average velocity = 2.319(Ft/s)
Channel flow top width = 7.924(Ft.)
Flow Velocity = 2.32(Ft/s)
Travel time = 5.94 min.
Time of concentration = 30.05 min.
Critical depth = 0.223(Ft.)

```
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.881(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.629
Subarea runoff =      3.290(CFS) for    6.600(Ac.)
Total runoff =      5.490(CFS)
Effective area this stream =        9.90(Ac.)
Total Study Area (Main Stream No. 1) =        9.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.294(Ft.), Average velocity =   2.607(Ft/s)
Critical depth =      0.277(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2949.000(Ft.)
Downstream point elevation =  2941.500(Ft.)
Channel length thru subarea  =  1143.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =      7.988(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      7.988(CFS)
Depth of flow =   0.433(Ft.), Average velocity =   2.389(Ft/s)
Channel flow top width =    9.460(Ft.)
Flow Velocity =    2.39(Ft/s)
Travel time  =    7.97 min.
Time of concentration =   38.02 min.
Critical depth =      0.352(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.765(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.588
Subarea runoff =      4.907(CFS) for   13.200(Ac.)
Total runoff =     10.398(CFS)
Effective area this stream =       23.10(Ac.)
Total Study Area (Main Stream No. 1) =       23.10(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.501(Ft.), Average velocity =   2.595(Ft/s)
Critical depth =      0.414(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      504.000 to Point/Station      505.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2941.500(Ft.)
Downstream point elevation =  2931.100(Ft.)
Channel length thru subarea  =  1062.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     14.561(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     14.561(CFS)
Depth of flow =   0.540(Ft.), Average velocity =   3.306(Ft/s)
```

```
Channel flow top width =   10.318(Ft.)
Flow Velocity =    3.31(Ft/s)
Travel time  =    5.35 min.
Time of concentration =   43.38 min.
Critical depth =      0.504(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.5000     Max loss rate(Fm)=     0.133(In/Hr)
Rainfall intensity =      0.707(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.638
Subarea runoff =      8.357(CFS) for   18.500(Ac.)
Total runoff =     18.754(CFS)
Effective area this stream =       41.60(Ac.)
Total Study Area (Main Stream No. 1) =       41.60(Ac.)
Area averaged Fm value =    0.206(In/Hr)
Depth of flow =   0.620(Ft.), Average velocity =   3.570(Ft/s)
Critical depth =      0.586(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      505.000 to Point/Station      506.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2931.100(Ft.)
Downstream point elevation =  2919.900(Ft.)
Channel length thru subarea  =   869.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     20.734(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     20.734(CFS)
Depth of flow =   0.607(Ft.), Average velocity =   4.050(Ft/s)
Channel flow top width =   10.858(Ft.)
Flow Velocity =    4.05(Ft/s)
Travel time  =    3.58 min.
Time of concentration =   46.95 min.
Critical depth =      0.621(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.7500     Max loss rate(Fm)=     0.199(In/Hr)
Rainfall intensity =      0.674(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.627
Subarea runoff =      3.863(CFS) for   11.900(Ac.)
Total runoff =     22.617(CFS)
Effective area this stream =       53.50(Ac.)
Total Study Area (Main Stream No. 1) =       53.50(Ac.)
Area averaged Fm value =    0.205(In/Hr)
Depth of flow =   0.637(Ft.), Average velocity =   4.158(Ft/s)
Critical depth =      0.656(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      506.000 to Point/Station      507.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2919.900(Ft.)
Downstream point elevation =  2906.300(Ft.)
Channel length thru subarea  =  1559.000(Ft.)
Channel base width     =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     24.254(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     24.254(CFS)
Depth of flow =   0.395(Ft.), Average velocity =   2.844(Ft/s)
Channel flow top width =   23.161(Ft.)
```

```
Flow Velocity =    2.84(Ft/s)
Travel time  =    9.14 min.
Time of concentration =   56.09 min.
Critical depth =      0.348(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.606(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.571
Subarea runoff =      3.220(CFS) for   21.200(Ac.)
Total runoff =     25.837(CFS)
Effective area this stream =       74.70(Ac.)
Total Study Area (Main Stream No. 1) =       74.70(Ac.)
Area averaged Fm value =    0.222(In/Hr)
Depth of flow =   0.410(Ft.), Average velocity =   2.911(Ft/s)
Critical depth =      0.363(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      507.000 to Point/Station      508.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2906.300(Ft.)
Downstream point elevation =  2894.400(Ft.)
Channel length thru subarea  =  1336.000(Ft.)
Channel base width     =   30.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     27.056(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     27.056(CFS)
Depth of flow =   0.331(Ft.), Average velocity =   2.608(Ft/s)
Channel flow top width =   32.650(Ft.)
Flow Velocity =    2.61(Ft/s)
Travel time  =    8.54 min.
Time of concentration =   64.63 min.
Critical depth =      0.289(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.557(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.526
Subarea runoff =      2.347(CFS) for   21.600(Ac.)
Total runoff =     28.184(CFS)
Effective area this stream =       96.30(Ac.)
Total Study Area (Main Stream No. 1) =       96.30(Ac.)
Area averaged Fm value =    0.231(In/Hr)
Depth of flow =   0.339(Ft.), Average velocity =   2.649(Ft/s)
Critical depth =      0.297(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      508.000 to Point/Station      509.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2894.400(Ft.)
Downstream point/station elevation =  2893.300(Ft.)
Pipe length  =   130.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    28.184(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    28.184(CFS)
Normal flow depth in pipe =   21.89(In.)
```

Flow top width inside pipe =   21.15(In.)
Critical Depth =   22.17(In.)
Pipe flow velocity =   8.17(Ft/s)
Travel time through pipe =   0.27 min.
Time of concentration (TC) =   64.89 min.
End of computations, Total Study Area =   96.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.873
Area averaged SCS curve number = 86.0

RATEX06CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/18/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #6
10 YEAR STORM EVENT
FN: RATEX06CUL10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 601.000 to Point/Station 602.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 990.000(Ft.)
Top (of initial area) elevation = 2931.200(Ft.)
Bottom (of initial area) elevation = 2920.700(Ft.)
Difference in elevation = 10.500(Ft.)
Slope = 0.01061 s(%)= 1.06
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 20.573 min.
Rainfall intensity = 1.106(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.684
Subarea runoff = 4.542(CFS)
Total initial stream area = 6.000(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++

Process from Point/Station 602.000 to Point/Station 603.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2920.700(Ft.)
Downstream point elevation = 2910.300(Ft.)
Channel length thru subarea = 1127.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 7.621(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 7.621(CFS)
Depth of flow = 0.383(Ft.), Average velocity = 2.643(Ft/s)
Channel flow top width = 9.063(Ft.)
Flow Velocity = 2.64(Ft/s)
Travel time = 7.11 min.
Time of concentration = 27.68 min.
Critical depth = 0.340(Ft.)

```
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.926(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.642
Subarea runoff =      6.102(CFS) for   11.900(Ac.)
Total runoff =     10.644(CFS)
Effective area this stream =       17.90(Ac.)
Total Study Area (Main Stream No. 1) =       17.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.462(Ft.), Average velocity =   2.939(Ft/s)
Critical depth =      0.418(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      603.000 to Point/Station      604.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2910.300(Ft.)
Downstream point elevation =  2894.500(Ft.)
Channel length thru subarea  =  1719.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     14.737(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     14.737(CFS)
Depth of flow =   0.553(Ft.), Average velocity =   3.246(Ft/s)
Channel flow top width =   10.423(Ft.)
Flow Velocity =    3.25(Ft/s)
Travel time  =    8.83 min.
Time of concentration =   36.51 min.
Critical depth =      0.508(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.784(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.596
Subarea runoff =      8.089(CFS) for   22.200(Ac.)
Total runoff =     18.732(CFS)
Effective area this stream =       40.10(Ac.)
Total Study Area (Main Stream No. 1) =       40.10(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.630(Ft.), Average velocity =   3.491(Ft/s)
Critical depth =      0.586(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      604.000 to Point/Station      605.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2894.500(Ft.)
Downstream point/station elevation =  2893.800(Ft.)
Pipe length  =   150.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.732(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    18.732(CFS)
Normal flow depth in pipe =   19.76(In.)
Flow top width inside pipe =   23.92(In.)
Critical Depth =   18.16(In.)
Pipe flow velocity =      6.01(Ft/s)
Travel time through pipe =    0.42 min.
```

Time of concentration (TC) = 36.92 min.
End of computations, Total Study Area = 40.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 86.0

10-YEAR HYDROLOGY (RATIONAL METHOD), ON-SITE PROPOSED CONDITION

BUILDING 1

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/09/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 1A
10 YEAR STORM EVENT
FN: 1APROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 111.000 to Point/Station 112.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 570.000(Ft.)
Top (of initial area) elevation = 2908.100(Ft.)
Bottom (of initial area) elevation = 2903.400(Ft.)
Difference in elevation = 4.700(Ft.)
Slope = 0.00825 s(%)= 0.82
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.046 min.
Rainfall intensity = 1.701(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff = 5.777(CFS)
Total initial stream area = 3.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 112.000 to Point/Station 113.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2898.400(Ft.)
Downstream point/station elevation = 2897.000(Ft.)
Pipe length = 457.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 5.777(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 5.777(CFS)
Normal flow depth in pipe = 14.65(In.)
Flow top width inside pipe = 14.01(In.)
Critical Depth = 11.12(In.)
Pipe flow velocity = 3.75(Ft/s)
Travel time through pipe = 2.03 min.
Time of concentration (TC) = 12.08 min.

++

Process from Point/Station 112.000 to Point/Station 113.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.900(Ac.)
Runoff from this stream =      5.777(CFS)
Time of concentration =   12.08 min.
Rainfall intensity =     1.523(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      115.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   455.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2903.200(Ft.)
Difference in elevation =     5.800(Ft.)
Slope =    0.01275  s(%)=       1.27
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.414 min.
Rainfall intensity =      1.892(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.874
Subarea runoff =     10.084(CFS)
Total initial stream area =        6.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      113.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2898.200(Ft.)
Downstream point/station elevation =  2897.000(Ft.)
Pipe length  =   338.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.084(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    10.084(CFS)
Normal flow depth in pipe =   15.48(In.)
Flow top width inside pipe =   22.97(In.)
Critical Depth =   13.63(In.)
Pipe flow velocity =      4.71(Ft/s)
Travel time through pipe =    1.20 min.
Time of concentration (TC) =     9.61 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      113.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.100(Ac.)
Runoff from this stream =     10.084(CFS)
Time of concentration =    9.61 min.
Rainfall intensity =     1.746(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      5.78     3.900     12.08    0.055      1.523
2     10.08     6.100      9.61    0.055      1.746
Qmax(1) =
          1.000 *    1.000 *     5.777) +
          0.868 *    1.000 *    10.084) + =      14.528
Qmax(2) =
          1.152 *    0.796 *     5.777) +
          1.000 *    1.000 *    10.084) + =      15.382

Total of 2 main streams to confluence:
Flow rates before confluence point:
       6.777      11.084
Maximum flow rates at confluence using above data:
       14.528       15.382
Area of streams before confluence:
        3.900        6.100
Effective area values after confluence:
       10.000        9.204


Results of confluence:
Total flow rate =     15.382(CFS)
Time of concentration =     9.611 min.
Effective stream area after confluence  =      9.204(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      10.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      116.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2898.600(Ft.)
Downstream point/station elevation =  2898.300(Ft.)
Pipe length  =    96.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.382(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    15.382(CFS)
Normal flow depth in pipe =   19.80(In.)
Flow top width inside pipe =   23.87(In.)
Critical Depth =   16.39(In.)
Pipe flow velocity =      4.92(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =     9.94 min.
End of computations, Total Study Area =           10.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

BUILDING 2

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 2A
10 YEAR STORM EVENT
FN: 2APROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 211.000 to Point/Station 212.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 769.000(Ft.)
Top (of initial area) elevation = 2911.000(Ft.)
Bottom (of initial area) elevation = 2904.200(Ft.)
Difference in elevation = 6.800(Ft.)
Slope = 0.00884 s(%)= 0.88
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.167 min.
Rainfall intensity = 1.596(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.869
Subarea runoff = 12.346(CFS)
Total initial stream area = 8.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 212.000 to Point/Station 213.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2899.200(Ft.)
Downstream point/station elevation = 2897.600(Ft.)
Pipe length = 524.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 12.346(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 12.346(CFS)
Normal flow depth in pipe = 19.41(In.)
Flow top width inside pipe = 18.88(In.)
Critical Depth = 15.17(In.)
Pipe flow velocity = 4.54(Ft/s)
Travel time through pipe = 1.93 min.
Time of concentration (TC) = 13.09 min.

++

Process from Point/Station 212.000 to Point/Station 213.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.900(Ac.)
Runoff from this stream =     12.346(CFS)
Time of concentration =   13.09 min.
Rainfall intensity =     1.451(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      215.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   733.000(Ft.)
Top (of initial area) elevation =  2911.000(Ft.)
Bottom (of initial area) elevation =  2903.500(Ft.)
Difference in elevation =     7.500(Ft.)
Slope =    0.01023  s(%)=       1.02
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.640 min.
Rainfall intensity =      1.643(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.870
Subarea runoff =     13.580(CFS)
Total initial stream area =        9.500(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      213.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2898.500(Ft.)
Downstream point/station elevation =  2897.600(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.580(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    13.580(CFS)
Normal flow depth in pipe =   10.45(In.)
Flow top width inside pipe =   17.76(In.)
Critical Depth =   16.44(In.)
Pipe flow velocity =     12.75(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    10.67 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      213.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      9.500(Ac.)
Runoff from this stream =     13.580(CFS)
Time of concentration =   10.67 min.
Rainfall intensity =     1.640(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1     12.35     8.900     13.09    0.055      1.451
2     13.58     9.500     10.67    0.055      1.640
Qmax(1) =
          1.000 *    1.000 *    12.346) +
          0.880 *    1.000 *    13.580) + =      24.302
Qmax(2) =
          1.136 *    0.815 *    12.346) +
          1.000 *    1.000 *    13.580) + =      25.007

Total of 2 main streams to confluence:
Flow rates before confluence point:
      13.346      14.580
Maximum flow rates at confluence using above data:
       24.302       25.007
Area of streams before confluence:
        8.900        9.500
Effective area values after confluence:
       18.400       16.752


Results of confluence:
Total flow rate =     25.007(CFS)
Time of concentration =    10.668 min.
Effective stream area after confluence  =     16.752(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      18.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      216.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.600(Ft.)
Downstream point/station elevation =  2896.400(Ft.)
Pipe length  =    55.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.007(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    25.007(CFS)
Normal flow depth in pipe =   15.49(In.)
Flow top width inside pipe =   22.96(In.)
Critical Depth =   21.13(In.)
Pipe flow velocity =     11.67(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =    10.75 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      216.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     16.752(Ac.)
Runoff from this stream =     25.007(CFS)
Time of concentration =   10.75 min.
Rainfall intensity =     1.633(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      218.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   117.000(Ft.)
Top (of initial area) elevation =  2906.000(Ft.)
Bottom (of initial area) elevation =  2904.300(Ft.)
Difference in elevation =     1.700(Ft.)
Slope =    0.01453  s(%)=       1.45
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.761 min.
Rainfall intensity =      2.662(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      2.816(CFS)
Total initial stream area =        1.200(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      219.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2899.300(Ft.)
Downstream point/station elevation =  2897.900(Ft.)
Pipe length  =   451.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.816(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     2.816(CFS)
Normal flow depth in pipe =    9.98(In.)
Flow top width inside pipe =   14.15(In.)
Critical Depth =    8.09(In.)
Pipe flow velocity =      3.24(Ft/s)
Travel time through pipe =    2.32 min.
Time of concentration (TC) =     7.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      219.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      1.200(Ac.)
Runoff from this stream =      2.816(CFS)
Time of concentration =    7.08 min.
Rainfall intensity =     2.098(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      221.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   126.000(Ft.)
Top (of initial area) elevation =  2904.700(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     1.400(Ft.)
Slope =    0.01111  s(%)=       1.11
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.175 min.
Rainfall intensity =      2.532(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      2.676(CFS)
Total initial stream area =        1.200(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      219.000
```

```
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2897.900(Ft.)
Pipe length  =    42.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.676(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.676(CFS)
Normal flow depth in pipe =    7.90(In.)
Flow top width inside pipe =   11.38(In.)
Critical Depth =    8.41(In.)
Pipe flow velocity =      4.88(Ft/s)
Travel time through pipe =    0.14 min.
Time of concentration (TC) =     5.32 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      219.000
**** CONFLUENCE OF MINOR STREAMS ****
_____________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      1.200(Ac.)
Runoff from this stream =      2.676(CFS)
Time of concentration =    5.32 min.
Rainfall intensity =     2.491(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      2.82     1.200      7.08    0.055      2.098
2      2.68     1.200      5.32    0.055      2.491
Qmax(1) =
          1.000 *    1.000 *     2.816) +
          0.839 *    1.000 *     2.676) + =       5.060
Qmax(2) =
          1.192 *    0.751 *     2.816) +
          1.000 *    1.000 *     2.676) + =       5.198

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.816       2.676
Maximum flow rates at confluence using above data:
        5.060        5.198
Area of streams before confluence:
        1.200        1.200
Effective area values after confluence:
        2.400        2.102
Results of confluence:
Total flow rate =      5.198(CFS)
Time of concentration =     5.318 min.
Effective stream area after confluence =      2.102(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       2.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      222.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =  2897.900(Ft.)
Downstream point/station elevation =  2896.900(Ft.)
Pipe length  =   342.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.198(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     5.198(CFS)
Normal flow depth in pipe =   13.55(In.)
Flow top width inside pipe =   15.53(In.)
Critical Depth =   10.53(In.)
Pipe flow velocity =      3.64(Ft/s)
Travel time through pipe =    1.56 min.
```

```
Time of concentration (TC) =     6.88 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      222.000 to Point/Station      222.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     6.88 min.
Rainfall intensity =      2.134(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.877
Subarea runoff =      1.729(CFS) for    1.600(Ac.)
Total runoff =      6.927(CFS)
Effective area this stream =        3.70(Ac.)
Total Study Area (Main Stream No. 2) =       22.40(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      222.000 to Point/Station      216.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.900(Ft.)
Downstream point/station elevation =  2896.400(Ft.)
Pipe length  =   159.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.927(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     6.927(CFS)
Normal flow depth in pipe =   13.95(In.)
Flow top width inside pipe =   19.84(In.)
Critical Depth =   11.66(In.)
Pipe flow velocity =      4.08(Ft/s)
Travel time through pipe =    0.65 min.
Time of concentration (TC) =     7.53 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      222.000 to Point/Station      216.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.702(Ac.)
Runoff from this stream =      6.927(CFS)
Time of concentration =    7.53 min.
Rainfall intensity =     2.022(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     25.01    16.752     10.75    0.055      1.633
2      6.93     3.702      7.53    0.055      2.022
Qmax(1) =
          1.000 *    1.000 *    25.007) +
          0.802 *    1.000 *     6.927) + =      30.565
Qmax(2) =
          1.246 *    0.701 *    25.007) +
          1.000 *    1.000 *     6.927) + =      28.762

Total of 2 main streams to confluence:
Flow rates before confluence point:
      26.007       7.927
Maximum flow rates at confluence using above data:
       30.565       28.762
```

```
Area of streams before confluence:
       16.752        3.702
Effective area values after confluence:
       20.454       15.440


Results of confluence:
Total flow rate =     30.565(CFS)
Time of concentration =    10.747 min.
Effective stream area after confluence  =     20.454(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      20.45(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      216.000 to Point/Station      223.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2895.800(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =   153.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    30.565(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    30.565(CFS)
Normal flow depth in pipe =   24.40(In.)
Flow top width inside pipe =   33.65(In.)
Critical Depth =   21.52(In.)
Pipe flow velocity =      6.00(Ft/s)
Travel time through pipe =    0.43 min.
Time of concentration (TC) =    11.17 min.
End of computations, Total Study Area =           22.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 2B
10 YEAR STORM EVENT
FN: 2BPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 231.000 to Point/Station 232.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 723.000(Ft.)
Top (of initial area) elevation = 2911.000(Ft.)
Bottom (of initial area) elevation = 2904.500(Ft.)
Difference in elevation = 6.500(Ft.)
Slope = 0.00899 s(%)= 0.90
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.859 min.
Rainfall intensity = 1.623(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.870
Subarea runoff = 7.763(CFS)
Total initial stream area = 5.500(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 232.000 to Point/Station 233.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2899.500(Ft.)
Downstream point/station elevation = 2894.600(Ft.)
Pipe length = 33.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 7.763(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 7.763(CFS)
Normal flow depth in pipe = 6.46(In.)
Flow top width inside pipe = 11.97(In.)
Critical depth could not be calculated.
Pipe flow velocity = 18.01(Ft/s)
Travel time through pipe = 0.03 min.
Time of concentration (TC) = 10.89 min.

++

Process from Point/Station 232.000 to Point/Station 233.000

```
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.500(Ac.)
Runoff from this stream =      7.763(CFS)
Time of concentration =   10.89 min.
Rainfall intensity =     1.620(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      234.000 to Point/Station      235.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   201.000(Ft.)
Top (of initial area) elevation =  2906.400(Ft.)
Bottom (of initial area) elevation =  2904.800(Ft.)
Difference in elevation =     1.600(Ft.)
Slope =    0.00796  s(%)=       0.80
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.668 min.
Rainfall intensity =      2.175(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.877
Subarea runoff =      3.053(CFS)
Total initial stream area =        1.600(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      235.000 to Point/Station      236.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  2899.800(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =   539.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.053(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.053(CFS)
Normal flow depth in pipe =    8.05(In.)
Flow top width inside pipe =   14.96(In.)
Critical Depth =    8.43(In.)
Pipe flow velocity =      4.55(Ft/s)
Travel time through pipe =    1.97 min.
Time of concentration (TC) =     8.64 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      235.000 to Point/Station      236.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      1.600(Ac.)
Runoff from this stream =      3.053(CFS)
Time of concentration =    8.64 min.
Rainfall intensity =     1.861(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      237.000 to Point/Station      238.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
```

```
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   498.000(Ft.)
Top (of initial area) elevation =  2906.900(Ft.)
Bottom (of initial area) elevation =  2901.100(Ft.)
Difference in elevation =     5.800(Ft.)
Slope =    0.01165  s(%)=       1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.882 min.
Rainfall intensity =      1.831(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      4.796(CFS)
Total initial stream area =        3.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      238.000 to Point/Station      236.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2896.100(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.796(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.796(CFS)
Normal flow depth in pipe =   11.88(In.)
Flow top width inside pipe =   12.17(In.)
Critical Depth =   10.65(In.)
Pipe flow velocity =      4.60(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     8.94 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      238.000 to Point/Station      236.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      3.000(Ac.)
Runoff from this stream =      4.796(CFS)
Time of concentration =    8.94 min.
Rainfall intensity =     1.823(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1      3.05     1.600      8.64    0.055      1.861
2      4.80     3.000      8.94    0.055      1.823
Qmax(1) =
          1.000 *    1.000 *     3.053) +
          1.021 *    0.966 *     4.796) + =       7.786
Qmax(2) =
          0.979 *    1.000 *     3.053) +
          1.000 *    1.000 *     4.796) + =       7.785

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.053       4.796
Maximum flow rates at confluence using above data:
        7.786        7.785
Area of streams before confluence:
        1.600        3.000
Effective area values after confluence:
```

```
        4.499        4.600
Results of confluence:
Total flow rate =      7.786(CFS)
Time of concentration =     8.642 min.
Effective stream area after confluence =      4.499(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       4.60(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      236.000 to Point/Station      239.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.000(Ft.)
Downstream point/station elevation =  2895.200(Ft.)
Pipe length  =   268.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.786(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     7.786(CFS)
Normal flow depth in pipe =   15.56(In.)
Flow top width inside pipe =   18.40(In.)
Critical Depth =   12.42(In.)
Pipe flow velocity =      4.07(Ft/s)
Travel time through pipe =    1.10 min.
Time of concentration (TC) =     9.74 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      239.000 to Point/Station      239.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     9.74 min.
Rainfall intensity =      1.733(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.872
Subarea runoff =      2.631(CFS) for    2.400(Ac.)
Total runoff =     10.418(CFS)
Effective area this stream =        6.90(Ac.)
Total Study Area (Main Stream No. 2) =       12.50(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      239.000 to Point/Station      233.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2895.200(Ft.)
Downstream point/station elevation =  2894.600(Ft.)
Pipe length  =   209.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.418(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    10.418(CFS)
Normal flow depth in pipe =   17.16(In.)
Flow top width inside pipe =   21.67(In.)
Critical Depth =   13.86(In.)
Pipe flow velocity =      4.34(Ft/s)
Travel time through pipe =    0.80 min.
Time of concentration (TC) =    10.54 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      239.000 to Point/Station      233.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.899(Ac.)
```

```
Runoff from this stream =     10.418(CFS)
Time of concentration =   10.54 min.
Rainfall intensity =     1.652(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      7.76     5.500     10.89    0.055      1.620
2     10.42     6.899     10.54    0.055      1.652
Qmax(1) =
          1.000 *    1.000 *     7.763) +
          0.980 *    1.000 *    10.418) + =      17.973
Qmax(2) =
          1.020 *    0.968 *     7.763) +
          1.000 *    1.000 *    10.418) + =      18.086

Total of 2 main streams to confluence:
Flow rates before confluence point:
       8.763      11.418
Maximum flow rates at confluence using above data:
       17.973       18.086
Area of streams before confluence:
        5.500        6.899
Effective area values after confluence:
       12.399       12.223


Results of confluence:
Total flow rate =     18.086(CFS)
Time of concentration =    10.541 min.
Effective stream area after confluence  =     12.223(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      12.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      233.000 to Point/Station      240.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2897.100(Ft.)
Downstream point/station elevation =  2896.500(Ft.)
Pipe length  =   214.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.086(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    18.086(CFS)
Normal flow depth in pipe =   20.91(In.)
Flow top width inside pipe =   27.58(In.)
Critical Depth =   17.27(In.)
Pipe flow velocity =      4.95(Ft/s)
Travel time through pipe =    0.72 min.
Time of concentration (TC) =    11.26 min.
End of computations, Total Study Area =           12.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 2C
10 YEAR STORM EVENT
FN: 2CPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 251.000 to Point/Station 252.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 607.000(Ft.)
Top (of initial area) elevation = 2911.000(Ft.)
Bottom (of initial area) elevation = 2905.200(Ft.)
Difference in elevation = 5.800(Ft.)
Slope = 0.00956 s(%)= 0.96
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.002 min.
Rainfall intensity = 1.705(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff = 7.724(CFS)
Total initial stream area = 5.200(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 252.000 to Point/Station 253.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2900.200(Ft.)
Downstream point/station elevation = 2899.100(Ft.)
Pipe length = 364.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 7.724(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 7.724(CFS)
Normal flow depth in pipe = 15.38(In.)
Flow top width inside pipe = 18.60(In.)
Critical Depth = 12.35(In.)
Pipe flow velocity = 4.09(Ft/s)
Travel time through pipe = 1.48 min.
Time of concentration (TC) = 11.49 min.

++

Process from Point/Station 252.000 to Point/Station 253.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.200(Ac.)
Runoff from this stream =      7.724(CFS)
Time of concentration =   11.49 min.
Rainfall intensity =     1.569(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      254.000 to Point/Station      255.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   607.000(Ft.)
Top (of initial area) elevation =  2911.000(Ft.)
Bottom (of initial area) elevation =  2905.200(Ft.)
Difference in elevation =     5.800(Ft.)
Slope =    0.00956  s(%)=       0.96
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.002 min.
Rainfall intensity =      1.705(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff =      7.724(CFS)
Total initial stream area =        5.200(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      255.000 to Point/Station      253.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2900.200(Ft.)
Downstream point/station elevation =  2899.100(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.724(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     7.724(CFS)
Normal flow depth in pipe =    9.30(In.)
Flow top width inside pipe =   10.02(In.)
Critical depth could not be calculated.
Pipe flow velocity =     11.81(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    10.03 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      255.000 to Point/Station      253.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.200(Ac.)
Runoff from this stream =      7.724(CFS)
Time of concentration =   10.03 min.
Rainfall intensity =     1.702(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      7.72     5.200     11.49    0.055      1.569
2      7.72     5.200     10.03    0.055      1.702
Qmax(1) =
          1.000 *    1.000 *     7.724) +
          0.919 *    1.000 *     7.724) + =      14.825
Qmax(2) =
          1.088 *    0.873 *     7.724) +
          1.000 *    1.000 *     7.724) + =      15.061

Total of 2 main streams to confluence:
Flow rates before confluence point:
       8.724       8.724
Maximum flow rates at confluence using above data:
       14.825       15.061
Area of streams before confluence:
        5.200        5.200
Effective area values after confluence:
       10.400        9.742


Results of confluence:
Total flow rate =     15.061(CFS)
Time of concentration =    10.032 min.
Effective stream area after confluence  =      9.742(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      10.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      253.000 to Point/Station      256.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2899.100(Ft.)
Downstream point/station elevation =  2898.100(Ft.)
Pipe length  =   343.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.061(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    15.061(CFS)
Normal flow depth in pipe =   20.04(In.)
Flow top width inside pipe =   23.62(In.)
Critical Depth =   16.22(In.)
Pipe flow velocity =      4.76(Ft/s)
Travel time through pipe =    1.20 min.
Time of concentration (TC) =    11.23 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      253.000 to Point/Station      256.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      9.742(Ac.)
Runoff from this stream =     15.061(CFS)
Time of concentration =   11.23 min.
Rainfall intensity =     1.590(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      257.000 to Point/Station      258.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   607.000(Ft.)
Top (of initial area) elevation =  2911.000(Ft.)
Bottom (of initial area) elevation =  2905.200(Ft.)
Difference in elevation =     5.800(Ft.)
Slope =    0.00956  s(%)=       0.96
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.002 min.
Rainfall intensity =      1.705(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff =      9.506(CFS)
Total initial stream area =        6.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      258.000 to Point/Station      256.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2900.200(Ft.)
Downstream point/station elevation =  2898.100(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.506(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     9.506(CFS)
Normal flow depth in pipe =    8.45(In.)
Flow top width inside pipe =   10.95(In.)
Critical depth could not be calculated.
Pipe flow velocity =     16.08(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =    10.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      258.000 to Point/Station      256.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.400(Ac.)
Runoff from this stream =      9.506(CFS)
Time of concentration =   10.02 min.
Rainfall intensity =     1.703(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      259.000 to Point/Station      260.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   211.000(Ft.)
Top (of initial area) elevation =  2907.000(Ft.)
Bottom (of initial area) elevation =  2905.000(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00948  s(%)=       0.95
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.565 min.
Rainfall intensity =      2.195(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.878
Subarea runoff =      2.890(CFS)
Total initial stream area =        1.500(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      260.000 to Point/Station      256.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2900.000(Ft.)
Downstream point/station elevation =  2898.100(Ft.)
Pipe length  =   215.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.890(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.890(CFS)
Normal flow depth in pipe =    8.60(In.)
Flow top width inside pipe =   10.81(In.)
Critical Depth =    8.75(In.)
Pipe flow velocity =      4.80(Ft/s)
Travel time through pipe =    0.75 min.
Time of concentration (TC) =     7.31 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      260.000 to Point/Station      256.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      1.500(Ac.)
Runoff from this stream =      2.890(CFS)
Time of concentration =    7.31 min.
Rainfall intensity =     2.058(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     15.06     9.742     11.23    0.055      1.590
2      9.51     6.400     10.02    0.055      1.703
3      2.89     1.500      7.31    0.055      2.058
Qmax(1) =
          1.000 *    1.000 *    15.061) +
          0.932 *    1.000 *     9.506) +
          0.767 *    1.000 *     2.890) + =      26.133
Qmax(2) =
          1.073 *    0.892 *    15.061) +
          1.000 *    1.000 *     9.506) +
          0.823 *    1.000 *     2.890) + =      26.308
Qmax(3) =
          1.304 *    0.651 *    15.061) +
          1.215 *    0.729 *     9.506) +
          1.000 *    1.000 *     2.890) + =      24.103

Total of 3 main streams to confluence:
Flow rates before confluence point:
      16.061      10.506       3.890
Maximum flow rates at confluence using above data:
       26.133       26.308       24.103
Area of streams before confluence:
        9.742        6.400        1.500
Effective area values after confluence:
       17.642       16.593       12.510


Results of confluence:
Total flow rate =     26.308(CFS)
Time of concentration =    10.024 min.
Effective stream area after confluence  =     16.593(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      17.64(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      256.000 to Point/Station      261.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
```

Upstream point/station elevation = 2900.300(Ft.)
Downstream point/station elevation = 2899.500(Ft.)
Pipe length = 257.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 26.308(CFS)
Nearest computed pipe diameter = 33.00(In.)
Calculated individual pipe flow = 26.308(CFS)
Normal flow depth in pipe = 24.28(In.)
Flow top width inside pipe = 29.10(In.)
Critical Depth = 20.39(In.)
Pipe flow velocity = 5.62(Ft/s)
Travel time through pipe = 0.76 min.
Time of concentration (TC) = 10.79 min.
End of computations, Total Study Area = 18.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 2D
10 YEAR STORM EVENT
FN: 2DPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 271.000 to Point/Station 272.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 607.000(Ft.)
Top (of initial area) elevation = 2911.000(Ft.)
Bottom (of initial area) elevation = 2905.200(Ft.)
Difference in elevation = 5.800(Ft.)
Slope = 0.00956 s(%)= 0.96
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.002 min.
Rainfall intensity = 1.705(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff = 9.654(CFS)
Total initial stream area = 6.500(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 272.000 to Point/Station 273.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2900.200(Ft.)
Downstream point/station elevation = 2899.700(Ft.)
Pipe length = 44.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 9.654(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 9.654(CFS)
Normal flow depth in pipe = 12.89(In.)
Flow top width inside pipe = 16.23(In.)
Critical Depth = 14.39(In.)
Pipe flow velocity = 7.13(Ft/s)
Travel time through pipe = 0.10 min.
Time of concentration (TC) = 10.11 min.

++

Process from Point/Station 272.000 to Point/Station 273.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      6.500(Ac.)
Runoff from this stream =      9.654(CFS)
Time of concentration =   10.11 min.
Rainfall intensity =     1.695(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      274.000 to Point/Station      275.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   190.000(Ft.)
Top (of initial area) elevation =  2909.500(Ft.)
Bottom (of initial area) elevation =  2905.200(Ft.)
Difference in elevation =     4.300(Ft.)
Slope =    0.02263  s(%)=       2.26
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.290 min.
Rainfall intensity =      2.499(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.880
Subarea runoff =      5.059(CFS)
Total initial stream area =        2.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      275.000 to Point/Station      273.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2900.200(Ft.)
Downstream point/station elevation =  2899.700(Ft.)
Pipe length  =   161.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.059(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     5.059(CFS)
Normal flow depth in pipe =   12.91(In.)
Flow top width inside pipe =   16.21(In.)
Critical Depth =   10.39(In.)
Pipe flow velocity =      3.73(Ft/s)
Travel time through pipe =    0.72 min.
Time of concentration (TC) =     6.01 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      275.000 to Point/Station      273.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.300(Ac.)
Runoff from this stream =      5.059(CFS)
Time of concentration =    6.01 min.
Rainfall intensity =     2.315(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      9.65     6.500     10.11    0.055      1.695
2      5.06     2.300      6.01    0.055      2.315
Qmax(1) =
          1.000 *    1.000 *     9.654) +
          0.726 *    1.000 *     5.059) + =      13.326
Qmax(2) =
          1.378 *    0.595 *     9.654) +
          1.000 *    1.000 *     5.059) + =      12.972

Total of 2 main streams to confluence:
Flow rates before confluence point:
      10.654       6.059
Maximum flow rates at confluence using above data:
       13.326       12.972
Area of streams before confluence:
        6.500        2.300
Effective area values after confluence:
        8.800        6.166


Results of confluence:
Total flow rate =     13.326(CFS)
Time of concentration =    10.105 min.
Effective stream area after confluence  =      8.800(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       8.80(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      273.000 to Point/Station      276.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2901.300(Ft.)
Downstream point/station elevation =  2900.100(Ft.)
Pipe length  =   397.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.326(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    13.326(CFS)
Normal flow depth in pipe =   17.98(In.)
Flow top width inside pipe =   25.47(In.)
Critical Depth =   15.21(In.)
Pipe flow velocity =      4.74(Ft/s)
Travel time through pipe =    1.40 min.
Time of concentration (TC) =    11.50 min.
End of computations, Total Study Area =            8.80 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

BUILDING 3

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/07/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 3A
10 YEAR STORM EVENT
FN: 3APROPRAT10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 311.000 to Point/Station 312.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 537.000(Ft.)
Top (of initial area) elevation = 2909.000(Ft.)
Bottom (of initial area) elevation = 2903.300(Ft.)
Difference in elevation = 5.700(Ft.)
Slope = 0.01061 s(%)= 1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.326 min.
Rainfall intensity = 1.778(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff = 6.050(CFS)
Total initial stream area = 3.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 312.000 to Point/Station 313.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2898.300(Ft.)
Downstream point/station elevation = 2897.500(Ft.)
Pipe length = 262.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 6.050(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 6.050(CFS)
Normal flow depth in pipe = 12.83(In.)
Flow top width inside pipe = 20.48(In.)
Critical Depth = 10.88(In.)
Pipe flow velocity = 3.93(Ft/s)
Travel time through pipe = 1.11 min.
Time of concentration (TC) = 10.44 min.

++

Process from Point/Station 312.000 to Point/Station 313.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.900(Ac.)
Runoff from this stream =      6.050(CFS)
Time of concentration =   10.44 min.
Rainfall intensity =     1.662(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      314.000 to Point/Station      315.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   537.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.01061  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.326 min.
Rainfall intensity =      1.778(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =     12.254(CFS)
Total initial stream area =        7.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2897.500(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.254(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    12.254(CFS)
Normal flow depth in pipe =   10.35(In.)
Flow top width inside pipe =   13.88(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.57(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.900(Ac.)
Runoff from this stream =     12.254(CFS)
Time of concentration =    9.34 min.
Rainfall intensity =     1.776(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      6.05     3.900     10.44    0.055      1.662
2     12.25     7.900      9.34    0.055      1.776
Qmax(1) =
          1.000 *    1.000 *     6.050) +
          0.934 *    1.000 *    12.254) + =      17.491
Qmax(2) =
          1.071 *    0.895 *     6.050) +
          1.000 *    1.000 *    12.254) + =      18.054

Total of 2 main streams to confluence:
Flow rates before confluence point:
       7.050      13.254
Maximum flow rates at confluence using above data:
       17.491       18.054
Area of streams before confluence:
        3.900        7.900
Effective area values after confluence:
       11.800       11.391


Results of confluence:
Total flow rate =     18.054(CFS)
Time of concentration =     9.344 min.
Effective stream area after confluence  =     11.391(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.80(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      316.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.500(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =   493.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.054(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    18.054(CFS)
Normal flow depth in pipe =   20.25(In.)
Flow top width inside pipe =   28.10(In.)
Critical Depth =   17.27(In.)
Pipe flow velocity =      5.12(Ft/s)
Travel time through pipe =    1.61 min.
Time of concentration (TC) =    10.95 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      316.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.391(Ac.)
Runoff from this stream =     18.054(CFS)
Time of concentration =   10.95 min.
Rainfall intensity =     1.615(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      317.000 to Point/Station      318.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   537.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.01061  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.326 min.
Rainfall intensity =      1.778(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      7.446(CFS)
Total initial stream area =        4.800(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      318.000 to Point/Station      316.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.446(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     7.446(CFS)
Normal flow depth in pipe =    6.23(In.)
Flow top width inside pipe =   11.99(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.05(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      318.000 to Point/Station      316.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      4.800(Ac.)
Runoff from this stream =      7.446(CFS)
Time of concentration =    9.34 min.
Rainfall intensity =     1.777(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      319.000 to Point/Station      320.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   278.000(Ft.)
Top (of initial area) elevation =  2907.500(Ft.)
Bottom (of initial area) elevation =  2902.700(Ft.)
Difference in elevation =     4.800(Ft.)
Slope =    0.01727  s(%)=       1.73
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.502 min.
Rainfall intensity =      2.208(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.878
Subarea runoff =      6.782(CFS)
Total initial stream area =        3.500(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      320.000 to Point/Station      321.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2898.400(Ft.)
Downstream point/station elevation =  2897.200(Ft.)
Pipe length  =   402.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.782(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     6.782(CFS)
Normal flow depth in pipe =   13.99(In.)
Flow top width inside pipe =   19.80(In.)
Critical Depth =   11.53(In.)
Pipe flow velocity =      3.98(Ft/s)
Travel time through pipe =    1.68 min.
Time of concentration (TC) =     8.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      321.000 to Point/Station      321.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     8.18 min.
Rainfall intensity =      1.923(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.874
Subarea runoff =      3.644(CFS) for    2.700(Ac.)
Total runoff =     10.426(CFS)
Effective area this stream =        6.20(Ac.)
Total Study Area (Main Stream No. 3) =       22.80(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      321.000 to Point/Station      322.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2897.200(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =   400.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.426(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    10.426(CFS)
Normal flow depth in pipe =   16.88(In.)
Flow top width inside pipe =   21.93(In.)
Critical Depth =   13.88(In.)
Pipe flow velocity =      4.42(Ft/s)
Travel time through pipe =    1.51 min.
Time of concentration (TC) =     9.69 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      321.000 to Point/Station      322.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      6.200(Ac.)
Runoff from this stream =     10.426(CFS)
Time of concentration =    9.69 min.
Rainfall intensity =     1.738(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1     18.05    11.391     10.95    0.055      1.615
2      7.45     4.800      9.34    0.055      1.777
3     10.43     6.200      9.69    0.055      1.738
Qmax(1) =
          1.000 *    1.000 *    18.054) +
          0.906 *    1.000 *     7.446) +
          0.927 *    1.000 *    10.426) + =      34.467
Qmax(2) =
          1.104 *    0.853 *    18.054) +
          1.000 *    1.000 *     7.446) +
          1.023 *    0.964 *    10.426) + =      34.721
Qmax(3) =
          1.079 *    0.885 *    18.054) +
          0.977 *    1.000 *     7.446) +
          1.000 *    1.000 *    10.426) + =      34.940

Total of 3 main streams to confluence:
Flow rates before confluence point:
      19.054       8.446      11.426
Maximum flow rates at confluence using above data:
       34.467       34.721       34.940
Area of streams before confluence:
       11.391        4.800        6.200
Effective area values after confluence:
       22.391       20.491       21.083


Results of confluence:
Total flow rate =     34.940(CFS)
Time of concentration =     9.692 min.
Effective stream area after confluence  =     21.083(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      22.39(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      316.000 to Point/Station      322.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.000(Ft.)
Downstream point/station elevation =  2895.200(Ft.)
Pipe length  =   276.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    34.940(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    34.940(CFS)
Normal flow depth in pipe =   28.69(In.)
Flow top width inside pipe =   28.97(In.)
Critical Depth =   23.03(In.)
Pipe flow velocity =      5.79(Ft/s)
Travel time through pipe =    0.79 min.
Time of concentration (TC) =    10.49 min.
End of computations, Total Study Area =           22.80 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/07/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 3B
10 YEAR STORM EVENT
FN: 3BPROPRAT10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 331.000 to Point/Station 332.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 537.000(Ft.)
Top (of initial area) elevation = 2909.000(Ft.)
Bottom (of initial area) elevation = 2903.300(Ft.)
Difference in elevation = 5.700(Ft.)
Slope = 0.01061 s(%)= 1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.326 min.
Rainfall intensity = 1.778(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff = 6.205(CFS)
Total initial stream area = 4.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 332.000 to Point/Station 333.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2898.600(Ft.)
Downstream point/station elevation = 2897.800(Ft.)
Pipe length = 261.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 6.205(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 6.205(CFS)
Normal flow depth in pipe = 13.03(In.)
Flow top width inside pipe = 20.38(In.)
Critical Depth = 11.01(In.)
Pipe flow velocity = 3.95(Ft/s)
Travel time through pipe = 1.10 min.
Time of concentration (TC) = 10.43 min.

++

Process from Point/Station 332.000 to Point/Station 333.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      4.000(Ac.)
Runoff from this stream =      6.205(CFS)
Time of concentration =   10.43 min.
Rainfall intensity =     1.663(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      334.000 to Point/Station      335.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   537.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.01061  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.326 min.
Rainfall intensity =      1.778(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =     12.254(CFS)
Total initial stream area =        7.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      335.000 to Point/Station      336.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2897.800(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.254(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    12.254(CFS)
Normal flow depth in pipe =   10.45(In.)
Flow top width inside pipe =   17.76(In.)
Critical Depth =   15.89(In.)
Pipe flow velocity =     11.51(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.35 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      335.000 to Point/Station      336.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.900(Ac.)
Runoff from this stream =     12.254(CFS)
Time of concentration =    9.35 min.
Rainfall intensity =     1.776(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      6.20     4.000     10.43    0.055      1.663
2     12.25     7.900      9.35    0.055      1.776
Qmax(1) =
          1.000 *    1.000 *     6.205) +
          0.935 *    1.000 *    12.254) + =      17.657
Qmax(2) =
          1.070 *    0.897 *     6.205) +
          1.000 *    1.000 *    12.254) + =      18.206

Total of 2 main streams to confluence:
Flow rates before confluence point:
       7.205      13.254
Maximum flow rates at confluence using above data:
       17.657       18.206
Area of streams before confluence:
        4.000        7.900
Effective area values after confluence:
       11.900       11.486


Results of confluence:
Total flow rate =     18.206(CFS)
Time of concentration =     9.347 min.
Effective stream area after confluence  =     11.486(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.90(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      333.000 to Point/Station      336.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.800(Ft.)
Downstream point/station elevation =  2896.300(Ft.)
Pipe length  =   493.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.206(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    18.206(CFS)
Normal flow depth in pipe =   20.39(In.)
Flow top width inside pipe =   28.00(In.)
Critical Depth =   17.34(In.)
Pipe flow velocity =      5.13(Ft/s)
Travel time through pipe =    1.60 min.
Time of concentration (TC) =    10.95 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      333.000 to Point/Station      336.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.486(Ac.)
Runoff from this stream =     18.206(CFS)
Time of concentration =   10.95 min.
Rainfall intensity =     1.615(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      337.000 to Point/Station      338.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   537.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.01061  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.326 min.
Rainfall intensity =      1.778(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      7.756(CFS)
Total initial stream area =        5.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      338.000 to Point/Station      336.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2896.300(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.756(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     7.756(CFS)
Normal flow depth in pipe =    6.67(In.)
Flow top width inside pipe =   11.92(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.29(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      338.000 to Point/Station      336.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.000(Ac.)
Runoff from this stream =      7.756(CFS)
Time of concentration =    9.34 min.
Rainfall intensity =     1.777(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      339.000 to Point/Station      340.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   184.000(Ft.)
Top (of initial area) elevation =  2904.500(Ft.)
Bottom (of initial area) elevation =  2902.200(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.01250  s(%)=       1.25
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.881 min.
Rainfall intensity =      2.345(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.879
Subarea runoff =      4.329(CFS)
Total initial stream area =        2.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      340.000 to Point/Station      341.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2898.400(Ft.)
Downstream point/station elevation =  2897.000(Ft.)
Pipe length  =   442.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.329(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     4.329(CFS)
Normal flow depth in pipe =   11.44(In.)
Flow top width inside pipe =   17.33(In.)
Critical Depth =    9.58(In.)
Pipe flow velocity =      3.65(Ft/s)
Travel time through pipe =    2.02 min.
Time of concentration (TC) =     7.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      341.000 to Point/Station      341.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     7.90 min.
Rainfall intensity =      1.965(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.875
Subarea runoff =      2.548(CFS) for    1.900(Ac.)
Total runoff =      6.876(CFS)
Effective area this stream =        4.00(Ac.)
Total Study Area (Main Stream No. 3) =       20.90(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      341.000 to Point/Station      336.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2897.000(Ft.)
Downstream point/station elevation =  2896.300(Ft.)
Pipe length  =   246.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.876(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     6.876(CFS)
Normal flow depth in pipe =   14.39(In.)
Flow top width inside pipe =   19.51(In.)
Critical Depth =   11.63(In.)
Pipe flow velocity =      3.92(Ft/s)
Travel time through pipe =    1.05 min.
Time of concentration (TC) =     8.94 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      341.000 to Point/Station      336.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      4.000(Ac.)
Runoff from this stream =      6.876(CFS)
Time of concentration =    8.94 min.
Rainfall intensity =     1.823(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1     18.21    11.486     10.95    0.055      1.615
2      7.76     5.000      9.34    0.055      1.777
3      6.88     4.000      8.94    0.055      1.823
Qmax(1) =
          1.000 *    1.000 *    18.206) +
          0.906 *    1.000 *     7.756) +
          0.882 *    1.000 *     6.876) + =      31.300
Qmax(2) =
          1.104 *    0.853 *    18.206) +
          1.000 *    1.000 *     7.756) +
          0.974 *    1.000 *     6.876) + =      31.589
Qmax(3) =
          1.134 *    0.817 *    18.206) +
          1.027 *    0.958 *     7.756) +
          1.000 *    1.000 *     6.876) + =      31.363

Total of 3 main streams to confluence:
Flow rates before confluence point:
      19.206       8.756       7.876
Maximum flow rates at confluence using above data:
       31.300       31.589       31.363
Area of streams before confluence:
       11.486        5.000        4.000
Effective area values after confluence:
       20.486       18.797       18.169


Results of confluence:
Total flow rate =     31.589(CFS)
Time of concentration =     9.340 min.
Effective stream area after confluence  =     18.797(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      20.49(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      336.000 to Point/Station      342.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.300(Ft.)
Downstream point/station elevation =  2894.700(Ft.)
Pipe length  =   308.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    31.589(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    31.589(CFS)
Normal flow depth in pipe =   22.92(In.)
Flow top width inside pipe =   30.40(In.)
Critical Depth =   22.46(In.)
Pipe flow velocity =      7.17(Ft/s)
Travel time through pipe =    0.72 min.
Time of concentration (TC) =    10.06 min.
End of computations, Total Study Area =           20.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/07/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 3C
10 YEAR STORM EVENT
FN: 3CPROPRAT10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 351.000 to Point/Station 352.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 602.000(Ft.)
Top (of initial area) elevation = 2909.000(Ft.)
Bottom (of initial area) elevation = 2902.600(Ft.)
Difference in elevation = 6.400(Ft.)
Slope = 0.01063 s(%)= 1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.759 min.
Rainfall intensity = 1.731(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff = 5.731(CFS)
Total initial stream area = 3.800(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 352.000 to Point/Station 353.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2897.600(Ft.)
Downstream point/station elevation = 2896.800(Ft.)
Pipe length = 262.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 5.731(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 5.731(CFS)
Normal flow depth in pipe = 14.55(In.)
Flow top width inside pipe = 14.16(In.)
Critical Depth = 11.10(In.)
Pipe flow velocity = 3.74(Ft/s)
Travel time through pipe = 1.17 min.
Time of concentration (TC) = 10.92 min.

++

Process from Point/Station 352.000 to Point/Station 353.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.800(Ac.)
Runoff from this stream =      5.731(CFS)
Time of concentration =   10.92 min.
Rainfall intensity =     1.617(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      354.000 to Point/Station      355.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   602.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2902.600(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01063  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.759 min.
Rainfall intensity =      1.731(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =     11.462(CFS)
Total initial stream area =        7.600(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      355.000 to Point/Station      353.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2897.600(Ft.)
Downstream point/station elevation =  2896.800(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.462(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    11.462(CFS)
Normal flow depth in pipe =    9.86(In.)
Flow top width inside pipe =   14.24(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.40(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.78 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      355.000 to Point/Station      353.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.600(Ac.)
Runoff from this stream =     11.462(CFS)
Time of concentration =    9.78 min.
Rainfall intensity =     1.729(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      5.73     3.800     10.92    0.055      1.617
2     11.46     7.600      9.78    0.055      1.729
Qmax(1) =
          1.000 *    1.000 *     5.731) +
          0.933 *    1.000 *    11.462) + =      16.430
Qmax(2) =
          1.071 *    0.895 *     5.731) +
          1.000 *    1.000 *    11.462) + =      16.957

Total of 2 main streams to confluence:
Flow rates before confluence point:
       6.731      12.462
Maximum flow rates at confluence using above data:
       16.430       16.957
Area of streams before confluence:
        3.800        7.600
Effective area values after confluence:
       11.400       11.001


Results of confluence:
Total flow rate =     16.957(CFS)
Time of concentration =     9.777 min.
Effective stream area after confluence  =     11.001(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      353.000 to Point/Station      356.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2896.800(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =   493.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.957(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    16.957(CFS)
Normal flow depth in pipe =   21.94(In.)
Flow top width inside pipe =   21.08(In.)
Critical Depth =   17.25(In.)
Pipe flow velocity =      4.90(Ft/s)
Travel time through pipe =    1.68 min.
Time of concentration (TC) =    11.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      353.000 to Point/Station      356.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.001(Ac.)
Runoff from this stream =     16.957(CFS)
Time of concentration =   11.45 min.
Rainfall intensity =     1.572(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      357.000 to Point/Station      358.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   602.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2902.600(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01063  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.759 min.
Rainfall intensity =      1.731(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      7.993(CFS)
Total initial stream area =        5.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      358.000 to Point/Station      356.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2897.600(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.993(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     7.993(CFS)
Normal flow depth in pipe =    6.51(In.)
Flow top width inside pipe =   11.96(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.36(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.77 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      358.000 to Point/Station      356.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.300(Ac.)
Runoff from this stream =      7.993(CFS)
Time of concentration =    9.77 min.
Rainfall intensity =     1.729(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      359.000 to Point/Station      360.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   158.000(Ft.)
Top (of initial area) elevation =  2907.500(Ft.)
Bottom (of initial area) elevation =  2904.700(Ft.)
Difference in elevation =     2.800(Ft.)
Slope =    0.01772  s(%)=       1.77
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.160 min.
Rainfall intensity =      2.536(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      5.137(CFS)
Total initial stream area =        2.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      361.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2897.400(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =   456.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.137(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     5.137(CFS)
Normal flow depth in pipe =   13.14(In.)
Flow top width inside pipe =   15.99(In.)
Critical Depth =   10.48(In.)
Pipe flow velocity =      3.72(Ft/s)
Travel time through pipe =    2.04 min.
Time of concentration (TC) =     7.20 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.000 to Point/Station      361.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     7.20 min.
Rainfall intensity =      2.076(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.876
Subarea runoff =      2.504(CFS) for    1.900(Ac.)
Total runoff =      7.641(CFS)
Effective area this stream =        4.20(Ac.)
Total Study Area (Main Stream No. 3) =       20.90(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.000 to Point/Station      356.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2896.000(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =   236.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.641(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     7.641(CFS)
Normal flow depth in pipe =   15.38(In.)
Flow top width inside pipe =   18.60(In.)
Critical Depth =   12.29(In.)
Pipe flow velocity =      4.05(Ft/s)
Travel time through pipe =    0.97 min.
Time of concentration (TC) =     8.17 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.000 to Point/Station      356.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      4.200(Ac.)
Runoff from this stream =      7.641(CFS)
Time of concentration =    8.17 min.
Rainfall intensity =     1.925(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1     16.96    11.001     11.45    0.055      1.572
2      7.99     5.300      9.77    0.055      1.729
3      7.64     4.200      8.17    0.055      1.925
Qmax(1) =
          1.000 *    1.000 *    16.957) +
          0.906 *    1.000 *     7.993) +
          0.811 *    1.000 *     7.641) + =      30.399
Qmax(2) =
          1.104 *    0.853 *    16.957) +
          1.000 *    1.000 *     7.993) +
          0.895 *    1.000 *     7.641) + =      30.800
Qmax(3) =
          1.232 *    0.714 *    16.957) +
          1.117 *    0.837 *     7.993) +
          1.000 *    1.000 *     7.641) + =      30.022

Total of 3 main streams to confluence:
Flow rates before confluence point:
      17.957       8.993       8.641
Maximum flow rates at confluence using above data:
       30.399       30.800       30.022
Area of streams before confluence:
       11.001        5.300        4.200
Effective area values after confluence:
       20.501       18.885       16.484


Results of confluence:
Total flow rate =     30.800(CFS)
Time of concentration =     9.772 min.
Effective stream area after confluence  =     18.885(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      20.50(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      356.000 to Point/Station      362.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2900.900(Ft.)
Downstream point/station elevation =  2899.200(Ft.)
Pipe length  =   554.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    30.800(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    30.800(CFS)
Normal flow depth in pipe =   25.13(In.)
Flow top width inside pipe =   33.06(In.)
Critical Depth =   21.57(In.)
Pipe flow velocity =      5.85(Ft/s)
Travel time through pipe =    1.58 min.
Time of concentration (TC) =    11.35 min.
End of computations, Total Study Area =           20.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/07/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 3D
10 YEAR STORM EVENT
FN: 3DPROPRAT10.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 371.000 to Point/Station 372.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 602.000(Ft.)
Top (of initial area) elevation = 2909.000(Ft.)
Bottom (of initial area) elevation = 2902.600(Ft.)
Difference in elevation = 6.400(Ft.)
Slope = 0.01063 s(%)= 1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.759 min.
Rainfall intensity = 1.731(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff = 5.731(CFS)
Total initial stream area = 3.800(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 372.000 to Point/Station 373.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2897.600(Ft.)
Downstream point/station elevation = 2896.800(Ft.)
Pipe length = 261.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 5.731(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 5.731(CFS)
Normal flow depth in pipe = 14.53(In.)
Flow top width inside pipe = 14.20(In.)
Critical Depth = 11.10(In.)
Pipe flow velocity = 3.75(Ft/s)
Travel time through pipe = 1.16 min.
Time of concentration (TC) = 10.92 min.

++

Process from Point/Station 372.000 to Point/Station 373.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.800(Ac.)
Runoff from this stream =      5.731(CFS)
Time of concentration =   10.92 min.
Rainfall intensity =     1.618(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      374.000 to Point/Station      375.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   602.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2902.600(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01063  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.759 min.
Rainfall intensity =      1.731(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =     11.613(CFS)
Total initial stream area =        7.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      375.000 to Point/Station      373.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2897.600(Ft.)
Downstream point/station elevation =  2896.800(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.613(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    11.613(CFS)
Normal flow depth in pipe =    9.95(In.)
Flow top width inside pipe =   14.18(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.44(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.78 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      375.000 to Point/Station      373.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.700(Ac.)
Runoff from this stream =     11.613(CFS)
Time of concentration =    9.78 min.
Rainfall intensity =     1.729(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      5.73     3.800     10.92    0.055      1.618
2     11.61     7.700      9.78    0.055      1.729
Qmax(1) =
          1.000 *    1.000 *     5.731) +
          0.934 *    1.000 *    11.613) + =      16.575
Qmax(2) =
          1.071 *    0.896 *     5.731) +
          1.000 *    1.000 *    11.613) + =      17.109

Total of 2 main streams to confluence:
Flow rates before confluence point:
       6.731      12.613
Maximum flow rates at confluence using above data:
       16.575       17.109
Area of streams before confluence:
        3.800        7.700
Effective area values after confluence:
       11.500       11.103


Results of confluence:
Total flow rate =     17.109(CFS)
Time of concentration =     9.777 min.
Effective stream area after confluence  =     11.103(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.50(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      373.000 to Point/Station      376.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.800(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =   493.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.109(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    17.109(CFS)
Normal flow depth in pipe =   19.50(In.)
Flow top width inside pipe =   28.62(In.)
Critical Depth =   16.80(In.)
Pipe flow velocity =      5.07(Ft/s)
Travel time through pipe =    1.62 min.
Time of concentration (TC) =    11.40 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      373.000 to Point/Station      376.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.103(Ac.)
Runoff from this stream =     17.109(CFS)
Time of concentration =   11.40 min.
Rainfall intensity =     1.576(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      377.000 to Point/Station      378.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   602.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2902.600(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01063  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.759 min.
Rainfall intensity =      1.731(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      7.088(CFS)
Total initial stream area =        4.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      378.000 to Point/Station      376.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.600(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.088(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     7.088(CFS)
Normal flow depth in pipe =    6.06(In.)
Flow top width inside pipe =   12.00(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.84(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.77 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      378.000 to Point/Station      376.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      4.700(Ac.)
Runoff from this stream =      7.088(CFS)
Time of concentration =    9.77 min.
Rainfall intensity =     1.729(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      379.000 to Point/Station      380.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   109.000(Ft.)
Top (of initial area) elevation =  2904.600(Ft.)
Bottom (of initial area) elevation =  2902.700(Ft.)
Difference in elevation =     1.900(Ft.)
Slope =    0.01743  s(%)=       1.74
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.463 min.
Rainfall intensity =      2.767(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff =      3.418(CFS)
Total initial stream area =        1.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      380.000 to Point/Station      381.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.200(Ft.)
Downstream point/station elevation =  2896.200(Ft.)
Pipe length  =   316.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.418(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.418(CFS)
Normal flow depth in pipe =   11.55(In.)
Flow top width inside pipe =   12.62(In.)
Critical Depth =    8.94(In.)
Pipe flow velocity =      3.37(Ft/s)
Travel time through pipe =    1.56 min.
Time of concentration (TC) =     6.03 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      381.000 to Point/Station      381.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     6.03 min.
Rainfall intensity =      2.311(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff =      3.282(CFS) for    1.900(Ac.)
Total runoff =      6.700(CFS)
Effective area this stream =        3.30(Ac.)
Total Study Area (Main Stream No. 3) =       19.50(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      381.000 to Point/Station      376.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.200(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =   309.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.700(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     6.700(CFS)
Normal flow depth in pipe =   13.99(In.)
Flow top width inside pipe =   19.80(In.)
Critical Depth =   11.47(In.)
Pipe flow velocity =      3.93(Ft/s)
Travel time through pipe =    1.31 min.
Time of concentration (TC) =     7.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      381.000 to Point/Station      376.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      3.300(Ac.)
Runoff from this stream =      6.700(CFS)
Time of concentration =    7.34 min.
Rainfall intensity =     2.054(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1     17.11    11.103     11.40    0.055      1.576
2      7.09     4.700      9.77    0.055      1.729
3      6.70     3.300      7.34    0.055      2.054
Qmax(1) =
          1.000 *    1.000 *    17.109) +
          0.909 *    1.000 *     7.088) +
          0.761 *    1.000 *     6.700) + =      28.652
Qmax(2) =
          1.100 *    0.857 *    17.109) +
          1.000 *    1.000 *     7.088) +
          0.838 *    1.000 *     6.700) + =      28.838
Qmax(3) =
          1.314 *    0.644 *    17.109) +
          1.194 *    0.751 *     7.088) +
          1.000 *    1.000 *     6.700) + =      27.516

Total of 3 main streams to confluence:
Flow rates before confluence point:
      18.109       8.088       7.700
Maximum flow rates at confluence using above data:
       28.652       28.838       27.516
Area of streams before confluence:
       11.103        4.700        3.300
Effective area values after confluence:
       19.103       17.519       13.973


Results of confluence:
Total flow rate =     28.838(CFS)
Time of concentration =     9.773 min.
Effective stream area after confluence  =     17.519(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      19.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      376.000 to Point/Station      382.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2899.100(Ft.)
Downstream point/station elevation =  2897.800(Ft.)
Pipe length  =   429.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    28.838(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    28.838(CFS)
Normal flow depth in pipe =   26.77(In.)
Flow top width inside pipe =   25.84(In.)
Critical Depth =   21.42(In.)
Pipe flow velocity =      5.59(Ft/s)
Travel time through pipe =    1.28 min.
Time of concentration (TC) =    11.05 min.
End of computations, Total Study Area =           19.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

BUILDING 4

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/08/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 4A
10 YEAR STORM EVENT
FN: 4APROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 411.000 to Point/Station 412.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 516.000(Ft.)
Top (of initial area) elevation = 2916.500(Ft.)
Bottom (of initial area) elevation = 2910.600(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01143 s(%)= 1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.043 min.
Rainfall intensity = 1.811(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff = 4.269(CFS)
Total initial stream area = 2.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 412.000 to Point/Station 413.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.600(Ft.)
Downstream point/station elevation = 2904.700(Ft.)
Pipe length = 299.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.269(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 4.269(CFS)
Normal flow depth in pipe = 11.53(In.)
Flow top width inside pipe = 17.27(In.)
Critical Depth = 9.49(In.)
Pipe flow velocity = 3.57(Ft/s)
Travel time through pipe = 1.40 min.
Time of concentration (TC) = 10.44 min.

++

Process from Point/Station 412.000 to Point/Station 413.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      2.700(Ac.)
Runoff from this stream =      4.269(CFS)
Time of concentration =   10.44 min.
Rainfall intensity =     1.662(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      414.000 to Point/Station      415.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   516.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.600(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01143  s(%)=       1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.043 min.
Rainfall intensity =      1.811(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      8.379(CFS)
Total initial stream area =        5.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      415.000 to Point/Station      413.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2905.600(Ft.)
Downstream point/station elevation =  2904.700(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.379(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     8.379(CFS)
Normal flow depth in pipe =   10.52(In.)
Flow top width inside pipe =   17.74(In.)
Critical Depth =   13.46(In.)
Pipe flow velocity =      7.80(Ft/s)
Travel time through pipe =    0.13 min.
Time of concentration (TC) =     9.17 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      415.000 to Point/Station      413.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.300(Ac.)
Runoff from this stream =      8.379(CFS)
Time of concentration =    9.17 min.
Rainfall intensity =     1.797(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      4.27     2.700     10.44    0.055      1.662
2      8.38     5.300      9.17    0.055      1.797
Qmax(1) =
          1.000 *    1.000 *     4.269) +
          0.923 *    1.000 *     8.379) + =      12.001
Qmax(2) =
          1.084 *    0.878 *     4.269) +
          1.000 *    1.000 *     8.379) + =      12.443

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.269       9.379
Maximum flow rates at confluence using above data:
       12.001       12.443
Area of streams before confluence:
        2.700        5.300
Effective area values after confluence:
        8.000        7.672


Results of confluence:
Total flow rate =     12.443(CFS)
Time of concentration =     9.169 min.
Effective stream area after confluence  =      7.672(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       8.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      413.000 to Point/Station      416.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.700(Ft.)
Downstream point/station elevation =  2903.300(Ft.)
Pipe length  =   479.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.443(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    12.443(CFS)
Normal flow depth in pipe =   17.34(In.)
Flow top width inside pipe =   25.88(In.)
Critical Depth =   14.68(In.)
Pipe flow velocity =      4.61(Ft/s)
Travel time through pipe =    1.73 min.
Time of concentration (TC) =    10.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      413.000 to Point/Station      416.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      7.672(Ac.)
Runoff from this stream =     12.443(CFS)
Time of concentration =   10.90 min.
Rainfall intensity =     1.620(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      417.000 to Point/Station      418.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   516.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.600(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01143  s(%)=       1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.043 min.
Rainfall intensity =      1.811(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      5.850(CFS)
Total initial stream area =        3.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      418.000 to Point/Station      416.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2905.600(Ft.)
Downstream point/station elevation =  2903.300(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.850(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     5.850(CFS)
Normal flow depth in pipe =    8.36(In.)
Flow top width inside pipe =   11.04(In.)
Critical depth could not be calculated.
Pipe flow velocity =     10.02(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     9.14 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      418.000 to Point/Station      416.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.700(Ac.)
Runoff from this stream =      5.850(CFS)
Time of concentration =    9.14 min.
Rainfall intensity =     1.800(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     12.44     7.672     10.90    0.055      1.620
2      5.85     3.700      9.14    0.055      1.800
Qmax(1) =
          1.000 *    1.000 *    12.443) +
          0.897 *    1.000 *     5.850) + =      17.688
Qmax(2) =
          1.115 *    0.839 *    12.443) +
          1.000 *    1.000 *     5.850) + =      17.488

Total of 2 main streams to confluence:
Flow rates before confluence point:
      13.443       6.850
Maximum flow rates at confluence using above data:
       17.688       17.488
Area of streams before confluence:
        7.672        3.700
Effective area values after confluence:
       11.372       10.134


Results of confluence:
Total flow rate =     17.688(CFS)
Time of concentration =    10.899 min.
Effective stream area after confluence  =     11.372(Ac.)
```

```
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.37(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      416.000 to Point/Station      419.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2903.300(Ft.)
Downstream point/station elevation =  2902.800(Ft.)
Pipe length  =   148.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.688(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    17.688(CFS)
Normal flow depth in pipe =   21.70(In.)
Flow top width inside pipe =   21.44(In.)
Critical Depth =   17.63(In.)
Pipe flow velocity =      5.16(Ft/s)
Travel time through pipe =    0.48 min.
Time of concentration (TC) =    11.38 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      416.000 to Point/Station      419.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.372(Ac.)
Runoff from this stream =     17.688(CFS)
Time of concentration =   11.38 min.
Rainfall intensity =     1.578(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      420.000 to Point/Station      421.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   154.000(Ft.)
Top (of initial area) elevation =  2918.500(Ft.)
Bottom (of initial area) elevation =  2914.000(Ft.)
Difference in elevation =     4.500(Ft.)
Slope =    0.02922  s(%)=       2.92
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.621 min.
Rainfall intensity =      2.710(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff =      6.452(CFS)
Total initial stream area =        2.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      421.000 to Point/Station      422.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2909.000(Ft.)
Downstream point/station elevation =  2903.200(Ft.)
Pipe length  =   371.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.452(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     6.452(CFS)
```

```
Normal flow depth in pipe =   10.14(In.)
Flow top width inside pipe =   14.04(In.)
Critical Depth =   12.28(In.)
Pipe flow velocity =      7.31(Ft/s)
Travel time through pipe =    0.85 min.
Time of concentration (TC) =     5.47 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      422.000 to Point/Station      422.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     5.47 min.
Rainfall intensity =      2.450(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.880
Subarea runoff =      6.051(CFS) for    3.100(Ac.)
Total runoff =     12.503(CFS)
Effective area this stream =        5.80(Ac.)
Total Study Area (Main Stream No. 2) =       17.50(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      422.000 to Point/Station      419.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2903.200(Ft.)
Downstream point/station elevation =  2902.800(Ft.)
Pipe length  =   126.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.503(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    12.503(CFS)
Normal flow depth in pipe =   19.27(In.)
Flow top width inside pipe =   19.10(In.)
Critical Depth =   15.24(In.)
Pipe flow velocity =      4.62(Ft/s)
Travel time through pipe =    0.45 min.
Time of concentration (TC) =     5.92 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      422.000 to Point/Station      419.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.800(Ac.)
Runoff from this stream =     12.503(CFS)
Time of concentration =    5.92 min.
Rainfall intensity =     2.335(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     17.69    11.372     11.38    0.055      1.578
2     12.50     5.800      5.92    0.055      2.335
Qmax(1) =
          1.000 *    1.000 *    17.688) +
          0.668 *    1.000 *    12.503) + =      26.040
Qmax(2) =
          1.497 *    0.520 *    17.688) +
          1.000 *    1.000 *    12.503) + =      26.284
```

```
Total of 2 main streams to confluence:
Flow rates before confluence point:
      18.688      13.503
Maximum flow rates at confluence using above data:
       26.040       26.284
Area of streams before confluence:
       11.372        5.800
Effective area values after confluence:
       17.172       11.718


Results of confluence:
Total flow rate =     26.284(CFS)
Time of concentration =     5.921 min.
Effective stream area after confluence  =     11.718(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      17.17(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      419.000 to Point/Station      423.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2902.800(Ft.)
Downstream point/station elevation =  2902.400(Ft.)
Pipe length  =   149.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.284(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    26.284(CFS)
Normal flow depth in pipe =   25.92(In.)
Flow top width inside pipe =   27.09(In.)
Critical Depth =   20.39(In.)
Pipe flow velocity =      5.25(Ft/s)
Travel time through pipe =    0.47 min.
Time of concentration (TC) =     6.39 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      423.000 to Point/Station      423.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     6.39 min.
Rainfall intensity =      2.230(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.878
Subarea runoff =      4.296(CFS) for    3.900(Ac.)
Total runoff =     30.580(CFS)
Effective area this stream =       15.62(Ac.)
Total Study Area (Main Stream No. 1) =       21.40(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      423.000 to Point/Station      424.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2902.400(Ft.)
Downstream point/station elevation =  2901.300(Ft.)
Pipe length  =    97.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    30.580(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    30.580(CFS)
Normal flow depth in pipe =   20.53(In.)
Flow top width inside pipe =   23.05(In.)
Critical Depth =   22.93(In.)
Pipe flow velocity =      9.42(Ft/s)
Travel time through pipe =    0.17 min.
```

Time of concentration (TC) = 6.57 min.
End of computations, Total Study Area = 21.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/08/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 4B
10 YEAR STORM EVENT
FN: 4BPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 431.000 to Point/Station 432.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 516.000(Ft.)
Top (of initial area) elevation = 2916.500(Ft.)
Bottom (of initial area) elevation = 2910.600(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01143 s(%)= 1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.043 min.
Rainfall intensity = 1.811(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff = 4.269(CFS)
Total initial stream area = 2.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 432.000 to Point/Station 433.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.600(Ft.)
Downstream point/station elevation = 2904.700(Ft.)
Pipe length = 299.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.269(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 4.269(CFS)
Normal flow depth in pipe = 11.53(In.)
Flow top width inside pipe = 17.27(In.)
Critical Depth = 9.49(In.)
Pipe flow velocity = 3.57(Ft/s)
Travel time through pipe = 1.40 min.
Time of concentration (TC) = 10.44 min.

++

Process from Point/Station 432.000 to Point/Station 433.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      2.700(Ac.)
Runoff from this stream =      4.269(CFS)
Time of concentration =   10.44 min.
Rainfall intensity =     1.662(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      434.000 to Point/Station      435.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   516.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.600(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01143  s(%)=       1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.043 min.
Rainfall intensity =      1.811(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      8.379(CFS)
Total initial stream area =        5.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      435.000 to Point/Station      433.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2905.600(Ft.)
Downstream point/station elevation =  2904.700(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.379(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     8.379(CFS)
Normal flow depth in pipe =   10.52(In.)
Flow top width inside pipe =   17.74(In.)
Critical Depth =   13.46(In.)
Pipe flow velocity =      7.80(Ft/s)
Travel time through pipe =    0.13 min.
Time of concentration (TC) =     9.17 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      435.000 to Point/Station      433.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.300(Ac.)
Runoff from this stream =      8.379(CFS)
Time of concentration =    9.17 min.
Rainfall intensity =     1.797(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      4.27     2.700     10.44    0.055      1.662
2      8.38     5.300      9.17    0.055      1.797
Qmax(1) =
          1.000 *    1.000 *     4.269) +
          0.923 *    1.000 *     8.379) + =      12.001
Qmax(2) =
          1.084 *    0.878 *     4.269) +
          1.000 *    1.000 *     8.379) + =      12.443

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.269       9.379
Maximum flow rates at confluence using above data:
       12.001       12.443
Area of streams before confluence:
        2.700        5.300
Effective area values after confluence:
        8.000        7.672


Results of confluence:
Total flow rate =     12.443(CFS)
Time of concentration =     9.169 min.
Effective stream area after confluence  =      7.672(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       8.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      433.000 to Point/Station      436.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.700(Ft.)
Downstream point/station elevation =  2903.300(Ft.)
Pipe length  =   479.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.443(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    12.443(CFS)
Normal flow depth in pipe =   17.34(In.)
Flow top width inside pipe =   25.88(In.)
Critical Depth =   14.68(In.)
Pipe flow velocity =      4.61(Ft/s)
Travel time through pipe =    1.73 min.
Time of concentration (TC) =    10.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      433.000 to Point/Station      436.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      7.672(Ac.)
Runoff from this stream =     12.443(CFS)
Time of concentration =   10.90 min.
Rainfall intensity =     1.620(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      437.000 to Point/Station      438.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   516.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.600(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01143  s(%)=       1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.043 min.
Rainfall intensity =      1.811(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      5.850(CFS)
Total initial stream area =        3.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      438.000 to Point/Station      436.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2905.600(Ft.)
Downstream point/station elevation =  2903.300(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.850(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     5.850(CFS)
Normal flow depth in pipe =    8.36(In.)
Flow top width inside pipe =   11.04(In.)
Critical depth could not be calculated.
Pipe flow velocity =     10.02(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     9.14 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      438.000 to Point/Station      436.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.700(Ac.)
Runoff from this stream =      5.850(CFS)
Time of concentration =    9.14 min.
Rainfall intensity =     1.800(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     12.44     7.672     10.90    0.055      1.620
2      5.85     3.700      9.14    0.055      1.800
Qmax(1) =
          1.000 *    1.000 *    12.443) +
          0.897 *    1.000 *     5.850) + =      17.688
Qmax(2) =
          1.115 *    0.839 *    12.443) +
          1.000 *    1.000 *     5.850) + =      17.488

Total of 2 main streams to confluence:
Flow rates before confluence point:
      13.443       6.850
Maximum flow rates at confluence using above data:
       17.688       17.488
Area of streams before confluence:
        7.672        3.700
Effective area values after confluence:
       11.372       10.134


Results of confluence:
Total flow rate =     17.688(CFS)
Time of concentration =    10.899 min.
Effective stream area after confluence  =     11.372(Ac.)
```

```
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.37(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      436.000 to Point/Station      439.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2903.300(Ft.)
Downstream point/station elevation =  2902.200(Ft.)
Pipe length  =   143.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.688(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    17.688(CFS)
Normal flow depth in pipe =   17.67(In.)
Flow top width inside pipe =   21.15(In.)
Critical Depth =   18.19(In.)
Pipe flow velocity =      7.14(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =    11.23 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      436.000 to Point/Station      439.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.372(Ac.)
Runoff from this stream =     17.688(CFS)
Time of concentration =   11.23 min.
Rainfall intensity =     1.590(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      440.000 to Point/Station      441.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   150.000(Ft.)
Top (of initial area) elevation =  2911.700(Ft.)
Bottom (of initial area) elevation =  2909.700(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.01333  s(%)=       1.33
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.350 min.
Rainfall intensity =      2.482(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.880
Subarea runoff =      6.772(CFS)
Total initial stream area =        3.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      441.000 to Point/Station      442.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.700(Ft.)
Downstream point/station elevation =  2902.400(Ft.)
Pipe length  =   745.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.772(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     6.772(CFS)
```

```
Normal flow depth in pipe =   13.80(In.)
Flow top width inside pipe =   19.93(In.)
Critical Depth =   11.53(In.)
Pipe flow velocity =      4.04(Ft/s)
Travel time through pipe =    3.08 min.
Time of concentration (TC) =     8.43 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      442.000 to Point/Station      442.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     8.43 min.
Rainfall intensity =      1.890(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.874
Subarea runoff =      1.816(CFS) for    2.100(Ac.)
Total runoff =      8.588(CFS)
Effective area this stream =        5.20(Ac.)
Total Study Area (Main Stream No. 2) =       16.90(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      442.000 to Point/Station      439.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2902.400(Ft.)
Downstream point/station elevation =  2902.200(Ft.)
Pipe length  =    93.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.588(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =     8.588(CFS)
Normal flow depth in pipe =   16.52(In.)
Flow top width inside pipe =   22.23(In.)
Critical Depth =   12.54(In.)
Pipe flow velocity =      3.73(Ft/s)
Travel time through pipe =    0.42 min.
Time of concentration (TC) =     8.84 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      442.000 to Point/Station      439.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.200(Ac.)
Runoff from this stream =      8.588(CFS)
Time of concentration =    8.84 min.
Rainfall intensity =     1.836(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     17.69    11.372     11.23    0.055      1.590
2      8.59     5.200      8.84    0.055      1.836
Qmax(1) =
          1.000 *    1.000 *    17.688) +
          0.862 *    1.000 *     8.588) + =      25.092
Qmax(2) =
          1.160 *    0.787 *    17.688) +
          1.000 *    1.000 *     8.588) + =      24.739
```

```
Total of 2 main streams to confluence:
Flow rates before confluence point:
      18.688       9.588
Maximum flow rates at confluence using above data:
       25.092       24.739
Area of streams before confluence:
       11.372        5.200
Effective area values after confluence:
       16.572       14.151


Results of confluence:
Total flow rate =     25.092(CFS)
Time of concentration =    11.233 min.
Effective stream area after confluence  =     16.572(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      16.57(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      439.000 to Point/Station      443.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2902.200(Ft.)
Downstream point/station elevation =  2901.700(Ft.)
Pipe length  =   154.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.092(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    25.092(CFS)
Normal flow depth in pipe =   23.02(In.)
Flow top width inside pipe =   30.32(In.)
Critical Depth =   19.93(In.)
Pipe flow velocity =      5.68(Ft/s)
Travel time through pipe =    0.45 min.
Time of concentration (TC) =    11.68 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      443.000 to Point/Station      443.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =    11.68 min.
Rainfall intensity =      1.553(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.868
Subarea runoff =      2.381(CFS) for    3.800(Ac.)
Total runoff =     27.473(CFS)
Effective area this stream =       20.37(Ac.)
Total Study Area (Main Stream No. 1) =       20.70(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      443.000 to Point/Station      444.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2901.700(Ft.)
Downstream point/station elevation =  2899.500(Ft.)
Pipe length  =    75.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    27.473(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    27.473(CFS)
Normal flow depth in pipe =   14.93(In.)
Flow top width inside pipe =   23.27(In.)
Critical Depth =   21.81(In.)
Pipe flow velocity =     13.38(Ft/s)
Travel time through pipe =    0.09 min.
```

Time of concentration (TC) = 11.78 min.
End of computations, Total Study Area = 20.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/08/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 4C
10 YEAR STORM EVENT
FN: 4CPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 451.000 to Point/Station 452.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 569.000(Ft.)
Top (of initial area) elevation = 2916.500(Ft.)
Bottom (of initial area) elevation = 2910.600(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01037 s(%)= 1.04
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.589 min.
Rainfall intensity = 1.749(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff = 5.641(CFS)
Total initial stream area = 3.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 452.000 to Point/Station 453.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.100(Ft.)
Downstream point/station elevation = 2904.300(Ft.)
Pipe length = 260.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 5.641(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 5.641(CFS)
Normal flow depth in pipe = 14.25(In.)
Flow top width inside pipe = 14.62(In.)
Critical Depth = 10.98(In.)
Pipe flow velocity = 3.76(Ft/s)
Travel time through pipe = 1.15 min.
Time of concentration (TC) = 10.74 min.

++

Process from Point/Station 452.000 to Point/Station 453.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.700(Ac.)
Runoff from this stream =      5.641(CFS)
Time of concentration =   10.74 min.
Rainfall intensity =     1.634(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      454.000 to Point/Station      455.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   569.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.100(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01125  s(%)=       1.12
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.434 min.
Rainfall intensity =      1.766(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =     11.397(CFS)
Total initial stream area =        7.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      455.000 to Point/Station      453.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2905.100(Ft.)
Downstream point/station elevation =  2904.300(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.397(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    11.397(CFS)
Normal flow depth in pipe =   11.17(In.)
Flow top width inside pipe =   13.08(In.)
Critical depth could not be calculated.
Pipe flow velocity =     11.63(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.46 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      455.000 to Point/Station      453.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.400(Ac.)
Runoff from this stream =     11.397(CFS)
Time of concentration =    9.46 min.
Rainfall intensity =     1.763(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)
```

```
1      5.64     3.700     10.74    0.055      1.634
2     11.40     7.400      9.46    0.055      1.763
Qmax(1) =
          1.000 *    1.000 *     5.641) +
          0.924 *    1.000 *    11.397) + =      16.177
Qmax(2) =
          1.082 *    0.881 *     5.641) +
          1.000 *    1.000 *    11.397) + =      16.773

Total of 2 main streams to confluence:
Flow rates before confluence point:
       6.641      12.397
Maximum flow rates at confluence using above data:
       16.177       16.773
Area of streams before confluence:
        3.700        7.400
Effective area values after confluence:
       11.100       10.660


Results of confluence:
Total flow rate =     16.773(CFS)
Time of concentration =     9.464 min.
Effective stream area after confluence  =     10.660(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      453.000 to Point/Station      456.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.300(Ft.)
Downstream point/station elevation =  2902.900(Ft.)
Pipe length  =   463.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.773(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    16.773(CFS)
Normal flow depth in pipe =   21.75(In.)
Flow top width inside pipe =   21.37(In.)
Critical Depth =   17.15(In.)
Pipe flow velocity =      4.88(Ft/s)
Travel time through pipe =    1.58 min.
Time of concentration (TC) =    11.04 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      453.000 to Point/Station      456.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.660(Ac.)
Runoff from this stream =     16.773(CFS)
Time of concentration =   11.04 min.
Rainfall intensity =     1.607(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      457.000 to Point/Station      458.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   569.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.100(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01125  s(%)=       1.12
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.434 min.
Rainfall intensity =      1.766(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      7.238(CFS)
Total initial stream area =        4.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      458.000 to Point/Station      456.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2905.100(Ft.)
Downstream point/station elevation =  2902.900(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.238(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     7.238(CFS)
Normal flow depth in pipe =    6.22(In.)
Flow top width inside pipe =   11.99(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.63(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      458.000 to Point/Station      456.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      4.700(Ac.)
Runoff from this stream =      7.238(CFS)
Time of concentration =    9.45 min.
Rainfall intensity =     1.764(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      459.000 to Point/Station      460.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   157.000(Ft.)
Top (of initial area) elevation =  2918.500(Ft.)
Bottom (of initial area) elevation =  2914.500(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.02548  s(%)=       2.55
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.786 min.
Rainfall intensity =      2.653(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      6.315(CFS)
Total initial stream area =        2.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      460.000 to Point/Station      461.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2909.500(Ft.)
Downstream point/station elevation =  2903.600(Ft.)
Pipe length  =   490.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.315(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     6.315(CFS)
Normal flow depth in pipe =   11.04(In.)
Flow top width inside pipe =   13.22(In.)
Critical Depth =   12.16(In.)
Pipe flow velocity =      6.53(Ft/s)
Travel time through pipe =    1.25 min.
Time of concentration (TC) =     6.04 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      461.000 to Point/Station      461.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     6.04 min.
Rainfall intensity =      2.308(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff =      5.449(CFS) for    3.100(Ac.)
Total runoff =     11.764(CFS)
Effective area this stream =        5.80(Ac.)
Total Study Area (Main Stream No. 3) =       21.60(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      461.000 to Point/Station      456.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2903.600(Ft.)
Downstream point/station elevation =  2902.900(Ft.)
Pipe length  =   219.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.764(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    11.764(CFS)
Normal flow depth in pipe =   18.14(In.)
Flow top width inside pipe =   20.62(In.)
Critical Depth =   14.78(In.)
Pipe flow velocity =      4.62(Ft/s)
Travel time through pipe =    0.79 min.
Time of concentration (TC) =     6.83 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      461.000 to Point/Station      456.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      5.800(Ac.)
Runoff from this stream =     11.764(CFS)
Time of concentration =    6.83 min.
Rainfall intensity =     2.144(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1     16.77    10.660     11.04    0.055      1.607
2      7.24     4.700      9.45    0.055      1.764
3     11.76     5.800      6.83    0.055      2.144
Qmax(1) =
          1.000 *    1.000 *    16.773) +
          0.908 *    1.000 *     7.238) +
          0.743 *    1.000 *    11.764) + =      32.081
Qmax(2) =
          1.102 *    0.855 *    16.773) +
          1.000 *    1.000 *     7.238) +
          0.818 *    1.000 *    11.764) + =      32.671
Qmax(3) =
          1.346 *    0.618 *    16.773) +
          1.222 *    0.723 *     7.238) +
          1.000 *    1.000 *    11.764) + =      32.116

Total of 3 main streams to confluence:
Flow rates before confluence point:
      17.773       8.238      12.764
Maximum flow rates at confluence using above data:
       32.081       32.671       32.116
Area of streams before confluence:
       10.660        4.700        5.800
Effective area values after confluence:
       21.160       19.619       15.786


Results of confluence:
Total flow rate =     32.671(CFS)
Time of concentration =     9.448 min.
Effective stream area after confluence  =     19.619(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      21.16(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      456.000 to Point/Station      462.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2906.600(Ft.)
Downstream point/station elevation =  2905.100(Ft.)
Pipe length  =   516.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    32.671(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    32.671(CFS)
Normal flow depth in pipe =   26.91(In.)
Flow top width inside pipe =   31.28(In.)
Critical Depth =   22.25(In.)
Pipe flow velocity =      5.76(Ft/s)
Travel time through pipe =    1.49 min.
Time of concentration (TC) =    10.94 min.
End of computations, Total Study Area =           21.60 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/08/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 4D
10 YEAR STORM EVENT
FN: 4DPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 471.000 to Point/Station 472.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 569.000(Ft.)
Top (of initial area) elevation = 2916.500(Ft.)
Bottom (of initial area) elevation = 2910.100(Ft.)
Difference in elevation = 6.400(Ft.)
Slope = 0.01125 s(%)= 1.12
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.434 min.
Rainfall intensity = 1.766(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff = 5.698(CFS)
Total initial stream area = 3.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 472.000 to Point/Station 473.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.100(Ft.)
Downstream point/station elevation = 2904.300(Ft.)
Pipe length = 260.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 5.698(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 5.698(CFS)
Normal flow depth in pipe = 14.41(In.)
Flow top width inside pipe = 14.38(In.)
Critical Depth = 11.05(In.)
Pipe flow velocity = 3.76(Ft/s)
Travel time through pipe = 1.15 min.
Time of concentration (TC) = 10.59 min.

++

Process from Point/Station 472.000 to Point/Station 473.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.700(Ac.)
Runoff from this stream =      5.698(CFS)
Time of concentration =   10.59 min.
Rainfall intensity =     1.648(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      474.000 to Point/Station      475.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   569.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.100(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01125  s(%)=       1.12
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.434 min.
Rainfall intensity =      1.766(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =     11.397(CFS)
Total initial stream area =        7.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      475.000 to Point/Station      473.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2905.100(Ft.)
Downstream point/station elevation =  2904.300(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.397(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    11.397(CFS)
Normal flow depth in pipe =   11.17(In.)
Flow top width inside pipe =   13.08(In.)
Critical depth could not be calculated.
Pipe flow velocity =     11.63(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.46 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      475.000 to Point/Station      473.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.400(Ac.)
Runoff from this stream =     11.397(CFS)
Time of concentration =    9.46 min.
Rainfall intensity =     1.763(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)
```

```
1      5.70     3.700     10.59    0.055      1.648
2     11.40     7.400      9.46    0.055      1.763
Qmax(1) =
          1.000 *    1.000 *     5.698) +
          0.933 *    1.000 *    11.397) + =      16.330
Qmax(2) =
          1.072 *    0.894 *     5.698) +
          1.000 *    1.000 *    11.397) + =      16.857

Total of 2 main streams to confluence:
Flow rates before confluence point:
       6.698      12.397
Maximum flow rates at confluence using above data:
       16.330       16.857
Area of streams before confluence:
        3.700        7.400
Effective area values after confluence:
       11.100       10.708


Results of confluence:
Total flow rate =     16.857(CFS)
Time of concentration =     9.464 min.
Effective stream area after confluence  =     10.708(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      473.000 to Point/Station      476.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.300(Ft.)
Downstream point/station elevation =  2902.900(Ft.)
Pipe length  =   463.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.857(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    16.857(CFS)
Normal flow depth in pipe =   21.89(In.)
Flow top width inside pipe =   21.15(In.)
Critical Depth =   17.19(In.)
Pipe flow velocity =      4.88(Ft/s)
Travel time through pipe =    1.58 min.
Time of concentration (TC) =    11.04 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      473.000 to Point/Station      476.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.708(Ac.)
Runoff from this stream =     16.857(CFS)
Time of concentration =   11.04 min.
Rainfall intensity =     1.607(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      477.000 to Point/Station      478.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   569.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.100(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01125  s(%)=       1.12
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.434 min.
Rainfall intensity =      1.766(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      7.238(CFS)
Total initial stream area =        4.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      478.000 to Point/Station      476.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2905.100(Ft.)
Downstream point/station elevation =  2902.900(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.238(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     7.238(CFS)
Normal flow depth in pipe =    6.22(In.)
Flow top width inside pipe =   11.99(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.63(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      476.000 to Point/Station      476.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     9.45 min.
Rainfall intensity =      1.764(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.872
Subarea runoff =      3.532(CFS) for    2.300(Ac.)
Total runoff =     10.771(CFS)
Effective area this stream =        7.00(Ac.)
Total Study Area (Main Stream No. 2) =       18.10(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      476.000 to Point/Station      476.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.000(Ac.)
Runoff from this stream =     10.771(CFS)
Time of concentration =    9.45 min.
Rainfall intensity =     1.764(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     16.86    10.708     11.04    0.055      1.607
2     10.77     7.000      9.45    0.055      1.764
```

```
Qmax(1) =
          1.000 *    1.000 *    16.857) +
          0.908 *    1.000 *    10.771) + =      26.634
Qmax(2) =
          1.102 *    0.855 *    16.857) +
          1.000 *    1.000 *    10.771) + =      26.657

Total of 2 main streams to confluence:
Flow rates before confluence point:
      17.857      11.771
Maximum flow rates at confluence using above data:
       26.634       26.657
Area of streams before confluence:
       10.708        7.000
Effective area values after confluence:
       17.708       16.160


Results of confluence:
Total flow rate =     26.657(CFS)
Time of concentration =     9.448 min.
Effective stream area after confluence  =     16.160(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      17.71(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      476.000 to Point/Station      479.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.800(Ft.)
Downstream point/station elevation =  2903.600(Ft.)
Pipe length  =   386.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.657(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    26.657(CFS)
Normal flow depth in pipe =   24.56(In.)
Flow top width inside pipe =   28.79(In.)
Critical Depth =   20.55(In.)
Pipe flow velocity =      5.62(Ft/s)
Travel time through pipe =    1.14 min.
Time of concentration (TC) =    10.59 min.
End of computations, Total Study Area =           18.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

BUILDING 5

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/09/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 5A
10 YEAR STORM EVENT
FN: 5APROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 511.000 to Point/Station 512.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 671.000(Ft.)
Top (of initial area) elevation = 2910.000(Ft.)
Bottom (of initial area) elevation = 2902.700(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01088 s(%)= 1.09
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.145 min.
Rainfall intensity = 1.691(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff = 7.509(CFS)
Total initial stream area = 5.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 512.000 to Point/Station 513.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2897.700(Ft.)
Downstream point/station elevation = 2896.900(Ft.)
Pipe length = 273.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 7.509(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 7.509(CFS)
Normal flow depth in pipe = 15.23(In.)
Flow top width inside pipe = 18.74(In.)
Critical Depth = 12.19(In.)
Pipe flow velocity = 4.02(Ft/s)
Travel time through pipe = 1.13 min.
Time of concentration (TC) = 11.28 min.

++

Process from Point/Station 512.000 to Point/Station 513.000

**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area = 5.100(Ac.)
Runoff from this stream = 7.509(CFS)
Time of concentration = 11.28 min.
Rainfall intensity = 1.587(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2

++

Process from Point/Station 514.000 to Point/Station 515.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 675.000(Ft.)
Top (of initial area) elevation = 2910.000(Ft.)
Bottom (of initial area) elevation = 2902.700(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01081 s(%)= 1.08
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.181 min.
Rainfall intensity = 1.687(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff = 7.345(CFS)
Total initial stream area = 5.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 515.000 to Point/Station 513.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2897.700(Ft.)
Downstream point/station elevation = 2896.900(Ft.)
Pipe length = 60.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 7.345(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 7.345(CFS)
Normal flow depth in pipe = 12.09(In.)
Flow top width inside pipe = 11.86(In.)
Critical Depth = 12.97(In.)
Pipe flow velocity = 6.93(Ft/s)
Travel time through pipe = 0.14 min.
Time of concentration (TC) = 10.33 min.

++

Process from Point/Station 515.000 to Point/Station 513.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area = 5.000(Ac.)
Runoff from this stream = 7.345(CFS)
Time of concentration = 10.33 min.
Rainfall intensity = 1.673(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)

```
1      7.51     5.100     11.28    0.055      1.587
2      7.35     5.000     10.33    0.055      1.673
Qmax(1) =
          1.000 *    1.000 *     7.509) +
          0.947 *    1.000 *     7.345) + =      14.463
Qmax(2) =
          1.056 *    0.916 *     7.509) +
          1.000 *    1.000 *     7.345) + =      14.608

Total of 2 main streams to confluence:
Flow rates before confluence point:
       8.509       8.345
Maximum flow rates at confluence using above data:
       14.463       14.608
Area of streams before confluence:
        5.100        5.000
Effective area values after confluence:
       10.100        9.670


Results of confluence:
Total flow rate =     14.608(CFS)
Time of concentration =    10.325 min.
Effective stream area after confluence  =      9.670(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      10.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      513.000 to Point/Station      516.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.900(Ft.)
Downstream point/station elevation =  2895.800(Ft.)
Pipe length  =   374.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.608(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    14.608(CFS)
Normal flow depth in pipe =   19.48(In.)
Flow top width inside pipe =   24.21(In.)
Critical Depth =   15.97(In.)
Pipe flow velocity =      4.76(Ft/s)
Travel time through pipe =    1.31 min.
Time of concentration (TC) =    11.64 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      513.000 to Point/Station      516.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      9.670(Ac.)
Runoff from this stream =     14.608(CFS)
Time of concentration =   11.64 min.
Rainfall intensity =     1.557(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      517.000 to Point/Station      518.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   515.000(Ft.)
Top (of initial area) elevation =  2908.600(Ft.)
Bottom (of initial area) elevation =  2904.600(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.00777  s(%)=       0.78
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.762 min.
Rainfall intensity =      1.730(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff =      9.198(CFS)
Total initial stream area =        6.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      518.000 to Point/Station      516.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2899.600(Ft.)
Downstream point/station elevation =  2895.800(Ft.)
Pipe length  =   438.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.198(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     9.198(CFS)
Normal flow depth in pipe =   13.88(In.)
Flow top width inside pipe =   15.13(In.)
Critical Depth =   14.08(In.)
Pipe flow velocity =      6.30(Ft/s)
Travel time through pipe =    1.16 min.
Time of concentration (TC) =    10.92 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      518.000 to Point/Station      516.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.100(Ac.)
Runoff from this stream =      9.198(CFS)
Time of concentration =   10.92 min.
Rainfall intensity =     1.617(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     14.61     9.670     11.64    0.055      1.557
2      9.20     6.100     10.92    0.055      1.617
Qmax(1) =
          1.000 *    1.000 *    14.608) +
          0.961 *    1.000 *     9.198) + =      23.451
Qmax(2) =
          1.040 *    0.939 *    14.608) +
          1.000 *    1.000 *     9.198) + =      23.460

Total of 2 main streams to confluence:
Flow rates before confluence point:
      15.608      10.198
Maximum flow rates at confluence using above data:
       23.451       23.460
Area of streams before confluence:
        9.670        6.100
Effective area values after confluence:
       15.770       15.177


Results of confluence:
Total flow rate =     23.460(CFS)
Time of concentration =    10.922 min.
Effective stream area after confluence  =     15.177(Ac.)
```

```
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      15.77(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      516.000 to Point/Station      519.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2895.900(Ft.)
Downstream point/station elevation =  2895.200(Ft.)
Pipe length  =   186.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    23.460(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    23.460(CFS)
Normal flow depth in pipe =   22.95(In.)
Flow top width inside pipe =   25.45(In.)
Critical Depth =   19.78(In.)
Pipe flow velocity =      5.82(Ft/s)
Travel time through pipe =    0.53 min.
Time of concentration (TC) =    11.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      519.000 to Point/Station      519.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =    11.45 min.
Rainfall intensity =      1.572(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.869
Subarea runoff =      6.958(CFS) for    7.100(Ac.)
Total runoff =     30.418(CFS)
Effective area this stream =       22.28(Ac.)
Total Study Area (Main Stream No. 1) =       23.30(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      519.000 to Point/Station      520.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2895.200(Ft.)
Downstream point/station elevation =  2895.100(Ft.)
Pipe length  =    53.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    30.418(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    30.418(CFS)
Normal flow depth in pipe =   27.56(In.)
Flow top width inside pipe =   35.51(In.)
Critical Depth =   20.93(In.)
Pipe flow velocity =      4.85(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    11.64 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      520.000 to Point/Station      521.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2895.300(Ft.)
Downstream point/station elevation =  2894.800(Ft.)
Pipe length  =   157.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    30.418(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    30.418(CFS)
Normal flow depth in pipe =   24.54(In.)
Flow top width inside pipe =   33.54(In.)
```

Critical Depth = 21.46(In.)
Pipe flow velocity = 5.93(Ft/s)
Travel time through pipe = 0.44 min.
Time of concentration (TC) = 12.08 min.
End of computations, Total Study Area = 23.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/09/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 5B
10 YEAR STORM EVENT
FN: 5BPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 531.000 to Point/Station 532.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 671.000(Ft.)
Top (of initial area) elevation = 2910.000(Ft.)
Bottom (of initial area) elevation = 2902.700(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01088 s(%)= 1.09
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.145 min.
Rainfall intensity = 1.691(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff = 7.509(CFS)
Total initial stream area = 5.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 532.000 to Point/Station 533.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2897.700(Ft.)
Downstream point/station elevation = 2896.900(Ft.)
Pipe length = 257.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 7.509(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 7.509(CFS)
Normal flow depth in pipe = 14.86(In.)
Flow top width inside pipe = 19.10(In.)
Critical Depth = 12.19(In.)
Pipe flow velocity = 4.12(Ft/s)
Travel time through pipe = 1.04 min.
Time of concentration (TC) = 11.18 min.

++

Process from Point/Station 534.000 to Point/Station 533.000

**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 11.18 min.
Rainfall intensity = 1.595(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified rational method)(Q=KCIA) is C = 0.869
Subarea runoff = 13.695(CFS) for 10.200(Ac.)
Total runoff = 21.204(CFS)
Effective area this stream = 15.30(Ac.)
Total Study Area (Main Stream No. 1) = 15.30(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++
Process from Point/Station 533.000 to Point/Station 536.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2896.900(Ft.)
Downstream point/station elevation = 2895.500(Ft.)
Pipe length = 476.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 21.204(CFS)
Nearest computed pipe diameter = 30.00(In.)
Calculated individual pipe flow = 21.204(CFS)
Normal flow depth in pipe = 23.44(In.)
Flow top width inside pipe = 24.80(In.)
Critical Depth = 18.77(In.)
Pipe flow velocity = 5.16(Ft/s)
Travel time through pipe = 1.54 min.
Time of concentration (TC) = 12.72 min.

++
Process from Point/Station 537.000 to Point/Station 538.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 12.72 min.
Rainfall intensity = 1.476(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified rational method)(Q=KCIA) is C = 0.867
Subarea runoff = 19.600(CFS) for 16.600(Ac.)
Total runoff = 40.804(CFS)
Effective area this stream = 31.90(Ac.)
Total Study Area (Main Stream No. 1) = 31.90(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++
Process from Point/Station 538.000 to Point/Station 536.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area = 31.900(Ac.)
Runoff from this stream = 40.804(CFS)
Time of concentration = 12.72 min.
Rainfall intensity = 1.476(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      539.000 to Point/Station      540.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   648.000(Ft.)
Top (of initial area) elevation =  2909.500(Ft.)
Bottom (of initial area) elevation =  2904.900(Ft.)
Difference in elevation =     4.600(Ft.)
Slope =    0.00710  s(%)=       0.71
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.896 min.
Rainfall intensity =      1.620(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.870
Subarea runoff =      5.071(CFS)
Total initial stream area =        3.600(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      540.000 to Point/Station      541.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2899.900(Ft.)
Downstream point/station elevation =  2899.800(Ft.)
Pipe length  =    41.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.071(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     5.071(CFS)
Normal flow depth in pipe =   14.39(In.)
Flow top width inside pipe =   14.41(In.)
Critical Depth =   10.39(In.)
Pipe flow velocity =      3.35(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =    11.10 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      541.000 to Point/Station      541.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =    11.10 min.
Rainfall intensity =      1.602(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.869
Subarea runoff =      2.030(CFS) for    1.500(Ac.)
Total runoff =      7.101(CFS)
Effective area this stream =        5.10(Ac.)
Total Study Area (Main Stream No. 2) =       37.00(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      541.000 to Point/Station      536.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2899.800(Ft.)
Downstream point/station elevation =  2895.500(Ft.)
Pipe length  =   885.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.101(CFS)
```

```
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     7.101(CFS)
Normal flow depth in pipe =   14.30(In.)
Flow top width inside pipe =   14.55(In.)
Critical Depth =   12.39(In.)
Pipe flow velocity =      4.72(Ft/s)
Travel time through pipe =    3.12 min.
Time of concentration (TC) =    14.22 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      541.000 to Point/Station      536.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.100(Ac.)
Runoff from this stream =      7.101(CFS)
Time of concentration =   14.22 min.
Rainfall intensity =     1.380(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     40.80    31.900     12.72    0.055      1.476
2      7.10     5.100     14.22    0.055      1.380
Qmax(1) =
          1.000 *    1.000 *    40.804) +
          1.072 *    0.894 *     7.101) + =      47.613
Qmax(2) =
          0.933 *    1.000 *    40.804) +
          1.000 *    1.000 *     7.101) + =      45.158

Total of 2 main streams to confluence:
Flow rates before confluence point:
      41.804       8.101
Maximum flow rates at confluence using above data:
       47.613       45.158
Area of streams before confluence:
       31.900        5.100
Effective area values after confluence:
       36.461       37.000


Results of confluence:
Total flow rate =     47.613(CFS)
Time of concentration =    12.721 min.
Effective stream area after confluence  =     36.461(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      37.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      536.000 to Point/Station      542.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2895.700(Ft.)
Downstream point/station elevation =  2895.200(Ft.)
Pipe length  =   183.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    47.613(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    47.613(CFS)
Normal flow depth in pipe =   31.31(In.)
Flow top width inside pipe =   36.59(In.)
Critical Depth =   25.82(In.)
Pipe flow velocity =      6.19(Ft/s)
Travel time through pipe =    0.49 min.
Time of concentration (TC) =    13.21 min.
End of computations, Total Study Area =           37.00 (Ac.)
The following figures may
```

be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/09/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 5C
10 YEAR STORM EVENT
FN: 5CPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 551.000 to Point/Station 552.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 606.000(Ft.)
Top (of initial area) elevation = 2910.000(Ft.)
Bottom (of initial area) elevation = 2903.300(Ft.)
Difference in elevation = 6.700(Ft.)
Slope = 0.01106 s(%)= 1.11
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.708 min.
Rainfall intensity = 1.736(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff = 6.052(CFS)
Total initial stream area = 4.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 552.000 to Point/Station 553.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2898.300(Ft.)
Downstream point/station elevation = 2897.500(Ft.)
Pipe length = 258.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 6.052(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 6.052(CFS)
Normal flow depth in pipe = 12.77(In.)
Flow top width inside pipe = 20.50(In.)
Critical Depth = 10.88(In.)
Pipe flow velocity = 3.95(Ft/s)
Travel time through pipe = 1.09 min.
Time of concentration (TC) = 10.80 min.

++

Process from Point/Station 552.000 to Point/Station 553.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      4.000(Ac.)
Runoff from this stream =      6.052(CFS)
Time of concentration =   10.80 min.
Rainfall intensity =     1.629(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      554.000 to Point/Station      555.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   606.000(Ft.)
Top (of initial area) elevation =  2910.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     6.700(Ft.)
Slope =    0.01106  s(%)=       1.11
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.708 min.
Rainfall intensity =      1.736(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      7.716(CFS)
Total initial stream area =        5.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      555.000 to Point/Station      553.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2897.500(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.716(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     7.716(CFS)
Normal flow depth in pipe =    8.48(In.)
Flow top width inside pipe =   14.87(In.)
Critical Depth =   13.21(In.)
Pipe flow velocity =     10.79(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.74 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      555.000 to Point/Station      553.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.100(Ac.)
Runoff from this stream =      7.716(CFS)
Time of concentration =    9.74 min.
Rainfall intensity =     1.732(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      556.000 to Point/Station      557.000
```

```
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   308.000(Ft.)
Top (of initial area) elevation =  2910.000(Ft.)
Bottom (of initial area) elevation =  2905.900(Ft.)
Difference in elevation =     4.100(Ft.)
Slope =    0.01331  s(%)=       1.33
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.136 min.
Rainfall intensity =      2.088(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff =      7.137(CFS)
Total initial stream area =        3.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      557.000 to Point/Station      553.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  2900.900(Ft.)
Downstream point/station elevation =  2897.500(Ft.)
Pipe length  =   149.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.137(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     7.137(CFS)
Normal flow depth in pipe =    9.53(In.)
Flow top width inside pipe =   14.44(In.)
Critical Depth =   12.82(In.)
Pipe flow velocity =      8.68(Ft/s)
Travel time through pipe =    0.29 min.
Time of concentration (TC) =     7.42 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      557.000 to Point/Station      553.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      3.900(Ac.)
Runoff from this stream =      7.137(CFS)
Time of concentration =    7.42 min.
Rainfall intensity =     2.039(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      6.05     4.000     10.80    0.055      1.629
2      7.72     5.100      9.74    0.055      1.732
3      7.14     3.900      7.42    0.055      2.039
Qmax(1) =
          1.000 *    1.000 *     6.052) +
          0.938 *    1.000 *     7.716) +
          0.793 *    1.000 *     7.137) + =      18.951
Qmax(2) =
          1.066 *    0.902 *     6.052) +
          1.000 *    1.000 *     7.716) +
          0.845 *    1.000 *     7.137) + =      19.569
Qmax(3) =
          1.261 *    0.687 *     6.052) +
          1.183 *    0.762 *     7.716) +
```

```
          1.000 *    1.000 *     7.137) + =      19.338

Total of 3 main streams to confluence:
Flow rates before confluence point:
       7.052       8.716       8.137
Maximum flow rates at confluence using above data:
       18.951       19.569       19.338
Area of streams before confluence:
        4.000        5.100        3.900
Effective area values after confluence:
       13.000       12.609       10.536


Results of confluence:
Total flow rate =     19.569(CFS)
Time of concentration =     9.741 min.
Effective stream area after confluence  =     12.609(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      13.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      553.000 to Point/Station      558.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2899.200(Ft.)
Downstream point/station elevation =  2897.800(Ft.)
Pipe length  =   480.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    19.569(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    19.569(CFS)
Normal flow depth in pipe =   21.91(In.)
Flow top width inside pipe =   26.62(In.)
Critical Depth =   18.02(In.)
Pipe flow velocity =      5.09(Ft/s)
Travel time through pipe =    1.57 min.
Time of concentration (TC) =    11.31 min.
End of computations, Total Study Area =           13.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/09/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 5D
10 YEAR STORM EVENT
FN: 5DPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 571.000 to Point/Station 572.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 606.000(Ft.)
Top (of initial area) elevation = 2910.000(Ft.)
Bottom (of initial area) elevation = 2902.700(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01205 s(%)= 1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.543 min.
Rainfall intensity = 1.754(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff = 6.117(CFS)
Total initial stream area = 4.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 572.000 to Point/Station 573.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2898.300(Ft.)
Downstream point/station elevation = 2897.500(Ft.)
Pipe length = 258.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 6.117(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 6.117(CFS)
Normal flow depth in pipe = 12.87(In.)
Flow top width inside pipe = 20.46(In.)
Critical Depth = 10.94(In.)
Pipe flow velocity = 3.96(Ft/s)
Travel time through pipe = 1.09 min.
Time of concentration (TC) = 10.63 min.

++

Process from Point/Station 572.000 to Point/Station 573.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      4.000(Ac.)
Runoff from this stream =      6.117(CFS)
Time of concentration =   10.63 min.
Rainfall intensity =     1.644(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      574.000 to Point/Station      575.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   606.000(Ft.)
Top (of initial area) elevation =  2910.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     6.700(Ft.)
Slope =    0.01106  s(%)=       1.11
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.708 min.
Rainfall intensity =      1.736(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =     11.953(CFS)
Total initial stream area =        7.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      575.000 to Point/Station      573.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2897.500(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.953(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    11.953(CFS)
Normal flow depth in pipe =   11.65(In.)
Flow top width inside pipe =   12.50(In.)
Critical depth could not be calculated.
Pipe flow velocity =     11.69(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.74 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      575.000 to Point/Station      573.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.900(Ac.)
Runoff from this stream =     11.953(CFS)
Time of concentration =    9.74 min.
Rainfall intensity =     1.733(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      6.12     4.000     10.63    0.055      1.644
2     11.95     7.900      9.74    0.055      1.733
Qmax(1) =
          1.000 *    1.000 *     6.117) +
          0.947 *    1.000 *    11.953) + =      17.438
Qmax(2) =
          1.056 *    0.916 *     6.117) +
          1.000 *    1.000 *    11.953) + =      17.870

Total of 2 main streams to confluence:
Flow rates before confluence point:
       7.117      12.953
Maximum flow rates at confluence using above data:
       17.438       17.870
Area of streams before confluence:
        4.000        7.900
Effective area values after confluence:
       11.900       11.565


Results of confluence:
Total flow rate =     17.870(CFS)
Time of concentration =     9.738 min.
Effective stream area after confluence  =     11.565(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.90(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      573.000 to Point/Station      576.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.500(Ft.)
Downstream point/station elevation =  2896.100(Ft.)
Pipe length  =   475.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.870(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    17.870(CFS)
Normal flow depth in pipe =   20.34(In.)
Flow top width inside pipe =   28.03(In.)
Critical Depth =   17.18(In.)
Pipe flow velocity =      5.04(Ft/s)
Travel time through pipe =    1.57 min.
Time of concentration (TC) =    11.31 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      577.000 to Point/Station      578.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =    11.31 min.
Rainfall intensity =      1.584(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.869
Subarea runoff =     18.969(CFS) for   15.200(Ac.)
Total runoff =     36.838(CFS)
Effective area this stream =       26.76(Ac.)
Total Study Area (Main Stream No. 1) =       27.10(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      576.000 to Point/Station      579.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.100(Ft.)
```

```
Downstream point/station elevation =  2894.200(Ft.)
Pipe length  =   626.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    36.838(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    36.838(CFS)
Normal flow depth in pipe =   26.63(In.)
Flow top width inside pipe =   36.30(In.)
Critical Depth =   23.13(In.)
Pipe flow velocity =      6.11(Ft/s)
Travel time through pipe =    1.71 min.
Time of concentration (TC) =    13.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      576.000 to Point/Station      579.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     26.765(Ac.)
Runoff from this stream =     36.838(CFS)
Time of concentration =   13.02 min.
Rainfall intensity =     1.456(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      580.000 to Point/Station      581.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   350.000(Ft.)
Top (of initial area) elevation =  2909.500(Ft.)
Bottom (of initial area) elevation =  2907.600(Ft.)
Difference in elevation =     1.900(Ft.)
Slope =    0.00543  s(%)=       0.54
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.986 min.
Rainfall intensity =      1.818(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      2.222(CFS)
Total initial stream area =        1.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      581.000 to Point/Station      579.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2902.600(Ft.)
Downstream point/station elevation =  2894.200(Ft.)
Pipe length  =   139.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.222(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.222(CFS)
Normal flow depth in pipe =    4.75(In.)
Flow top width inside pipe =    8.99(In.)
Critical Depth =    8.02(In.)
Pipe flow velocity =      9.41(Ft/s)
Travel time through pipe =    0.25 min.
Time of concentration (TC) =     9.23 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      581.000 to Point/Station      579.000
```

**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area = 1.400(Ac.)
Runoff from this stream = 2.222(CFS)
Time of concentration = 9.23 min.
Rainfall intensity = 1.789(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	36.84	26.765	13.02	0.055	1.456
2	2.22	1.400	9.23	0.055	1.789

Qmax(1) =
1.000 * 1.000 * 36.838) +
0.808 * 1.000 * 2.222) + = 38.633
Qmax(2) =
1.238 * 0.709 * 36.838) +
1.000 * 1.000 * 2.222) + = 34.564

Total of 2 main streams to confluence:
Flow rates before confluence point:
37.838 3.222
Maximum flow rates at confluence using above data:
38.633 34.564
Area of streams before confluence:
26.765 1.400
Effective area values after confluence:
28.165 20.383

Results of confluence:
Total flow rate = 38.633(CFS)
Time of concentration = 13.017 min.
Effective stream area after confluence = 28.165(Ac.)
Study area average Pervious fraction(Ap) = 0.100
Study area average soil loss rate(Fm) = 0.055(In/Hr)
Study area total = 28.16(Ac.)

++
Process from Point/Station 579.000 to Point/Station 582.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2901.300(Ft.)
Downstream point/station elevation = 2900.900(Ft.)
Pipe length = 139.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 38.633(CFS)
Nearest computed pipe diameter = 39.00(In.)
Calculated individual pipe flow = 38.633(CFS)
Normal flow depth in pipe = 28.17(In.)
Flow top width inside pipe = 34.93(In.)
Critical Depth = 23.70(In.)
Pipe flow velocity = 6.02(Ft/s)
Travel time through pipe = 0.39 min.
Time of concentration (TC) = 13.40 min.
End of computations, Total Study Area = 28.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

BUILDING 6

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 6A
10 YEAR STORM EVENT
FN: 6APROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 611.000 to Point/Station 612.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 645.000(Ft.)
Top (of initial area) elevation = 2915.900(Ft.)
Bottom (of initial area) elevation = 2908.600(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01132 s(%)= 1.13
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.907 min.
Rainfall intensity = 1.715(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff = 10.608(CFS)
Total initial stream area = 7.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 612.000 to Point/Station 613.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2903.600(Ft.)
Downstream point/station elevation = 2902.200(Ft.)
Pipe length = 470.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.608(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 10.608(CFS)
Normal flow depth in pipe = 17.13(In.)
Flow top width inside pipe = 21.69(In.)
Critical Depth = 14.01(In.)
Pipe flow velocity = 4.42(Ft/s)
Travel time through pipe = 1.77 min.
Time of concentration (TC) = 11.68 min.

++
Process from Point/Station 612.000 to Point/Station 613.000

**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 7.100(Ac.)
Runoff from this stream = 10.608(CFS)
Time of concentration = 11.68 min.
Rainfall intensity = 1.554(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000

++
Process from Point/Station 614.000 to Point/Station 615.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 642.000(Ft.)
Top (of initial area) elevation = 2915.900(Ft.)
Bottom (of initial area) elevation = 2908.600(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01137 s(%)= 1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.879 min.
Rainfall intensity = 1.718(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff = 11.824(CFS)
Total initial stream area = 7.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 615.000 to Point/Station 613.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2903.600(Ft.)
Downstream point/station elevation = 2902.200(Ft.)
Pipe length = 15.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 11.824(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 11.824(CFS)
Normal flow depth in pipe = 8.37(In.)
Flow top width inside pipe = 14.90(In.)
Critical depth could not be calculated.
Pipe flow velocity = 16.80(Ft/s)
Travel time through pipe = 0.01 min.
Time of concentration (TC) = 9.89 min.

++
Process from Point/Station 615.000 to Point/Station 613.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
Stream flow area = 7.900(Ac.)
Runoff from this stream = 11.824(CFS)
Time of concentration = 9.89 min.
Rainfall intensity = 1.716(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	10.61	7.100	11.68	0.055	1.554
2	11.82	7.900	9.89	0.055	1.716

```
Qmax(1) =
          1.000 *    1.000 *    10.608) +
          0.902 *    1.000 *    11.824) + =      21.275
Qmax(2) =
          1.108 *    0.847 *    10.608) +
          1.000 *    1.000 *    11.824) + =      21.786

Total of 2 streams to confluence:
Flow rates before confluence point:
      10.608      11.824
Maximum flow rates at confluence using above data:
       21.275       21.786
Area of streams before confluence:
        7.100        7.900
Effective area values after confluence:
       15.000       13.915
Results of confluence:
Total flow rate =     21.786(CFS)
Time of concentration =     9.894 min.
Effective stream area after confluence =     13.915(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =      15.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      613.000 to Point/Station      616.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2902.200(Ft.)
Downstream point/station elevation =  2902.000(Ft.)
Pipe length  =    68.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.786(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    21.786(CFS)
Normal flow depth in pipe =   24.05(In.)
Flow top width inside pipe =   23.93(In.)
Critical Depth =   19.05(In.)
Pipe flow velocity =      5.17(Ft/s)
Travel time through pipe =    0.22 min.
Time of concentration (TC) =    10.11 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      613.000 to Point/Station      616.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     13.915(Ac.)
Runoff from this stream =     21.786(CFS)
Time of concentration =   10.11 min.
Rainfall intensity =     1.694(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      617.000 to Point/Station      618.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   259.000(Ft.)
Top (of initial area) elevation =  2913.300(Ft.)
Bottom (of initial area) elevation =  2910.500(Ft.)
Difference in elevation =     2.800(Ft.)
Slope =    0.01081  s(%)=       1.08
```

```
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.941 min.
Rainfall intensity =      2.123(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.877
Subarea runoff =      5.584(CFS)
Total initial stream area =        3.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      618.000 to Point/Station      619.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2905.500(Ft.)
Downstream point/station elevation =  2903.200(Ft.)
Pipe length  =   255.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.584(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     5.584(CFS)
Normal flow depth in pipe =   11.23(In.)
Flow top width inside pipe =   13.02(In.)
Critical Depth =   11.48(In.)
Pipe flow velocity =      5.66(Ft/s)
Travel time through pipe =    0.75 min.
Time of concentration (TC) =     7.69 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      618.000 to Point/Station      619.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      3.000(Ac.)
Runoff from this stream =      5.584(CFS)
Time of concentration =    7.69 min.
Rainfall intensity =     1.996(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      620.000 to Point/Station      621.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   255.000(Ft.)
Top (of initial area) elevation =  2912.700(Ft.)
Bottom (of initial area) elevation =  2908.900(Ft.)
Difference in elevation =     3.800(Ft.)
Slope =    0.01490  s(%)=       1.49
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.469 min.
Rainfall intensity =      2.215(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.878
Subarea runoff =      5.832(CFS)
Total initial stream area =        3.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      621.000 to Point/Station      619.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2903.900(Ft.)
Downstream point/station elevation =  2903.200(Ft.)
Pipe length  =   247.00(Ft.)   Manning's N = 0.013
```

```
No. of pipes = 1  Required pipe flow  =     5.832(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     5.832(CFS)
Normal flow depth in pipe =   12.84(In.)
Flow top width inside pipe =   20.47(In.)
Critical Depth =   10.67(In.)
Pipe flow velocity =      3.78(Ft/s)
Travel time through pipe =    1.09 min.
Time of concentration (TC) =     7.56 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      621.000 to Point/Station      619.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      3.000(Ac.)
Runoff from this stream =      5.832(CFS)
Time of concentration =    7.56 min.
Rainfall intensity =     2.017(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      5.58     3.000      7.69    0.055      1.996
2      5.83     3.000      7.56    0.055      2.017
Qmax(1) =
          1.000 *    1.000 *     5.584) +
          0.989 *    1.000 *     5.832) + =      11.353
Qmax(2) =
          1.011 *    0.983 *     5.584) +
          1.000 *    1.000 *     5.832) + =      11.378

Total of 2 streams to confluence:
Flow rates before confluence point:
       5.584       5.832
Maximum flow rates at confluence using above data:
       11.353       11.378
Area of streams before confluence:
        3.000        3.000
Effective area values after confluence:
        6.000        5.948
Results of confluence:
Total flow rate =     11.378(CFS)
Time of concentration =     7.557 min.
Effective stream area after confluence =      5.948(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       6.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      619.000 to Point/Station      616.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2903.200(Ft.)
Downstream point/station elevation =  2902.000(Ft.)
Pipe length  =   342.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.378(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    11.378(CFS)
Normal flow depth in pipe =   16.99(In.)
Flow top width inside pipe =   21.82(In.)
Critical Depth =   14.53(In.)
Pipe flow velocity =      4.79(Ft/s)
Travel time through pipe =    1.19 min.
Time of concentration (TC) =     8.75 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      619.000 to Point/Station      616.000
```

**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area = 5.948(Ac.)
Runoff from this stream = 11.378(CFS)
Time of concentration = 8.75 min.
Rainfall intensity = 1.848(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	21.79	13.915	10.11	0.055	1.694
2	11.38	5.948	8.75	0.055	1.848

Qmax(1) =
1.000 * 1.000 * 21.786) +
0.914 * 1.000 * 11.378) + = 32.186
Qmax(2) =
1.094 * 0.865 * 21.786) +
1.000 * 1.000 * 11.378) + = 31.992

Total of 2 main streams to confluence:
Flow rates before confluence point:
22.786 12.378
Maximum flow rates at confluence using above data:
32.186 31.992
Area of streams before confluence:
13.915 5.948
Effective area values after confluence:
19.862 17.982

Results of confluence:
Total flow rate = 32.186(CFS)
Time of concentration = 10.114 min.
Effective stream area after confluence = 19.862(Ac.)
Study area average Pervious fraction(Ap) = 0.100
Study area average soil loss rate(Fm) = 0.055(In/Hr)
Study area total = 19.86(Ac.)

++
Process from Point/Station 616.000 to Point/Station 622.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2901.800(Ft.)
Downstream point/station elevation = 2900.400(Ft.)
Pipe length = 461.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 32.186(CFS)
Nearest computed pipe diameter = 36.00(In.)
Calculated individual pipe flow = 32.186(CFS)
Normal flow depth in pipe = 26.11(In.)
Flow top width inside pipe = 32.14(In.)
Critical Depth = 22.08(In.)
Pipe flow velocity = 5.86(Ft/s)
Travel time through pipe = 1.31 min.
Time of concentration (TC) = 11.42 min.
End of computations, Total Study Area = 21.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 6B
10 YEAR STORM EVENT
FN: 6BPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 631.000 to Point/Station 632.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 645.000(Ft.)
Top (of initial area) elevation = 2915.900(Ft.)
Bottom (of initial area) elevation = 2908.600(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01132 s(%)= 1.13
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.907 min.
Rainfall intensity = 1.715(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff = 10.608(CFS)
Total initial stream area = 7.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 632.000 to Point/Station 633.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2903.600(Ft.)
Downstream point/station elevation = 2902.100(Ft.)
Pipe length = 485.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.608(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 10.608(CFS)
Normal flow depth in pipe = 16.90(In.)
Flow top width inside pipe = 21.91(In.)
Critical Depth = 14.01(In.)
Pipe flow velocity = 4.49(Ft/s)
Travel time through pipe = 1.80 min.
Time of concentration (TC) = 11.71 min.

++

Process from Point/Station 632.000 to Point/Station 633.000

**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 7.100(Ac.)
Runoff from this stream = 10.608(CFS)
Time of concentration = 11.71 min.
Rainfall intensity = 1.551(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000

++
Process from Point/Station 634.000 to Point/Station 635.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 645.000(Ft.)
Top (of initial area) elevation = 2915.900(Ft.)
Bottom (of initial area) elevation = 2908.600(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01132 s(%)= 1.13
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.907 min.
Rainfall intensity = 1.715(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff = 14.941(CFS)
Total initial stream area = 10.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 635.000 to Point/Station 633.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2903.600(Ft.)
Downstream point/station elevation = 2902.100(Ft.)
Pipe length = 21.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 14.941(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 14.941(CFS)
Normal flow depth in pipe = 10.78(In.)
Flow top width inside pipe = 13.49(In.)
Critical depth could not be calculated.
Pipe flow velocity = 15.84(Ft/s)
Travel time through pipe = 0.02 min.
Time of concentration (TC) = 9.93 min.

++
Process from Point/Station 635.000 to Point/Station 633.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
Stream flow area = 10.000(Ac.)
Runoff from this stream = 14.941(CFS)
Time of concentration = 9.93 min.
Rainfall intensity = 1.713(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	10.61	7.100	11.71	0.055	1.551
2	14.94	10.000	9.93	0.055	1.713

```
Qmax(1) =
          1.000 *    1.000 *    10.608) +
          0.903 *    1.000 *    14.941) + =      24.097
Qmax(2) =
          1.108 *    0.848 *    10.608) +
          1.000 *    1.000 *    14.941) + =      24.907

Total of 2 streams to confluence:
Flow rates before confluence point:
      10.608      14.941
Maximum flow rates at confluence using above data:
       24.097       24.907
Area of streams before confluence:
        7.100       10.000
Effective area values after confluence:
       17.100       16.022
Results of confluence:
Total flow rate =     24.907(CFS)
Time of concentration =     9.929 min.
Effective stream area after confluence =     16.022(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =      17.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      633.000 to Point/Station      636.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2902.100(Ft.)
Downstream point/station elevation =  2900.900(Ft.)
Pipe length  =   392.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    24.907(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    24.907(CFS)
Normal flow depth in pipe =   23.39(In.)
Flow top width inside pipe =   29.98(In.)
Critical Depth =   19.83(In.)
Pipe flow velocity =      5.53(Ft/s)
Travel time through pipe =    1.18 min.
Time of concentration (TC) =    11.11 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      633.000 to Point/Station      636.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     16.022(Ac.)
Runoff from this stream =     24.907(CFS)
Time of concentration =   11.11 min.
Rainfall intensity =     1.601(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      637.000 to Point/Station      638.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   381.000(Ft.)
Top (of initial area) elevation =  2914.000(Ft.)
Bottom (of initial area) elevation =  2909.900(Ft.)
Difference in elevation =     4.100(Ft.)
Slope =    0.01076  s(%)=       1.08
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.107 min.
```

```
Rainfall intensity =      1.934(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.875
Subarea runoff =      3.383(CFS)
Total initial stream area =        2.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      638.000 to Point/Station      636.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.900(Ft.)
Downstream point/station elevation =  2900.900(Ft.)
Pipe length  =   214.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.383(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.383(CFS)
Normal flow depth in pipe =    7.36(In.)
Flow top width inside pipe =   11.69(In.)
Critical Depth =    9.44(In.)
Pipe flow velocity =      6.70(Ft/s)
Travel time through pipe =    0.53 min.
Time of concentration (TC) =     8.64 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      638.000 to Point/Station      636.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.000(Ac.)
Runoff from this stream =      3.383(CFS)
Time of concentration =    8.64 min.
Rainfall intensity =     1.862(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     24.91    16.022     11.11    0.055      1.601
2      3.38     2.000      8.64    0.055      1.862
Qmax(1) =
          1.000 *    1.000 *    24.907) +
          0.856 *    1.000 *     3.383) + =      27.802
Qmax(2) =
          1.169 *    0.778 *    24.907) +
          1.000 *    1.000 *     3.383) + =      26.018

Total of 2 streams to confluence:
Flow rates before confluence point:
      24.907       3.383
Maximum flow rates at confluence using above data:
       27.802       26.018
Area of streams before confluence:
       16.022        2.000
Effective area values after confluence:
       18.022       14.459
Results of confluence:
Total flow rate =     27.802(CFS)
Time of concentration =    11.110 min.
Effective stream area after confluence =     18.022(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =      18.02(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      636.000 to Point/Station      639.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2902.400(Ft.)
```

Downstream point/station elevation = 2901.900(Ft.)
Pipe length =   169.00(Ft.)   Manning's N = 0.013
No. of pipes = 1 Required pipe flow =   27.802(CFS)
Nearest computed pipe diameter =   33.00(In.)
Calculated individual pipe flow =   27.802(CFS)
Normal flow depth in pipe =   26.11(In.)
Flow top width inside pipe =   26.83(In.)
Critical Depth =   21.01(In.)
Pipe flow velocity =   5.52(Ft/s)
Travel time through pipe =   0.51 min.
Time of concentration (TC) =   11.62 min.
End of computations, Total Study Area =   19.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 6C
10 YEAR STORM EVENT
FN: 6CPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 651.000 to Point/Station 652.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 507.000(Ft.)
Top (of initial area) elevation = 2915.900(Ft.)
Bottom (of initial area) elevation = 2910.000(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01164 s(%)= 1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.948 min.
Rainfall intensity = 1.823(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff = 4.933(CFS)
Total initial stream area = 3.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 652.000 to Point/Station 653.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.000(Ft.)
Downstream point/station elevation = 2904.200(Ft.)
Pipe length = 257.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.933(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 4.933(CFS)
Normal flow depth in pipe = 12.66(In.)
Flow top width inside pipe = 16.45(In.)
Critical Depth = 10.25(In.)
Pipe flow velocity = 3.72(Ft/s)
Travel time through pipe = 1.15 min.
Time of concentration (TC) = 10.10 min.

++

Process from Point/Station 652.000 to Point/Station 653.000

```
**** CONFLUENCE OF MINOR STREAMS ****
--------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.100(Ac.)
Runoff from this stream =      4.933(CFS)
Time of concentration =   10.10 min.
Rainfall intensity =     1.695(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      654.000 to Point/Station      655.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   507.000(Ft.)
Top (of initial area) elevation =  2915.900(Ft.)
Bottom (of initial area) elevation =  2910.000(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01164  s(%)=       1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.948 min.
Rainfall intensity =      1.823(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      9.708(CFS)
Total initial stream area =        6.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      655.000 to Point/Station      653.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2905.000(Ft.)
Downstream point/station elevation =  2904.200(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.708(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     9.708(CFS)
Normal flow depth in pipe =    9.87(In.)
Flow top width inside pipe =   14.23(In.)
Critical Depth =   14.12(In.)
Pipe flow velocity =     11.33(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.98 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      655.000 to Point/Station      653.000
**** CONFLUENCE OF MINOR STREAMS ****
--------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      6.100(Ac.)
Runoff from this stream =      9.708(CFS)
Time of concentration =    8.98 min.
Rainfall intensity =     1.819(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      4.93     3.100     10.10    0.055      1.695
2      9.71     6.100      8.98    0.055      1.819
```

```
Qmax(1) =
          1.000 *    1.000 *     4.933) +
          0.930 *    1.000 *     9.708) + =      13.958
Qmax(2) =
          1.076 *    0.889 *     4.933) +
          1.000 *    1.000 *     9.708) + =      14.425

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.933       9.708
Maximum flow rates at confluence using above data:
       13.958       14.425
Area of streams before confluence:
        3.100        6.100
Effective area values after confluence:
        9.200        8.856
Results of confluence:
Total flow rate =     14.425(CFS)
Time of concentration =     8.979 min.
Effective stream area after confluence =      8.856(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       9.20(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      653.000 to Point/Station      656.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2904.200(Ft.)
Downstream point/station elevation =  2903.100(Ft.)
Pipe length  =   381.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.425(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    14.425(CFS)
Normal flow depth in pipe =   19.41(In.)
Flow top width inside pipe =   24.28(In.)
Critical Depth =   15.86(In.)
Pipe flow velocity =      4.71(Ft/s)
Travel time through pipe =    1.35 min.
Time of concentration (TC) =    10.33 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      653.000 to Point/Station      656.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.856(Ac.)
Runoff from this stream =     14.425(CFS)
Time of concentration =   10.33 min.
Rainfall intensity =     1.673(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      657.000 to Point/Station      658.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   260.000(Ft.)
Top (of initial area) elevation =  2913.300(Ft.)
Bottom (of initial area) elevation =  2910.500(Ft.)
Difference in elevation =     2.800(Ft.)
Slope =    0.01077  s(%)=       1.08
```

```
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.957 min.
Rainfall intensity =      2.120(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.877
Subarea runoff =      8.550(CFS)
Total initial stream area =        4.600(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      658.000 to Point/Station      659.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2905.500(Ft.)
Downstream point/station elevation =  2903.700(Ft.)
Pipe length  =   601.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.550(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     8.550(CFS)
Normal flow depth in pipe =   16.97(In.)
Flow top width inside pipe =   16.54(In.)
Critical Depth =   13.04(In.)
Pipe flow velocity =      4.11(Ft/s)
Travel time through pipe =    2.44 min.
Time of concentration (TC) =     9.39 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      658.000 to Point/Station      659.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      4.600(Ac.)
Runoff from this stream =      8.550(CFS)
Time of concentration =    9.39 min.
Rainfall intensity =     1.770(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      660.000 to Point/Station      661.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   507.000(Ft.)
Top (of initial area) elevation =  2915.900(Ft.)
Bottom (of initial area) elevation =  2910.000(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01164  s(%)=       1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.948 min.
Rainfall intensity =      1.823(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      7.002(CFS)
Total initial stream area =        4.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      661.000 to Point/Station      659.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2905.000(Ft.)
Downstream point/station elevation =  2903.700(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
```

```
No. of pipes = 1  Required pipe flow  =     7.002(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     7.002(CFS)
Normal flow depth in pipe =    8.04(In.)
Flow top width inside pipe =   11.29(In.)
Critical depth could not be calculated.
Pipe flow velocity =     12.51(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.98 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      661.000 to Point/Station      659.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      4.400(Ac.)
Runoff from this stream =      7.002(CFS)
Time of concentration =    8.98 min.
Rainfall intensity =     1.820(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      8.55     4.600      9.39    0.055      1.770
2      7.00     4.400      8.98    0.055      1.820
Qmax(1) =
          1.000 *    1.000 *     8.550) +
          0.972 *    1.000 *     7.002) + =      15.358
Qmax(2) =
          1.029 *    0.955 *     8.550) +
          1.000 *    1.000 *     7.002) + =      15.405

Total of 2 streams to confluence:
Flow rates before confluence point:
       8.550       7.002
Maximum flow rates at confluence using above data:
       15.358       15.405
Area of streams before confluence:
        4.600        4.400
Effective area values after confluence:
        9.000        8.795
Results of confluence:
Total flow rate =     15.405(CFS)
Time of concentration =     8.976 min.
Effective stream area after confluence =      8.795(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       9.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      659.000 to Point/Station      656.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2903.700(Ft.)
Downstream point/station elevation =  2903.100(Ft.)
Pipe length  =    90.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.405(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    15.405(CFS)
Normal flow depth in pipe =   16.76(In.)
Flow top width inside pipe =   22.03(In.)
Critical Depth =   16.97(In.)
Pipe flow velocity =      6.58(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =     9.20 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      659.000 to Point/Station      656.000
```

**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area = 8.795(Ac.)
Runoff from this stream = 15.405(CFS)
Time of concentration = 9.20 min.
Rainfall intensity = 1.792(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	14.42	8.856	10.33	0.055	1.673
2	15.41	8.795	9.20	0.055	1.792

Qmax(1) =
1.000 * 1.000 * 14.425) +
0.931 * 1.000 * 15.405) + = 28.770
Qmax(2) =
1.074 * 0.891 * 14.425) +
1.000 * 1.000 * 15.405) + = 29.212

Total of 2 main streams to confluence:
Flow rates before confluence point:
15.425 16.405
Maximum flow rates at confluence using above data:
28.770 29.212
Area of streams before confluence:
8.856 8.795
Effective area values after confluence:
17.651 16.688

Results of confluence:
Total flow rate = 29.212(CFS)
Time of concentration = 9.204 min.
Effective stream area after confluence = 16.688(Ac.)
Study area average Pervious fraction(Ap) = 0.100
Study area average soil loss rate(Fm) = 0.055(In/Hr)
Study area total = 17.65(Ac.)

++
Process from Point/Station 656.000 to Point/Station 661.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.000(Ft.)
Downstream point/station elevation = 2903.500(Ft.)
Pipe length = 511.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 29.212(CFS)
Nearest computed pipe diameter = 36.00(In.)
Calculated individual pipe flow = 29.212(CFS)
Normal flow depth in pipe = 24.54(In.)
Flow top width inside pipe = 33.54(In.)
Critical Depth = 21.01(In.)
Pipe flow velocity = 5.69(Ft/s)
Travel time through pipe = 1.50 min.
Time of concentration (TC) = 10.70 min.
End of computations, Total Study Area = 18.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 6D
10 YEAR STORM EVENT
FN: 6DPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 671.000 to Point/Station 672.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 507.000(Ft.)
Top (of initial area) elevation = 2915.900(Ft.)
Bottom (of initial area) elevation = 2910.000(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01164 s(%)= 1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.948 min.
Rainfall intensity = 1.823(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff = 4.933(CFS)
Total initial stream area = 3.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 672.000 to Point/Station 673.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.000(Ft.)
Downstream point/station elevation = 2904.200(Ft.)
Pipe length = 257.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.933(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 4.933(CFS)
Normal flow depth in pipe = 12.66(In.)
Flow top width inside pipe = 16.45(In.)
Critical Depth = 10.25(In.)
Pipe flow velocity = 3.72(Ft/s)
Travel time through pipe = 1.15 min.
Time of concentration (TC) = 10.10 min.

++

Process from Point/Station 672.000 to Point/Station 673.000

**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 3.100(Ac.)
Runoff from this stream = 4.933(CFS)
Time of concentration = 10.10 min.
Rainfall intensity = 1.695(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000

++

Process from Point/Station 674.000 to Point/Station 675.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 507.000(Ft.)
Top (of initial area) elevation = 2915.900(Ft.)
Bottom (of initial area) elevation = 2910.000(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01164 s(%)= 1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.948 min.
Rainfall intensity = 1.823(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff = 9.708(CFS)
Total initial stream area = 6.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 675.000 to Point/Station 673.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.000(Ft.)
Downstream point/station elevation = 2904.200(Ft.)
Pipe length = 21.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 9.708(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 9.708(CFS)
Normal flow depth in pipe = 9.87(In.)
Flow top width inside pipe = 14.23(In.)
Critical Depth = 14.12(In.)
Pipe flow velocity = 11.33(Ft/s)
Travel time through pipe = 0.03 min.
Time of concentration (TC) = 8.98 min.

++

Process from Point/Station 675.000 to Point/Station 673.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
Stream flow area = 6.100(Ac.)
Runoff from this stream = 9.708(CFS)
Time of concentration = 8.98 min.
Rainfall intensity = 1.819(In/Hr)
Area averaged loss rate (Fm) = 0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	4.93	3.100	10.10	0.055	1.695
2	9.71	6.100	8.98	0.055	1.819

```
Qmax(1) =
          1.000 *    1.000 *     4.933) +
          0.930 *    1.000 *     9.708) + =      13.958
Qmax(2) =
          1.076 *    0.889 *     4.933) +
          1.000 *    1.000 *     9.708) + =      14.425

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.933       9.708
Maximum flow rates at confluence using above data:
       13.958       14.425
Area of streams before confluence:
        3.100        6.100
Effective area values after confluence:
        9.200        8.856
Results of confluence:
Total flow rate =     14.425(CFS)
Time of concentration =     8.979 min.
Effective stream area after confluence =      8.856(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       9.20(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      673.000 to Point/Station      676.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2904.200(Ft.)
Downstream point/station elevation =  2903.100(Ft.)
Pipe length  =   381.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.425(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    14.425(CFS)
Normal flow depth in pipe =   19.41(In.)
Flow top width inside pipe =   24.28(In.)
Critical Depth =   15.86(In.)
Pipe flow velocity =      4.71(Ft/s)
Travel time through pipe =    1.35 min.
Time of concentration (TC) =    10.33 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      673.000 to Point/Station      676.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      8.856(Ac.)
Runoff from this stream =     14.425(CFS)
Time of concentration =   10.33 min.
Rainfall intensity =     1.673(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      677.000 to Point/Station      678.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   507.000(Ft.)
Top (of initial area) elevation =  2915.900(Ft.)
Bottom (of initial area) elevation =  2910.000(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01164  s(%)=       1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.948 min.
```

```
Rainfall intensity =      1.823(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =     11.617(CFS)
Total initial stream area =        7.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      678.000 to Point/Station      676.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2905.000(Ft.)
Downstream point/station elevation =  2903.100(Ft.)
Pipe length  =    81.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.617(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    11.617(CFS)
Normal flow depth in pipe =   11.33(In.)
Flow top width inside pipe =   17.39(In.)
Critical Depth =   15.57(In.)
Pipe flow velocity =      9.91(Ft/s)
Travel time through pipe =    0.14 min.
Time of concentration (TC) =     9.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      678.000 to Point/Station      676.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      7.300(Ac.)
Runoff from this stream =     11.617(CFS)
Time of concentration =    9.08 min.
Rainfall intensity =     1.807(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     14.42     8.856     10.33    0.055      1.673
2     11.62     7.300      9.08    0.055      1.807
Qmax(1) =
          1.000 *    1.000 *    14.425) +
          0.924 *    1.000 *    11.617) + =      25.155
Qmax(2) =
          1.083 *    0.880 *    14.425) +
          1.000 *    1.000 *    11.617) + =      25.355

Total of 2 streams to confluence:
Flow rates before confluence point:
      14.425      11.617
Maximum flow rates at confluence using above data:
       25.155       25.355
Area of streams before confluence:
        8.856        7.300
Effective area values after confluence:
       16.156       15.090
Results of confluence:
Total flow rate =     25.355(CFS)
Time of concentration =     9.084 min.
Effective stream area after confluence =     15.090(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =      16.16(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      676.000 to Point/Station      679.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2906.100(Ft.)
```

Downstream point/station elevation = 2904.800(Ft.)
Pipe length =   447.00(Ft.)   Manning's N = 0.013
No. of pipes = 1 Required pipe flow =   25.355(CFS)
Nearest computed pipe diameter =   33.00(In.)
Calculated individual pipe flow =   25.355(CFS)
Normal flow depth in pipe =   24.23(In.)
Flow top width inside pipe =   29.15(In.)
Critical Depth =   20.03(In.)
Pipe flow velocity =   5.43(Ft/s)
Travel time through pipe =   1.37 min.
Time of concentration (TC) =   10.46 min.
End of computations, Total Study Area =   16.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

BUILDING 7

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/14/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 7A
10 YEAR STORM EVENT
FN: 7APROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 711.000 to Point/Station 712.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 555.000(Ft.)
Top (of initial area) elevation = 2920.400(Ft.)
Bottom (of initial area) elevation = 2913.900(Ft.)
Difference in elevation = 6.500(Ft.)
Slope = 0.01171 s(%)= 1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.265 min.
Rainfall intensity = 1.785(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff = 4.516(CFS)
Total initial stream area = 2.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 712.000 to Point/Station 713.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2908.900(Ft.)
Downstream point/station elevation = 2907.900(Ft.)
Pipe length = 331.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.516(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 4.516(CFS)
Normal flow depth in pipe = 11.98(In.)
Flow top width inside pipe = 16.99(In.)
Critical Depth = 9.79(In.)
Pipe flow velocity = 3.61(Ft/s)
Travel time through pipe = 1.53 min.
Time of concentration (TC) = 10.79 min.

++

Process from Point/Station 712.000 to Point/Station 713.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      2.900(Ac.)
Runoff from this stream =      4.516(CFS)
Time of concentration =   10.79 min.
Rainfall intensity =     1.629(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      714.000 to Point/Station      715.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   555.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2913.900(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.01171  s(%)=       1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.265 min.
Rainfall intensity =      1.785(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      8.877(CFS)
Total initial stream area =        5.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      715.000 to Point/Station      713.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2908.900(Ft.)
Downstream point/station elevation =  2907.900(Ft.)
Pipe length  =   110.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.877(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     8.877(CFS)
Normal flow depth in pipe =   13.17(In.)
Flow top width inside pipe =   15.95(In.)
Critical Depth =   13.84(In.)
Pipe flow velocity =      6.40(Ft/s)
Travel time through pipe =    0.29 min.
Time of concentration (TC) =     9.55 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      715.000 to Point/Station      713.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.700(Ac.)
Runoff from this stream =      8.877(CFS)
Time of concentration =    9.55 min.
Rainfall intensity =     1.753(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      4.52     2.900     10.79    0.055      1.629
2      8.88     5.700      9.55    0.055      1.753
Qmax(1) =
          1.000 *    1.000 *     4.516) +
          0.927 *    1.000 *     8.877) + =      12.747
Qmax(2) =
          1.079 *    0.885 *     4.516) +
          1.000 *    1.000 *     8.877) + =      13.189

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.516       9.877
Maximum flow rates at confluence using above data:
       12.747       13.189
Area of streams before confluence:
        2.900        5.700
Effective area values after confluence:
        8.600        8.267


Results of confluence:
Total flow rate =     13.189(CFS)
Time of concentration =     9.552 min.
Effective stream area after confluence  =      8.267(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       8.60(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      713.000 to Point/Station      716.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2907.900(Ft.)
Downstream point/station elevation =  2906.700(Ft.)
Pipe length  =   390.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.189(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    13.189(CFS)
Normal flow depth in pipe =   17.74(In.)
Flow top width inside pipe =   25.63(In.)
Critical Depth =   15.12(In.)
Pipe flow velocity =      4.76(Ft/s)
Travel time through pipe =    1.36 min.
Time of concentration (TC) =    10.92 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      713.000 to Point/Station      716.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.267(Ac.)
Runoff from this stream =     13.189(CFS)
Time of concentration =   10.92 min.
Rainfall intensity =     1.618(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      717.000 to Point/Station      718.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   555.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2913.900(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.01171  s(%)=       1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.265 min.
Rainfall intensity =      1.785(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =     10.902(CFS)
Total initial stream area =        7.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      718.000 to Point/Station      716.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.900(Ft.)
Downstream point/station elevation =  2906.700(Ft.)
Pipe length  =    71.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.902(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    10.902(CFS)
Normal flow depth in pipe =   11.77(In.)
Flow top width inside pipe =   12.34(In.)
Critical depth could not be calculated.
Pipe flow velocity =     10.55(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     9.38 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      718.000 to Point/Station      716.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.000(Ac.)
Runoff from this stream =     10.902(CFS)
Time of concentration =    9.38 min.
Rainfall intensity =     1.772(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      719.000 to Point/Station      720.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   492.000(Ft.)
Top (of initial area) elevation =  2919.900(Ft.)
Bottom (of initial area) elevation =  2915.600(Ft.)
Difference in elevation =     4.300(Ft.)
Slope =    0.00874  s(%)=       0.87
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.362 min.
Rainfall intensity =      1.774(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =     10.677(CFS)
Total initial stream area =        6.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      720.000 to Point/Station      716.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2910.600(Ft.)
Downstream point/station elevation =  2906.700(Ft.)
Pipe length  =   411.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.677(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    10.677(CFS)
Normal flow depth in pipe =   12.84(In.)
Flow top width inside pipe =   20.47(In.)
Critical Depth =   14.62(In.)
Pipe flow velocity =      6.93(Ft/s)
Travel time through pipe =    0.99 min.
Time of concentration (TC) =    10.35 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      720.000 to Point/Station      716.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      6.900(Ac.)
Runoff from this stream =     10.677(CFS)
Time of concentration =   10.35 min.
Rainfall intensity =     1.670(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     13.19     8.267     10.92    0.055      1.618
2     10.90     7.000      9.38    0.055      1.772
3     10.68     6.900     10.35    0.055      1.670
Qmax(1) =
          1.000 *    1.000 *    13.189) +
          0.910 *    1.000 *    10.902) +
          0.968 *    1.000 *    10.677) + =      33.441
Qmax(2) =
          1.099 *    0.859 *    13.189) +
          1.000 *    1.000 *    10.902) +
          1.063 *    0.906 *    10.677) + =      33.635
Qmax(3) =
          1.034 *    0.948 *    13.189) +
          0.941 *    1.000 *    10.902) +
          1.000 *    1.000 *    10.677) + =      33.858

Total of 3 main streams to confluence:
Flow rates before confluence point:
      14.189      11.902      11.677
Maximum flow rates at confluence using above data:
       33.441       33.635       33.858
Area of streams before confluence:
        8.267        7.000        6.900
Effective area values after confluence:
       22.167       20.353       21.739


Results of confluence:
Total flow rate =     33.858(CFS)
Time of concentration =    10.351 min.
Effective stream area after confluence  =     21.739(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      22.17(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      716.000 to Point/Station      721.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
```

Upstream point/station elevation = 2907.400(Ft.)
Downstream point/station elevation = 2905.900(Ft.)
Pipe length = 486.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 33.858(CFS)
Nearest computed pipe diameter = 36.00(In.)
Calculated individual pipe flow = 33.858(CFS)
Normal flow depth in pipe = 27.05(In.)
Flow top width inside pipe = 31.12(In.)
Critical Depth = 22.67(In.)
Pipe flow velocity = 5.94(Ft/s)
Travel time through pipe = 1.36 min.
Time of concentration (TC) = 11.71 min.
End of computations, Total Study Area = 22.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/14/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 7B
10 YEAR STORM EVENT
FN: 7BPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 731.000 to Point/Station 732.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 555.000(Ft.)
Top (of initial area) elevation = 2920.400(Ft.)
Bottom (of initial area) elevation = 2913.900(Ft.)
Difference in elevation = 6.500(Ft.)
Slope = 0.01171 s(%)= 1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.265 min.
Rainfall intensity = 1.785(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff = 4.516(CFS)
Total initial stream area = 2.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 732.000 to Point/Station 733.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2908.900(Ft.)
Downstream point/station elevation = 2907.900(Ft.)
Pipe length = 331.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.516(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 4.516(CFS)
Normal flow depth in pipe = 11.98(In.)
Flow top width inside pipe = 16.99(In.)
Critical Depth = 9.79(In.)
Pipe flow velocity = 3.61(Ft/s)
Travel time through pipe = 1.53 min.
Time of concentration (TC) = 10.79 min.

++

Process from Point/Station 732.000 to Point/Station 733.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      2.900(Ac.)
Runoff from this stream =      4.516(CFS)
Time of concentration =   10.79 min.
Rainfall intensity =     1.629(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      734.000 to Point/Station      735.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   555.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2913.900(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.01171  s(%)=       1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.265 min.
Rainfall intensity =      1.785(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      4.516(CFS)
Total initial stream area =        2.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      735.000 to Point/Station      733.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2908.900(Ft.)
Downstream point/station elevation =  2907.900(Ft.)
Pipe length  =   100.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.516(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.516(CFS)
Normal flow depth in pipe =    9.23(In.)
Flow top width inside pipe =   14.59(In.)
Critical Depth =   10.34(In.)
Pipe flow velocity =      5.69(Ft/s)
Travel time through pipe =    0.29 min.
Time of concentration (TC) =     9.56 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      735.000 to Point/Station      733.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.900(Ac.)
Runoff from this stream =      4.516(CFS)
Time of concentration =    9.56 min.
Rainfall intensity =     1.752(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      4.52     2.900     10.79    0.055      1.629
2      4.52     2.900      9.56    0.055      1.752
Qmax(1) =
          1.000 *    1.000 *     4.516) +
          0.927 *    1.000 *     4.516) + =       8.705
Qmax(2) =
          1.078 *    0.886 *     4.516) +
          1.000 *    1.000 *     4.516) + =       8.829

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.516       5.516
Maximum flow rates at confluence using above data:
        8.705        8.829
Area of streams before confluence:
        2.900        2.900
Effective area values after confluence:
        5.800        5.469


Results of confluence:
Total flow rate =      8.829(CFS)
Time of concentration =     9.558 min.
Effective stream area after confluence  =      5.469(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       5.80(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      733.000 to Point/Station      736.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2907.900(Ft.)
Downstream point/station elevation =  2907.400(Ft.)
Pipe length  =   153.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.829(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     8.829(CFS)
Normal flow depth in pipe =   16.76(In.)
Flow top width inside pipe =   16.86(In.)
Critical Depth =   13.24(In.)
Pipe flow velocity =      4.29(Ft/s)
Travel time through pipe =    0.59 min.
Time of concentration (TC) =    10.15 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      733.000 to Point/Station      736.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.469(Ac.)
Runoff from this stream =      8.829(CFS)
Time of concentration =   10.15 min.
Rainfall intensity =     1.690(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      737.000 to Point/Station      738.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   555.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2913.900(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.01171  s(%)=       1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.265 min.
Rainfall intensity =      1.785(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      5.607(CFS)
Total initial stream area =        3.600(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      738.000 to Point/Station      736.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2908.900(Ft.)
Downstream point/station elevation =  2907.400(Ft.)
Pipe length  =    71.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.607(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     5.607(CFS)
Normal flow depth in pipe =    8.35(In.)
Flow top width inside pipe =   14.90(In.)
Critical Depth =   11.51(In.)
Pipe flow velocity =      7.99(Ft/s)
Travel time through pipe =    0.15 min.
Time of concentration (TC) =     9.41 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      738.000 to Point/Station      736.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.600(Ac.)
Runoff from this stream =      5.607(CFS)
Time of concentration =    9.41 min.
Rainfall intensity =     1.768(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      8.83     5.469     10.15    0.055      1.690
2      5.61     3.600      9.41    0.055      1.768
Qmax(1) =
          1.000 *    1.000 *     8.829) +
          0.954 *    1.000 *     5.607) + =      14.180
Qmax(2) =
          1.048 *    0.927 *     8.829) +
          1.000 *    1.000 *     5.607) + =      14.186

Total of 2 main streams to confluence:
Flow rates before confluence point:
       9.829       6.607
Maximum flow rates at confluence using above data:
       14.180       14.186
Area of streams before confluence:
        5.469        3.600
Effective area values after confluence:
        9.069        8.671


Results of confluence:
Total flow rate =     14.186(CFS)
Time of concentration =     9.414 min.
Effective stream area after confluence  =      8.671(Ac.)
```

```
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       9.07(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      736.000 to Point/Station      782.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2906.500(Ft.)
Downstream point/station elevation =  2905.700(Ft.)
Pipe length  =   184.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.186(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    14.186(CFS)
Normal flow depth in pipe =   18.70(In.)
Flow top width inside pipe =   19.91(In.)
Critical Depth =   16.29(In.)
Pipe flow velocity =      5.40(Ft/s)
Travel time through pipe =    0.57 min.
Time of concentration (TC) =     9.98 min.
End of computations, Total Study Area =            9.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/14/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 7C
10 YEAR STORM EVENT
FN: 7CPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 751.000 to Point/Station 752.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 492.000(Ft.)
Top (of initial area) elevation = 2920.400(Ft.)
Bottom (of initial area) elevation = 2914.500(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01199 s(%)= 1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.788 min.
Rainfall intensity = 1.843(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff = 4.989(CFS)
Total initial stream area = 3.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 752.000 to Point/Station 753.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2909.500(Ft.)
Downstream point/station elevation = 2908.700(Ft.)
Pipe length = 257.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.989(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 4.989(CFS)
Normal flow depth in pipe = 12.76(In.)
Flow top width inside pipe = 16.35(In.)
Critical Depth = 10.31(In.)
Pipe flow velocity = 3.72(Ft/s)
Travel time through pipe = 1.15 min.
Time of concentration (TC) = 9.94 min.

++

Process from Point/Station 752.000 to Point/Station 753.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.100(Ac.)
Runoff from this stream =      4.989(CFS)
Time of concentration =    9.94 min.
Rainfall intensity =     1.712(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      754.000 to Point/Station      755.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   492.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2914.500(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01199  s(%)=       1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.788 min.
Rainfall intensity =      1.843(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      5.150(CFS)
Total initial stream area =        3.200(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      755.000 to Point/Station      753.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2909.500(Ft.)
Downstream point/station elevation =  2908.700(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.150(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     5.150(CFS)
Normal flow depth in pipe =    7.69(In.)
Flow top width inside pipe =   11.52(In.)
Critical Depth =   11.09(In.)
Pipe flow velocity =      9.69(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     8.82 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      755.000 to Point/Station      753.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.200(Ac.)
Runoff from this stream =      5.150(CFS)
Time of concentration =    8.82 min.
Rainfall intensity =     1.838(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      4.99     3.100      9.94    0.055      1.712
2      5.15     3.200      8.82    0.055      1.838
Qmax(1) =
          1.000 *    1.000 *     4.989) +
          0.929 *    1.000 *     5.150) + =       9.773
Qmax(2) =
          1.076 *    0.888 *     4.989) +
          1.000 *    1.000 *     5.150) + =       9.917

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.989       6.150
Maximum flow rates at confluence using above data:
        9.773        9.917
Area of streams before confluence:
        3.100        3.200
Effective area values after confluence:
        6.300        5.952


Results of confluence:
Total flow rate =      9.917(CFS)
Time of concentration =     8.824 min.
Effective stream area after confluence  =      5.952(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       6.30(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      753.000 to Point/Station      756.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.700(Ft.)
Downstream point/station elevation =  2908.000(Ft.)
Pipe length  =   235.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.917(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =     9.917(CFS)
Normal flow depth in pipe =   16.29(In.)
Flow top width inside pipe =   22.41(In.)
Critical Depth =   13.52(In.)
Pipe flow velocity =      4.37(Ft/s)
Travel time through pipe =    0.90 min.
Time of concentration (TC) =     9.72 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      753.000 to Point/Station      756.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.952(Ac.)
Runoff from this stream =      9.917(CFS)
Time of concentration =    9.72 min.
Rainfall intensity =     1.735(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      757.000 to Point/Station      758.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   492.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2914.500(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01199  s(%)=       1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.788 min.
Rainfall intensity =      1.843(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =     11.104(CFS)
Total initial stream area =        6.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      758.000 to Point/Station      756.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2909.500(Ft.)
Downstream point/station elevation =  2908.000(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.104(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    11.104(CFS)
Normal flow depth in pipe =    8.75(In.)
Flow top width inside pipe =   14.79(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.94(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     8.81 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      758.000 to Point/Station      756.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.900(Ac.)
Runoff from this stream =     11.104(CFS)
Time of concentration =    8.81 min.
Rainfall intensity =     1.840(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      9.92     5.952      9.72    0.055      1.735
2     11.10     6.900      8.81    0.055      1.840
Qmax(1) =
          1.000 *    1.000 *     9.917) +
          0.941 *    1.000 *    11.104) + =      20.366
Qmax(2) =
          1.063 *    0.906 *     9.917) +
          1.000 *    1.000 *    11.104) + =      20.657

Total of 2 main streams to confluence:
Flow rates before confluence point:
      10.917      12.104
Maximum flow rates at confluence using above data:
       20.366       20.657
Area of streams before confluence:
        5.952        6.900
Effective area values after confluence:
       12.852       12.296


Results of confluence:
Total flow rate =     20.657(CFS)
Time of concentration =     8.811 min.
Effective stream area after confluence  =     12.296(Ac.)
```

```
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      12.85(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      756.000 to Point/Station      759.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.000(Ft.)
Downstream point/station elevation =  2906.600(Ft.)
Pipe length  =   471.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.657(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    20.657(CFS)
Normal flow depth in pipe =   22.76(In.)
Flow top width inside pipe =   25.68(In.)
Critical Depth =   18.54(In.)
Pipe flow velocity =      5.17(Ft/s)
Travel time through pipe =    1.52 min.
Time of concentration (TC) =    10.33 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      756.000 to Point/Station      759.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     12.296(Ac.)
Runoff from this stream =     20.657(CFS)
Time of concentration =   10.33 min.
Rainfall intensity =     1.673(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      760.000 to Point/Station      761.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   492.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2914.500(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01199  s(%)=       1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.788 min.
Rainfall intensity =      1.843(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =     12.874(CFS)
Total initial stream area =        8.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      761.000 to Point/Station      759.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2909.500(Ft.)
Downstream point/station elevation =  2906.600(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.874(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =    12.874(CFS)
```

```
Normal flow depth in pipe =    9.55(In.)
Flow top width inside pipe =    9.67(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.21(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     8.81 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      761.000 to Point/Station      759.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      8.000(Ac.)
Runoff from this stream =     12.874(CFS)
Time of concentration =    8.81 min.
Rainfall intensity =     1.841(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      762.000 to Point/Station      763.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   271.000(Ft.)
Top (of initial area) elevation =  2923.000(Ft.)
Bottom (of initial area) elevation =  2917.600(Ft.)
Difference in elevation =     5.400(Ft.)
Slope =    0.01993  s(%)=       1.99
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.254 min.
Rainfall intensity =      2.260(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.878
Subarea runoff =      9.328(CFS)
Total initial stream area =        4.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      763.000 to Point/Station      759.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2912.600(Ft.)
Downstream point/station elevation =  2906.600(Ft.)
Pipe length  =   256.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.328(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     9.328(CFS)
Normal flow depth in pipe =   11.60(In.)
Flow top width inside pipe =   12.56(In.)
Critical Depth =   13.99(In.)
Pipe flow velocity =      9.17(Ft/s)
Travel time through pipe =    0.47 min.
Time of concentration (TC) =     6.72 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      763.000 to Point/Station      759.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      4.700(Ac.)
```

```
Runoff from this stream =      9.328(CFS)
Time of concentration =    6.72 min.
Rainfall intensity =     2.165(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     20.66    12.296     10.33    0.055      1.673
2     12.87     8.000      8.81    0.055      1.841
3      9.33     4.700      6.72    0.055      2.165
Qmax(1) =
          1.000 *    1.000 *    20.657) +
          0.906 *    1.000 *    12.874) +
          0.767 *    1.000 *     9.328) + =      39.471
Qmax(2) =
          1.104 *    0.853 *    20.657) +
          1.000 *    1.000 *    12.874) +
          0.846 *    1.000 *     9.328) + =      40.208
Qmax(3) =
          1.304 *    0.651 *    20.657) +
          1.182 *    0.763 *    12.874) +
          1.000 *    1.000 *     9.328) + =      38.462

Total of 3 main streams to confluence:
Flow rates before confluence point:
      21.657      13.874      10.328
Maximum flow rates at confluence using above data:
       39.471       40.208       38.462
Area of streams before confluence:
       12.296        8.000        4.700
Effective area values after confluence:
       24.996       23.183       18.804


Results of confluence:
Total flow rate =     40.208(CFS)
Time of concentration =     8.806 min.
Effective stream area after confluence  =     23.183(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      25.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      759.000 to Point/Station      764.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2907.100(Ft.)
Downstream point/station elevation =  2905.900(Ft.)
Pipe length  =   400.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    40.208(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    40.208(CFS)
Normal flow depth in pipe =   28.64(In.)
Flow top width inside pipe =   34.45(In.)
Critical Depth =   24.22(In.)
Pipe flow velocity =      6.16(Ft/s)
Travel time through pipe =    1.08 min.
Time of concentration (TC) =     9.89 min.
End of computations, Total Study Area =           25.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/14/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 7D
10 YEAR STORM EVENT
FN: 7DPROPRAT10.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.582 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 771.000 to Point/Station 772.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 492.000(Ft.)
Top (of initial area) elevation = 2920.400(Ft.)
Bottom (of initial area) elevation = 2914.500(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01199 s(%)= 1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.788 min.
Rainfall intensity = 1.843(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff = 4.828(CFS)
Total initial stream area = 3.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++

Process from Point/Station 772.000 to Point/Station 773.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2909.500(Ft.)
Downstream point/station elevation = 2908.700(Ft.)
Pipe length = 257.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.828(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 4.828(CFS)
Normal flow depth in pipe = 12.45(In.)
Flow top width inside pipe = 16.63(In.)
Critical Depth = 10.14(In.)
Pipe flow velocity = 3.70(Ft/s)
Travel time through pipe = 1.16 min.
Time of concentration (TC) = 9.94 min.

++

Process from Point/Station 772.000 to Point/Station 773.000

```
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.000(Ac.)
Runoff from this stream =      4.828(CFS)
Time of concentration =    9.94 min.
Rainfall intensity =     1.711(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      774.000 to Point/Station      775.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   492.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2914.500(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01199  s(%)=       1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.788 min.
Rainfall intensity =      1.843(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      7.724(CFS)
Total initial stream area =        4.800(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      775.000 to Point/Station      773.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  2909.500(Ft.)
Downstream point/station elevation =  2908.700(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.724(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     7.724(CFS)
Normal flow depth in pipe =    8.48(In.)
Flow top width inside pipe =   14.87(In.)
Critical Depth =   13.21(In.)
Pipe flow velocity =     10.79(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.82 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      775.000 to Point/Station      773.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      4.800(Ac.)
Runoff from this stream =      7.724(CFS)
Time of concentration =    8.82 min.
Rainfall intensity =     1.839(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      4.83     3.000      9.94    0.055      1.711
2      7.72     4.800      8.82    0.055      1.839
Qmax(1) =
          1.000 *    1.000 *     4.828) +
          0.928 *    1.000 *     7.724) + =      11.999
Qmax(2) =
          1.077 *    0.887 *     4.828) +
          1.000 *    1.000 *     7.724) + =      12.336

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.828       8.724
Maximum flow rates at confluence using above data:
       11.999       12.336
Area of streams before confluence:
        3.000        4.800
Effective area values after confluence:
        7.800        7.461


Results of confluence:
Total flow rate =     12.336(CFS)
Time of concentration =     8.820 min.
Effective stream area after confluence  =      7.461(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       7.80(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      773.000 to Point/Station      776.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.700(Ft.)
Downstream point/station elevation =  2907.200(Ft.)
Pipe length  =   513.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.336(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    12.336(CFS)
Normal flow depth in pipe =   17.23(In.)
Flow top width inside pipe =   25.95(In.)
Critical Depth =   14.62(In.)
Pipe flow velocity =      4.61(Ft/s)
Travel time through pipe =    1.86 min.
Time of concentration (TC) =    10.68 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      773.000 to Point/Station      776.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      7.461(Ac.)
Runoff from this stream =     12.336(CFS)
Time of concentration =   10.68 min.
Rainfall intensity =     1.640(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      777.000 to Point/Station      778.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   234.000(Ft.)
Top (of initial area) elevation =  2918.600(Ft.)
Bottom (of initial area) elevation =  2916.600(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00855  s(%)=       0.85
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.985 min.
Rainfall intensity =      2.115(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.877
Subarea runoff =      3.523(CFS)
Total initial stream area =        1.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      778.000 to Point/Station      776.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2911.600(Ft.)
Downstream point/station elevation =  2907.200(Ft.)
Pipe length  =    30.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.523(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     3.523(CFS)
Normal flow depth in pipe =    4.79(In.)
Flow top width inside pipe =    8.98(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.72(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     7.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      778.000 to Point/Station      776.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.900(Ac.)
Runoff from this stream =      3.523(CFS)
Time of concentration =    7.02 min.
Rainfall intensity =     2.109(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     12.34     7.461     10.68    0.055      1.640
2      3.52     1.900      7.02    0.055      2.109
Qmax(1) =
          1.000 *    1.000 *    12.336) +
          0.772 *    1.000 *     3.523) + =      15.055
Qmax(2) =
          1.296 *    0.657 *    12.336) +
          1.000 *    1.000 *     3.523) + =      14.034

Total of 2 main streams to confluence:
Flow rates before confluence point:
      13.336       4.523
Maximum flow rates at confluence using above data:
       15.055       14.034
Area of streams before confluence:
        7.461        1.900
Effective area values after confluence:
        9.361        6.805


Results of confluence:
Total flow rate =     15.055(CFS)
Time of concentration =    10.677 min.
Effective stream area after confluence  =      9.361(Ac.)
```

```
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       9.36(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      776.000 to Point/Station      779.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2907.200(Ft.)
Downstream point/station elevation =  2905.700(Ft.)
Pipe length  =   482.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.055(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    15.055(CFS)
Normal flow depth in pipe =   19.50(In.)
Flow top width inside pipe =   24.19(In.)
Critical Depth =   16.22(In.)
Pipe flow velocity =      4.90(Ft/s)
Travel time through pipe =    1.64 min.
Time of concentration (TC) =    12.32 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      776.000 to Point/Station      779.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      9.361(Ac.)
Runoff from this stream =     15.055(CFS)
Time of concentration =   12.32 min.
Rainfall intensity =     1.505(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      780.000 to Point/Station      781.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   421.000(Ft.)
Top (of initial area) elevation =  2919.000(Ft.)
Bottom (of initial area) elevation =  2913.700(Ft.)
Difference in elevation =     5.300(Ft.)
Slope =    0.01259  s(%)=       1.26
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.177 min.
Rainfall intensity =      1.924(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.874
Subarea runoff =      5.552(CFS)
Total initial stream area =        3.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      781.000 to Point/Station      779.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.700(Ft.)
Downstream point/station elevation =  2905.700(Ft.)
Pipe length  =   104.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.552(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     5.552(CFS)
```

```
Normal flow depth in pipe =    9.05(In.)
Flow top width inside pipe =   10.34(In.)
Critical Depth =   11.29(In.)
Pipe flow velocity =      8.74(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =     8.38 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      781.000 to Point/Station      779.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.300(Ac.)
Runoff from this stream =      5.552(CFS)
Time of concentration =    8.38 min.
Rainfall intensity =     1.897(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     15.05     9.361     12.32    0.055      1.505
2      5.55     3.300      8.38    0.055      1.897
Qmax(1) =
          1.000 *    1.000 *    15.055) +
          0.787 *    1.000 *     5.552) + =      19.426
Qmax(2) =
          1.270 *    0.680 *    15.055) +
          1.000 *    1.000 *     5.552) + =      18.555

Total of 2 main streams to confluence:
Flow rates before confluence point:
      16.055       6.552
Maximum flow rates at confluence using above data:
       19.426       18.555
Area of streams before confluence:
        9.361        3.300
Effective area values after confluence:
       12.661        9.665


Results of confluence:
Total flow rate =     19.426(CFS)
Time of concentration =    12.318 min.
Effective stream area after confluence  =     12.661(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      12.66(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      779.000 to Point/Station      782.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2906.000(Ft.)
Downstream point/station elevation =  2905.700(Ft.)
Pipe length  =    81.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    19.426(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    19.426(CFS)
Normal flow depth in pipe =   19.90(In.)
Flow top width inside pipe =   28.36(In.)
Critical Depth =   17.93(In.)
Pipe flow velocity =      5.62(Ft/s)
Travel time through pipe =    0.24 min.
Time of concentration (TC) =    12.56 min.
End of computations, Total Study Area =           13.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
```

effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

100-YEAR HYDROLOGY (RATIONAL METHOD), OFF-SITE EXISTING CONDITION

RATEXOFF

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 02/27/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY
100 YEAR STORM EVENT
FN: RATEXOFF100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 3092.000(Ft.)
Bottom (of initial area) elevation = 3079.500(Ft.)
Difference in elevation = 12.500(Ft.)
Slope = 0.01250 s(%)= 1.25
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 19.988 min.
Rainfall intensity = 1.953(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.778
Subarea runoff = 6.533(CFS)
Total initial stream area = 4.300(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++
Process from Point/Station 102.000 to Point/Station 103.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 3079.500(Ft.)
Downstream point elevation = 3070.800(Ft.)
Channel length thru subarea = 726.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 12.094(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 12.094(CFS)
Depth of flow = 0.461(Ft.), Average velocity = 3.346(Ft/s)
Channel flow top width = 9.686(Ft.)
Flow Velocity = 3.35(Ft/s)
Travel time = 3.62 min.

```
Time of concentration =   23.60 min.
Critical depth =      0.453(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.768(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.765
Subarea runoff =     11.048(CFS) for    8.700(Ac.)
Total runoff =     17.581(CFS)
Effective area this stream =       13.00(Ac.)
Total Study Area (Main Stream No. 1) =       13.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.566(Ft.), Average velocity =   3.756(Ft/s)
Critical depth =      0.563(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  3070.800(Ft.)
Downstream point elevation =  3061.700(Ft.)
Channel length thru subarea  =   819.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     26.879(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     26.879(CFS)
Depth of flow =   0.727(Ft.), Average velocity =   4.153(Ft/s)
Channel flow top width =   11.813(Ft.)
Flow Velocity =    4.15(Ft/s)
Travel time  =    3.29 min.
Time of concentration =   26.89 min.
Critical depth =      0.719(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.635(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.754
Subarea runoff =     18.537(CFS) for   16.300(Ac.)
Total runoff =     36.117(CFS)
Effective area this stream =       29.30(Ac.)
Total Study Area (Main Stream No. 1) =       29.30(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.849(Ft.), Average velocity =   4.525(Ft/s)
Critical depth =      0.852(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  3061.700(Ft.)
Downstream point elevation =  3048.700(Ft.)
Channel length thru subarea  =  1278.000(Ft.)
Channel base width     =   12.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     55.231(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
```

```
Flow(q) thru subarea =     55.231(CFS)
Depth of flow =   0.803(Ft.), Average velocity =   4.524(Ft/s)
Channel flow top width =   18.421(Ft.)
Flow Velocity =    4.52(Ft/s)
Travel time  =    4.71 min.
Time of concentration =   31.60 min.
Critical depth =      0.797(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.484(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.739
Subarea runoff =     38.146(CFS) for   38.400(Ac.)
Total runoff =     74.263(CFS)
Effective area this stream =       67.70(Ac.)
Total Study Area (Main Stream No. 1) =       67.70(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.947(Ft.), Average velocity =   4.969(Ft/s)
Critical depth =      0.953(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  3048.700(Ft.)
Downstream point elevation =  3026.800(Ft.)
Channel length thru subarea  =  1945.000(Ft.)
Channel base width     =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     99.327(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     99.327(CFS)
Depth of flow =   0.836(Ft.), Average velocity =   5.092(Ft/s)
Channel flow top width =   26.685(Ft.)
Flow Velocity =    5.09(Ft/s)
Travel time  =    6.37 min.
Time of concentration =   37.96 min.
Critical depth =      0.859(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.329(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.721
Subarea runoff =     50.043(CFS) for   62.100(Ac.)
Total runoff =    124.306(CFS)
Effective area this stream =      129.80(Ac.)
Total Study Area (Main Stream No. 1) =      129.80(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.951(Ft.), Average velocity =   5.493(Ft/s)
Critical depth =      0.992(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  3026.800(Ft.)
Downstream point elevation =  3005.900(Ft.)
Channel length thru subarea  =  1787.000(Ft.)
Channel base width     =   25.000(Ft.)
```

```
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    134.356(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    134.356(CFS)
Depth of flow =   0.872(Ft.), Average velocity =   5.408(Ft/s)
Channel flow top width =   31.976(Ft.)
Flow Velocity =    5.41(Ft/s)
Travel time  =    5.51 min.
Time of concentration =   43.47 min.
Critical depth =      0.922(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.225(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.705
Subarea runoff =     20.032(CFS) for   37.200(Ac.)
Total runoff =    144.338(CFS)
Effective area this stream =      167.00(Ac.)
Total Study Area (Main Stream No. 1) =      167.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.909(Ft.), Average velocity =   5.545(Ft/s)
Critical depth =      0.953(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  3005.900(Ft.)
Downstream point elevation =  2987.700(Ft.)
Channel length thru subarea  =  2485.000(Ft.)
Channel base width     =   35.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    158.439(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    158.439(CFS)
Depth of flow =   0.913(Ft.), Average velocity =   4.491(Ft/s)
Channel flow top width =   42.302(Ft.)
Flow Velocity =    4.49(Ft/s)
Travel time  =    9.22 min.
Time of concentration =   52.69 min.
Critical depth =      0.828(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.092(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.681
Subarea runoff =     28.136(CFS) for   64.800(Ac.)
Total runoff =    172.474(CFS)
Effective area this stream =      231.80(Ac.)
Total Study Area (Main Stream No. 1) =      231.80(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.959(Ft.), Average velocity =   4.630(Ft/s)
Critical depth =      0.875(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** IMPROVED CHANNEL TRAVEL TIME ****
```

```
Upstream point elevation =  2987.700(Ft.)
Downstream point elevation =  2966.100(Ft.)
Channel length thru subarea  =  2485.000(Ft.)
Channel base width    =   45.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    204.965(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    204.965(CFS)
Depth of flow =   0.875(Ft.), Average velocity =   4.828(Ft/s)
Channel flow top width =   52.003(Ft.)
Flow Velocity =    4.83(Ft/s)
Travel time  =    8.58 min.
Time of concentration =   61.27 min.
Critical depth =      0.844(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.997(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.661
Subarea runoff =     64.910(CFS) for  128.400(Ac.)
Total runoff =    237.384(CFS)
Effective area this stream =      360.20(Ac.)
Total Study Area (Main Stream No. 1) =      360.20(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.955(Ft.), Average velocity =   5.094(Ft/s)
Critical depth =      0.922(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2966.100(Ft.)
Downstream point elevation =  2950.500(Ft.)
Channel length thru subarea  =  1382.000(Ft.)
Channel base width    =   50.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    264.337(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    264.337(CFS)
Depth of flow =   0.886(Ft.), Average velocity =   5.569(Ft/s)
Channel flow top width =   57.091(Ft.)
Flow Velocity =    5.57(Ft/s)
Travel time  =    4.14 min.
Time of concentration =   65.41 min.
Critical depth =      0.930(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.959(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.651
Subarea runoff =     53.838(CFS) for  106.100(Ac.)
Total runoff =    291.222(CFS)
Effective area this stream =      466.30(Ac.)
Total Study Area (Main Stream No. 1) =      466.30(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.939(Ft.), Average velocity =   5.772(Ft/s)
Critical depth =      0.984(Ft.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    466.300(Ac.)
Runoff from this stream =    291.222(CFS)
Time of concentration =   65.41 min.
Rainfall intensity =     0.959(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  3055.200(Ft.)
Bottom (of initial area) elevation =  3044.400(Ft.)
Difference in elevation =    10.800(Ft.)
Slope =    0.01080  s(%)=       1.08
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   20.581 min.
Rainfall intensity =      1.919(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.776
Subarea runoff =     10.421(CFS)
Total initial stream area =        7.000(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      113.000
**** IMPROVED CHANNEL TRAVEL TIME ****
----------------------------------------------------------------------------
Upstream point elevation =  3044.400(Ft.)
Downstream point elevation =  3037.400(Ft.)
Channel length thru subarea  =   693.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     19.193(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     19.193(CFS)
Depth of flow =   0.622(Ft.), Average velocity =   3.634(Ft/s)
Channel flow top width =   10.977(Ft.)
Flow Velocity =    3.63(Ft/s)
Travel time  =    3.18 min.
Time of concentration =   23.76 min.
Critical depth =      0.594(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.761(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.765
Subarea runoff =     17.444(CFS) for   13.700(Ac.)
Total runoff =     27.865(CFS)
```

```
Effective area this stream =       20.70(Ac.)
Total Study Area (Main Stream No. 1) =      487.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.760(Ft.), Average velocity =   4.058(Ft/s)
Critical depth =      0.734(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      114.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  3037.400(Ft.)
Downstream point elevation =  3028.100(Ft.)
Channel length thru subarea  =   867.000(Ft.)
Channel base width     =   10.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     43.264(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     43.264(CFS)
Depth of flow =   0.754(Ft.), Average velocity =   4.406(Ft/s)
Channel flow top width =   16.035(Ft.)
Flow Velocity =    4.41(Ft/s)
Travel time  =    3.28 min.
Time of concentration =   27.04 min.
Critical depth =      0.750(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.629(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.754
Subarea runoff =     30.702(CFS) for   27.000(Ac.)
Total runoff =     58.567(CFS)
Effective area this stream =       47.70(Ac.)
Total Study Area (Main Stream No. 1) =      514.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.892(Ft.), Average velocity =   4.840(Ft/s)
Critical depth =      0.898(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      115.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  3028.100(Ft.)
Downstream point elevation =  3014.600(Ft.)
Channel length thru subarea  =  1278.000(Ft.)
Channel base width     =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     84.604(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     84.604(CFS)
Depth of flow =   0.776(Ft.), Average velocity =   4.720(Ft/s)
Channel flow top width =   26.207(Ft.)
Flow Velocity =    4.72(Ft/s)
Travel time  =    4.51 min.
Time of concentration =   31.55 min.
Critical depth =      0.781(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
```

```
Rainfall intensity =      1.485(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.739
Subarea runoff =     52.013(CFS) for   53.000(Ac.)
Total runoff =    110.580(CFS)
Effective area this stream =      100.70(Ac.)
Total Study Area (Main Stream No. 1) =      567.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.905(Ft.), Average velocity =   5.171(Ft/s)
Critical depth =      0.922(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      116.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  3014.600(Ft.)
Downstream point elevation =  2991.100(Ft.)
Channel length thru subarea  =  2143.000(Ft.)
Channel base width     =   30.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    152.994(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    152.994(CFS)
Depth of flow =   0.866(Ft.), Average velocity =   5.277(Ft/s)
Channel flow top width =   36.931(Ft.)
Flow Velocity =    5.28(Ft/s)
Travel time  =    6.77 min.
Time of concentration =   38.32 min.
Critical depth =      0.891(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.322(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.719
Subarea runoff =     84.753(CFS) for  104.700(Ac.)
Total runoff =    195.333(CFS)
Effective area this stream =      205.40(Ac.)
Total Study Area (Main Stream No. 1) =      671.70(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.999(Ft.), Average velocity =   5.751(Ft/s)
Critical depth =      1.047(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      110.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2991.100(Ft.)
Downstream point elevation =  2950.500(Ft.)
Channel length thru subarea  =  3898.000(Ft.)
Channel base width     =   70.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    256.570(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    256.570(CFS)
Depth of flow =   0.733(Ft.), Average velocity =   4.797(Ft/s)
Channel flow top width =   75.866(Ft.)
Flow Velocity =    4.80(Ft/s)
Travel time  =   13.54 min.
Time of concentration =   51.86 min.
Critical depth =      0.734(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
```

```
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.102(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.684
Subarea runoff =    122.407(CFS) for  216.300(Ac.)
Total runoff =    317.741(CFS)
Effective area this stream =      421.70(Ac.)
Total Study Area (Main Stream No. 1) =      888.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.833(Ft.), Average velocity =   5.203(Ft/s)
Critical depth =      0.844(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =    421.700(Ac.)
Runoff from this stream =    317.741(CFS)
Time of concentration =   51.86 min.
Rainfall intensity =     1.102(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1    291.22   466.300     65.41    0.265      0.959
2    317.74   421.700     51.86    0.265      1.102
Qmax(1) =
          1.000 *    1.000 *   291.222) +
          0.829 *    1.000 *   317.741) + =     554.589
Qmax(2) =
          1.206 *    0.793 *   291.222) +
          1.000 *    1.000 *   317.741) + =     596.326

Total of 2 streams to confluence:
Flow rates before confluence point:
     291.222     317.741
Maximum flow rates at confluence using above data:
      554.589      596.326
Area of streams before confluence:
      466.300      421.700
Effective area values after confluence:
      888.000      791.433
Results of confluence:
Total flow rate =    596.326(CFS)
Time of concentration =    51.863 min.
Effective stream area after confluence =    791.433(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =     888.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      117.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2950.500(Ft.)
Downstream point elevation =  2936.700(Ft.)
Channel length thru subarea  =  2462.000(Ft.)
Channel base width    =  160.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    645.114(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    645.114(CFS)
```

```
Depth of flow =   0.938(Ft.), Average velocity =   4.198(Ft/s)
Channel flow top width =  167.508(Ft.)
Flow Velocity =    4.20(Ft/s)
Travel time  =    9.77 min.
Time of concentration =   61.64 min.
Critical depth =      0.789(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.994(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.660
Subarea runoff =     97.510(CFS) for  266.500(Ac.)
Total runoff =    693.836(CFS)
Effective area this stream =     1057.93(Ac.)
Total Study Area (Main Stream No. 1) =     1154.50(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.980(Ft.), Average velocity =   4.318(Ft/s)
Critical depth =      0.828(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      117.000 to Point/Station      118.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2936.700(Ft.)
Downstream point elevation =  2915.300(Ft.)
Channel length thru subarea  =  3127.000(Ft.)
Channel base width     =  160.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    714.860(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    714.860(CFS)
Depth of flow =   0.940(Ft.), Average velocity =   4.644(Ft/s)
Channel flow top width =  167.521(Ft.)
Flow Velocity =    4.64(Ft/s)
Travel time  =   11.22 min.
Time of concentration =   72.86 min.
Critical depth =      0.844(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      0.899(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.635
Subarea runoff =     41.977(CFS) for  232.000(Ac.)
Total runoff =    735.814(CFS)
Effective area this stream =     1289.93(Ac.)
Total Study Area (Main Stream No. 1) =     1386.50(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.956(Ft.), Average velocity =   4.696(Ft/s)
Critical depth =      0.859(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2915.300(Ft.)
Downstream point elevation =  2900.000(Ft.)
Channel length thru subarea  =  3330.000(Ft.)
Channel base width     =  200.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
```

```
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    735.840(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    735.840(CFS)
Depth of flow =   0.944(Ft.), Average velocity =   3.826(Ft/s)
Channel flow top width =  207.550(Ft.)
Flow Velocity =    3.83(Ft/s)
Travel time  =   14.50 min.
Time of concentration =   87.37 min.
Critical depth =      0.750(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =    674.760(CFS)
therefore the upstream flow rate of Q =    735.814(CFS) is being used
Rainfall intensity =      0.806(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.604
Subarea runoff =      0.000(CFS) for   95.800(Ac.)
Total runoff =    735.814(CFS)
Effective area this stream =     1385.73(Ac.)
Total Study Area (Main Stream No. 1) =     1482.30(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.944(Ft.), Average velocity =   3.826(Ft/s)
Critical depth =      0.750(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =   1385.733(Ac.)
Runoff from this stream =    735.814(CFS)
Time of concentration =   87.37 min.
Rainfall intensity =     0.806(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   722.000(Ft.)
Top (of initial area) elevation =  2963.300(Ft.)
Bottom (of initial area) elevation =  2960.600(Ft.)
Difference in elevation =     2.700(Ft.)
Slope =    0.00374  s(%)=       0.37
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   22.336 min.
Rainfall intensity =      1.827(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.769
Subarea runoff =     13.919(CFS)
Total initial stream area =        9.900(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      202.000 to Point/Station      203.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2960.600(Ft.)
Downstream point elevation =  2950.200(Ft.)
Channel length thru subarea  =  1147.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     24.991(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     24.991(CFS)
Depth of flow =   0.738(Ft.), Average velocity =   3.784(Ft/s)
Channel flow top width =   11.903(Ft.)
Flow Velocity =    3.78(Ft/s)
Travel time  =    5.05 min.
Time of concentration =   27.39 min.
Critical depth =      0.695(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.617(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.752
Subarea runoff =     22.092(CFS) for   19.700(Ac.)
Total runoff =     36.011(CFS)
Effective area this stream =       29.60(Ac.)
Total Study Area (Main Stream No. 1) =     1511.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.894(Ft.), Average velocity =   4.205(Ft/s)
Critical depth =      0.852(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2950.200(Ft.)
Downstream point elevation =  2940.100(Ft.)
Channel length thru subarea  =  1514.000(Ft.)
Channel base width     =   15.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     53.390(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     53.390(CFS)
Depth of flow =   0.792(Ft.), Average velocity =   3.711(Ft/s)
Channel flow top width =   21.336(Ft.)
Flow Velocity =    3.71(Ft/s)
Travel time  =    6.80 min.
Time of concentration =   34.19 min.
Critical depth =      0.688(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.415(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.731
Subarea runoff =     34.699(CFS) for   38.700(Ac.)
Total runoff =     70.710(CFS)
Effective area this stream =       68.30(Ac.)
Total Study Area (Main Stream No. 1) =     1550.60(Ac.)
Area averaged Fm value =    0.265(In/Hr)
```

```
Depth of flow =   0.929(Ft.), Average velocity =   4.068(Ft/s)
Critical depth =      0.820(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2940.100(Ft.)
Downstream point elevation =  2913.000(Ft.)
Channel length thru subarea  =  2177.000(Ft.)
Channel base width     =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     97.659(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     97.659(CFS)
Depth of flow =   0.804(Ft.), Average velocity =   5.233(Ft/s)
Channel flow top width =   26.431(Ft.)
Flow Velocity =    5.23(Ft/s)
Travel time  =    6.93 min.
Time of concentration =   41.12 min.
Critical depth =      0.852(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.267(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.712
Subarea runoff =     53.812(CFS) for   69.800(Ac.)
Total runoff =    124.522(CFS)
Effective area this stream =      138.10(Ac.)
Total Study Area (Main Stream No. 1) =     1620.40(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.925(Ft.), Average velocity =   5.683(Ft/s)
Critical depth =      0.992(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      119.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2913.000(Ft.)
Downstream point elevation =  2900.000(Ft.)
Channel length thru subarea  =  1579.000(Ft.)
Channel base width     =   25.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    132.495(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    132.495(CFS)
Depth of flow =   0.958(Ft.), Average velocity =   4.799(Ft/s)
Channel flow top width =   32.661(Ft.)
Flow Velocity =    4.80(Ft/s)
Travel time  =    5.48 min.
Time of concentration =   46.61 min.
Critical depth =      0.906(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.175(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.697
```

```
Subarea runoff =     15.884(CFS) for   33.300(Ac.)
Total runoff =    140.406(CFS)
Effective area this stream =      171.40(Ac.)
Total Study Area (Main Stream No. 1) =     1653.70(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.990(Ft.), Average velocity =   4.895(Ft/s)
Critical depth =      0.938(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      119.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =    171.400(Ac.)
Runoff from this stream =    140.406(CFS)
Time of concentration =   46.61 min.
Rainfall intensity =     1.175(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1    735.81  1385.733     87.37    0.265      0.806
2    140.41   171.400     46.61    0.265      1.175
Qmax(1) =
          1.000 *    1.000 *   735.814) +
          0.594 *    1.000 *   140.406) + =     819.274
Qmax(2) =
          1.682 *    0.533 *   735.814) +
          1.000 *    1.000 *   140.406) + =     800.762

Total of 2 streams to confluence:
Flow rates before confluence point:
     735.814     140.406
Maximum flow rates at confluence using above data:
      819.274      800.762
Area of streams before confluence:
     1385.733      171.400
Effective area values after confluence:
     1557.133      910.641
Results of confluence:
Total flow rate =    819.274(CFS)
Time of concentration =    87.366 min.
Effective stream area after confluence =   1557.133(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =    1557.13(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      119.000 to Point/Station      120.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2900.000(Ft.)
Downstream point elevation =  2894.700(Ft.)
Channel length thru subarea  =  1506.000(Ft.)
Channel base width     =  250.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    819.306(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    819.306(CFS)
Depth of flow =   0.954(Ft.), Average velocity =   3.382(Ft/s)
Channel flow top width =  257.635(Ft.)
Flow Velocity =    3.38(Ft/s)
Travel time  =    7.42 min.
Time of concentration =   94.79 min.
Critical depth =      0.688(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
```

```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =    732.194(CFS)
therefore the upstream flow rate of Q =    819.274(CFS) is being used
Rainfall intensity =      0.768(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.589
Subarea runoff =      0.000(CFS) for   61.700(Ac.)
Total runoff =    819.274(CFS)
Effective area this stream =     1618.83(Ac.)
Total Study Area (Main Stream No. 1) =     1715.40(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.954(Ft.), Average velocity =   3.382(Ft/s)
Critical depth =      0.688(Ft.)
End of computations, Total Study Area =         1715.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  86.0
```

RATEXWESTOFF

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/04/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, WESTERNMOST
100 YEAR STORM EVENT
FN: RATEXWESTOFF100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 91.000 to Point/Station 92.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 953.000(Ft.)
Top (of initial area) elevation = 2952.000(Ft.)
Bottom (of initial area) elevation = 2941.400(Ft.)
Difference in elevation = 10.600(Ft.)
Slope = 0.01112 s(%)= 1.11
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 20.070 min.
Rainfall intensity = 1.948(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.778
Subarea runoff = 8.029(CFS)
Total initial stream area = 5.300(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++
Process from Point/Station 92.000 to Point/Station 93.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2941.400(Ft.)
Downstream point elevation = 2927.800(Ft.)
Channel length thru subarea = 1132.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 13.518(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 13.518(CFS)
Depth of flow = 0.490(Ft.), Average velocity = 3.468(Ft/s)
Channel flow top width = 9.918(Ft.)
Flow Velocity = 3.47(Ft/s)
Travel time = 5.44 min.

```
Time of concentration =   25.51 min.
Critical depth =      0.484(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.687(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.759
Subarea runoff =     10.914(CFS) for    9.500(Ac.)
Total runoff =     18.943(CFS)
Effective area this stream =       14.80(Ac.)
Total Study Area (Main Stream No. 1) =       14.80(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.589(Ft.), Average velocity =   3.846(Ft/s)
Critical depth =      0.586(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       93.000 to Point/Station       94.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2927.800(Ft.)
Downstream point elevation =  2906.300(Ft.)
Channel length thru subarea  =  1990.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     27.085(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     27.085(CFS)
Depth of flow =   0.735(Ft.), Average velocity =   4.122(Ft/s)
Channel flow top width =   11.881(Ft.)
Flow Velocity =    4.12(Ft/s)
Travel time  =    8.05 min.
Time of concentration =   33.56 min.
Critical depth =      0.727(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.7500     Max loss rate(Fm)=     0.199(In/Hr)
Rainfall intensity =      1.431(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.756
Subarea runoff =     16.225(CFS) for   17.700(Ac.)
Total runoff =     35.167(CFS)
Effective area this stream =       32.50(Ac.)
Total Study Area (Main Stream No. 1) =       32.50(Ac.)
Area averaged Fm value =    0.229(In/Hr)
Depth of flow =   0.844(Ft.), Average velocity =   4.446(Ft/s)
Critical depth =      0.844(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       94.000 to Point/Station       95.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2906.300(Ft.)
Downstream point elevation =  2900.900(Ft.)
Channel length thru subarea  =   793.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     37.368(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     37.368(CFS)
Depth of flow =   0.982(Ft.), Average velocity =   3.835(Ft/s)
Channel flow top width =   13.853(Ft.)
```

```
Flow Velocity =    3.83(Ft/s)
Travel time  =    3.45 min.
Time of concentration =   37.00 min.
Critical depth =      0.875(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.350(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.743
Subarea runoff =      4.351(CFS) for    6.900(Ac.)
Total runoff =     39.518(CFS)
Effective area this stream =       39.40(Ac.)
Total Study Area (Main Stream No. 1) =       39.40(Ac.)
Area averaged Fm value =    0.235(In/Hr)
Depth of flow =   1.009(Ft.), Average velocity =   3.905(Ft/s)
!!Warning: Water is above left or right bank elevations
ERROR - Channel depth exceeds maximum allowable depth
Critical depth =      0.898(Ft.)
End of computations, Total Study Area =           39.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.888
Area averaged SCS curve number =  86.0
```

RATEXEASTOFF

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 02/27/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, EAST BOUNDARY
100 YEAR STORM EVENT
FN: RATEXEASTOFF100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 801.000 to Point/Station 802.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 946.000(Ft.)
Top (of initial area) elevation = 2928.800(Ft.)
Bottom (of initial area) elevation = 2925.300(Ft.)
Difference in elevation = 3.500(Ft.)
Slope = 0.00370 s(%)= 0.37
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 24.939 min.
Rainfall intensity = 1.710(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.761
Subarea runoff = 11.316(CFS)
Total initial stream area = 8.700(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++
Process from Point/Station 802.000 to Point/Station 803.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2925.300(Ft.)
Downstream point elevation = 2920.000(Ft.)
Channel length thru subarea = 988.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 20.040(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 20.040(CFS)
Depth of flow = 0.754(Ft.), Average velocity = 2.946(Ft/s)
Channel flow top width = 12.035(Ft.)
Flow Velocity = 2.95(Ft/s)
Travel time = 5.59 min.

```
Time of concentration =   30.53 min.
Critical depth =      0.609(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.515(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.743
Subarea runoff =     17.367(CFS) for   16.800(Ac.)
Total runoff =     28.683(CFS)
Effective area this stream =       25.50(Ac.)
Total Study Area (Main Stream No. 1) =       25.50(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.911(Ft.), Average velocity =   3.267(Ft/s)
Critical depth =      0.750(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      803.000 to Point/Station      804.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2920.000(Ft.)
Downstream point elevation =  2912.000(Ft.)
Channel length thru subarea  =  1228.000(Ft.)
Channel base width     =   12.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     40.749(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     40.749(CFS)
Depth of flow =   0.767(Ft.), Average velocity =   3.528(Ft/s)
Channel flow top width =   18.134(Ft.)
Flow Velocity =    3.53(Ft/s)
Travel time  =    5.80 min.
Time of concentration =   36.33 min.
Critical depth =      0.656(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.365(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.725
Subarea runoff =     24.066(CFS) for   27.800(Ac.)
Total runoff =     52.750(CFS)
Effective area this stream =       53.30(Ac.)
Total Study Area (Main Stream No. 1) =       53.30(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.886(Ft.), Average velocity =   3.830(Ft/s)
Critical depth =      0.773(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      803.000 to Point/Station      804.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     53.300(Ac.)
Runoff from this stream =     52.750(CFS)
Time of concentration =   36.33 min.
Rainfall intensity =     1.365(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      805.000 to Point/Station      806.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   655.000(Ft.)
Top (of initial area) elevation =  2924.900(Ft.)
Bottom (of initial area) elevation =  2920.100(Ft.)
Difference in elevation =     4.800(Ft.)
Slope =    0.00733  s(%)=       0.73
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   18.778 min.
Rainfall intensity =      2.028(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.782
Subarea runoff =      5.076(CFS)
Total initial stream area =        3.200(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      806.000 to Point/Station      807.000
**** IMPROVED CHANNEL TRAVEL TIME ****
----------------------------------------------------------------------------
Upstream point elevation =  2920.100(Ft.)
Downstream point elevation =  2915.200(Ft.)
Channel length thru subarea  =   713.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =      8.250(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      8.250(CFS)
Depth of flow =   0.435(Ft.), Average velocity =   2.452(Ft/s)
Channel flow top width =    9.478(Ft.)
Flow Velocity =    2.45(Ft/s)
Travel time  =    4.85 min.
Time of concentration =   23.62 min.
Critical depth =      0.359(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.767(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.765
Subarea runoff =      6.277(CFS) for    5.200(Ac.)
Total runoff =     11.353(CFS)
Effective area this stream =        8.40(Ac.)
Total Study Area (Main Stream No. 1) =       61.70(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.519(Ft.), Average velocity =   2.709(Ft/s)
Critical depth =      0.434(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      807.000 to Point/Station      804.000
**** IMPROVED CHANNEL TRAVEL TIME ****
----------------------------------------------------------------------------
Upstream point elevation =  2915.200(Ft.)
Downstream point elevation =  2912.000(Ft.)
Channel length thru subarea  =   405.000(Ft.)
Channel base width     =    6.000(Ft.)
```

```
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     16.918(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     16.918(CFS)
Depth of flow =   0.621(Ft.), Average velocity =   3.211(Ft/s)
Channel flow top width =   10.968(Ft.)
Flow Velocity =    3.21(Ft/s)
Travel time  =    2.10 min.
Time of concentration =   25.73 min.
Critical depth =      0.551(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.679(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.758
Subarea runoff =     11.039(CFS) for    9.200(Ac.)
Total runoff =     22.392(CFS)
Effective area this stream =       17.60(Ac.)
Total Study Area (Main Stream No. 1) =       70.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.722(Ft.), Average velocity =   3.490(Ft/s)
Critical depth =      0.648(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      807.000 to Point/Station      804.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     17.600(Ac.)
Runoff from this stream =     22.392(CFS)
Time of concentration =   25.73 min.
Rainfall intensity =     1.679(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     52.75    53.300     36.33    0.265      1.365
2     22.39    17.600     25.73    0.265      1.679
Qmax(1) =
          1.000 *    1.000 *    52.750) +
          0.778 *    1.000 *    22.392) + =      70.168
Qmax(2) =
          1.286 *    0.708 *    52.750) +
          1.000 *    1.000 *    22.392) + =      70.411

Total of 2 streams to confluence:
Flow rates before confluence point:
      52.750      22.392
Maximum flow rates at confluence using above data:
       70.168       70.411
Area of streams before confluence:
       53.300       17.600
Effective area values after confluence:
       70.900       55.343
Results of confluence:
Total flow rate =     70.411(CFS)
Time of concentration =    25.727 min.
Effective stream area after confluence =     55.343(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =      70.90(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      804.000 to Point/Station      808.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2912.000(Ft.)
Downstream point elevation =  2909.500(Ft.)
Channel length thru subarea  =   410.000(Ft.)
Channel base width    =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     70.453(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     70.453(CFS)
Depth of flow =   0.818(Ft.), Average velocity =   3.700(Ft/s)
Channel flow top width =   26.545(Ft.)
Flow Velocity =    3.70(Ft/s)
Travel time  =    1.85 min.
Time of concentration =   27.57 min.
Critical depth =      0.695(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =     69.548(CFS)
therefore the upstream flow rate of Q =     70.411(CFS) is being used
Rainfall intensity =      1.610(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.752
Subarea runoff =      0.000(CFS) for    2.100(Ac.)
Total runoff =     70.411(CFS)
Effective area this stream =       57.44(Ac.)
Total Study Area (Main Stream No. 1) =       73.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.818(Ft.), Average velocity =   3.700(Ft/s)
Critical depth =      0.695(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      804.000 to Point/Station      808.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     57.443(Ac.)
Runoff from this stream =     70.411(CFS)
Time of concentration =   27.57 min.
Rainfall intensity =     1.610(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      809.000 to Point/Station      808.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   733.000(Ft.)
Top (of initial area) elevation =  2916.400(Ft.)
Bottom (of initial area) elevation =  2909.500(Ft.)
Difference in elevation =     6.900(Ft.)
Slope =    0.00941  s(%)=       0.94
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
```

```
Initial area time of concentration =   18.683 min.
Rainfall intensity =      2.034(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.783
Subarea runoff =      7.323(CFS)
Total initial stream area =        4.600(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      809.000 to Point/Station      808.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      4.600(Ac.)
Runoff from this stream =      7.323(CFS)
Time of concentration =   18.68 min.
Rainfall intensity =     2.034(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     70.41    57.443     27.57    0.265      1.610
2      7.32     4.600     18.68    0.265      2.034
Qmax(1) =
          1.000 *    1.000 *    70.411) +
          0.761 *    1.000 *     7.323) + =      75.981
Qmax(2) =
          1.315 *    0.678 *    70.411) +
          1.000 *    1.000 *     7.323) + =      70.056

Total of 2 streams to confluence:
Flow rates before confluence point:
      70.411       7.323
Maximum flow rates at confluence using above data:
       75.981       70.056
Area of streams before confluence:
       57.443        4.600
Effective area values after confluence:
       62.043       43.522
Results of confluence:
Total flow rate =     75.981(CFS)
Time of concentration =    27.574 min.
Effective stream area after confluence =     62.043(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =      62.04(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      808.000 to Point/Station      810.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2909.500(Ft.)
Downstream point elevation =  2905.700(Ft.)
Channel length thru subarea  =   703.000(Ft.)
Channel base width     =   30.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     87.416(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     87.416(CFS)
Depth of flow =   0.768(Ft.), Average velocity =   3.442(Ft/s)
Channel flow top width =   36.143(Ft.)
Flow Velocity =    3.44(Ft/s)
Travel time  =    3.40 min.
Time of concentration =   30.98 min.
Critical depth =      0.625(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
```

```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.502(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.741
Subarea runoff =     22.786(CFS) for   26.700(Ac.)
Total runoff =     98.766(CFS)
Effective area this stream =       88.74(Ac.)
Total Study Area (Main Stream No. 1) =      104.30(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.825(Ft.), Average velocity =   3.596(Ft/s)
Critical depth =      0.672(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      810.000 to Point/Station      811.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2905.700(Ft.)
Downstream point elevation =  2900.400(Ft.)
Channel length thru subarea  =   878.000(Ft.)
Channel base width     =   30.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    101.639(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    101.639(CFS)
Depth of flow =   0.812(Ft.), Average velocity =   3.764(Ft/s)
Channel flow top width =   36.497(Ft.)
Flow Velocity =    3.76(Ft/s)
Travel time  =    3.89 min.
Time of concentration =   34.87 min.
Critical depth =      0.688(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.399(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.729
Subarea runoff =      5.664(CFS) for   13.600(Ac.)
Total runoff =    104.430(CFS)
Effective area this stream =      102.34(Ac.)
Total Study Area (Main Stream No. 1) =      117.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.825(Ft.), Average velocity =   3.801(Ft/s)
Critical depth =      0.703(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      810.000 to Point/Station      811.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    102.343(Ac.)
Runoff from this stream =    104.430(CFS)
Time of concentration =   34.87 min.
Rainfall intensity =     1.399(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      812.000 to Point/Station      813.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
```

```
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   803.000(Ft.)
Top (of initial area) elevation =  2916.000(Ft.)
Bottom (of initial area) elevation =  2910.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.00747  s(%)=       0.75
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   20.294 min.
Rainfall intensity =      1.936(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.777
Subarea runoff =      8.720(CFS)
Total initial stream area =        5.800(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      813.000 to Point/Station      814.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2910.000(Ft.)
Downstream point elevation =  2903.800(Ft.)
Channel length thru subarea  =   391.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     11.184(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     11.184(CFS)
Depth of flow =   0.408(Ft.), Average velocity =   3.592(Ft/s)
Channel flow top width =    9.264(Ft.)
Flow Velocity =    3.59(Ft/s)
Travel time  =    1.81 min.
Time of concentration =   22.11 min.
Critical depth =      0.430(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.839(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.770
Subarea runoff =      4.875(CFS) for    3.800(Ac.)
Total runoff =     13.595(CFS)
Effective area this stream =        9.60(Ac.)
Total Study Area (Main Stream No. 1) =      127.50(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.455(Ft.), Average velocity =   3.822(Ft/s)
Critical depth =      0.484(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      814.000 to Point/Station      811.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2903.800(Ft.)
Downstream point elevation =  2900.400(Ft.)
Channel length thru subarea  =   515.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     16.044(CFS)
Manning's 'N'    = 0.025
```

```
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     16.044(CFS)
Depth of flow =   0.634(Ft.), Average velocity =   2.968(Ft/s)
Channel flow top width =   11.068(Ft.)
Flow Velocity =    2.97(Ft/s)
Travel time  =    2.89 min.
Time of concentration =   25.00 min.
Critical depth =      0.531(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.708(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.760
Subarea runoff =      4.843(CFS) for    4.600(Ac.)
Total runoff =     18.438(CFS)
Effective area this stream =       14.20(Ac.)
Total Study Area (Main Stream No. 1) =      132.10(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.683(Ft.), Average velocity =   3.093(Ft/s)
Critical depth =      0.578(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      814.000 to Point/Station      811.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     14.200(Ac.)
Runoff from this stream =     18.438(CFS)
Time of concentration =   25.00 min.
Rainfall intensity =     1.708(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1    104.43   102.343     34.87    0.265      1.399
2     18.44    14.200     25.00    0.265      1.708
Qmax(1) =
          1.000 *    1.000 *   104.430) +
          0.786 *    1.000 *    18.438) + =     118.920
Qmax(2) =
          1.273 *    0.717 *   104.430) +
          1.000 *    1.000 *    18.438) + =     113.727

Total of 2 streams to confluence:
Flow rates before confluence point:
     104.430      18.438
Maximum flow rates at confluence using above data:
      118.920      113.727
Area of streams before confluence:
      102.343       14.200
Effective area values after confluence:
      116.543       87.585
Results of confluence:
Total flow rate =    118.920(CFS)
Time of concentration =    34.865 min.
Effective stream area after confluence =    116.543(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =     116.54(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      811.000 to Point/Station      815.000
**** IMPROVED CHANNEL TRAVEL TIME ****
```

```
Upstream point elevation =  2900.400(Ft.)
Downstream point elevation =  2898.000(Ft.)
Channel length thru subarea  =   420.000(Ft.)
Channel base width     =   40.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    119.006(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    119.006(CFS)
Depth of flow =   0.769(Ft.), Average velocity =   3.592(Ft/s)
Channel flow top width =   46.152(Ft.)
Flow Velocity =    3.59(Ft/s)
Travel time  =    1.95 min.
Time of concentration =   36.81 min.
Critical depth =      0.633(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.354(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.724
Subarea runoff =      0.091(CFS) for    4.900(Ac.)
Total runoff =    119.012(CFS)
Effective area this stream =      121.44(Ac.)
Total Study Area (Main Stream No. 1) =      137.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.769(Ft.), Average velocity =   3.592(Ft/s)
Critical depth =      0.633(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      811.000 to Point/Station      815.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    121.443(Ac.)
Runoff from this stream =    119.012(CFS)
Time of concentration =   36.81 min.
Rainfall intensity =     1.354(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      816.000 to Point/Station      817.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   515.000(Ft.)
Top (of initial area) elevation =  2906.000(Ft.)
Bottom (of initial area) elevation =  2900.800(Ft.)
Difference in elevation =     5.200(Ft.)
Slope =    0.01010  s(%)=       1.01
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.997 min.
Rainfall intensity =      2.232(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.793
Subarea runoff =      7.260(CFS)
Total initial stream area =        4.100(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      817.000 to Point/Station      815.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2900.800(Ft.)
Downstream point elevation =  2898.000(Ft.)
Channel length thru subarea  =   432.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =      9.285(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      9.285(CFS)
Depth of flow =   0.472(Ft.), Average velocity =   2.494(Ft/s)
Channel flow top width =    9.775(Ft.)
Flow Velocity =    2.49(Ft/s)
Travel time  =    2.89 min.
Time of concentration =   18.88 min.
Critical depth =      0.383(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      2.021(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.782
Subarea runoff =      3.960(CFS) for    3.000(Ac.)
Total runoff =     11.220(CFS)
Effective area this stream =        7.10(Ac.)
Total Study Area (Main Stream No. 1) =      144.10(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.524(Ft.), Average velocity =   2.645(Ft/s)
Critical depth =      0.430(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      817.000 to Point/Station      815.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      7.100(Ac.)
Runoff from this stream =     11.220(CFS)
Time of concentration =   18.88 min.
Rainfall intensity =     2.021(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1    119.01   121.443      36.81    0.265      1.354
2     11.22     7.100      18.88    0.265      2.021
Qmax(1) =
          1.000 *    1.000 *   119.012) +
          0.620 *    1.000 *    11.220) + =     125.969
Qmax(2) =
          1.613 *    0.513 *   119.012) +
          1.000 *    1.000 *    11.220) + =     109.663

Total of 2 streams to confluence:
Flow rates before confluence point:
     119.012      11.220
Maximum flow rates at confluence using above data:
      125.969      109.663
Area of streams before confluence:
      121.443        7.100
```

```
Effective area values after confluence:
      128.543       69.395
Results of confluence:
Total flow rate =    125.969(CFS)
Time of concentration =    36.814 min.
Effective stream area after confluence =    128.543(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =     128.54(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      815.000 to Point/Station      818.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2898.000(Ft.)
Downstream point elevation =  2894.500(Ft.)
Channel length thru subarea  =   884.000(Ft.)
Channel base width    =   40.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    126.010(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    126.010(CFS)
Depth of flow =   0.886(Ft.), Average velocity =   3.265(Ft/s)
Channel flow top width =   47.090(Ft.)
Flow Velocity =    3.27(Ft/s)
Travel time  =    4.51 min.
Time of concentration =   41.33 min.
Critical depth =      0.656(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =    125.084(CFS)
therefore the upstream flow rate of Q =    125.969(CFS) is being used
Rainfall intensity =      1.263(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.711
Subarea runoff =      0.000(CFS) for   10.700(Ac.)
Total runoff =    125.969(CFS)
Effective area this stream =      139.24(Ac.)
Total Study Area (Main Stream No. 1) =      154.80(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.886(Ft.), Average velocity =   3.265(Ft/s)
Critical depth =      0.656(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      815.000 to Point/Station      818.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    139.243(Ac.)
Runoff from this stream =    125.969(CFS)
Time of concentration =   41.33 min.
Rainfall intensity =     1.263(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      819.000 to Point/Station      820.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
```

```
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  2915.000(Ft.)
Bottom (of initial area) elevation =  2906.700(Ft.)
Difference in elevation =     8.300(Ft.)
Slope =    0.00830  s(%)=       0.83
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   21.694 min.
Rainfall intensity =      1.860(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.772
Subarea runoff =     12.054(CFS)
Total initial stream area =        8.400(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      820.000 to Point/Station      821.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2906.700(Ft.)
Downstream point elevation =  2900.600(Ft.)
Channel length thru subarea  =   741.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     21.805(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     21.805(CFS)
Depth of flow =   0.704(Ft.), Average velocity =   3.513(Ft/s)
Channel flow top width =   11.632(Ft.)
Flow Velocity =    3.51(Ft/s)
Travel time  =    3.52 min.
Time of concentration =   25.21 min.
Critical depth =      0.641(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.699(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.760
Subarea runoff =     19.441(CFS) for   16.000(Ac.)
Total runoff =     31.495(CFS)
Effective area this stream =       24.40(Ac.)
Total Study Area (Main Stream No. 1) =      179.20(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.855(Ft.), Average velocity =   3.910(Ft/s)
Critical depth =      0.789(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      821.000 to Point/Station      818.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2900.600(Ft.)
Downstream point elevation =  2894.500(Ft.)
Channel length thru subarea  =   728.000(Ft.)
Channel base width     =   12.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     43.654(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     43.654(CFS)
Depth of flow =   0.742(Ft.), Average velocity =   3.928(Ft/s)
Channel flow top width =   17.940(Ft.)
```

```
Flow Velocity =    3.93(Ft/s)
Travel time  =    3.09 min.
Time of concentration =   28.30 min.
Critical depth =      0.688(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.585(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.750
Subarea runoff =     24.237(CFS) for   22.500(Ac.)
Total runoff =     55.732(CFS)
Effective area this stream =       46.90(Ac.)
Total Study Area (Main Stream No. 1) =      201.70(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.852(Ft.), Average velocity =   4.248(Ft/s)
Critical depth =      0.797(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      821.000 to Point/Station      818.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     46.900(Ac.)
Runoff from this stream =     55.732(CFS)
Time of concentration =   28.30 min.
Rainfall intensity =     1.585(In/Hr)
Area averaged loss rate (Fm) =    0.2651(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1    125.97   139.243     41.33    0.265      1.263
2     55.73    46.900     28.30    0.265      1.585
Qmax(1) =
          1.000 *    1.000 *   125.969) +
          0.756 *    1.000 *    55.732) + =     168.100
Qmax(2) =
          1.323 *    0.685 *   125.969) +
          1.000 *    1.000 *    55.732) + =     169.840

Total of 2 streams to confluence:
Flow rates before confluence point:
     125.969      55.732
Maximum flow rates at confluence using above data:
      168.100      169.840
Area of streams before confluence:
      139.243       46.900
Effective area values after confluence:
      186.143      142.250
Results of confluence:
Total flow rate =    169.840(CFS)
Time of concentration =    28.299 min.
Effective stream area after confluence =    142.250(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.265(In/Hr)
Study area total (this main stream) =     186.14(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      818.000 to Point/Station      822.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2894.500(Ft.)
Downstream point/station elevation =  2893.500(Ft.)
Pipe length  =   100.00(Ft.)   Manning's N = 0.013
```

No. of pipes = 1 Required pipe flow =   169.840(CFS)
Nearest computed pipe diameter =   54.00(In.)
Calculated individual pipe flow =   169.840(CFS)
Normal flow depth in pipe =   38.72(In.)
Flow top width inside pipe =   48.65(In.)
Critical Depth =   45.52(In.)
Pipe flow velocity =   13.91(Ft/s)
Travel time through pipe =   0.12 min.
Time of concentration (TC) =   28.42 min.
End of computations, Total Study Area =   201.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 86.0

RATEX01CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/04/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #1
100 YEAR STORM EVENT
FN: RATEX01CUL100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 971.000(Ft.)
Top (of initial area) elevation = 2961.400(Ft.)
Bottom (of initial area) elevation = 2949.600(Ft.)
Difference in elevation = 11.800(Ft.)
Slope = 0.01215 s(%)= 1.22
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 19.866 min.
Rainfall intensity = 1.960(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.778
Subarea runoff = 12.054(CFS)
Total initial stream area = 7.900(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++
Process from Point/Station 102.000 to Point/Station 103.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2949.600(Ft.)
Downstream point elevation = 2936.500(Ft.)
Channel length thru subarea = 1076.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 22.142(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 22.142(CFS)
Depth of flow = 0.639(Ft.), Average velocity = 4.050(Ft/s)
Channel flow top width = 11.112(Ft.)
Flow Velocity = 4.05(Ft/s)
Travel time = 4.43 min.

```
Time of concentration =   24.29 min.
Critical depth =      0.648(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.5000     Max loss rate(Fm)=     0.133(In/Hr)
Rainfall intensity =      1.737(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.808
Subarea runoff =     20.081(CFS) for   15.000(Ac.)
Total runoff =     32.134(CFS)
Effective area this stream =       22.90(Ac.)
Total Study Area (Main Stream No. 1) =       22.90(Ac.)
Area averaged Fm value =    0.178(In/Hr)
Depth of flow =   0.780(Ft.), Average velocity =   4.519(Ft/s)
Critical depth =      0.797(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2936.500(Ft.)
Downstream point elevation =  2918.400(Ft.)
Channel length thru subarea  =  1783.000(Ft.)
Channel base width     =   30.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     47.152(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     47.152(CFS)
Depth of flow =   0.443(Ft.), Average velocity =   3.350(Ft/s)
Channel flow top width =   33.544(Ft.)
Flow Velocity =    3.35(Ft/s)
Travel time  =    8.87 min.
Time of concentration =   33.17 min.
Critical depth =      0.418(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.027(In/Hr)
Rainfall intensity =      1.441(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.841
Subarea runoff =     29.938(CFS) for   28.300(Ac.)
Total runoff =     62.072(CFS)
Effective area this stream =       51.20(Ac.)
Total Study Area (Main Stream No. 1) =       51.20(Ac.)
Area averaged Fm value =    0.094(In/Hr)
Depth of flow =   0.521(Ft.), Average velocity =   3.711(Ft/s)
Critical depth =      0.500(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2918.400(Ft.)
Downstream point elevation =  2907.600(Ft.)
Channel length thru subarea  =  1056.000(Ft.)
Channel base width     =   40.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     66.265(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     66.265(CFS)
Depth of flow =   0.457(Ft.), Average velocity =   3.463(Ft/s)
Channel flow top width =   43.660(Ft.)
Flow Velocity =    3.46(Ft/s)
Travel time  =    5.08 min.
Time of concentration =   38.25 min.
```

```
Critical depth =      0.434(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.7500     Max loss rate(Fm)=     0.199(In/Hr)
Rainfall intensity =      1.323(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.821
Subarea runoff =      8.317(CFS) for   13.600(Ac.)
Total runoff =     70.388(CFS)
Effective area this stream =       64.80(Ac.)
Total Study Area (Main Stream No. 1) =       64.80(Ac.)
Area averaged Fm value =    0.116(In/Hr)
Depth of flow =   0.474(Ft.), Average velocity =   3.543(Ft/s)
Critical depth =      0.453(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2907.600(Ft.)
Downstream point elevation =  2895.500(Ft.)
Channel length thru subarea  =  1422.000(Ft.)
Channel base width     =   50.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     70.922(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     70.922(CFS)
Depth of flow =   0.441(Ft.), Average velocity =   3.104(Ft/s)
Channel flow top width =   53.531(Ft.)
Flow Velocity =    3.10(Ft/s)
Travel time  =    7.64 min.
Time of concentration =   45.88 min.
Critical depth =      0.391(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.186(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.796
Subarea runoff =      0.971(CFS) for   10.800(Ac.)
Total runoff =     71.360(CFS)
Effective area this stream =       75.60(Ac.)
Total Study Area (Main Stream No. 1) =       75.60(Ac.)
Area averaged Fm value =    0.138(In/Hr)
Depth of flow =   0.443(Ft.), Average velocity =   3.111(Ft/s)
Critical depth =      0.395(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2895.500(Ft.)
Downstream point/station elevation =  2895.000(Ft.)
Pipe length  =   100.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    71.360(CFS)
Nearest computed pipe diameter  =     45.00(In.)
Calculated individual pipe flow  =    71.360(CFS)
Normal flow depth in pipe =   31.41(In.)
Flow top width inside pipe =   41.32(In.)
Critical Depth =   31.22(In.)
Pipe flow velocity =      8.66(Ft/s)
Travel time through pipe =    0.19 min.
Time of concentration (TC) =    46.08 min.
End of computations, Total Study Area =           75.60 (Ac.)
```

The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.519
Area averaged SCS curve number = 86.0

RATEX02CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/04/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #2
100 YEAR STORM EVENT
FN: RATEX02CUL100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 880.000(Ft.)
Top (of initial area) elevation = 2964.000(Ft.)
Bottom (of initial area) elevation = 2960.500(Ft.)
Difference in elevation = 3.500(Ft.)
Slope = 0.00398 s(%)= 0.40
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 23.880 min.
Rainfall intensity = 1.755(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.764
Subarea runoff = 13.145(CFS)
Total initial stream area = 9.800(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++
Process from Point/Station 202.000 to Point/Station 203.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2960.500(Ft.)
Downstream point elevation = 2947.700(Ft.)
Channel length thru subarea = 1203.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 23.676(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 23.676(CFS)
Depth of flow = 0.687(Ft.), Average velocity = 3.940(Ft/s)
Channel flow top width = 11.495(Ft.)
Flow Velocity = 3.94(Ft/s)
Travel time = 5.09 min.

```
Time of concentration =   28.97 min.
Critical depth =      0.672(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.563(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.747
Subarea runoff =     20.973(CFS) for   19.400(Ac.)
Total runoff =     34.118(CFS)
Effective area this stream =       29.20(Ac.)
Total Study Area (Main Stream No. 1) =       29.20(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.834(Ft.), Average velocity =   4.383(Ft/s)
Critical depth =      0.828(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2947.700(Ft.)
Downstream point elevation =  2930.700(Ft.)
Channel length thru subarea  =  2037.000(Ft.)
Channel base width     =   15.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     48.819(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     48.819(CFS)
Depth of flow =   0.706(Ft.), Average velocity =   3.881(Ft/s)
Channel flow top width =   20.646(Ft.)
Flow Velocity =    3.88(Ft/s)
Travel time  =    8.75 min.
Time of concentration =   37.72 min.
Critical depth =      0.648(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.7500     Max loss rate(Fm)=     0.199(In/Hr)
Rainfall intensity =      1.334(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.745
Subarea runoff =     29.346(CFS) for   34.600(Ac.)
Total runoff =     63.464(CFS)
Effective area this stream =       63.80(Ac.)
Total Study Area (Main Stream No. 1) =       63.80(Ac.)
Area averaged Fm value =    0.229(In/Hr)
Depth of flow =   0.820(Ft.), Average velocity =   4.235(Ft/s)
Critical depth =      0.766(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2930.700(Ft.)
Downstream point elevation =  2908.500(Ft.)
Channel length thru subarea  =  1721.000(Ft.)
Channel base width     =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     73.055(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     73.055(CFS)
Depth of flow =   0.672(Ft.), Average velocity =   4.788(Ft/s)
Channel flow top width =   25.380(Ft.)
```

```
Flow Velocity =    4.79(Ft/s)
Travel time  =    5.99 min.
Time of concentration =   43.71 min.
Critical depth =      0.711(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.2500     Max loss rate(Fm)=     0.066(In/Hr)
Rainfall intensity =      1.221(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.765
Subarea runoff =     19.090(CFS) for   24.600(Ac.)
Total runoff =     82.554(CFS)
Effective area this stream =       88.40(Ac.)
Total Study Area (Main Stream No. 1) =       88.40(Ac.)
Area averaged Fm value =    0.184(In/Hr)
Depth of flow =   0.722(Ft.), Average velocity =   4.996(Ft/s)
Critical depth =      0.766(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     88.400(Ac.)
Runoff from this stream =     82.554(CFS)
Time of concentration =   43.71 min.
Rainfall intensity =     1.221(In/Hr)
Area averaged loss rate (Fm) =    0.1838(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6934


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      207.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Initial subarea data:
Initial area flow distance =   900.000(Ft.)
Top (of initial area) elevation =  2963.000(Ft.)
Bottom (of initial area) elevation =  2958.600(Ft.)
Difference in elevation =     4.400(Ft.)
Slope =    0.00489  s(%)=       0.49
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   23.121 min.
Rainfall intensity =      1.790(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.767
Subarea runoff =     13.036(CFS)
Total initial stream area =        9.500(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.265(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2958.600(Ft.)
Downstream point elevation =  2947.700(Ft.)
Channel length thru subarea  =    19.000(Ft.)
Channel base width    =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     26.072(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     26.072(CFS)
```

```
Depth of flow =   0.238(Ft.), Average velocity =  15.782(Ft/s)
Channel flow top width =    7.901(Ft.)
Flow Velocity =   15.78(Ft/s)
Travel time  =    0.02 min.
Time of concentration =   23.14 min.
Critical depth =      0.711(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.789(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.767
Subarea runoff =     26.048(CFS) for   19.000(Ac.)
Total runoff =     39.085(CFS)
Effective area this stream =       28.50(Ac.)
Total Study Area (Main Stream No. 1) =      116.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.300(Ft.), Average velocity =  18.098(Ft/s)
Critical depth =      0.891(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2947.700(Ft.)
Downstream point elevation =  2930.900(Ft.)
Channel length thru subarea  =  1903.000(Ft.)
Channel base width     =   15.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     53.911(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     53.911(CFS)
Depth of flow =   0.735(Ft.), Average velocity =   4.088(Ft/s)
Channel flow top width =   20.881(Ft.)
Flow Velocity =    4.09(Ft/s)
Travel time  =    7.76 min.
Time of concentration =   30.90 min.
Critical depth =      0.688(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.5000     Max loss rate(Fm)=     0.133(In/Hr)
Rainfall intensity =      1.504(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.782
Subarea runoff =     29.596(CFS) for   29.900(Ac.)
Total runoff =     68.681(CFS)
Effective area this stream =       58.40(Ac.)
Total Study Area (Main Stream No. 1) =      146.80(Ac.)
Area averaged Fm value =    0.197(In/Hr)
Depth of flow =   0.844(Ft.), Average velocity =   4.429(Ft/s)
Critical depth =      0.805(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      205.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2930.300(Ft.)
Downstream point elevation =  2908.500(Ft.)
Channel length thru subarea  =  1668.000(Ft.)
Channel base width     =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     84.354(CFS)
Manning's 'N'    = 0.025
```

```
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     84.354(CFS)
Depth of flow =   0.728(Ft.), Average velocity =   5.055(Ft/s)
Channel flow top width =   25.826(Ft.)
Flow Velocity =    5.06(Ft/s)
Travel time  =    5.50 min.
Time of concentration =   36.40 min.
Critical depth =      0.781(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.0100     Max loss rate(Fm)=     0.003(In/Hr)
Rainfall intensity =      1.363(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.815
Subarea runoff =     31.295(CFS) for   31.600(Ac.)
Total runoff =     99.976(CFS)
Effective area this stream =       90.00(Ac.)
Total Study Area (Main Stream No. 1) =      178.40(Ac.)
Area averaged Fm value =    0.129(In/Hr)
Depth of flow =   0.803(Ft.), Average velocity =   5.360(Ft/s)
Critical depth =      0.867(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      205.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     90.000(Ac.)
Runoff from this stream =     99.976(CFS)
Time of concentration =   36.40 min.
Rainfall intensity =     1.363(In/Hr)
Area averaged loss rate (Fm) =    0.1289(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4863
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     82.55    88.400     43.71    0.184      1.221
2     99.98    90.000     36.40    0.129      1.363
Qmax(1) =
          1.000 *    1.000 *    82.554) +
          0.885 *    1.000 *    99.976) + =     171.050
Qmax(2) =
          1.137 *    0.833 *    82.554) +
          1.000 *    1.000 *    99.976) + =     178.117

Total of 2 streams to confluence:
Flow rates before confluence point:
      82.554      99.976
Maximum flow rates at confluence using above data:
      171.050      178.117
Area of streams before confluence:
       88.400       90.000
Effective area values after confluence:
      178.400      163.620
Results of confluence:
Total flow rate =    178.117(CFS)
Time of concentration =    36.400 min.
Effective stream area after confluence =    163.620(Ac.)
Study area average Pervious fraction(Ap) =  0.589
Study area average soil loss rate(Fm) =    0.156(In/Hr)
Study area total (this main stream) =     178.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      210.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2908.500(Ft.)
Downstream point elevation =  2907.300(Ft.)
```

```
Channel length thru subarea  =   567.000(Ft.)
Channel base width     =  100.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    179.800(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    179.800(CFS)
Depth of flow =   0.773(Ft.), Average velocity =   2.256(Ft/s)
Channel flow top width =  106.185(Ft.)
Flow Velocity =    2.26(Ft/s)
Travel time  =    4.19 min.
Time of concentration =   40.59 min.
Critical depth =      0.461(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.5000     Max loss rate(Fm)=     0.133(In/Hr)
Rainfall intensity =      1.277(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.791
Subarea runoff =      3.307(CFS) for   15.900(Ac.)
Total runoff =    181.424(CFS)
Effective area this stream =      179.52(Ac.)
Total Study Area (Main Stream No. 1) =      194.30(Ac.)
Area averaged Fm value =    0.154(In/Hr)
Depth of flow =   0.777(Ft.), Average velocity =   2.264(Ft/s)
Critical depth =      0.465(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2907.300(Ft.)
Downstream point elevation =  2900.000(Ft.)
Channel length thru subarea  =  1095.000(Ft.)
Channel base width     =  100.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    181.471(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    181.471(CFS)
Depth of flow =   0.552(Ft.), Average velocity =   3.217(Ft/s)
Channel flow top width =  104.416(Ft.)
Flow Velocity =    3.22(Ft/s)
Travel time  =    5.67 min.
Time of concentration =   46.26 min.
Critical depth =      0.465(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =    175.652(CFS)
therefore the upstream flow rate of Q =    181.424(CFS) is being used
Rainfall intensity =      1.181(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.777
Subarea runoff =      0.000(CFS) for   11.900(Ac.)
Total runoff =    181.424(CFS)
Effective area this stream =      191.42(Ac.)
Total Study Area (Main Stream No. 1) =      206.20(Ac.)
Area averaged Fm value =    0.161(In/Hr)
Depth of flow =   0.552(Ft.), Average velocity =   3.216(Ft/s)
Critical depth =      0.465(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      211.000 to Point/Station      212.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =  2900.000(Ft.)
Downstream point elevation =  2895.300(Ft.)
Channel length thru subarea  =   350.000(Ft.)
Channel base width     =  100.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    183.667(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =    183.667(CFS)
Depth of flow =   0.451(Ft.), Average velocity =   4.001(Ft/s)
Channel flow top width =  103.608(Ft.)
Flow Velocity =    4.00(Ft/s)
Travel time  =    1.46 min.
Time of concentration =   47.72 min.
Critical depth =      0.469(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.159(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.768
Subarea runoff =      4.390(CFS) for   17.300(Ac.)
Total runoff =    185.814(CFS)
Effective area this stream =      208.72(Ac.)
Total Study Area (Main Stream No. 1) =      223.50(Ac.)
Area averaged Fm value =    0.170(In/Hr)
Depth of flow =   0.454(Ft.), Average velocity =   4.019(Ft/s)
Critical depth =      0.473(Ft.)
End of computations, Total Study Area =          223.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.636
Area averaged SCS curve number =  86.0
```

RATEX03CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/04/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #3
100 YEAR STORM EVENT
FN: RATEX03CUL100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 301.000 to Point/Station 302.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 888.000(Ft.)
Top (of initial area) elevation = 2925.000(Ft.)
Bottom (of initial area) elevation = 2915.100(Ft.)
Difference in elevation = 9.900(Ft.)
Slope = 0.01115 s(%)= 1.11
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 19.502 min.
Rainfall intensity = 1.982(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.780
Subarea runoff = 7.727(CFS)
Total initial stream area = 5.000(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++
Process from Point/Station 302.000 to Point/Station 303.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2915.100(Ft.)
Downstream point elevation = 2909.000(Ft.)
Channel length thru subarea = 463.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 14.611(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 14.611(CFS)
Depth of flow = 0.498(Ft.), Average velocity = 3.667(Ft/s)
Channel flow top width = 9.987(Ft.)
Flow Velocity = 3.67(Ft/s)
Travel time = 2.10 min.

```
Time of concentration =   21.61 min.
Critical depth =      0.508(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.864(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.772
Subarea runoff =     13.715(CFS) for    9.900(Ac.)
Total runoff =     21.442(CFS)
Effective area this stream =       14.90(Ac.)
Total Study Area (Main Stream No. 1) =       14.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.615(Ft.), Average velocity =   4.123(Ft/s)
Critical depth =      0.633(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2909.000(Ft.)
Downstream point elevation =  2901.500(Ft.)
Channel length thru subarea  =   780.000(Ft.)
Channel base width     =   10.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     28.226(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     28.226(CFS)
Depth of flow =   0.612(Ft.), Average velocity =   3.703(Ft/s)
Channel flow top width =   14.898(Ft.)
Flow Velocity =    3.70(Ft/s)
Travel time  =    3.51 min.
Time of concentration =   25.12 min.
Critical depth =      0.578(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.703(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.760
Subarea runoff =     13.501(CFS) for   12.100(Ac.)
Total runoff =     34.943(CFS)
Effective area this stream =       27.00(Ac.)
Total Study Area (Main Stream No. 1) =       27.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.690(Ft.), Average velocity =   3.966(Ft/s)
Critical depth =      0.656(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      305.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2901.500(Ft.)
Downstream point elevation =  2895.500(Ft.)
Channel length thru subarea  =   748.000(Ft.)
Channel base width     =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     40.956(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
```

```
Flow(q) thru subarea =     40.956(CFS)
Depth of flow =   0.551(Ft.), Average velocity =   3.347(Ft/s)
Channel flow top width =   24.409(Ft.)
Flow Velocity =    3.35(Ft/s)
Travel time  =    3.72 min.
Time of concentration =   28.84 min.
Critical depth =      0.492(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.567(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.748
Subarea runoff =     11.943(CFS) for   13.000(Ac.)
Total runoff =     46.886(CFS)
Effective area this stream =       40.00(Ac.)
Total Study Area (Main Stream No. 1) =       40.00(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.596(Ft.), Average velocity =   3.512(Ft/s)
Critical depth =      0.531(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      305.000 to Point/Station      306.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2895.500(Ft.)
Downstream point/station elevation =  2894.800(Ft.)
Pipe length  =   150.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    46.886(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    46.886(CFS)
Normal flow depth in pipe =   27.14(In.)
Flow top width inside pipe =   35.88(In.)
Critical Depth =   26.20(In.)
Pipe flow velocity =      7.60(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =    29.17 min.
End of computations, Total Study Area =           40.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  86.0
```

RATEX04CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/04/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #4
100 YEAR STORM EVENT
FN: RATEX04CUL100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 401.000 to Point/Station 402.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 715.000(Ft.)
Top (of initial area) elevation = 2936.400(Ft.)
Bottom (of initial area) elevation = 2931.100(Ft.)
Difference in elevation = 5.300(Ft.)
Slope = 0.00741 s(%)= 0.74
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.236 min.
Rainfall intensity = 2.760(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff = 4.869(CFS)
Total initial stream area = 2.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 402.000 to Point/Station 403.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2931.100(Ft.)
Downstream point elevation = 2923.600(Ft.)
Channel length thru subarea = 633.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 8.249(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 8.249(CFS)
Depth of flow = 0.373(Ft.), Average velocity = 2.951(Ft/s)
Channel flow top width = 8.985(Ft.)
Flow Velocity = 2.95(Ft/s)
Travel time = 3.58 min.

```
Time of concentration =   14.81 min.
Critical depth =      0.359(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      2.338(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.825
Subarea runoff =      6.704(CFS) for    4.000(Ac.)
Total runoff =     11.573(CFS)
Effective area this stream =        6.00(Ac.)
Total Study Area (Main Stream No. 1) =        6.00(Ac.)
Area averaged Fm value =    0.195(In/Hr)
Depth of flow =   0.451(Ft.), Average velocity =   3.287(Ft/s)
Critical depth =      0.438(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      403.000 to Point/Station      404.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2923.600(Ft.)
Downstream point elevation =  2911.200(Ft.)
Channel length thru subarea  =  1310.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     15.277(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     15.277(CFS)
Depth of flow =   0.559(Ft.), Average velocity =   3.316(Ft/s)
Channel flow top width =   10.475(Ft.)
Flow Velocity =    3.32(Ft/s)
Travel time  =    6.58 min.
Time of concentration =   21.40 min.
Critical depth =      0.520(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.875(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.789
Subarea runoff =      7.353(CFS) for    6.800(Ac.)
Total runoff =     18.925(CFS)
Effective area this stream =       12.80(Ac.)
Total Study Area (Main Stream No. 1) =       12.80(Ac.)
Area averaged Fm value =    0.232(In/Hr)
Depth of flow =   0.628(Ft.), Average velocity =   3.538(Ft/s)
Critical depth =      0.586(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      404.000 to Point/Station      405.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2911.200(Ft.)
Downstream point elevation =  2896.300(Ft.)
Channel length thru subarea  =  1437.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     24.867(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
```

```
Flow(q) thru subarea =     24.867(CFS)
Depth of flow =   0.710(Ft.), Average velocity =   3.961(Ft/s)
Channel flow top width =   11.681(Ft.)
Flow Velocity =    3.96(Ft/s)
Travel time  =    6.05 min.
Time of concentration =   27.44 min.
Critical depth =      0.688(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.615(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.762
Subarea runoff =     11.825(CFS) for   12.200(Ac.)
Total runoff =     30.751(CFS)
Effective area this stream =       25.00(Ac.)
Total Study Area (Main Stream No. 1) =       25.00(Ac.)
Area averaged Fm value =    0.248(In/Hr)
Depth of flow =   0.795(Ft.), Average velocity =   4.215(Ft/s)
Critical depth =      0.781(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      405.000 to Point/Station      406.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.300(Ft.)
Downstream point/station elevation =  2895.700(Ft.)
Pipe length  =   130.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    30.751(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    30.751(CFS)
Normal flow depth in pipe =   23.48(In.)
Flow top width inside pipe =   29.90(In.)
Critical Depth =   22.15(In.)
Pipe flow velocity =      6.80(Ft/s)
Travel time through pipe =    0.32 min.
Time of concentration (TC) =    27.76 min.
End of computations, Total Study Area =           25.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.928
Area averaged SCS curve number =  84.6
```

RATEX05CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/04/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #5
100 YEAR STORM EVENT
FN: RATEX05CUL100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 501.000 to Point/Station 502.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 2964.000(Ft.)
Bottom (of initial area) elevation = 2959.100(Ft.)
Difference in elevation = 4.900(Ft.)
Slope = 0.00490 s(%)= 0.49
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 24.106 min.
Rainfall intensity = 1.746(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.763
Subarea runoff = 4.397(CFS)
Total initial stream area = 3.300(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++
Process from Point/Station 502.000 to Point/Station 503.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2959.100(Ft.)
Downstream point elevation = 2949.000(Ft.)
Channel length thru subarea = 827.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 8.038(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 8.038(CFS)
Depth of flow = 0.365(Ft.), Average velocity = 2.956(Ft/s)
Channel flow top width = 8.917(Ft.)
Flow Velocity = 2.96(Ft/s)
Travel time = 4.66 min.

```
Time of concentration =   28.77 min.
Critical depth =      0.352(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.570(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.748
Subarea runoff =      7.229(CFS) for    6.600(Ac.)
Total runoff =     11.626(CFS)
Effective area this stream =        9.90(Ac.)
Total Study Area (Main Stream No. 1) =        9.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.448(Ft.), Average velocity =   3.327(Ft/s)
Critical depth =      0.441(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2949.000(Ft.)
Downstream point elevation =  2941.500(Ft.)
Channel length thru subarea  =  1143.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     17.590(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     17.590(CFS)
Depth of flow =   0.667(Ft.), Average velocity =   3.044(Ft/s)
Channel flow top width =   11.334(Ft.)
Flow Velocity =    3.04(Ft/s)
Travel time  =    6.26 min.
Time of concentration =   35.03 min.
Critical depth =      0.563(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.395(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.729
Subarea runoff =     11.865(CFS) for   13.200(Ac.)
Total runoff =     23.490(CFS)
Effective area this stream =       23.10(Ac.)
Total Study Area (Main Stream No. 1) =       23.10(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.778(Ft.), Average velocity =   3.314(Ft/s)
Critical depth =      0.672(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      504.000 to Point/Station      505.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2941.500(Ft.)
Downstream point elevation =  2931.100(Ft.)
Channel length thru subarea  =  1062.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     32.316(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
```

```
Flow(q) thru subarea =     32.316(CFS)
Depth of flow =   0.828(Ft.), Average velocity =   4.190(Ft/s)
Channel flow top width =   12.626(Ft.)
Flow Velocity =    4.19(Ft/s)
Travel time  =    4.22 min.
Time of concentration =   39.25 min.
Critical depth =      0.805(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.5000     Max loss rate(Fm)=     0.133(In/Hr)
Rainfall intensity =      1.303(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.758
Subarea runoff =     17.570(CFS) for   18.500(Ac.)
Total runoff =     41.061(CFS)
Effective area this stream =       41.60(Ac.)
Total Study Area (Main Stream No. 1) =       41.60(Ac.)
Area averaged Fm value =    0.206(In/Hr)
Depth of flow =   0.938(Ft.), Average velocity =   4.487(Ft/s)
Critical depth =      0.922(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      505.000 to Point/Station      506.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2931.100(Ft.)
Downstream point elevation =  2919.900(Ft.)
Channel length thru subarea  =   869.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     45.727(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     45.727(CFS)
Depth of flow =   0.924(Ft.), Average velocity =   5.104(Ft/s)
Channel flow top width =   13.392(Ft.)
Flow Velocity =    5.10(Ft/s)
Travel time  =    2.84 min.
Time of concentration =   42.09 min.
Critical depth =      0.969(Ft.)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 0.7500     Max loss rate(Fm)=     0.199(In/Hr)
Rainfall intensity =      1.249(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.753
Subarea runoff =      9.251(CFS) for   11.900(Ac.)
Total runoff =     50.312(CFS)
Effective area this stream =       53.50(Ac.)
Total Study Area (Main Stream No. 1) =       53.50(Ac.)
Area averaged Fm value =    0.205(In/Hr)
Depth of flow =   0.971(Ft.), Average velocity =   5.244(Ft/s)
Critical depth =      1.023(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      506.000 to Point/Station      507.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2919.900(Ft.)
Downstream point elevation =  2906.300(Ft.)
Channel length thru subarea  =  1559.000(Ft.)
Channel base width     =   20.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     56.150(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     56.150(CFS)
```

```
Depth of flow =   0.647(Ft.), Average velocity =   3.845(Ft/s)
Channel flow top width =   25.172(Ft.)
Flow Velocity =    3.85(Ft/s)
Travel time  =    6.76 min.
Time of concentration =   48.85 min.
Critical depth =      0.602(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.143(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.725
Subarea runoff =     11.603(CFS) for   21.200(Ac.)
Total runoff =     61.915(CFS)
Effective area this stream =       74.70(Ac.)
Total Study Area (Main Stream No. 1) =       74.70(Ac.)
Area averaged Fm value =    0.222(In/Hr)
Depth of flow =   0.684(Ft.), Average velocity =   3.979(Ft/s)
Critical depth =      0.641(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      507.000 to Point/Station      508.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2906.300(Ft.)
Downstream point elevation =  2894.400(Ft.)
Channel length thru subarea  =  1336.000(Ft.)
Channel base width     =   30.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     67.114(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     67.114(CFS)
Depth of flow =   0.567(Ft.), Average velocity =   3.665(Ft/s)
Channel flow top width =   34.540(Ft.)
Flow Velocity =    3.66(Ft/s)
Travel time  =    6.08 min.
Time of concentration =   54.92 min.
Critical depth =      0.523(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.065(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.704
Subarea runoff =     10.333(CFS) for   21.600(Ac.)
Total runoff =     72.248(CFS)
Effective area this stream =       96.30(Ac.)
Total Study Area (Main Stream No. 1) =       96.30(Ac.)
Area averaged Fm value =    0.231(In/Hr)
Depth of flow =   0.593(Ft.), Average velocity =   3.766(Ft/s)
Critical depth =      0.551(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      508.000 to Point/Station      509.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2894.400(Ft.)
Downstream point/station elevation =  2893.300(Ft.)
Pipe length  =   130.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    72.248(CFS)
Nearest computed pipe diameter  =     39.00(In.)
```

Calculated individual pipe flow =   72.248(CFS)
Normal flow depth in pipe =   30.38(In.)
Flow top width inside pipe =   32.37(In.)
Critical Depth =   32.33(In.)
Pipe flow velocity =   10.42(Ft/s)
Travel time through pipe =   0.21 min.
Time of concentration (TC) =   55.13 min.
End of computations, Total Study Area =   96.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.873
Area averaged SCS curve number = 86.0

RATEX06CUL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 03/04/25

24-0505 - ADELANTO INDUSTRIAL PARK
OFF-SITE RATIONAL METHOD HYDROLOGY, CULVERT #6
100 YEAR STORM EVENT
FN: RATEX06CUL100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 601.000 to Point/Station 602.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 990.000(Ft.)
Top (of initial area) elevation = 2931.200(Ft.)
Bottom (of initial area) elevation = 2920.700(Ft.)
Difference in elevation = 10.500(Ft.)
Slope = 0.01061 s(%)= 1.06
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 20.573 min.
Rainfall intensity = 1.920(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.776
Subarea runoff = 8.935(CFS)
Total initial stream area = 6.000(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)

++
Process from Point/Station 602.000 to Point/Station 603.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2920.700(Ft.)
Downstream point elevation = 2910.300(Ft.)
Channel length thru subarea = 1127.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 15.734(CFS)
Manning's 'N' = 0.025
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 15.734(CFS)
Depth of flow = 0.572(Ft.), Average velocity = 3.316(Ft/s)
Channel flow top width = 10.579(Ft.)
Flow Velocity = 3.32(Ft/s)
Travel time = 5.66 min.

```
Time of concentration =   26.24 min.
Critical depth =      0.527(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.659(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.756
Subarea runoff =     13.522(CFS) for   11.900(Ac.)
Total runoff =     22.457(CFS)
Effective area this stream =       17.90(Ac.)
Total Study Area (Main Stream No. 1) =       17.90(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.694(Ft.), Average velocity =   3.689(Ft/s)
Critical depth =      0.648(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      603.000 to Point/Station      604.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  2910.300(Ft.)
Downstream point elevation =  2894.500(Ft.)
Channel length thru subarea  =  1719.000(Ft.)
Channel base width     =    6.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     32.466(CFS)
Manning's 'N'    = 0.025
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     32.466(CFS)
Depth of flow =   0.844(Ft.), Average velocity =   4.102(Ft/s)
Channel flow top width =   12.753(Ft.)
Flow Velocity =    4.10(Ft/s)
Travel time  =    6.98 min.
Time of concentration =   33.22 min.
Critical depth =      0.805(Ft.)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 86.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.265(In/Hr)
Rainfall intensity =      1.440(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.734
Subarea runoff =     19.945(CFS) for   22.200(Ac.)
Total runoff =     42.402(CFS)
Effective area this stream =       40.10(Ac.)
Total Study Area (Main Stream No. 1) =       40.10(Ac.)
Area averaged Fm value =    0.265(In/Hr)
Depth of flow =   0.970(Ft.), Average velocity =   4.426(Ft/s)
Critical depth =      0.938(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      604.000 to Point/Station      605.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2894.500(Ft.)
Downstream point/station elevation =  2893.800(Ft.)
Pipe length  =   150.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    42.402(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    42.402(CFS)
Normal flow depth in pipe =   27.47(In.)
Flow top width inside pipe =   30.62(In.)
Critical Depth =   25.45(In.)
```

Pipe flow velocity =   7.32(Ft/s)
Travel time through pipe =   0.34 min.
Time of concentration (TC) =   33.56 min.
End of computations, Total Study Area =   40.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 86.0

100-YEAR HYDROLOGY (RATIONAL METHOD), ON-SITE PROPOSED CONDITION

BUILDING 1

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/09/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 1A
100 YEAR STORM EVENT
FN: 1APROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 111.000 to Point/Station 112.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 570.000(Ft.)
Top (of initial area) elevation = 2908.100(Ft.)
Bottom (of initial area) elevation = 2903.400(Ft.)
Difference in elevation = 4.700(Ft.)
Slope = 0.00825 s(%)= 0.82
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.046 min.
Rainfall intensity = 2.951(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff = 10.167(CFS)
Total initial stream area = 3.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 112.000 to Point/Station 113.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2898.400(Ft.)
Downstream point/station elevation = 2897.000(Ft.)
Pipe length = 457.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.167(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 10.167(CFS)
Normal flow depth in pipe = 16.41(In.)
Flow top width inside pipe = 22.32(In.)
Critical Depth = 13.71(In.)
Pipe flow velocity = 4.44(Ft/s)
Travel time through pipe = 1.72 min.
Time of concentration (TC) = 11.76 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      113.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.900(Ac.)
Runoff from this stream =     10.167(CFS)
Time of concentration =   11.76 min.
Rainfall intensity =     2.685(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      115.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   455.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2903.200(Ft.)
Difference in elevation =     5.800(Ft.)
Slope =    0.01275  s(%)=       1.27
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.414 min.
Rainfall intensity =      3.283(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.885
Subarea runoff =     17.721(CFS)
Total initial stream area =        6.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      113.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2898.200(Ft.)
Downstream point/station elevation =  2897.000(Ft.)
Pipe length  =   338.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.721(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    17.721(CFS)
Normal flow depth in pipe =   21.23(In.)
Flow top width inside pipe =   22.13(In.)
Critical Depth =   17.66(In.)
Pipe flow velocity =      5.29(Ft/s)
Travel time through pipe =    1.07 min.
Time of concentration (TC) =     9.48 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      113.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.100(Ac.)
Runoff from this stream =     17.721(CFS)
Time of concentration =    9.48 min.
Rainfall intensity =     3.056(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     10.17     3.900     11.76    0.055      2.685
2     17.72     6.100      9.48    0.055      3.056
Qmax(1) =
          1.000 *    1.000 *    10.167) +
          0.876 *    1.000 *    17.721) + =      25.697
Qmax(2) =
          1.141 *    0.806 *    10.167) +
          1.000 *    1.000 *    17.721) + =      27.071

Total of 2 main streams to confluence:
Flow rates before confluence point:
      11.167      18.721
Maximum flow rates at confluence using above data:
       25.697       27.071
Area of streams before confluence:
        3.900        6.100
Effective area values after confluence:
       10.000        9.243


Results of confluence:
Total flow rate =     27.071(CFS)
Time of concentration =     9.480 min.
Effective stream area after confluence  =      9.243(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      10.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      116.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2898.600(Ft.)
Downstream point/station elevation =  2898.300(Ft.)
Pipe length  =    96.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    27.071(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    27.071(CFS)
Normal flow depth in pipe =   24.84(In.)
Flow top width inside pipe =   28.47(In.)
Critical Depth =   20.70(In.)
Pipe flow velocity =      5.64(Ft/s)
Travel time through pipe =    0.28 min.
Time of concentration (TC) =     9.76 min.
End of computations, Total Study Area =           10.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

BUILDING 2

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 2A
100 YEAR STORM EVENT
FN: 2APROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 211.000 to Point/Station 212.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 769.000(Ft.)
Top (of initial area) elevation = 2911.000(Ft.)
Bottom (of initial area) elevation = 2904.200(Ft.)
Difference in elevation = 6.800(Ft.)
Slope = 0.00884 s(%)= 0.88
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.167 min.
Rainfall intensity = 2.770(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff = 21.748(CFS)
Total initial stream area = 8.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 212.000 to Point/Station 213.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2899.200(Ft.)
Downstream point/station elevation = 2897.600(Ft.)
Pipe length = 524.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 21.748(CFS)
Nearest computed pipe diameter = 30.00(In.)
Calculated individual pipe flow = 21.748(CFS)
Normal flow depth in pipe = 23.58(In.)
Flow top width inside pipe = 24.61(In.)
Critical Depth = 19.01(In.)
Pipe flow velocity = 5.26(Ft/s)
Travel time through pipe = 1.66 min.
Time of concentration (TC) = 12.83 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      213.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.900(Ac.)
Runoff from this stream =     21.748(CFS)
Time of concentration =   12.83 min.
Rainfall intensity =     2.549(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      215.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   733.000(Ft.)
Top (of initial area) elevation =  2911.000(Ft.)
Bottom (of initial area) elevation =  2903.500(Ft.)
Difference in elevation =     7.500(Ft.)
Slope =    0.01023  s(%)=       1.02
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.640 min.
Rainfall intensity =      2.851(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff =     23.911(CFS)
Total initial stream area =        9.500(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      213.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2898.500(Ft.)
Downstream point/station elevation =  2897.600(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    23.911(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    23.911(CFS)
Normal flow depth in pipe =   13.52(In.)
Flow top width inside pipe =   20.11(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.61(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    10.66 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      213.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      9.500(Ac.)
Runoff from this stream =     23.911(CFS)
Time of concentration =   10.66 min.
Rainfall intensity =     2.847(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     21.75     8.900     12.83    0.055      2.549
2     23.91     9.500     10.66    0.055      2.847
Qmax(1) =
          1.000 *    1.000 *    21.748) +
          0.893 *    1.000 *    23.911) + =      43.101
Qmax(2) =
          1.120 *    0.831 *    21.748) +
          1.000 *    1.000 *    23.911) + =      44.157

Total of 2 main streams to confluence:
Flow rates before confluence point:
      22.748      24.911
Maximum flow rates at confluence using above data:
       43.101       44.157
Area of streams before confluence:
        8.900        9.500
Effective area values after confluence:
       18.400       16.899


Results of confluence:
Total flow rate =     44.157(CFS)
Time of concentration =    10.665 min.
Effective stream area after confluence  =     16.899(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      18.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      216.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.600(Ft.)
Downstream point/station elevation =  2896.400(Ft.)
Pipe length  =    55.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    44.157(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    44.157(CFS)
Normal flow depth in pipe =   21.33(In.)
Flow top width inside pipe =   22.00(In.)
Critical Depth =   25.65(In.)
Pipe flow velocity =     13.11(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    10.73 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      216.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     16.899(Ac.)
Runoff from this stream =     44.157(CFS)
Time of concentration =   10.73 min.
Rainfall intensity =     2.836(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      218.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   117.000(Ft.)
Top (of initial area) elevation =  2906.000(Ft.)
Bottom (of initial area) elevation =  2904.300(Ft.)
Difference in elevation =     1.700(Ft.)
Slope =    0.01453  s(%)=       1.45
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.761 min.
Rainfall intensity =      4.619(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.889
Subarea runoff =      4.930(CFS)
Total initial stream area =        1.200(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      219.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2899.300(Ft.)
Downstream point/station elevation =  2897.900(Ft.)
Pipe length  =   451.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.930(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     4.930(CFS)
Normal flow depth in pipe =   12.66(In.)
Flow top width inside pipe =   16.45(In.)
Critical Depth =   10.25(In.)
Pipe flow velocity =      3.71(Ft/s)
Travel time through pipe =    2.02 min.
Time of concentration (TC) =     6.79 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      219.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      1.200(Ac.)
Runoff from this stream =      4.930(CFS)
Time of concentration =    6.79 min.
Rainfall intensity =     3.735(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      221.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   126.000(Ft.)
Top (of initial area) elevation =  2904.700(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     1.400(Ft.)
Slope =    0.01111  s(%)=       1.11
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.175 min.
Rainfall intensity =      4.394(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.889
Subarea runoff =      4.687(CFS)
Total initial stream area =        1.200(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      219.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2897.900(Ft.)
Pipe length  =    42.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.687(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.687(CFS)
Normal flow depth in pipe =    9.63(In.)
Flow top width inside pipe =   14.38(In.)
Critical Depth =   10.54(In.)
Pipe flow velocity =      5.63(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =     5.30 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      219.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      1.200(Ac.)
Runoff from this stream =      4.687(CFS)
Time of concentration =    5.30 min.
Rainfall intensity =     4.332(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      4.93     1.200      6.79    0.055      3.735
2      4.69     1.200      5.30    0.055      4.332
Qmax(1) =
          1.000 *    1.000 *     4.930) +
          0.860 *    1.000 *     4.687) + =       8.962
Qmax(2) =
          1.162 *    0.781 *     4.930) +
          1.000 *    1.000 *     4.687) + =       9.161

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.930       4.687
Maximum flow rates at confluence using above data:
       8.962        9.161
Area of streams before confluence:
       1.200        1.200
Effective area values after confluence:
       2.400        2.137
Results of confluence:
Total flow rate =      9.161(CFS)
Time of concentration =     5.299 min.
Effective stream area after confluence =      2.137(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       2.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      222.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2897.900(Ft.)
Downstream point/station elevation =  2896.900(Ft.)
Pipe length  =   342.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.161(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =     9.161(CFS)
Normal flow depth in pipe =   15.49(In.)
Flow top width inside pipe =   22.96(In.)
Critical Depth =   12.96(In.)
```

```
Pipe flow velocity =      4.27(Ft/s)
Travel time through pipe =    1.33 min.
Time of concentration (TC) =     6.63 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      222.000 to Point/Station      222.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     6.63 min.
Rainfall intensity =      3.786(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.887
Subarea runoff =      3.388(CFS) for    1.600(Ac.)
Total runoff =     12.549(CFS)
Effective area this stream =        3.74(Ac.)
Total Study Area (Main Stream No. 2) =       22.40(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      222.000 to Point/Station      216.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2896.900(Ft.)
Downstream point/station elevation =  2896.400(Ft.)
Pipe length  =   159.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.549(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    12.549(CFS)
Normal flow depth in pipe =   19.45(In.)
Flow top width inside pipe =   18.81(In.)
Critical Depth =   15.28(In.)
Pipe flow velocity =      4.60(Ft/s)
Travel time through pipe =    0.58 min.
Time of concentration (TC) =     7.21 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      222.000 to Point/Station      216.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.737(Ac.)
Runoff from this stream =     12.549(CFS)
Time of concentration =    7.21 min.
Rainfall intensity =     3.602(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     44.16    16.899     10.73    0.055      2.836
2     12.55     3.737      7.21    0.055      3.602
Qmax(1) =
          1.000 *    1.000 *    44.157) +
          0.784 *    1.000 *    12.549) + =      53.998
Qmax(2) =
          1.275 *    0.672 *    44.157) +
          1.000 *    1.000 *    12.549) + =      50.362

Total of 2 main streams to confluence:
Flow rates before confluence point:
      45.157      13.549
```

```
Maximum flow rates at confluence using above data:
       53.998       50.362
Area of streams before confluence:
       16.899        3.737
Effective area values after confluence:
       20.636       15.086


Results of confluence:
Total flow rate =     53.998(CFS)
Time of concentration =    10.735 min.
Effective stream area after confluence  =     20.636(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      20.64(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      216.000 to Point/Station      223.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2895.800(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =   153.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    53.998(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    53.998(CFS)
Normal flow depth in pipe =   32.34(In.)
Flow top width inside pipe =   35.35(In.)
Critical Depth =   27.60(In.)
Pipe flow velocity =      6.80(Ft/s)
Travel time through pipe =    0.38 min.
Time of concentration (TC) =    11.11 min.
End of computations, Total Study Area =           22.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 2B
100 YEAR STORM EVENT
FN: 2BPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 231.000 to Point/Station 232.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 723.000(Ft.)
Top (of initial area) elevation = 2911.000(Ft.)
Bottom (of initial area) elevation = 2904.500(Ft.)
Difference in elevation = 6.500(Ft.)
Slope = 0.00899 s(%)= 0.90
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.859 min.
Rainfall intensity = 2.817(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff = 13.672(CFS)
Total initial stream area = 5.500(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 232.000 to Point/Station 233.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2899.500(Ft.)
Downstream point/station elevation = 2894.600(Ft.)
Pipe length = 33.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 13.672(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 13.672(CFS)
Normal flow depth in pipe = 9.80(In.)
Flow top width inside pipe = 9.29(In.)
Critical depth could not be calculated.
Pipe flow velocity = 19.93(Ft/s)
Travel time through pipe = 0.03 min.
Time of concentration (TC) = 10.89 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      232.000 to Point/Station      233.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.500(Ac.)
Runoff from this stream =     13.672(CFS)
Time of concentration =   10.89 min.
Rainfall intensity =     2.812(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      234.000 to Point/Station      235.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   201.000(Ft.)
Top (of initial area) elevation =  2906.400(Ft.)
Bottom (of initial area) elevation =  2904.800(Ft.)
Difference in elevation =     1.600(Ft.)
Slope =    0.00796  s(%)=       0.80
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.668 min.
Rainfall intensity =      3.774(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =      5.356(CFS)
Total initial stream area =        1.600(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      235.000 to Point/Station      236.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2899.800(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =   539.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.356(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     5.356(CFS)
Normal flow depth in pipe =   12.12(In.)
Flow top width inside pipe =   11.82(In.)
Critical Depth =   11.26(In.)
Pipe flow velocity =      5.04(Ft/s)
Travel time through pipe =    1.78 min.
Time of concentration (TC) =     8.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      235.000 to Point/Station      236.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      1.600(Ac.)
Runoff from this stream =      5.356(CFS)
Time of concentration =    8.45 min.
Rainfall intensity =     3.274(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      237.000 to Point/Station      238.000
```

```
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   498.000(Ft.)
Top (of initial area) elevation =  2906.900(Ft.)
Bottom (of initial area) elevation =  2901.100(Ft.)
Difference in elevation =     5.800(Ft.)
Slope =    0.01165  s(%)=       1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.882 min.
Rainfall intensity =      3.178(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =      8.432(CFS)
Total initial stream area =        3.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      238.000 to Point/Station      236.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  2896.100(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.432(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     8.432(CFS)
Normal flow depth in pipe =   12.87(In.)
Flow top width inside pipe =   20.46(In.)
Critical Depth =   12.94(In.)
Pipe flow velocity =      5.46(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     8.93 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      238.000 to Point/Station      236.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      3.000(Ac.)
Runoff from this stream =      8.432(CFS)
Time of concentration =    8.93 min.
Rainfall intensity =     3.166(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1      5.36     1.600      8.45    0.055      3.274
2      8.43     3.000      8.93    0.055      3.166
Qmax(1) =
          1.000 *    1.000 *     5.356) +
          1.035 *    0.946 *     8.432) + =      13.607
Qmax(2) =
          0.967 *    1.000 *     5.356) +
          1.000 *    1.000 *     8.432) + =      13.609

Total of 2 streams to confluence:
Flow rates before confluence point:
       5.356       8.432
Maximum flow rates at confluence using above data:
      13.607       13.609
Area of streams before confluence:
```

```
        1.600        3.000
Effective area values after confluence:
        4.438        4.600
Results of confluence:
Total flow rate =     13.609(CFS)
Time of concentration =     8.934 min.
Effective stream area after confluence =      4.600(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       4.60(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      236.000 to Point/Station      239.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2896.000(Ft.)
Downstream point/station elevation =  2895.200(Ft.)
Pipe length  =   268.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.609(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    13.609(CFS)
Normal flow depth in pipe =   18.33(In.)
Flow top width inside pipe =   25.21(In.)
Critical Depth =   15.38(In.)
Pipe flow velocity =      4.73(Ft/s)
Travel time through pipe =    0.94 min.
Time of concentration (TC) =     9.88 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      239.000 to Point/Station      239.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     9.88 min.
Rainfall intensity =      2.981(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.883
Subarea runoff =      4.828(CFS) for    2.400(Ac.)
Total runoff =     18.437(CFS)
Effective area this stream =        7.00(Ac.)
Total Study Area (Main Stream No. 2) =       12.50(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      239.000 to Point/Station      233.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2895.200(Ft.)
Downstream point/station elevation =  2894.600(Ft.)
Pipe length  =   209.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.437(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    18.437(CFS)
Normal flow depth in pipe =   21.05(In.)
Flow top width inside pipe =   27.45(In.)
Critical Depth =   17.46(In.)
Pipe flow velocity =      5.02(Ft/s)
Travel time through pipe =    0.69 min.
Time of concentration (TC) =    10.57 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      239.000 to Point/Station      233.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
```

```
In Main Stream number: 2
Stream flow area =      7.000(Ac.)
Runoff from this stream =     18.437(CFS)
Time of concentration =   10.57 min.
Rainfall intensity =     2.862(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     13.67     5.500     10.89    0.055      2.812
2     18.44     7.000     10.57    0.055      2.862
Qmax(1) =
          1.000 *    1.000 *    13.672) +
          0.982 *    1.000 *    18.437) + =      31.782
Qmax(2) =
          1.018 *    0.971 *    13.672) +
          1.000 *    1.000 *    18.437) + =      31.954

Total of 2 main streams to confluence:
Flow rates before confluence point:
      14.672      19.437
Maximum flow rates at confluence using above data:
       31.782       31.954
Area of streams before confluence:
        5.500        7.000
Effective area values after confluence:
       12.500       12.342


Results of confluence:
Total flow rate =     31.954(CFS)
Time of concentration =    10.573 min.
Effective stream area after confluence  =     12.342(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      12.50(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      233.000 to Point/Station      240.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.100(Ft.)
Downstream point/station elevation =  2896.500(Ft.)
Pipe length  =   214.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    31.954(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    31.954(CFS)
Normal flow depth in pipe =   26.81(In.)
Flow top width inside pipe =   31.39(In.)
Critical Depth =   22.02(In.)
Pipe flow velocity =      5.66(Ft/s)
Travel time through pipe =    0.63 min.
Time of concentration (TC) =    11.20 min.
End of computations, Total Study Area =           12.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 2C
100 YEAR STORM EVENT
FN: 2CPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 251.000 to Point/Station 252.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 607.000(Ft.)
Top (of initial area) elevation = 2911.000(Ft.)
Bottom (of initial area) elevation = 2905.200(Ft.)
Difference in elevation = 5.800(Ft.)
Slope = 0.00956 s(%)= 0.96
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.002 min.
Rainfall intensity = 2.959(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff = 13.592(CFS)
Total initial stream area = 5.200(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 252.000 to Point/Station 253.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2900.200(Ft.)
Downstream point/station elevation = 2899.100(Ft.)
Pipe length = 364.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 13.592(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 13.592(CFS)
Normal flow depth in pipe = 18.23(In.)
Flow top width inside pipe = 25.29(In.)
Critical Depth = 15.38(In.)
Pipe flow velocity = 4.76(Ft/s)
Travel time through pipe = 1.28 min.
Time of concentration (TC) = 11.28 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      252.000 to Point/Station      253.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.200(Ac.)
Runoff from this stream =     13.592(CFS)
Time of concentration =   11.28 min.
Rainfall intensity =     2.753(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      254.000 to Point/Station      255.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   607.000(Ft.)
Top (of initial area) elevation =  2911.000(Ft.)
Bottom (of initial area) elevation =  2905.200(Ft.)
Difference in elevation =     5.800(Ft.)
Slope =    0.00956  s(%)=       0.96
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.002 min.
Rainfall intensity =      2.959(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff =     13.592(CFS)
Total initial stream area =        5.200(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      255.000 to Point/Station      253.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2900.200(Ft.)
Downstream point/station elevation =  2899.100(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.592(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    13.592(CFS)
Normal flow depth in pipe =   11.32(In.)
Flow top width inside pipe =   12.91(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.67(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    10.03 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      255.000 to Point/Station      253.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.200(Ac.)
Runoff from this stream =     13.592(CFS)
Time of concentration =   10.03 min.
Rainfall intensity =     2.955(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     13.59     5.200     11.28    0.055      2.753
2     13.59     5.200     10.03    0.055      2.955
Qmax(1) =
          1.000 *    1.000 *    13.592) +
          0.931 *    1.000 *    13.592) + =      26.241
Qmax(2) =
          1.075 *    0.889 *    13.592) +
          1.000 *    1.000 *    13.592) + =      26.578

Total of 2 main streams to confluence:
Flow rates before confluence point:
      14.592      14.592
Maximum flow rates at confluence using above data:
       26.241       26.578
Area of streams before confluence:
        5.200        5.200
Effective area values after confluence:
       10.400        9.824


Results of confluence:
Total flow rate =     26.578(CFS)
Time of concentration =    10.028 min.
Effective stream area after confluence  =      9.824(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      10.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      253.000 to Point/Station      256.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2899.100(Ft.)
Downstream point/station elevation =  2898.100(Ft.)
Pipe length  =   343.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.578(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    26.578(CFS)
Normal flow depth in pipe =   25.22(In.)
Flow top width inside pipe =   28.02(In.)
Critical Depth =   20.52(In.)
Pipe flow velocity =      5.46(Ft/s)
Travel time through pipe =    1.05 min.
Time of concentration (TC) =    11.07 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      253.000 to Point/Station      256.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      9.824(Ac.)
Runoff from this stream =     26.578(CFS)
Time of concentration =   11.07 min.
Rainfall intensity =     2.784(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      257.000 to Point/Station      258.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   607.000(Ft.)
Top (of initial area) elevation =  2911.000(Ft.)
Bottom (of initial area) elevation =  2905.200(Ft.)
Difference in elevation =     5.800(Ft.)
Slope =    0.00956  s(%)=       0.96
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.002 min.
Rainfall intensity =      2.959(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff =     16.728(CFS)
Total initial stream area =        6.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      258.000 to Point/Station      256.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2900.200(Ft.)
Downstream point/station elevation =  2898.100(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.728(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    16.728(CFS)
Normal flow depth in pipe =   10.32(In.)
Flow top width inside pipe =   13.90(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.57(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =    10.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      258.000 to Point/Station      256.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.400(Ac.)
Runoff from this stream =     16.728(CFS)
Time of concentration =   10.02 min.
Rainfall intensity =     2.956(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      259.000 to Point/Station      260.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   211.000(Ft.)
Top (of initial area) elevation =  2907.000(Ft.)
Bottom (of initial area) elevation =  2905.000(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00948  s(%)=       0.95
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.565 min.
Rainfall intensity =      3.810(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =      5.069(CFS)
Total initial stream area =        1.500(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      260.000 to Point/Station      256.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2900.000(Ft.)
Downstream point/station elevation =  2898.100(Ft.)
Pipe length  =   215.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.069(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     5.069(CFS)
Normal flow depth in pipe =   10.48(In.)
Flow top width inside pipe =   13.77(In.)
Critical Depth =   10.96(In.)
Pipe flow velocity =      5.54(Ft/s)
Travel time through pipe =    0.65 min.
Time of concentration (TC) =     7.21 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      260.000 to Point/Station      256.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      1.500(Ac.)
Runoff from this stream =      5.069(CFS)
Time of concentration =    7.21 min.
Rainfall intensity =     3.601(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     26.58     9.824     11.07    0.055      2.784
2     16.73     6.400     10.02    0.055      2.956
3      5.07     1.500      7.21    0.055      3.601
Qmax(1) =
          1.000 *    1.000 *    26.578) +
          0.941 *    1.000 *    16.728) +
          0.770 *    1.000 *     5.069) + =      46.215
Qmax(2) =
          1.063 *    0.905 *    26.578) +
          1.000 *    1.000 *    16.728) +
          0.818 *    1.000 *     5.069) + =      46.441
Qmax(3) =
          1.299 *    0.651 *    26.578) +
          1.222 *    0.720 *    16.728) +
          1.000 *    1.000 *     5.069) + =      42.274

Total of 3 main streams to confluence:
Flow rates before confluence point:
      27.578      17.728       6.069
Maximum flow rates at confluence using above data:
       46.215       46.441       42.274
Area of streams before confluence:
        9.824        6.400        1.500
Effective area values after confluence:
       17.724       16.789       12.503


Results of confluence:
Total flow rate =     46.441(CFS)
Time of concentration =    10.021 min.
Effective stream area after confluence  =     16.789(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      17.72(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      256.000 to Point/Station      261.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  2900.300(Ft.)
Downstream point/station elevation =  2899.500(Ft.)
Pipe length  =   257.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    46.441(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    46.441(CFS)
Normal flow depth in pipe =   29.16(In.)
Flow top width inside pipe =   38.70(In.)
Critical Depth =   25.50(In.)
Pipe flow velocity =      6.52(Ft/s)
Travel time through pipe =    0.66 min.
Time of concentration (TC) =    10.68 min.
End of computations, Total Study Area =           18.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 2D
100 YEAR STORM EVENT
FN: 2DPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 271.000 to Point/Station 272.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 607.000(Ft.)
Top (of initial area) elevation = 2911.000(Ft.)
Bottom (of initial area) elevation = 2905.200(Ft.)
Difference in elevation = 5.800(Ft.)
Slope = 0.00956 s(%)= 0.96
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.002 min.
Rainfall intensity = 2.959(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff = 16.990(CFS)
Total initial stream area = 6.500(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 272.000 to Point/Station 273.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2900.200(Ft.)
Downstream point/station elevation = 2899.700(Ft.)
Pipe length = 44.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 16.990(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 16.990(CFS)
Normal flow depth in pipe = 14.86(In.)
Flow top width inside pipe = 23.31(In.)
Critical Depth = 17.83(In.)
Pipe flow velocity = 8.32(Ft/s)
Travel time through pipe = 0.09 min.
Time of concentration (TC) = 10.09 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      272.000 to Point/Station      273.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      6.500(Ac.)
Runoff from this stream =     16.990(CFS)
Time of concentration =   10.09 min.
Rainfall intensity =     2.944(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      274.000 to Point/Station      275.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   190.000(Ft.)
Top (of initial area) elevation =  2909.500(Ft.)
Bottom (of initial area) elevation =  2905.200(Ft.)
Difference in elevation =     4.300(Ft.)
Slope =    0.02263  s(%)=       2.26
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.290 min.
Rainfall intensity =      4.337(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.889
Subarea runoff =      8.863(CFS)
Total initial stream area =        2.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      275.000 to Point/Station      273.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2900.200(Ft.)
Downstream point/station elevation =  2899.700(Ft.)
Pipe length  =   161.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.863(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =     8.863(CFS)
Normal flow depth in pipe =   14.84(In.)
Flow top width inside pipe =   23.32(In.)
Critical Depth =   12.73(In.)
Pipe flow velocity =      4.35(Ft/s)
Travel time through pipe =    0.62 min.
Time of concentration (TC) =     5.91 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      275.000 to Point/Station      273.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.300(Ac.)
Runoff from this stream =      8.863(CFS)
Time of concentration =    5.91 min.
Rainfall intensity =     4.059(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     16.99     6.500     10.09    0.055      2.944
2      8.86     2.300      5.91    0.055      4.059
Qmax(1) =
          1.000 *    1.000 *    16.990) +
          0.721 *    1.000 *     8.863) + =      23.385
Qmax(2) =
          1.386 *    0.585 *    16.990) +
          1.000 *    1.000 *     8.863) + =      22.649

Total of 2 main streams to confluence:
Flow rates before confluence point:
      17.990       9.863
Maximum flow rates at confluence using above data:
       23.385       22.649
Area of streams before confluence:
        6.500        2.300
Effective area values after confluence:
        8.800        6.105


Results of confluence:
Total flow rate =     23.385(CFS)
Time of concentration =    10.091 min.
Effective stream area after confluence  =      8.800(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       8.80(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      273.000 to Point/Station      276.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2901.300(Ft.)
Downstream point/station elevation =  2900.100(Ft.)
Pipe length  =   397.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    23.385(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    23.385(CFS)
Normal flow depth in pipe =   22.41(In.)
Flow top width inside pipe =   30.81(In.)
Critical Depth =   19.21(In.)
Pipe flow velocity =      5.44(Ft/s)
Travel time through pipe =    1.22 min.
Time of concentration (TC) =    11.31 min.
End of computations, Total Study Area =            8.80 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

BUILDING 3

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/07/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 3A
100 YEAR STORM EVENT
FN: 3APROPRAT100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 311.000 to Point/Station 312.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 537.000(Ft.)
Top (of initial area) elevation = 2909.000(Ft.)
Bottom (of initial area) elevation = 2903.300(Ft.)
Difference in elevation = 5.700(Ft.)
Slope = 0.01061 s(%)= 1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.326 min.
Rainfall intensity = 3.086(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 10.640(CFS)
Total initial stream area = 3.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 312.000 to Point/Station 313.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2898.300(Ft.)
Downstream point/station elevation = 2897.500(Ft.)
Pipe length = 262.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.640(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 10.640(CFS)
Normal flow depth in pipe = 17.02(In.)
Flow top width inside pipe = 21.80(In.)
Critical Depth = 14.03(In.)
Pipe flow velocity = 4.47(Ft/s)
Travel time through pipe = 0.98 min.
Time of concentration (TC) = 10.30 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.900(Ac.)
Runoff from this stream =     10.640(CFS)
Time of concentration =   10.30 min.
Rainfall intensity =     2.907(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      314.000 to Point/Station      315.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   537.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.01061  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.326 min.
Rainfall intensity =      3.086(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     21.552(CFS)
Total initial stream area =        7.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2897.500(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.552(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    21.552(CFS)
Normal flow depth in pipe =   13.21(In.)
Flow top width inside pipe =   15.91(In.)
Critical depth could not be calculated.
Pipe flow velocity =     15.51(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.900(Ac.)
Runoff from this stream =     21.552(CFS)
Time of concentration =    9.34 min.
Rainfall intensity =     3.083(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     10.64     3.900     10.30    0.055      2.907
2     21.55     7.900      9.34    0.055      3.083
Qmax(1) =
          1.000 *    1.000 *    10.640) +
          0.942 *    1.000 *    21.552) + =      30.940
Qmax(2) =
          1.062 *    0.907 *    10.640) +
          1.000 *    1.000 *    21.552) + =      31.794

Total of 2 main streams to confluence:
Flow rates before confluence point:
      11.640      22.552
Maximum flow rates at confluence using above data:
       30.940       31.794
Area of streams before confluence:
        3.900        7.900
Effective area values after confluence:
       11.800       11.436


Results of confluence:
Total flow rate =     31.794(CFS)
Time of concentration =     9.342 min.
Effective stream area after confluence  =     11.436(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.80(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      316.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.500(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =   493.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    31.794(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    31.794(CFS)
Normal flow depth in pipe =   25.83(In.)
Flow top width inside pipe =   32.42(In.)
Critical Depth =   21.97(In.)
Pipe flow velocity =      5.86(Ft/s)
Travel time through pipe =    1.40 min.
Time of concentration (TC) =    10.74 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      316.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.436(Ac.)
Runoff from this stream =     31.794(CFS)
Time of concentration =   10.74 min.
Rainfall intensity =     2.835(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      317.000 to Point/Station      318.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   537.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.01061  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.326 min.
Rainfall intensity =      3.086(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     13.095(CFS)
Total initial stream area =        4.800(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      318.000 to Point/Station      316.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.095(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =    13.095(CFS)
Normal flow depth in pipe =    9.23(In.)
Flow top width inside pipe =   10.11(In.)
Critical depth could not be calculated.
Pipe flow velocity =     20.19(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      318.000 to Point/Station      316.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      4.800(Ac.)
Runoff from this stream =     13.095(CFS)
Time of concentration =    9.34 min.
Rainfall intensity =     3.084(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      319.000 to Point/Station      320.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   278.000(Ft.)
Top (of initial area) elevation =  2907.500(Ft.)
Bottom (of initial area) elevation =  2902.700(Ft.)
Difference in elevation =     4.800(Ft.)
Slope =    0.01727  s(%)=       1.73
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.502 min.
Rainfall intensity =      3.832(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =     11.897(CFS)
Total initial stream area =        3.500(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      320.000 to Point/Station      321.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2898.400(Ft.)
Downstream point/station elevation =  2897.200(Ft.)
Pipe length  =   402.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.897(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    11.897(CFS)
Normal flow depth in pipe =   18.89(In.)
Flow top width inside pipe =   19.65(In.)
Critical Depth =   14.87(In.)
Pipe flow velocity =      4.48(Ft/s)
Travel time through pipe =    1.50 min.
Time of concentration (TC) =     8.00 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      321.000 to Point/Station      321.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     8.00 min.
Rainfall intensity =      3.384(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.885
Subarea runoff =      6.681(CFS) for    2.700(Ac.)
Total runoff =     18.578(CFS)
Effective area this stream =        6.20(Ac.)
Total Study Area (Main Stream No. 3) =       22.80(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      321.000 to Point/Station      322.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2897.200(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =   400.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.578(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    18.578(CFS)
Normal flow depth in pipe =   20.81(In.)
Flow top width inside pipe =   27.66(In.)
Critical Depth =   17.51(In.)
Pipe flow velocity =      5.11(Ft/s)
Travel time through pipe =    1.30 min.
Time of concentration (TC) =     9.30 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      321.000 to Point/Station      322.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      6.200(Ac.)
Runoff from this stream =     18.578(CFS)
Time of concentration =    9.30 min.
Rainfall intensity =     3.091(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     31.79    11.436     10.74    0.055      2.835
2     13.10     4.800      9.34    0.055      3.084
3     18.58     6.200      9.30    0.055      3.091
Qmax(1) =
          1.000 *    1.000 *    31.794) +
          0.918 *    1.000 *    13.095) +
          0.916 *    1.000 *    18.578) + =      60.822
Qmax(2) =
          1.090 *    0.869 *    31.794) +
          1.000 *    1.000 *    13.095) +
          0.998 *    1.000 *    18.578) + =      61.734
Qmax(3) =
          1.092 *    0.866 *    31.794) +
          1.002 *    0.996 *    13.095) +
          1.000 *    1.000 *    18.578) + =      61.712

Total of 3 main streams to confluence:
Flow rates before confluence point:
      32.794      14.095      19.578
Maximum flow rates at confluence using above data:
       60.822       61.734       61.712
Area of streams before confluence:
       11.436        4.800        6.200
Effective area values after confluence:
       22.436       20.939       20.880


Results of confluence:
Total flow rate =     61.734(CFS)
Time of concentration =     9.338 min.
Effective stream area after confluence  =     20.939(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      22.44(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      316.000 to Point/Station      322.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2896.000(Ft.)
Downstream point/station elevation =  2895.200(Ft.)
Pipe length  =   276.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    61.734(CFS)
Nearest computed pipe diameter  =     45.00(In.)
Calculated individual pipe flow  =    61.734(CFS)
Normal flow depth in pipe =   34.97(In.)
Flow top width inside pipe =   37.46(In.)
Critical Depth =   29.00(In.)
Pipe flow velocity =      6.71(Ft/s)
Travel time through pipe =    0.69 min.
Time of concentration (TC) =    10.02 min.
End of computations, Total Study Area =           22.80 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/07/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 3B
100 YEAR STORM EVENT
FN: 3BPROPRAT100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 331.000 to Point/Station 332.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 537.000(Ft.)
Top (of initial area) elevation = 2909.000(Ft.)
Bottom (of initial area) elevation = 2903.300(Ft.)
Difference in elevation = 5.700(Ft.)
Slope = 0.01061 s(%)= 1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.326 min.
Rainfall intensity = 3.086(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 10.913(CFS)
Total initial stream area = 4.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 332.000 to Point/Station 333.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2898.600(Ft.)
Downstream point/station elevation = 2897.800(Ft.)
Pipe length = 261.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.913(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 10.913(CFS)
Normal flow depth in pipe = 17.34(In.)
Flow top width inside pipe = 21.49(In.)
Critical Depth = 14.21(In.)
Pipe flow velocity = 4.49(Ft/s)
Travel time through pipe = 0.97 min.
Time of concentration (TC) = 10.29 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      332.000 to Point/Station      333.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      4.000(Ac.)
Runoff from this stream =     10.913(CFS)
Time of concentration =   10.29 min.
Rainfall intensity =     2.908(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      334.000 to Point/Station      335.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   537.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.01061  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.326 min.
Rainfall intensity =      3.086(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     21.552(CFS)
Total initial stream area =        7.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      335.000 to Point/Station      336.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2897.800(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.552(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    21.552(CFS)
Normal flow depth in pipe =   13.50(In.)
Flow top width inside pipe =   20.12(In.)
Critical Depth =   19.57(In.)
Pipe flow velocity =     13.18(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      335.000 to Point/Station      336.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.900(Ac.)
Runoff from this stream =     21.552(CFS)
Time of concentration =    9.34 min.
Rainfall intensity =     3.082(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     10.91     4.000     10.29    0.055      2.908
2     21.55     7.900      9.34    0.055      3.082
Qmax(1) =
          1.000 *    1.000 *    10.913) +
          0.943 *    1.000 *    21.552) + =      31.227
Qmax(2) =
          1.061 *    0.908 *    10.913) +
          1.000 *    1.000 *    21.552) + =      32.062

Total of 2 main streams to confluence:
Flow rates before confluence point:
      11.913      22.552
Maximum flow rates at confluence using above data:
       31.227       32.062
Area of streams before confluence:
        4.000        7.900
Effective area values after confluence:
       11.900       11.531


Results of confluence:
Total flow rate =     32.062(CFS)
Time of concentration =     9.345 min.
Effective stream area after confluence  =     11.531(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.90(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      333.000 to Point/Station      336.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.800(Ft.)
Downstream point/station elevation =  2896.300(Ft.)
Pipe length  =   493.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    32.062(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    32.062(CFS)
Normal flow depth in pipe =   26.02(In.)
Flow top width inside pipe =   32.23(In.)
Critical Depth =   22.02(In.)
Pipe flow velocity =      5.87(Ft/s)
Travel time through pipe =    1.40 min.
Time of concentration (TC) =    10.75 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      333.000 to Point/Station      336.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.531(Ac.)
Runoff from this stream =     32.062(CFS)
Time of concentration =   10.75 min.
Rainfall intensity =     2.834(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      337.000 to Point/Station      338.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   537.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.01061  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.326 min.
Rainfall intensity =      3.086(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     13.641(CFS)
Total initial stream area =        5.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      338.000 to Point/Station      336.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2896.300(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.641(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    13.641(CFS)
Normal flow depth in pipe =    8.19(In.)
Flow top width inside pipe =   14.94(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.92(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      338.000 to Point/Station      336.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.000(Ac.)
Runoff from this stream =     13.641(CFS)
Time of concentration =    9.34 min.
Rainfall intensity =     3.084(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      339.000 to Point/Station      340.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   184.000(Ft.)
Top (of initial area) elevation =  2904.500(Ft.)
Bottom (of initial area) elevation =  2902.200(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.01250  s(%)=       1.25
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.881 min.
Rainfall intensity =      4.070(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.888
Subarea runoff =      7.588(CFS)
Total initial stream area =        2.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      340.000 to Point/Station      341.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2898.400(Ft.)
Downstream point/station elevation =  2897.000(Ft.)
Pipe length  =   442.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.588(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     7.588(CFS)
Normal flow depth in pipe =   14.88(In.)
Flow top width inside pipe =   19.08(In.)
Critical Depth =   12.26(In.)
Pipe flow velocity =      4.16(Ft/s)
Travel time through pipe =    1.77 min.
Time of concentration (TC) =     7.65 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      341.000 to Point/Station      341.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     7.65 min.
Rainfall intensity =      3.475(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.886
Subarea runoff =      4.726(CFS) for    1.900(Ac.)
Total runoff =     12.314(CFS)
Effective area this stream =        4.00(Ac.)
Total Study Area (Main Stream No. 3) =       20.90(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      341.000 to Point/Station      336.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2897.000(Ft.)
Downstream point/station elevation =  2896.300(Ft.)
Pipe length  =   246.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.314(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    12.314(CFS)
Normal flow depth in pipe =   17.37(In.)
Flow top width inside pipe =   25.87(In.)
Critical Depth =   14.60(In.)
Pipe flow velocity =      4.55(Ft/s)
Travel time through pipe =    0.90 min.
Time of concentration (TC) =     8.55 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      341.000 to Point/Station      336.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      4.000(Ac.)
Runoff from this stream =     12.314(CFS)
Time of concentration =    8.55 min.
Rainfall intensity =     3.251(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     32.06    11.531     10.75    0.055      2.834
2     13.64     5.000      9.34    0.055      3.084
3     12.31     4.000      8.55    0.055      3.251
Qmax(1) =
          1.000 *    1.000 *    32.062) +
          0.918 *    1.000 *    13.641) +
          0.870 *    1.000 *    12.314) + =      55.290
Qmax(2) =
          1.090 *    0.869 *    32.062) +
          1.000 *    1.000 *    13.641) +
          0.948 *    1.000 *    12.314) + =      55.669
Qmax(3) =
          1.150 *    0.796 *    32.062) +
          1.055 *    0.916 *    13.641) +
          1.000 *    1.000 *    12.314) + =      54.830

Total of 3 main streams to confluence:
Flow rates before confluence point:
      33.062      14.641      13.314
Maximum flow rates at confluence using above data:
       55.290       55.669       54.830
Area of streams before confluence:
       11.531        5.000        4.000
Effective area values after confluence:
       20.531       19.021       17.754


Results of confluence:
Total flow rate =     55.669(CFS)
Time of concentration =     9.338 min.
Effective stream area after confluence  =     19.021(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      20.53(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      336.000 to Point/Station      342.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2896.300(Ft.)
Downstream point/station elevation =  2894.700(Ft.)
Pipe length  =   308.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    55.669(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    55.669(CFS)
Normal flow depth in pipe =   29.91(In.)
Flow top width inside pipe =   32.98(In.)
Critical Depth =   28.61(In.)
Pipe flow velocity =      8.15(Ft/s)
Travel time through pipe =    0.63 min.
Time of concentration (TC) =     9.97 min.
End of computations, Total Study Area =           20.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/07/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 3C
100 YEAR STORM EVENT
FN: 3CPROPRAT100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 351.000 to Point/Station 352.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 602.000(Ft.)
Top (of initial area) elevation = 2909.000(Ft.)
Bottom (of initial area) elevation = 2902.600(Ft.)
Difference in elevation = 6.400(Ft.)
Slope = 0.01063 s(%)= 1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.759 min.
Rainfall intensity = 3.003(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 10.083(CFS)
Total initial stream area = 3.800(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 352.000 to Point/Station 353.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2897.600(Ft.)
Downstream point/station elevation = 2896.800(Ft.)
Pipe length = 262.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.083(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 10.083(CFS)
Normal flow depth in pipe = 16.34(In.)
Flow top width inside pipe = 22.38(In.)
Critical Depth = 13.63(In.)
Pipe flow velocity = 4.43(Ft/s)
Travel time through pipe = 0.99 min.
Time of concentration (TC) = 10.75 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      352.000 to Point/Station      353.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.800(Ac.)
Runoff from this stream =     10.083(CFS)
Time of concentration =   10.75 min.
Rainfall intensity =     2.835(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      354.000 to Point/Station      355.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   602.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2902.600(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01063  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.759 min.
Rainfall intensity =      3.003(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     20.167(CFS)
Total initial stream area =        7.600(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      355.000 to Point/Station      353.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2897.600(Ft.)
Downstream point/station elevation =  2896.800(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.167(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    20.167(CFS)
Normal flow depth in pipe =   12.54(In.)
Flow top width inside pipe =   16.55(In.)
Critical depth could not be calculated.
Pipe flow velocity =     15.36(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.78 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      355.000 to Point/Station      353.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.600(Ac.)
Runoff from this stream =     20.167(CFS)
Time of concentration =    9.78 min.
Rainfall intensity =     3.000(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     10.08     3.800     10.75    0.055      2.835
2     20.17     7.600      9.78    0.055      3.000
Qmax(1) =
          1.000 *    1.000 *    10.083) +
          0.944 *    1.000 *    20.167) + =      29.116
Qmax(2) =
          1.060 *    0.910 *    10.083) +
          1.000 *    1.000 *    20.167) + =      29.886

Total of 2 main streams to confluence:
Flow rates before confluence point:
      11.083      21.167
Maximum flow rates at confluence using above data:
       29.116       29.886
Area of streams before confluence:
        3.800        7.600
Effective area values after confluence:
       11.400       11.057


Results of confluence:
Total flow rate =     29.886(CFS)
Time of concentration =     9.775 min.
Effective stream area after confluence  =     11.057(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      353.000 to Point/Station      356.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.800(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =   493.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    29.886(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    29.886(CFS)
Normal flow depth in pipe =   24.63(In.)
Flow top width inside pipe =   33.47(In.)
Critical Depth =   21.23(In.)
Pipe flow velocity =      5.80(Ft/s)
Travel time through pipe =    1.42 min.
Time of concentration (TC) =    11.19 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      353.000 to Point/Station      356.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.057(Ac.)
Runoff from this stream =     29.886(CFS)
Time of concentration =   11.19 min.
Rainfall intensity =     2.766(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      357.000 to Point/Station      358.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   602.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2902.600(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01063  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.759 min.
Rainfall intensity =      3.003(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     14.064(CFS)
Total initial stream area =        5.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      358.000 to Point/Station      356.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.600(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.064(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    14.064(CFS)
Normal flow depth in pipe =    7.99(In.)
Flow top width inside pipe =   14.97(In.)
Critical depth could not be calculated.
Pipe flow velocity =     21.16(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.77 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      358.000 to Point/Station      356.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.300(Ac.)
Runoff from this stream =     14.064(CFS)
Time of concentration =    9.77 min.
Rainfall intensity =     3.001(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      359.000 to Point/Station      360.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   158.000(Ft.)
Top (of initial area) elevation =  2907.500(Ft.)
Bottom (of initial area) elevation =  2904.700(Ft.)
Difference in elevation =     2.800(Ft.)
Slope =    0.01772  s(%)=       1.77
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.160 min.
Rainfall intensity =      4.402(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.889
Subarea runoff =      8.998(CFS)
Total initial stream area =        2.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      361.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2897.400(Ft.)
Downstream point/station elevation =  2896.000(Ft.)
Pipe length  =   456.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.998(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =     8.998(CFS)
Normal flow depth in pipe =   15.05(In.)
Flow top width inside pipe =   23.21(In.)
Critical Depth =   12.84(In.)
Pipe flow velocity =      4.34(Ft/s)
Travel time through pipe =    1.75 min.
Time of concentration (TC) =     6.91 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.000 to Point/Station      361.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     6.91 min.
Rainfall intensity =      3.694(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.887
Subarea runoff =      4.758(CFS) for    1.900(Ac.)
Total runoff =     13.756(CFS)
Effective area this stream =        4.20(Ac.)
Total Study Area (Main Stream No. 3) =       20.90(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.000 to Point/Station      356.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2896.000(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =   236.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.756(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    13.756(CFS)
Normal flow depth in pipe =   18.52(In.)
Flow top width inside pipe =   25.07(In.)
Critical Depth =   15.46(In.)
Pipe flow velocity =      4.73(Ft/s)
Travel time through pipe =    0.83 min.
Time of concentration (TC) =     7.74 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.000 to Point/Station      356.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      4.200(Ac.)
Runoff from this stream =     13.756(CFS)
Time of concentration =    7.74 min.
Rainfall intensity =     3.450(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     29.89    11.057     11.19    0.055      2.766
2     14.06     5.300      9.77    0.055      3.001
3     13.76     4.200      7.74    0.055      3.450
Qmax(1) =
          1.000 *    1.000 *    29.886) +
          0.920 *    1.000 *    14.064) +
          0.798 *    1.000 *    13.756) + =      53.812
Qmax(2) =
          1.087 *    0.873 *    29.886) +
          1.000 *    1.000 *    14.064) +
          0.868 *    1.000 *    13.756) + =      54.349
Qmax(3) =
          1.252 *    0.692 *    29.886) +
          1.153 *    0.792 *    14.064) +
          1.000 *    1.000 *    13.756) + =      52.495

Total of 3 main streams to confluence:
Flow rates before confluence point:
      30.886      15.064      14.756
Maximum flow rates at confluence using above data:
       53.812       54.349       52.495
Area of streams before confluence:
       11.057        5.300        4.200
Effective area values after confluence:
       20.557       19.153       16.049


Results of confluence:
Total flow rate =     54.349(CFS)
Time of concentration =     9.771 min.
Effective stream area after confluence  =     19.153(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      20.56(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      356.000 to Point/Station      362.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2900.900(Ft.)
Downstream point/station elevation =  2899.200(Ft.)
Pipe length  =   554.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    54.349(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    54.349(CFS)
Normal flow depth in pipe =   33.52(In.)
Flow top width inside pipe =   33.73(In.)
Critical Depth =   27.66(In.)
Pipe flow velocity =      6.60(Ft/s)
Travel time through pipe =    1.40 min.
Time of concentration (TC) =    11.17 min.
End of computations, Total Study Area =           20.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/07/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 3D
100 YEAR STORM EVENT
FN: 3DPROPRAT100.OUT ABE

Program License Serial Number 6586

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 371.000 to Point/Station 372.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 602.000(Ft.)
Top (of initial area) elevation = 2909.000(Ft.)
Bottom (of initial area) elevation = 2902.600(Ft.)
Difference in elevation = 6.400(Ft.)
Slope = 0.01063 s(%)= 1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.759 min.
Rainfall intensity = 3.003(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 10.083(CFS)
Total initial stream area = 3.800(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 372.000 to Point/Station 373.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2897.600(Ft.)
Downstream point/station elevation = 2896.800(Ft.)
Pipe length = 261.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.083(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 10.083(CFS)
Normal flow depth in pipe = 16.31(In.)
Flow top width inside pipe = 22.40(In.)
Critical Depth = 13.63(In.)
Pipe flow velocity = 4.43(Ft/s)
Travel time through pipe = 0.98 min.
Time of concentration (TC) = 10.74 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      372.000 to Point/Station      373.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.800(Ac.)
Runoff from this stream =     10.083(CFS)
Time of concentration =   10.74 min.
Rainfall intensity =     2.835(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      374.000 to Point/Station      375.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   602.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2902.600(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01063  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.759 min.
Rainfall intensity =      3.003(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     20.432(CFS)
Total initial stream area =        7.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      375.000 to Point/Station      373.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2897.600(Ft.)
Downstream point/station elevation =  2896.800(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.432(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    20.432(CFS)
Normal flow depth in pipe =   12.66(In.)
Flow top width inside pipe =   16.45(In.)
Critical depth could not be calculated.
Pipe flow velocity =     15.39(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.78 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      375.000 to Point/Station      373.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.700(Ac.)
Runoff from this stream =     20.432(CFS)
Time of concentration =    9.78 min.
Rainfall intensity =     3.000(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     10.08     3.800     10.74    0.055      2.835
2     20.43     7.700      9.78    0.055      3.000
Qmax(1) =
          1.000 *    1.000 *    10.083) +
          0.944 *    1.000 *    20.432) + =      29.373
Qmax(2) =
          1.059 *    0.910 *    10.083) +
          1.000 *    1.000 *    20.432) + =      30.153

Total of 2 main streams to confluence:
Flow rates before confluence point:
      11.083      21.432
Maximum flow rates at confluence using above data:
       29.373       30.153
Area of streams before confluence:
        3.800        7.700
Effective area values after confluence:
       11.500       11.159


Results of confluence:
Total flow rate =     30.153(CFS)
Time of concentration =     9.775 min.
Effective stream area after confluence  =     11.159(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.50(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      373.000 to Point/Station      376.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.800(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =   493.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    30.153(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    30.153(CFS)
Normal flow depth in pipe =   24.80(In.)
Flow top width inside pipe =   33.33(In.)
Critical Depth =   21.35(In.)
Pipe flow velocity =      5.81(Ft/s)
Travel time through pipe =    1.41 min.
Time of concentration (TC) =    11.19 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      373.000 to Point/Station      376.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.159(Ac.)
Runoff from this stream =     30.153(CFS)
Time of concentration =   11.19 min.
Rainfall intensity =     2.766(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      377.000 to Point/Station      378.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   602.000(Ft.)
Top (of initial area) elevation =  2909.000(Ft.)
Bottom (of initial area) elevation =  2902.600(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01063  s(%)=       1.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.759 min.
Rainfall intensity =      3.003(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     12.471(CFS)
Total initial stream area =        4.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      378.000 to Point/Station      376.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.600(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.471(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =    12.471(CFS)
Normal flow depth in pipe =    8.85(In.)
Flow top width inside pipe =   10.56(In.)
Critical depth could not be calculated.
Pipe flow velocity =     20.08(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.77 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      378.000 to Point/Station      376.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      4.700(Ac.)
Runoff from this stream =     12.471(CFS)
Time of concentration =    9.77 min.
Rainfall intensity =     3.001(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      379.000 to Point/Station      380.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   109.000(Ft.)
Top (of initial area) elevation =  2904.600(Ft.)
Bottom (of initial area) elevation =  2902.700(Ft.)
Difference in elevation =     1.900(Ft.)
Slope =    0.01743  s(%)=       1.74
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.463 min.
Rainfall intensity =      4.802(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.890
Subarea runoff =      5.982(CFS)
Total initial stream area =        1.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      380.000 to Point/Station      381.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2897.200(Ft.)
Downstream point/station elevation =  2896.200(Ft.)
Pipe length  =   316.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.982(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     5.982(CFS)
Normal flow depth in pipe =   12.59(In.)
Flow top width inside pipe =   20.58(In.)
Critical Depth =   10.81(In.)
Pipe flow velocity =      3.97(Ft/s)
Travel time through pipe =    1.33 min.
Time of concentration (TC) =     5.79 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      381.000 to Point/Station      381.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     5.79 min.
Rainfall intensity =      4.109(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.888
Subarea runoff =      6.057(CFS) for    1.900(Ac.)
Total runoff =     12.040(CFS)
Effective area this stream =        3.30(Ac.)
Total Study Area (Main Stream No. 3) =       19.50(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      381.000 to Point/Station      376.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2896.200(Ft.)
Downstream point/station elevation =  2895.300(Ft.)
Pipe length  =   309.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.040(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    12.040(CFS)
Normal flow depth in pipe =   19.36(In.)
Flow top width inside pipe =   18.96(In.)
Critical Depth =   14.94(In.)
Pipe flow velocity =      4.43(Ft/s)
Travel time through pipe =    1.16 min.
Time of concentration (TC) =     6.95 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      381.000 to Point/Station      376.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      3.300(Ac.)
Runoff from this stream =     12.040(CFS)
Time of concentration =    6.95 min.
Rainfall intensity =     3.681(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     30.15    11.159     11.19    0.055      2.766
2     12.47     4.700      9.77    0.055      3.001
3     12.04     3.300      6.95    0.055      3.681
Qmax(1) =
          1.000 *    1.000 *    30.153) +
          0.920 *    1.000 *    12.471) +
          0.748 *    1.000 *    12.040) + =      50.635
Qmax(2) =
          1.086 *    0.873 *    30.153) +
          1.000 *    1.000 *    12.471) +
          0.812 *    1.000 *    12.040) + =      50.859
Qmax(3) =
          1.337 *    0.621 *    30.153) +
          1.231 *    0.711 *    12.471) +
          1.000 *    1.000 *    12.040) + =      48.009

Total of 3 main streams to confluence:
Flow rates before confluence point:
      31.153      13.471      13.040
Maximum flow rates at confluence using above data:
       50.635       50.859       48.009
Area of streams before confluence:
       11.159        4.700        3.300
Effective area values after confluence:
       19.159       17.744       13.575


Results of confluence:
Total flow rate =     50.859(CFS)
Time of concentration =     9.771 min.
Effective stream area after confluence  =     17.744(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      19.16(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      376.000 to Point/Station      382.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2899.100(Ft.)
Downstream point/station elevation =  2897.800(Ft.)
Pipe length  =   429.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    50.859(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    50.859(CFS)
Normal flow depth in pipe =   31.69(In.)
Flow top width inside pipe =   36.15(In.)
Critical Depth =   26.74(In.)
Pipe flow velocity =      6.53(Ft/s)
Travel time through pipe =    1.09 min.
Time of concentration (TC) =    10.87 min.
End of computations, Total Study Area =           19.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

BUILDING 4

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/08/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 4A
100 YEAR STORM EVENT
FN: 4APROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 411.000 to Point/Station 412.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 516.000(Ft.)
Top (of initial area) elevation = 2916.500(Ft.)
Bottom (of initial area) elevation = 2910.600(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01143 s(%)= 1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.043 min.
Rainfall intensity = 3.144(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 7.506(CFS)
Total initial stream area = 2.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 412.000 to Point/Station 413.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.600(Ft.)
Downstream point/station elevation = 2904.700(Ft.)
Pipe length = 299.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 7.506(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 7.506(CFS)
Normal flow depth in pipe = 15.05(In.)
Flow top width inside pipe = 18.93(In.)
Critical Depth = 12.17(In.)
Pipe flow velocity = 4.07(Ft/s)
Travel time through pipe = 1.23 min.
Time of concentration (TC) = 10.27 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      412.000 to Point/Station      413.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      2.700(Ac.)
Runoff from this stream =      7.506(CFS)
Time of concentration =   10.27 min.
Rainfall intensity =     2.913(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      414.000 to Point/Station      415.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   516.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.600(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01143  s(%)=       1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.043 min.
Rainfall intensity =      3.144(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     14.734(CFS)
Total initial stream area =        5.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      415.000 to Point/Station      413.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2905.600(Ft.)
Downstream point/station elevation =  2904.700(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.734(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    14.734(CFS)
Normal flow depth in pipe =   13.61(In.)
Flow top width inside pipe =   20.06(In.)
Critical Depth =   17.08(In.)
Pipe flow velocity =      8.94(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     9.15 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      415.000 to Point/Station      413.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.300(Ac.)
Runoff from this stream =     14.734(CFS)
Time of concentration =    9.15 min.
Rainfall intensity =     3.121(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      7.51     2.700     10.27    0.055      2.913
2     14.73     5.300      9.15    0.055      3.121
Qmax(1) =
          1.000 *    1.000 *     7.506) +
          0.932 *    1.000 *    14.734) + =      21.240
Qmax(2) =
          1.073 *    0.891 *     7.506) +
          1.000 *    1.000 *    14.734) + =      21.912

Total of 2 main streams to confluence:
Flow rates before confluence point:
       8.506      15.734
Maximum flow rates at confluence using above data:
       21.240       21.912
Area of streams before confluence:
        2.700        5.300
Effective area values after confluence:
        8.000        7.707


Results of confluence:
Total flow rate =     21.912(CFS)
Time of concentration =     9.153 min.
Effective stream area after confluence  =      7.707(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       8.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      413.000 to Point/Station      416.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.700(Ft.)
Downstream point/station elevation =  2903.300(Ft.)
Pipe length  =   479.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.912(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    21.912(CFS)
Normal flow depth in pipe =   24.28(In.)
Flow top width inside pipe =   23.57(In.)
Critical Depth =   19.10(In.)
Pipe flow velocity =      5.15(Ft/s)
Travel time through pipe =    1.55 min.
Time of concentration (TC) =    10.70 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      413.000 to Point/Station      416.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      7.707(Ac.)
Runoff from this stream =     21.912(CFS)
Time of concentration =   10.70 min.
Rainfall intensity =     2.841(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      417.000 to Point/Station      418.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   516.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.600(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01143  s(%)=       1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.043 min.
Rainfall intensity =      3.144(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     10.286(CFS)
Total initial stream area =        3.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      418.000 to Point/Station      416.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2905.600(Ft.)
Downstream point/station elevation =  2903.300(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.286(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    10.286(CFS)
Normal flow depth in pipe =   10.21(In.)
Flow top width inside pipe =   13.99(In.)
Critical depth could not be calculated.
Pipe flow velocity =     11.56(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     9.13 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      418.000 to Point/Station      416.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.700(Ac.)
Runoff from this stream =     10.286(CFS)
Time of concentration =    9.13 min.
Rainfall intensity =     3.126(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     21.91     7.707     10.70    0.055      2.841
2     10.29     3.700      9.13    0.055      3.126
Qmax(1) =
          1.000 *    1.000 *    21.912) +
          0.907 *    1.000 *    10.286) + =      31.244
Qmax(2) =
          1.102 *    0.853 *    21.912) +
          1.000 *    1.000 *    10.286) + =      30.883

Total of 2 main streams to confluence:
Flow rates before confluence point:
      22.912      11.286
Maximum flow rates at confluence using above data:
       31.244       30.883
Area of streams before confluence:
        7.707        3.700
Effective area values after confluence:
       11.407       10.272


Results of confluence:
Total flow rate =     31.244(CFS)
```

```
Time of concentration =    10.703 min.
Effective stream area after confluence  =     11.407(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.41(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      416.000 to Point/Station      419.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2903.300(Ft.)
Downstream point/station elevation =  2902.800(Ft.)
Pipe length  =   148.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    31.244(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    31.244(CFS)
Normal flow depth in pipe =   24.49(In.)
Flow top width inside pipe =   33.58(In.)
Critical Depth =   21.74(In.)
Pipe flow velocity =      6.10(Ft/s)
Travel time through pipe =    0.40 min.
Time of concentration (TC) =    11.11 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      416.000 to Point/Station      419.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.407(Ac.)
Runoff from this stream =     31.244(CFS)
Time of concentration =   11.11 min.
Rainfall intensity =     2.779(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      420.000 to Point/Station      421.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   154.000(Ft.)
Top (of initial area) elevation =  2918.500(Ft.)
Bottom (of initial area) elevation =  2914.000(Ft.)
Difference in elevation =     4.500(Ft.)
Slope =    0.02922  s(%)=       2.92
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.621 min.
Rainfall intensity =      4.703(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.890
Subarea runoff =     11.295(CFS)
Total initial stream area =        2.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      421.000 to Point/Station      422.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2909.000(Ft.)
Downstream point/station elevation =  2903.200(Ft.)
Pipe length  =   371.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.295(CFS)
```

```
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    11.295(CFS)
Normal flow depth in pipe =   12.87(In.)
Flow top width inside pipe =   16.25(In.)
Critical Depth =   15.40(In.)
Pipe flow velocity =      8.36(Ft/s)
Travel time through pipe =    0.74 min.
Time of concentration (TC) =     5.36 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      422.000 to Point/Station      422.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     5.36 min.
Rainfall intensity =      4.302(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.889
Subarea runoff =     10.876(CFS) for    3.100(Ac.)
Total runoff =     22.170(CFS)
Effective area this stream =        5.80(Ac.)
Total Study Area (Main Stream No. 2) =       17.50(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      422.000 to Point/Station      419.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2903.200(Ft.)
Downstream point/station elevation =  2902.800(Ft.)
Pipe length  =   126.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    22.170(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    22.170(CFS)
Normal flow depth in pipe =   23.58(In.)
Flow top width inside pipe =   24.61(In.)
Critical Depth =   19.22(In.)
Pipe flow velocity =      5.36(Ft/s)
Travel time through pipe =    0.39 min.
Time of concentration (TC) =     5.75 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      422.000 to Point/Station      419.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.800(Ac.)
Runoff from this stream =     22.170(CFS)
Time of concentration =    5.75 min.
Rainfall intensity =     4.124(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     31.24    11.407     11.11    0.055      2.779
2     22.17     5.800      5.75    0.055      4.124
Qmax(1) =
          1.000 *    1.000 *    31.244) +
          0.669 *    1.000 *    22.170) + =      46.086
Qmax(2) =
          1.494 *    0.518 *    31.244) +
```

```
          1.000 *    1.000 *    22.170) + =      46.342

Total of 2 main streams to confluence:
Flow rates before confluence point:
      32.244      23.170
Maximum flow rates at confluence using above data:
       46.086       46.342
Area of streams before confluence:
       11.407        5.800
Effective area values after confluence:
       17.207       11.708


Results of confluence:
Total flow rate =     46.342(CFS)
Time of concentration =     5.753 min.
Effective stream area after confluence  =     11.708(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      17.21(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      419.000 to Point/Station      423.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2902.800(Ft.)
Downstream point/station elevation =  2902.400(Ft.)
Pipe length  =   149.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    46.342(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    46.342(CFS)
Normal flow depth in pipe =   30.84(In.)
Flow top width inside pipe =   37.10(In.)
Critical Depth =   25.50(In.)
Pipe flow velocity =      6.12(Ft/s)
Travel time through pipe =    0.41 min.
Time of concentration (TC) =     6.16 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      423.000 to Point/Station      423.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     6.16 min.
Rainfall intensity =      3.959(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.888
Subarea runoff =      8.494(CFS) for    3.900(Ac.)
Total runoff =     54.836(CFS)
Effective area this stream =       15.61(Ac.)
Total Study Area (Main Stream No. 1) =       21.40(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      423.000 to Point/Station      424.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2902.400(Ft.)
Downstream point/station elevation =  2901.300(Ft.)
Pipe length  =    97.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    54.836(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    54.836(CFS)
Normal flow depth in pipe =   26.30(In.)
Flow top width inside pipe =   26.55(In.)
Critical Depth =   28.95(In.)
```

Pipe flow velocity =   10.81(Ft/s)
Travel time through pipe =   0.15 min.
Time of concentration (TC) =   6.31 min.
End of computations, Total Study Area =   21.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/08/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 4B
100 YEAR STORM EVENT
FN: 4BPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 431.000 to Point/Station 432.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 516.000(Ft.)
Top (of initial area) elevation = 2916.500(Ft.)
Bottom (of initial area) elevation = 2910.600(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01143 s(%)= 1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.043 min.
Rainfall intensity = 3.144(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 7.506(CFS)
Total initial stream area = 2.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 432.000 to Point/Station 433.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.600(Ft.)
Downstream point/station elevation = 2904.700(Ft.)
Pipe length = 299.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 7.506(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 7.506(CFS)
Normal flow depth in pipe = 15.05(In.)
Flow top width inside pipe = 18.93(In.)
Critical Depth = 12.17(In.)
Pipe flow velocity = 4.07(Ft/s)
Travel time through pipe = 1.23 min.
Time of concentration (TC) = 10.27 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      432.000 to Point/Station      433.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      2.700(Ac.)
Runoff from this stream =      7.506(CFS)
Time of concentration =   10.27 min.
Rainfall intensity =     2.913(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      434.000 to Point/Station      435.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   516.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.600(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01143  s(%)=       1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.043 min.
Rainfall intensity =      3.144(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     14.734(CFS)
Total initial stream area =        5.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      435.000 to Point/Station      433.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2905.600(Ft.)
Downstream point/station elevation =  2904.700(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.734(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    14.734(CFS)
Normal flow depth in pipe =   13.61(In.)
Flow top width inside pipe =   20.06(In.)
Critical Depth =   17.08(In.)
Pipe flow velocity =      8.94(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     9.15 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      435.000 to Point/Station      433.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.300(Ac.)
Runoff from this stream =     14.734(CFS)
Time of concentration =    9.15 min.
Rainfall intensity =     3.121(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      7.51     2.700     10.27    0.055      2.913
2     14.73     5.300      9.15    0.055      3.121
Qmax(1) =
          1.000 *    1.000 *     7.506) +
          0.932 *    1.000 *    14.734) + =      21.240
Qmax(2) =
          1.073 *    0.891 *     7.506) +
          1.000 *    1.000 *    14.734) + =      21.912

Total of 2 main streams to confluence:
Flow rates before confluence point:
       8.506      15.734
Maximum flow rates at confluence using above data:
       21.240       21.912
Area of streams before confluence:
        2.700        5.300
Effective area values after confluence:
        8.000        7.707


Results of confluence:
Total flow rate =     21.912(CFS)
Time of concentration =     9.153 min.
Effective stream area after confluence  =      7.707(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       8.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      433.000 to Point/Station      436.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.700(Ft.)
Downstream point/station elevation =  2903.300(Ft.)
Pipe length  =   479.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.912(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    21.912(CFS)
Normal flow depth in pipe =   24.28(In.)
Flow top width inside pipe =   23.57(In.)
Critical Depth =   19.10(In.)
Pipe flow velocity =      5.15(Ft/s)
Travel time through pipe =    1.55 min.
Time of concentration (TC) =    10.70 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      433.000 to Point/Station      436.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      7.707(Ac.)
Runoff from this stream =     21.912(CFS)
Time of concentration =   10.70 min.
Rainfall intensity =     2.841(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      437.000 to Point/Station      438.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   516.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.600(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01143  s(%)=       1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.043 min.
Rainfall intensity =      3.144(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     10.286(CFS)
Total initial stream area =        3.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      438.000 to Point/Station      436.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2905.600(Ft.)
Downstream point/station elevation =  2903.300(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.286(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    10.286(CFS)
Normal flow depth in pipe =   10.21(In.)
Flow top width inside pipe =   13.99(In.)
Critical depth could not be calculated.
Pipe flow velocity =     11.56(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     9.13 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      438.000 to Point/Station      436.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.700(Ac.)
Runoff from this stream =     10.286(CFS)
Time of concentration =    9.13 min.
Rainfall intensity =     3.126(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     21.91     7.707     10.70    0.055      2.841
2     10.29     3.700      9.13    0.055      3.126
Qmax(1) =
          1.000 *    1.000 *    21.912) +
          0.907 *    1.000 *    10.286) + =      31.244
Qmax(2) =
          1.102 *    0.853 *    21.912) +
          1.000 *    1.000 *    10.286) + =      30.883

Total of 2 main streams to confluence:
Flow rates before confluence point:
      22.912      11.286
Maximum flow rates at confluence using above data:
       31.244       30.883
Area of streams before confluence:
        7.707        3.700
Effective area values after confluence:
       11.407       10.272


Results of confluence:
Total flow rate =     31.244(CFS)
```

```
Time of concentration =    10.703 min.
Effective stream area after confluence  =     11.407(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.41(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      436.000 to Point/Station      439.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2903.300(Ft.)
Downstream point/station elevation =  2902.200(Ft.)
Pipe length  =   143.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    31.244(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    31.244(CFS)
Normal flow depth in pipe =   21.61(In.)
Flow top width inside pipe =   26.93(In.)
Critical Depth =   22.85(In.)
Pipe flow velocity =      8.25(Ft/s)
Travel time through pipe =    0.29 min.
Time of concentration (TC) =    10.99 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      436.000 to Point/Station      439.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     11.407(Ac.)
Runoff from this stream =     31.244(CFS)
Time of concentration =   10.99 min.
Rainfall intensity =     2.796(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      440.000 to Point/Station      441.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   150.000(Ft.)
Top (of initial area) elevation =  2911.700(Ft.)
Bottom (of initial area) elevation =  2909.700(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.01333  s(%)=       1.33
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.350 min.
Rainfall intensity =      4.307(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.889
Subarea runoff =     11.865(CFS)
Total initial stream area =        3.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      441.000 to Point/Station      442.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.700(Ft.)
Downstream point/station elevation =  2902.400(Ft.)
Pipe length  =   745.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.865(CFS)
```

```
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    11.865(CFS)
Normal flow depth in pipe =   18.56(In.)
Flow top width inside pipe =   20.09(In.)
Critical Depth =   14.83(In.)
Pipe flow velocity =      4.55(Ft/s)
Travel time through pipe =    2.73 min.
Time of concentration (TC) =     8.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      442.000 to Point/Station      442.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     8.08 min.
Rainfall intensity =      3.364(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.885
Subarea runoff =      3.621(CFS) for    2.100(Ac.)
Total runoff =     15.486(CFS)
Effective area this stream =        5.20(Ac.)
Total Study Area (Main Stream No. 2) =       16.90(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      442.000 to Point/Station      439.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2902.400(Ft.)
Downstream point/station elevation =  2902.200(Ft.)
Pipe length  =    93.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.486(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    15.486(CFS)
Normal flow depth in pipe =   20.55(In.)
Flow top width inside pipe =   27.87(In.)
Critical Depth =   15.94(In.)
Pipe flow velocity =      4.32(Ft/s)
Travel time through pipe =    0.36 min.
Time of concentration (TC) =     8.44 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      442.000 to Point/Station      439.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.200(Ac.)
Runoff from this stream =     15.486(CFS)
Time of concentration =    8.44 min.
Rainfall intensity =     3.277(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     31.24    11.407     10.99    0.055      2.796
2     15.49     5.200      8.44    0.055      3.277
Qmax(1) =
          1.000 *    1.000 *    31.244) +
          0.851 *    1.000 *    15.486) + =      44.419
Qmax(2) =
          1.175 *    0.768 *    31.244) +
```

```
          1.000 *    1.000 *    15.486) + =      43.676

Total of 2 main streams to confluence:
Flow rates before confluence point:
      32.244      16.486
Maximum flow rates at confluence using above data:
       44.419       43.676
Area of streams before confluence:
       11.407        5.200
Effective area values after confluence:
       16.607       13.956


Results of confluence:
Total flow rate =     44.419(CFS)
Time of concentration =    10.992 min.
Effective stream area after confluence  =     16.607(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      16.61(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      439.000 to Point/Station      443.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2902.200(Ft.)
Downstream point/station elevation =  2901.700(Ft.)
Pipe length  =   154.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    44.419(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    44.419(CFS)
Normal flow depth in pipe =   30.19(In.)
Flow top width inside pipe =   32.62(In.)
Critical Depth =   25.50(In.)
Pipe flow velocity =      6.45(Ft/s)
Travel time through pipe =    0.40 min.
Time of concentration (TC) =    11.39 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      443.000 to Point/Station      443.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =    11.39 min.
Rainfall intensity =      2.737(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff =      4.847(CFS) for    3.800(Ac.)
Total runoff =     49.266(CFS)
Effective area this stream =       20.41(Ac.)
Total Study Area (Main Stream No. 1) =       20.70(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      443.000 to Point/Station      444.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2901.700(Ft.)
Downstream point/station elevation =  2899.500(Ft.)
Pipe length  =    75.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    49.266(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    49.266(CFS)
Normal flow depth in pipe =   20.58(In.)
Flow top width inside pipe =   22.99(In.)
Critical depth could not be calculated.
```

Pipe flow velocity =   15.15(Ft/s)
Travel time through pipe =   0.08 min.
Time of concentration (TC) =   11.47 min.
End of computations, Total Study Area =   20.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/08/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 4C
100 YEAR STORM EVENT
FN: 4CPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 451.000 to Point/Station 452.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 569.000(Ft.)
Top (of initial area) elevation = 2916.500(Ft.)
Bottom (of initial area) elevation = 2910.600(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01037 s(%)= 1.04
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.589 min.
Rainfall intensity = 3.035(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 9.924(CFS)
Total initial stream area = 3.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 452.000 to Point/Station 453.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.100(Ft.)
Downstream point/station elevation = 2904.300(Ft.)
Pipe length = 260.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 9.924(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 9.924(CFS)
Normal flow depth in pipe = 16.10(In.)
Flow top width inside pipe = 22.55(In.)
Critical Depth = 13.52(In.)
Pipe flow velocity = 4.43(Ft/s)
Travel time through pipe = 0.98 min.
Time of concentration (TC) = 10.57 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      452.000 to Point/Station      453.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.700(Ac.)
Runoff from this stream =      9.924(CFS)
Time of concentration =   10.57 min.
Rainfall intensity =     2.863(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      454.000 to Point/Station      455.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   569.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.100(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01125  s(%)=       1.12
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.434 min.
Rainfall intensity =      3.065(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     20.046(CFS)
Total initial stream area =        7.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      455.000 to Point/Station      453.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2905.100(Ft.)
Downstream point/station elevation =  2904.300(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.046(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    20.046(CFS)
Normal flow depth in pipe =   14.39(In.)
Flow top width inside pipe =   14.41(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.22(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.46 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      455.000 to Point/Station      453.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.400(Ac.)
Runoff from this stream =     20.046(CFS)
Time of concentration =    9.46 min.
Rainfall intensity =     3.060(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      9.92     3.700     10.57    0.055      2.863
2     20.05     7.400      9.46    0.055      3.060
Qmax(1) =
          1.000 *    1.000 *     9.924) +
          0.935 *    1.000 *    20.046) + =      28.659
Qmax(2) =
          1.070 *    0.895 *     9.924) +
          1.000 *    1.000 *    20.046) + =      29.552

Total of 2 main streams to confluence:
Flow rates before confluence point:
      10.924      21.046
Maximum flow rates at confluence using above data:
       28.659       29.552
Area of streams before confluence:
        3.700        7.400
Effective area values after confluence:
       11.100       10.712


Results of confluence:
Total flow rate =     29.552(CFS)
Time of concentration =     9.461 min.
Effective stream area after confluence  =     10.712(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      453.000 to Point/Station      456.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.300(Ft.)
Downstream point/station elevation =  2902.900(Ft.)
Pipe length  =   463.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    29.552(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    29.552(CFS)
Normal flow depth in pipe =   24.47(In.)
Flow top width inside pipe =   33.59(In.)
Critical Depth =   21.12(In.)
Pipe flow velocity =      5.77(Ft/s)
Travel time through pipe =    1.34 min.
Time of concentration (TC) =    10.80 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      453.000 to Point/Station      456.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.712(Ac.)
Runoff from this stream =     29.552(CFS)
Time of concentration =   10.80 min.
Rainfall intensity =     2.826(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      457.000 to Point/Station      458.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   569.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.100(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01125  s(%)=       1.12
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.434 min.
Rainfall intensity =      3.065(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     12.732(CFS)
Total initial stream area =        4.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      458.000 to Point/Station      456.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2905.100(Ft.)
Downstream point/station elevation =  2902.900(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.732(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =    12.732(CFS)
Normal flow depth in pipe =    9.19(In.)
Flow top width inside pipe =   10.17(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.74(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      458.000 to Point/Station      456.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      4.700(Ac.)
Runoff from this stream =     12.732(CFS)
Time of concentration =    9.45 min.
Rainfall intensity =     3.062(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      459.000 to Point/Station      460.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   157.000(Ft.)
Top (of initial area) elevation =  2918.500(Ft.)
Bottom (of initial area) elevation =  2914.500(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.02548  s(%)=       2.55
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.786 min.
Rainfall intensity =      4.605(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.889
Subarea runoff =     11.057(CFS)
Total initial stream area =        2.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      460.000 to Point/Station      461.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2909.500(Ft.)
Downstream point/station elevation =  2903.600(Ft.)
Pipe length  =   490.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.057(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    11.057(CFS)
Normal flow depth in pipe =   14.13(In.)
Flow top width inside pipe =   14.79(In.)
Critical Depth =   15.27(In.)
Pipe flow velocity =      7.43(Ft/s)
Travel time through pipe =    1.10 min.
Time of concentration (TC) =     5.89 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      461.000 to Point/Station      461.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     5.89 min.
Rainfall intensity =      4.067(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.888
Subarea runoff =      9.890(CFS) for    3.100(Ac.)
Total runoff =     20.946(CFS)
Effective area this stream =        5.80(Ac.)
Total Study Area (Main Stream No. 3) =       21.60(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      461.000 to Point/Station      456.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2903.600(Ft.)
Downstream point/station elevation =  2902.900(Ft.)
Pipe length  =   219.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.946(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    20.946(CFS)
Normal flow depth in pipe =   22.31(In.)
Flow top width inside pipe =   26.19(In.)
Critical Depth =   18.66(In.)
Pipe flow velocity =      5.35(Ft/s)
Travel time through pipe =    0.68 min.
Time of concentration (TC) =     6.57 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      461.000 to Point/Station      456.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      5.800(Ac.)
Runoff from this stream =     20.946(CFS)
Time of concentration =    6.57 min.
Rainfall intensity =     3.808(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     29.55    10.712     10.80    0.055      2.826
2     12.73     4.700      9.45    0.055      3.062
3     20.95     5.800      6.57    0.055      3.808
Qmax(1) =
          1.000 *    1.000 *    29.552) +
          0.922 *    1.000 *    12.732) +
          0.738 *    1.000 *    20.946) + =      56.751
Qmax(2) =
          1.085 *    0.875 *    29.552) +
          1.000 *    1.000 *    12.732) +
          0.801 *    1.000 *    20.946) + =      57.571
Qmax(3) =
          1.354 *    0.608 *    29.552) +
          1.248 *    0.695 *    12.732) +
          1.000 *    1.000 *    20.946) + =      56.342

Total of 3 main streams to confluence:
Flow rates before confluence point:
      30.552      13.732      21.946
Maximum flow rates at confluence using above data:
       56.751       57.571       56.342
Area of streams before confluence:
       10.712        4.700        5.800
Effective area values after confluence:
       21.212       19.872       15.584


Results of confluence:
Total flow rate =     57.571(CFS)
Time of concentration =     9.447 min.
Effective stream area after confluence  =     19.872(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      21.21(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      456.000 to Point/Station      462.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2906.600(Ft.)
Downstream point/station elevation =  2905.100(Ft.)
Pipe length  =   516.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    57.571(CFS)
Nearest computed pipe diameter  =     45.00(In.)
Calculated individual pipe flow  =    57.571(CFS)
Normal flow depth in pipe =   32.86(In.)
Flow top width inside pipe =   39.95(In.)
Critical Depth =   27.95(In.)
Pipe flow velocity =      6.66(Ft/s)
Travel time through pipe =    1.29 min.
Time of concentration (TC) =    10.74 min.
End of computations, Total Study Area =           21.60 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/08/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 4D
100 YEAR STORM EVENT
FN: 4DPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 471.000 to Point/Station 472.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 569.000(Ft.)
Top (of initial area) elevation = 2916.500(Ft.)
Bottom (of initial area) elevation = 2910.600(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01037 s(%)= 1.04
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.589 min.
Rainfall intensity = 3.035(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 9.924(CFS)
Total initial stream area = 3.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 472.000 to Point/Station 473.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.100(Ft.)
Downstream point/station elevation = 2904.300(Ft.)
Pipe length = 260.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 9.924(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 9.924(CFS)
Normal flow depth in pipe = 16.10(In.)
Flow top width inside pipe = 22.55(In.)
Critical Depth = 13.52(In.)
Pipe flow velocity = 4.43(Ft/s)
Travel time through pipe = 0.98 min.
Time of concentration (TC) = 10.57 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      472.000 to Point/Station      473.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.700(Ac.)
Runoff from this stream =      9.924(CFS)
Time of concentration =   10.57 min.
Rainfall intensity =     2.863(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      474.000 to Point/Station      475.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   569.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.100(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01125  s(%)=       1.12
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.434 min.
Rainfall intensity =      3.065(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     20.046(CFS)
Total initial stream area =        7.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      475.000 to Point/Station      473.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2905.100(Ft.)
Downstream point/station elevation =  2904.300(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.046(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    20.046(CFS)
Normal flow depth in pipe =   14.39(In.)
Flow top width inside pipe =   14.41(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.22(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.46 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      475.000 to Point/Station      473.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.400(Ac.)
Runoff from this stream =     20.046(CFS)
Time of concentration =    9.46 min.
Rainfall intensity =     3.060(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      9.92     3.700     10.57    0.055      2.863
2     20.05     7.400      9.46    0.055      3.060
Qmax(1) =
          1.000 *    1.000 *     9.924) +
          0.935 *    1.000 *    20.046) + =      28.659
Qmax(2) =
          1.070 *    0.895 *     9.924) +
          1.000 *    1.000 *    20.046) + =      29.552

Total of 2 main streams to confluence:
Flow rates before confluence point:
      10.924      21.046
Maximum flow rates at confluence using above data:
       28.659       29.552
Area of streams before confluence:
        3.700        7.400
Effective area values after confluence:
       11.100       10.712


Results of confluence:
Total flow rate =     29.552(CFS)
Time of concentration =     9.461 min.
Effective stream area after confluence  =     10.712(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      473.000 to Point/Station      476.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.300(Ft.)
Downstream point/station elevation =  2902.900(Ft.)
Pipe length  =   463.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    29.552(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    29.552(CFS)
Normal flow depth in pipe =   24.47(In.)
Flow top width inside pipe =   33.59(In.)
Critical Depth =   21.12(In.)
Pipe flow velocity =      5.77(Ft/s)
Travel time through pipe =    1.34 min.
Time of concentration (TC) =    10.80 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      473.000 to Point/Station      476.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.712(Ac.)
Runoff from this stream =     29.552(CFS)
Time of concentration =   10.80 min.
Rainfall intensity =     2.826(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      477.000 to Point/Station      478.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   569.000(Ft.)
Top (of initial area) elevation =  2916.500(Ft.)
Bottom (of initial area) elevation =  2910.100(Ft.)
Difference in elevation =     6.400(Ft.)
Slope =    0.01125  s(%)=       1.12
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.434 min.
Rainfall intensity =      3.065(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     12.732(CFS)
Total initial stream area =        4.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      478.000 to Point/Station      476.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2905.100(Ft.)
Downstream point/station elevation =  2902.900(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.732(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =    12.732(CFS)
Normal flow depth in pipe =    9.19(In.)
Flow top width inside pipe =   10.17(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.74(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      476.000 to Point/Station      476.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     9.45 min.
Rainfall intensity =      3.062(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.884
Subarea runoff =      6.215(CFS) for    2.300(Ac.)
Total runoff =     18.947(CFS)
Effective area this stream =        7.00(Ac.)
Total Study Area (Main Stream No. 2) =       18.10(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      476.000 to Point/Station      476.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.000(Ac.)
Runoff from this stream =     18.947(CFS)
Time of concentration =    9.45 min.
Rainfall intensity =     3.062(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1     29.55    10.712     10.80    0.055      2.826
2     18.95     7.000      9.45    0.055      3.062
Qmax(1) =
          1.000 *    1.000 *    29.552) +
          0.922 *    1.000 *    18.947) + =      47.012
Qmax(2) =
          1.085 *    0.875 *    29.552) +
          1.000 *    1.000 *    18.947) + =      47.003

Total of 2 main streams to confluence:
Flow rates before confluence point:
      30.552      19.947
Maximum flow rates at confluence using above data:
       47.012       47.003
Area of streams before confluence:
       10.712        7.000
Effective area values after confluence:
       17.712       16.372


Results of confluence:
Total flow rate =     47.012(CFS)
Time of concentration =    10.798 min.
Effective stream area after confluence  =     17.712(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      17.71(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      476.000 to Point/Station      479.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2904.800(Ft.)
Downstream point/station elevation =  2903.600(Ft.)
Pipe length  =   386.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    47.012(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    47.012(CFS)
Normal flow depth in pipe =   29.44(In.)
Flow top width inside pipe =   38.46(In.)
Critical Depth =   25.69(In.)
Pipe flow velocity =      6.53(Ft/s)
Travel time through pipe =    0.99 min.
Time of concentration (TC) =    11.78 min.
End of computations, Total Study Area =           18.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

BUILDING 5

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/09/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 5A
100 YEAR STORM EVENT
FN: 5APROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 511.000 to Point/Station 512.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 671.000(Ft.)
Top (of initial area) elevation = 2910.000(Ft.)
Bottom (of initial area) elevation = 2902.700(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01088 s(%)= 1.09
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.145 min.
Rainfall intensity = 2.934(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff = 13.216(CFS)
Total initial stream area = 5.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 512.000 to Point/Station 513.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2897.700(Ft.)
Downstream point/station elevation = 2896.900(Ft.)
Pipe length = 273.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 13.216(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 13.216(CFS)
Normal flow depth in pipe = 18.07(In.)
Flow top width inside pipe = 25.41(In.)
Critical Depth = 15.17(In.)
Pipe flow velocity = 4.67(Ft/s)
Travel time through pipe = 0.97 min.
Time of concentration (TC) = 11.12 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      512.000 to Point/Station      513.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.100(Ac.)
Runoff from this stream =     13.216(CFS)
Time of concentration =   11.12 min.
Rainfall intensity =     2.777(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      514.000 to Point/Station      515.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   675.000(Ft.)
Top (of initial area) elevation =  2910.000(Ft.)
Bottom (of initial area) elevation =  2902.700(Ft.)
Difference in elevation =     7.300(Ft.)
Slope =    0.01081  s(%)=       1.08
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.181 min.
Rainfall intensity =      2.928(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff =     12.928(CFS)
Total initial stream area =        5.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      515.000 to Point/Station      513.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.700(Ft.)
Downstream point/station elevation =  2896.900(Ft.)
Pipe length  =    60.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.928(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    12.928(CFS)
Normal flow depth in pipe =   13.03(In.)
Flow top width inside pipe =   20.38(In.)
Critical Depth =   16.06(In.)
Pipe flow velocity =      8.25(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =    10.30 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      515.000 to Point/Station      513.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.000(Ac.)
Runoff from this stream =     12.928(CFS)
Time of concentration =   10.30 min.
Rainfall intensity =     2.907(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     13.22     5.100     11.12    0.055      2.777
2     12.93     5.000     10.30    0.055      2.907
Qmax(1) =
          1.000 *    1.000 *    13.216) +
          0.954 *    1.000 *    12.928) + =      25.555
Qmax(2) =
          1.048 *    0.927 *    13.216) +
          1.000 *    1.000 *    12.928) + =      25.759

Total of 2 main streams to confluence:
Flow rates before confluence point:
      14.216      13.928
Maximum flow rates at confluence using above data:
       25.555       25.759
Area of streams before confluence:
        5.100        5.000
Effective area values after confluence:
       10.100        9.726


Results of confluence:
Total flow rate =     25.759(CFS)
Time of concentration =    10.302 min.
Effective stream area after confluence  =      9.726(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      10.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      513.000 to Point/Station      516.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2896.900(Ft.)
Downstream point/station elevation =  2895.800(Ft.)
Pipe length  =   374.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.759(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    25.759(CFS)
Normal flow depth in pipe =   24.42(In.)
Flow top width inside pipe =   28.95(In.)
Critical Depth =   20.19(In.)
Pipe flow velocity =      5.46(Ft/s)
Travel time through pipe =    1.14 min.
Time of concentration (TC) =    11.44 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      513.000 to Point/Station      516.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      9.726(Ac.)
Runoff from this stream =     25.759(CFS)
Time of concentration =   11.44 min.
Rainfall intensity =     2.729(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      517.000 to Point/Station      518.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   515.000(Ft.)
Top (of initial area) elevation =  2908.600(Ft.)
Bottom (of initial area) elevation =  2904.600(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.00777  s(%)=       0.78
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.762 min.
Rainfall intensity =      3.003(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     16.183(CFS)
Total initial stream area =        6.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      518.000 to Point/Station      516.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2899.600(Ft.)
Downstream point/station elevation =  2895.800(Ft.)
Pipe length  =   438.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.183(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    16.183(CFS)
Normal flow depth in pipe =   15.77(In.)
Flow top width inside pipe =   22.78(In.)
Critical Depth =   17.40(In.)
Pipe flow velocity =      7.40(Ft/s)
Travel time through pipe =    0.99 min.
Time of concentration (TC) =    10.75 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      518.000 to Point/Station      516.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.100(Ac.)
Runoff from this stream =     16.183(CFS)
Time of concentration =   10.75 min.
Rainfall intensity =     2.834(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     25.76     9.726     11.44    0.055      2.729
2     16.18     6.100     10.75    0.055      2.834
Qmax(1) =
          1.000 *    1.000 *    25.759) +
          0.962 *    1.000 *    16.183) + =      41.334
Qmax(2) =
          1.039 *    0.939 *    25.759) +
          1.000 *    1.000 *    16.183) + =      41.324

Total of 2 main streams to confluence:
Flow rates before confluence point:
      26.759      17.183
Maximum flow rates at confluence using above data:
       41.334       41.324
Area of streams before confluence:
        9.726        6.100
Effective area values after confluence:
       15.826       15.236


Results of confluence:
Total flow rate =     41.334(CFS)
```

```
Time of concentration =    11.443 min.
Effective stream area after confluence  =     15.826(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      15.83(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      516.000 to Point/Station      519.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2895.900(Ft.)
Downstream point/station elevation =  2895.200(Ft.)
Pipe length  =   186.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    41.334(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    41.334(CFS)
Normal flow depth in pipe =   26.77(In.)
Flow top width inside pipe =   36.19(In.)
Critical Depth =   24.56(In.)
Pipe flow velocity =      6.81(Ft/s)
Travel time through pipe =    0.46 min.
Time of concentration (TC) =    11.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      519.000 to Point/Station      519.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =    11.90 min.
Rainfall intensity =      2.666(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff =     12.550(CFS) for    7.100(Ac.)
Total runoff =     53.884(CFS)
Effective area this stream =       22.93(Ac.)
Total Study Area (Main Stream No. 1) =       23.30(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      519.000 to Point/Station      520.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2895.200(Ft.)
Downstream point/station elevation =  2895.100(Ft.)
Pipe length  =    53.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    53.884(CFS)
Nearest computed pipe diameter  =     48.00(In.)
Calculated individual pipe flow  =    53.884(CFS)
Normal flow depth in pipe =   34.41(In.)
Flow top width inside pipe =   43.25(In.)
Critical Depth =   26.48(In.)
Pipe flow velocity =      5.59(Ft/s)
Travel time through pipe =    0.16 min.
Time of concentration (TC) =    12.06 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      520.000 to Point/Station      521.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2895.300(Ft.)
Downstream point/station elevation =  2894.800(Ft.)
Pipe length  =   157.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    53.884(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    53.884(CFS)
```

Normal flow depth in pipe = 32.63(In.)
Flow top width inside pipe = 34.98(In.)
Critical Depth = 27.56(In.)
Pipe flow velocity = 6.71(Ft/s)
Travel time through pipe = 0.39 min.
Time of concentration (TC) = 12.45 min.
End of computations, Total Study Area = 23.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/09/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 5B
100 YEAR STORM EVENT
FN: 5BPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 531.000 to Point/Station 532.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 671.000(Ft.)
Top (of initial area) elevation = 2910.000(Ft.)
Bottom (of initial area) elevation = 2902.700(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01088 s(%)= 1.09
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.145 min.
Rainfall intensity = 2.934(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff = 13.216(CFS)
Total initial stream area = 5.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 532.000 to Point/Station 533.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2897.700(Ft.)
Downstream point/station elevation = 2896.900(Ft.)
Pipe length = 257.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 13.216(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 13.216(CFS)
Normal flow depth in pipe = 17.70(In.)
Flow top width inside pipe = 25.66(In.)
Critical Depth = 15.17(In.)
Pipe flow velocity = 4.79(Ft/s)
Travel time through pipe = 0.89 min.
Time of concentration (TC) = 11.04 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      534.000 to Point/Station      533.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =    11.04 min.
Rainfall intensity =      2.789(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff =     24.434(CFS) for   10.200(Ac.)
Total runoff =     37.650(CFS)
Effective area this stream =       15.30(Ac.)
Total Study Area (Main Stream No. 1) =       15.30(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      533.000 to Point/Station      536.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2896.900(Ft.)
Downstream point/station elevation =  2895.500(Ft.)
Pipe length  =   476.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    37.650(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    37.650(CFS)
Normal flow depth in pipe =   27.38(In.)
Flow top width inside pipe =   35.68(In.)
Critical Depth =   23.37(In.)
Pipe flow velocity =      6.05(Ft/s)
Travel time through pipe =    1.31 min.
Time of concentration (TC) =    12.35 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      537.000 to Point/Station      538.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =    12.35 min.
Rainfall intensity =      2.607(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.881
Subarea runoff =     35.632(CFS) for   16.600(Ac.)
Total runoff =     73.282(CFS)
Effective area this stream =       31.90(Ac.)
Total Study Area (Main Stream No. 1) =       31.90(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      538.000 to Point/Station      536.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     31.900(Ac.)
Runoff from this stream =     73.282(CFS)
Time of concentration =   12.35 min.
Rainfall intensity =     2.607(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      539.000 to Point/Station      540.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   648.000(Ft.)
Top (of initial area) elevation =  2909.500(Ft.)
Bottom (of initial area) elevation =  2904.900(Ft.)
Difference in elevation =     4.600(Ft.)
Slope =    0.00710  s(%)=       0.71
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.896 min.
Rainfall intensity =      2.811(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff =      8.930(CFS)
Total initial stream area =        3.600(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      540.000 to Point/Station      541.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2899.900(Ft.)
Downstream point/station elevation =  2899.800(Ft.)
Pipe length  =    41.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.930(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =     8.930(CFS)
Normal flow depth in pipe =   16.22(In.)
Flow top width inside pipe =   22.47(In.)
Critical Depth =   12.81(In.)
Pipe flow velocity =      3.95(Ft/s)
Travel time through pipe =    0.17 min.
Time of concentration (TC) =    11.07 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      541.000 to Point/Station      541.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =    11.07 min.
Rainfall intensity =      2.784(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff =      3.599(CFS) for    1.500(Ac.)
Total runoff =     12.529(CFS)
Effective area this stream =        5.10(Ac.)
Total Study Area (Main Stream No. 2) =       37.00(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      541.000 to Point/Station      536.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2899.800(Ft.)
Downstream point/station elevation =  2895.500(Ft.)
```

```
Pipe length  =   885.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.529(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    12.529(CFS)
Normal flow depth in pipe =   16.15(In.)
Flow top width inside pipe =   22.52(In.)
Critical Depth =   15.28(In.)
Pipe flow velocity =      5.57(Ft/s)
Travel time through pipe =    2.65 min.
Time of concentration (TC) =    13.72 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      541.000 to Point/Station      536.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.100(Ac.)
Runoff from this stream =     12.529(CFS)
Time of concentration =   13.72 min.
Rainfall intensity =     2.448(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     73.28    31.900     12.35    0.055      2.607
2     12.53     5.100     13.72    0.055      2.448
Qmax(1) =
          1.000 *    1.000 *    73.282) +
          1.066 *    0.900 *    12.529) + =      85.313
Qmax(2) =
          0.938 *    1.000 *    73.282) +
          1.000 *    1.000 *    12.529) + =      81.244

Total of 2 main streams to confluence:
Flow rates before confluence point:
      74.282      13.529
Maximum flow rates at confluence using above data:
       85.313       81.244
Area of streams before confluence:
       31.900        5.100
Effective area values after confluence:
       36.492       37.000


Results of confluence:
Total flow rate =     85.313(CFS)
Time of concentration =    12.351 min.
Effective stream area after confluence  =     36.492(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      37.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      536.000 to Point/Station      542.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2895.700(Ft.)
Downstream point/station elevation =  2895.200(Ft.)
Pipe length  =   183.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    85.313(CFS)
Nearest computed pipe diameter  =     51.00(In.)
Calculated individual pipe flow  =    85.313(CFS)
Normal flow depth in pipe =   40.31(In.)
Flow top width inside pipe =   41.51(In.)
Critical Depth =   33.03(In.)
Pipe flow velocity =      7.09(Ft/s)
Travel time through pipe =    0.43 min.
Time of concentration (TC) =    12.78 min.
```

End of computations, Total Study Area = 37.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/09/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 5C
100 YEAR STORM EVENT
FN: 5CPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 551.000 to Point/Station 552.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 606.000(Ft.)
Top (of initial area) elevation = 2910.000(Ft.)
Bottom (of initial area) elevation = 2903.300(Ft.)
Difference in elevation = 6.700(Ft.)
Slope = 0.01106 s(%)= 1.11
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.708 min.
Rainfall intensity = 3.012(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 10.648(CFS)
Total initial stream area = 4.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 552.000 to Point/Station 553.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2898.300(Ft.)
Downstream point/station elevation = 2897.500(Ft.)
Pipe length = 258.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.648(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 10.648(CFS)
Normal flow depth in pipe = 16.92(In.)
Flow top width inside pipe = 21.89(In.)
Critical Depth = 14.04(In.)
Pipe flow velocity = 4.50(Ft/s)
Travel time through pipe = 0.96 min.
Time of concentration (TC) = 10.66 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      552.000 to Point/Station      553.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      4.000(Ac.)
Runoff from this stream =     10.648(CFS)
Time of concentration =   10.66 min.
Rainfall intensity =     2.847(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      554.000 to Point/Station      555.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   606.000(Ft.)
Top (of initial area) elevation =  2910.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     6.700(Ft.)
Slope =    0.01106  s(%)=       1.11
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.708 min.
Rainfall intensity =      3.012(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     13.576(CFS)
Total initial stream area =        5.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      555.000 to Point/Station      553.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2897.500(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.576(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    13.576(CFS)
Normal flow depth in pipe =   10.70(In.)
Flow top width inside pipe =   17.68(In.)
Critical Depth =   16.44(In.)
Pipe flow velocity =     12.40(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.74 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      555.000 to Point/Station      553.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.100(Ac.)
Runoff from this stream =     13.576(CFS)
Time of concentration =    9.74 min.
Rainfall intensity =     3.007(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      556.000 to Point/Station      557.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   308.000(Ft.)
Top (of initial area) elevation =  2910.000(Ft.)
Bottom (of initial area) elevation =  2905.900(Ft.)
Difference in elevation =     4.100(Ft.)
Slope =    0.01331  s(%)=       1.33
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.136 min.
Rainfall intensity =      3.624(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.886
Subarea runoff =     12.527(CFS)
Total initial stream area =        3.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      557.000 to Point/Station      553.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2900.900(Ft.)
Downstream point/station elevation =  2897.500(Ft.)
Pipe length  =   149.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.527(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    12.527(CFS)
Normal flow depth in pipe =   12.06(In.)
Flow top width inside pipe =   16.93(In.)
Critical Depth =   16.02(In.)
Pipe flow velocity =      9.95(Ft/s)
Travel time through pipe =    0.25 min.
Time of concentration (TC) =     7.39 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      557.000 to Point/Station      553.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      3.900(Ac.)
Runoff from this stream =     12.527(CFS)
Time of concentration =    7.39 min.
Rainfall intensity =     3.550(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     10.65     4.000     10.66    0.055      2.847
2     13.58     5.100      9.74    0.055      3.007
3     12.53     3.900      7.39    0.055      3.550
Qmax(1) =
          1.000 *    1.000 *    10.648) +
          0.946 *    1.000 *    13.576) +
          0.799 *    1.000 *    12.527) + =      33.498
Qmax(2) =
          1.057 *    0.913 *    10.648) +
          1.000 *    1.000 *    13.576) +
          0.845 *    1.000 *    12.527) + =      34.436
Qmax(3) =
```

```
          1.251 *    0.693 *    10.648) +
          1.184 *    0.759 *    13.576) +
          1.000 *    1.000 *    12.527) + =      33.944

Total of 3 main streams to confluence:
Flow rates before confluence point:
      11.648      14.576      13.527
Maximum flow rates at confluence using above data:
       33.498       34.436       33.944
Area of streams before confluence:
        4.000        5.100        3.900
Effective area values after confluence:
       13.000       12.652       10.539


Results of confluence:
Total flow rate =     34.436(CFS)
Time of concentration =     9.736 min.
Effective stream area after confluence  =     12.652(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      13.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      553.000 to Point/Station      558.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2899.200(Ft.)
Downstream point/station elevation =  2897.800(Ft.)
Pipe length  =   480.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    34.436(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    34.436(CFS)
Normal flow depth in pipe =   28.17(In.)
Flow top width inside pipe =   29.70(In.)
Critical Depth =   22.87(In.)
Pipe flow velocity =      5.80(Ft/s)
Travel time through pipe =    1.38 min.
Time of concentration (TC) =    11.12 min.
End of computations, Total Study Area =           13.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/09/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 5D
100 YEAR STORM EVENT
FN: 5DPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 571.000 to Point/Station 572.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 606.000(Ft.)
Top (of initial area) elevation = 2910.000(Ft.)
Bottom (of initial area) elevation = 2902.700(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01205 s(%)= 1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.543 min.
Rainfall intensity = 3.044(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 10.760(CFS)
Total initial stream area = 4.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 572.000 to Point/Station 573.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2898.300(Ft.)
Downstream point/station elevation = 2897.500(Ft.)
Pipe length = 258.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.760(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 10.760(CFS)
Normal flow depth in pipe = 17.06(In.)
Flow top width inside pipe = 21.76(In.)
Critical Depth = 14.12(In.)
Pipe flow velocity = 4.50(Ft/s)
Travel time through pipe = 0.95 min.
Time of concentration (TC) = 10.50 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      572.000 to Point/Station      573.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      4.000(Ac.)
Runoff from this stream =     10.760(CFS)
Time of concentration =   10.50 min.
Rainfall intensity =     2.874(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      574.000 to Point/Station      575.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   606.000(Ft.)
Top (of initial area) elevation =  2910.000(Ft.)
Bottom (of initial area) elevation =  2903.300(Ft.)
Difference in elevation =     6.700(Ft.)
Slope =    0.01106  s(%)=       1.11
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.708 min.
Rainfall intensity =      3.012(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     21.029(CFS)
Total initial stream area =        7.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      575.000 to Point/Station      573.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2898.300(Ft.)
Downstream point/station elevation =  2897.500(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.029(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    21.029(CFS)
Normal flow depth in pipe =   12.70(In.)
Flow top width inside pipe =   20.53(In.)
Critical Depth =   19.44(In.)
Pipe flow velocity =     13.83(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.73 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      575.000 to Point/Station      573.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.900(Ac.)
Runoff from this stream =     21.029(CFS)
Time of concentration =    9.73 min.
Rainfall intensity =     3.008(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     10.76     4.000     10.50    0.055      2.874
2     21.03     7.900      9.73    0.055      3.008
Qmax(1) =
          1.000 *    1.000 *    10.760) +
          0.955 *    1.000 *    21.029) + =      30.840
Qmax(2) =
          1.047 *    0.927 *    10.760) +
          1.000 *    1.000 *    21.029) + =      31.478

Total of 2 main streams to confluence:
Flow rates before confluence point:
      11.760      22.029
Maximum flow rates at confluence using above data:
       30.840       31.478
Area of streams before confluence:
        4.000        7.900
Effective area values after confluence:
       11.900       11.609


Results of confluence:
Total flow rate =     31.478(CFS)
Time of concentration =     9.734 min.
Effective stream area after confluence  =     11.609(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      11.90(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      573.000 to Point/Station      576.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2897.500(Ft.)
Downstream point/station elevation =  2896.100(Ft.)
Pipe length  =   475.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    31.478(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    31.478(CFS)
Normal flow depth in pipe =   25.97(In.)
Flow top width inside pipe =   32.28(In.)
Critical Depth =   21.85(In.)
Pipe flow velocity =      5.77(Ft/s)
Travel time through pipe =    1.37 min.
Time of concentration (TC) =    11.11 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      577.000 to Point/Station      578.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =    11.11 min.
Rainfall intensity =      2.779(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff =     34.252(CFS) for   15.200(Ac.)
Total runoff =     65.730(CFS)
Effective area this stream =       26.81(Ac.)
Total Study Area (Main Stream No. 1) =       27.10(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      576.000 to Point/Station      579.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
```

```
Upstream point/station elevation =  2896.100(Ft.)
Downstream point/station elevation =  2894.200(Ft.)
Pipe length  =   626.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    65.730(CFS)
Nearest computed pipe diameter  =     45.00(In.)
Calculated individual pipe flow  =    65.730(CFS)
Normal flow depth in pipe =   36.38(In.)
Flow top width inside pipe =   35.43(In.)
Critical Depth =   29.92(In.)
Pipe flow velocity =      6.88(Ft/s)
Travel time through pipe =    1.52 min.
Time of concentration (TC) =    12.62 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      576.000 to Point/Station      579.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     26.809(Ac.)
Runoff from this stream =     65.730(CFS)
Time of concentration =   12.62 min.
Rainfall intensity =     2.573(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      580.000 to Point/Station      581.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   350.000(Ft.)
Top (of initial area) elevation =  2909.500(Ft.)
Bottom (of initial area) elevation =  2907.600(Ft.)
Difference in elevation =     1.900(Ft.)
Slope =    0.00543  s(%)=       0.54
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.986 min.
Rainfall intensity =      3.156(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =      3.907(CFS)
Total initial stream area =        1.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      581.000 to Point/Station      579.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2902.600(Ft.)
Downstream point/station elevation =  2894.200(Ft.)
Pipe length  =   139.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.907(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     3.907(CFS)
Normal flow depth in pipe =    7.08(In.)
Flow top width inside pipe =    7.38(In.)
Critical depth could not be calculated.
Pipe flow velocity =     10.48(Ft/s)
Travel time through pipe =    0.22 min.
Time of concentration (TC) =     9.21 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      581.000 to Point/Station      579.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.400(Ac.)
Runoff from this stream =      3.907(CFS)
Time of concentration =    9.21 min.
Rainfall intensity =     3.110(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     65.73    26.809     12.62    0.055      2.573
2      3.91     1.400      9.21    0.055      3.110
Qmax(1) =
          1.000 *    1.000 *    65.730) +
          0.824 *    1.000 *     3.907) + =      68.951
Qmax(2) =
          1.213 *    0.729 *    65.730) +
          1.000 *    1.000 *     3.907) + =      62.060

Total of 2 main streams to confluence:
Flow rates before confluence point:
      66.730       4.907
Maximum flow rates at confluence using above data:
       68.951       62.060
Area of streams before confluence:
       26.809        1.400
Effective area values after confluence:
       28.209       20.954


Results of confluence:
Total flow rate =     68.951(CFS)
Time of concentration =    12.623 min.
Effective stream area after confluence  =     28.209(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      28.21(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      579.000 to Point/Station      582.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2901.300(Ft.)
Downstream point/station elevation =  2900.900(Ft.)
Pipe length  =   139.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    68.951(CFS)
Nearest computed pipe diameter  =     48.00(In.)
Calculated individual pipe flow  =    68.951(CFS)
Normal flow depth in pipe =   35.44(In.)
Flow top width inside pipe =   42.20(In.)
Critical Depth =   30.11(In.)
Pipe flow velocity =      6.93(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =    12.96 min.
End of computations, Total Study Area =           28.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

BUILDING 6

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 6A
100 YEAR STORM EVENT
FN: 6APROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 611.000 to Point/Station 612.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 645.000(Ft.)
Top (of initial area) elevation = 2915.900(Ft.)
Bottom (of initial area) elevation = 2908.600(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01132 s(%)= 1.13
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.907 min.
Rainfall intensity = 2.976(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff = 18.667(CFS)
Total initial stream area = 7.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 612.000 to Point/Station 613.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2903.600(Ft.)
Downstream point/station elevation = 2902.200(Ft.)
Pipe length = 470.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 18.667(CFS)
Nearest computed pipe diameter = 30.00(In.)
Calculated individual pipe flow = 18.667(CFS)
Normal flow depth in pipe = 20.93(In.)
Flow top width inside pipe = 27.56(In.)
Critical Depth = 17.55(In.)
Pipe flow velocity = 5.10(Ft/s)
Travel time through pipe = 1.54 min.
Time of concentration (TC) = 11.44 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      612.000 to Point/Station      613.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.100(Ac.)
Runoff from this stream =     18.667(CFS)
Time of concentration =   11.44 min.
Rainfall intensity =     2.730(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      614.000 to Point/Station      615.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   642.000(Ft.)
Top (of initial area) elevation =  2915.900(Ft.)
Bottom (of initial area) elevation =  2908.600(Ft.)
Difference in elevation =     7.300(Ft.)
Slope =    0.01137  s(%)=       1.14
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.879 min.
Rainfall intensity =      2.981(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff =     20.806(CFS)
Total initial stream area =        7.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      615.000 to Point/Station      613.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2903.600(Ft.)
Downstream point/station elevation =  2902.200(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.806(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    20.806(CFS)
Normal flow depth in pipe =   10.56(In.)
Flow top width inside pipe =   17.73(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.32(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.89 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      615.000 to Point/Station      613.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      7.900(Ac.)
Runoff from this stream =     20.806(CFS)
Time of concentration =    9.89 min.
Rainfall intensity =     2.979(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1     18.67     7.100     11.44    0.055      2.730
2     20.81     7.900      9.89    0.055      2.979
Qmax(1) =
          1.000 *    1.000 *    18.667) +
          0.915 *    1.000 *    20.806) + =      37.701
Qmax(2) =
          1.093 *    0.865 *    18.667) +
          1.000 *    1.000 *    20.806) + =      38.447

Total of 2 streams to confluence:
Flow rates before confluence point:
      18.667      20.806
Maximum flow rates at confluence using above data:
       37.701       38.447
Area of streams before confluence:
        7.100        7.900
Effective area values after confluence:
       15.000       14.038
Results of confluence:
Total flow rate =     38.447(CFS)
Time of concentration =     9.892 min.
Effective stream area after confluence =     14.038(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =      15.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      613.000 to Point/Station      616.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2902.200(Ft.)
Downstream point/station elevation =  2902.000(Ft.)
Pipe length  =    68.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    38.447(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    38.447(CFS)
Normal flow depth in pipe =   27.84(In.)
Flow top width inside pipe =   35.25(In.)
Critical Depth =   23.64(In.)
Pipe flow velocity =      6.07(Ft/s)
Travel time through pipe =    0.19 min.
Time of concentration (TC) =    10.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      613.000 to Point/Station      616.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     14.038(Ac.)
Runoff from this stream =     38.447(CFS)
Time of concentration =   10.08 min.
Rainfall intensity =     2.946(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      617.000 to Point/Station      618.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   259.000(Ft.)
Top (of initial area) elevation =  2913.300(Ft.)
Bottom (of initial area) elevation =  2910.500(Ft.)
```

```
Difference in elevation =     2.800(Ft.)
Slope =    0.01081  s(%)=       1.08
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.941 min.
Rainfall intensity =      3.684(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =      9.800(CFS)
Total initial stream area =        3.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      618.000 to Point/Station      619.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2905.500(Ft.)
Downstream point/station elevation =  2903.200(Ft.)
Pipe length  =   255.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.800(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     9.800(CFS)
Normal flow depth in pipe =   14.48(In.)
Flow top width inside pipe =   14.27(In.)
Critical Depth =   14.50(In.)
Pipe flow velocity =      6.44(Ft/s)
Travel time through pipe =    0.66 min.
Time of concentration (TC) =     7.60 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      618.000 to Point/Station      619.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      3.000(Ac.)
Runoff from this stream =      9.800(CFS)
Time of concentration =    7.60 min.
Rainfall intensity =     3.489(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      620.000 to Point/Station      621.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   255.000(Ft.)
Top (of initial area) elevation =  2912.700(Ft.)
Bottom (of initial area) elevation =  2908.900(Ft.)
Difference in elevation =     3.800(Ft.)
Slope =    0.01490  s(%)=       1.49
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.469 min.
Rainfall intensity =      3.843(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =     10.229(CFS)
Total initial stream area =        3.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      621.000 to Point/Station      619.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2903.900(Ft.)
```

```
Downstream point/station elevation =  2903.200(Ft.)
Pipe length  =   247.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.229(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    10.229(CFS)
Normal flow depth in pipe =   16.99(In.)
Flow top width inside pipe =   21.82(In.)
Critical Depth =   13.74(In.)
Pipe flow velocity =      4.30(Ft/s)
Travel time through pipe =    0.96 min.
Time of concentration (TC) =     7.43 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      621.000 to Point/Station      619.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      3.000(Ac.)
Runoff from this stream =     10.229(CFS)
Time of concentration =    7.43 min.
Rainfall intensity =     3.538(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      9.80     3.000      7.60    0.055      3.489
2     10.23     3.000      7.43    0.055      3.538
Qmax(1) =
          1.000 *    1.000 *     9.800) +
          0.986 *    1.000 *    10.229) + =      19.884
Qmax(2) =
          1.014 *    0.977 *     9.800) +
          1.000 *    1.000 *    10.229) + =      19.940

Total of 2 streams to confluence:
Flow rates before confluence point:
       9.800      10.229
Maximum flow rates at confluence using above data:
      19.884       19.940
Area of streams before confluence:
       3.000        3.000
Effective area values after confluence:
       6.000        5.931
Results of confluence:
Total flow rate =     19.940(CFS)
Time of concentration =     7.426 min.
Effective stream area after confluence =      5.931(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       6.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      619.000 to Point/Station      616.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2903.200(Ft.)
Downstream point/station elevation =  2902.000(Ft.)
Pipe length  =   342.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    19.940(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    19.940(CFS)
Normal flow depth in pipe =   20.67(In.)
Flow top width inside pipe =   27.77(In.)
Critical Depth =   18.19(In.)
Pipe flow velocity =      5.52(Ft/s)
Travel time through pipe =    1.03 min.
Time of concentration (TC) =     8.46 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      619.000 to Point/Station      616.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.931(Ac.)
Runoff from this stream =     19.940(CFS)
Time of concentration =    8.46 min.
Rainfall intensity =     3.272(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     38.45    14.038     10.08    0.055      2.946
2     19.94     5.931      8.46    0.055      3.272
Qmax(1) =
          1.000 *    1.000 *    38.447) +
          0.898 *    1.000 *    19.940) + =      56.362
Qmax(2) =
          1.113 *    0.839 *    38.447) +
          1.000 *    1.000 *    19.940) + =      55.851

Total of 2 main streams to confluence:
Flow rates before confluence point:
      39.447      20.940
Maximum flow rates at confluence using above data:
       56.362       55.851
Area of streams before confluence:
       14.038        5.931
Effective area values after confluence:
       19.969       17.711


Results of confluence:
Total flow rate =     56.362(CFS)
Time of concentration =    10.079 min.
Effective stream area after confluence  =     19.969(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      19.97(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      616.000 to Point/Station      622.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2901.800(Ft.)
Downstream point/station elevation =  2900.400(Ft.)
Pipe length  =   461.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    56.362(CFS)
Nearest computed pipe diameter  =     45.00(In.)
Calculated individual pipe flow  =    56.362(CFS)
Normal flow depth in pipe =   31.73(In.)
Flow top width inside pipe =   41.04(In.)
Critical Depth =   27.67(In.)
Pipe flow velocity =      6.77(Ft/s)
Travel time through pipe =    1.14 min.
Time of concentration (TC) =    11.21 min.
End of computations, Total Study Area =           21.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 6B
100 YEAR STORM EVENT
FN: 6BPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 631.000 to Point/Station 632.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 645.000(Ft.)
Top (of initial area) elevation = 2915.900(Ft.)
Bottom (of initial area) elevation = 2908.600(Ft.)
Difference in elevation = 7.300(Ft.)
Slope = 0.01132 s(%)= 1.13
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.907 min.
Rainfall intensity = 2.976(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff = 18.667(CFS)
Total initial stream area = 7.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 632.000 to Point/Station 633.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2903.600(Ft.)
Downstream point/station elevation = 2902.100(Ft.)
Pipe length = 485.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 18.667(CFS)
Nearest computed pipe diameter = 30.00(In.)
Calculated individual pipe flow = 18.667(CFS)
Normal flow depth in pipe = 20.65(In.)
Flow top width inside pipe = 27.79(In.)
Critical Depth = 17.55(In.)
Pipe flow velocity = 5.18(Ft/s)
Travel time through pipe = 1.56 min.
Time of concentration (TC) = 11.47 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      632.000 to Point/Station      633.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.100(Ac.)
Runoff from this stream =     18.667(CFS)
Time of concentration =   11.47 min.
Rainfall intensity =     2.726(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      634.000 to Point/Station      635.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   645.000(Ft.)
Top (of initial area) elevation =  2915.900(Ft.)
Bottom (of initial area) elevation =  2908.600(Ft.)
Difference in elevation =     7.300(Ft.)
Slope =    0.01132  s(%)=       1.13
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.907 min.
Rainfall intensity =      2.976(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff =     26.292(CFS)
Total initial stream area =       10.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      635.000 to Point/Station      633.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2903.600(Ft.)
Downstream point/station elevation =  2902.100(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.292(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    26.292(CFS)
Normal flow depth in pipe =   13.83(In.)
Flow top width inside pipe =   15.19(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.06(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.93 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      635.000 to Point/Station      633.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     10.000(Ac.)
Runoff from this stream =     26.292(CFS)
Time of concentration =    9.93 min.
Rainfall intensity =     2.973(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1     18.67     7.100     11.47    0.055      2.726
2     26.29    10.000      9.93    0.055      2.973
Qmax(1) =
          1.000 *    1.000 *    18.667) +
          0.916 *    1.000 *    26.292) + =      42.738
Qmax(2) =
          1.092 *    0.866 *    18.667) +
          1.000 *    1.000 *    26.292) + =      43.942

Total of 2 streams to confluence:
Flow rates before confluence point:
      18.667      26.292
Maximum flow rates at confluence using above data:
       42.738       43.942
Area of streams before confluence:
        7.100       10.000
Effective area values after confluence:
       17.100       16.146
Results of confluence:
Total flow rate =     43.942(CFS)
Time of concentration =     9.926 min.
Effective stream area after confluence =     16.146(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =      17.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      633.000 to Point/Station      636.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2902.100(Ft.)
Downstream point/station elevation =  2900.900(Ft.)
Pipe length  =   392.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    43.942(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    43.942(CFS)
Normal flow depth in pipe =   30.70(In.)
Flow top width inside pipe =   31.92(In.)
Critical Depth =   25.35(In.)
Pipe flow velocity =      6.27(Ft/s)
Travel time through pipe =    1.04 min.
Time of concentration (TC) =    10.97 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      633.000 to Point/Station      636.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     16.146(Ac.)
Runoff from this stream =     43.942(CFS)
Time of concentration =   10.97 min.
Rainfall intensity =     2.800(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      637.000 to Point/Station      638.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   381.000(Ft.)
Top (of initial area) elevation =  2914.000(Ft.)
Bottom (of initial area) elevation =  2909.900(Ft.)
Difference in elevation =     4.100(Ft.)
Slope =    0.01076  s(%)=       1.08
```

```
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.107 min.
Rainfall intensity =      3.357(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.885
Subarea runoff =      5.943(CFS)
Total initial stream area =        2.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      638.000 to Point/Station      636.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.900(Ft.)
Downstream point/station elevation =  2900.900(Ft.)
Pipe length  =   214.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.943(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     5.943(CFS)
Normal flow depth in pipe =    9.01(In.)
Flow top width inside pipe =   14.69(In.)
Critical Depth =   11.82(In.)
Pipe flow velocity =      7.72(Ft/s)
Travel time through pipe =    0.46 min.
Time of concentration (TC) =     8.57 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      638.000 to Point/Station      636.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.000(Ac.)
Runoff from this stream =      5.943(CFS)
Time of concentration =    8.57 min.
Rainfall intensity =     3.247(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1     43.94    16.146     10.97    0.055      2.800
2      5.94     2.000      8.57    0.055      3.247
Qmax(1) =
          1.000 *    1.000 *    43.942) +
          0.860 *    1.000 *     5.943) + =      49.053
Qmax(2) =
          1.163 *    0.781 *    43.942) +
          1.000 *    1.000 *     5.943) + =      45.864

Total of 2 streams to confluence:
Flow rates before confluence point:
      43.942       5.943
Maximum flow rates at confluence using above data:
       49.053       45.864
Area of streams before confluence:
       16.146        2.000
Effective area values after confluence:
       18.146       14.615
Results of confluence:
Total flow rate =     49.053(CFS)
Time of concentration =    10.968 min.
Effective stream area after confluence =     18.146(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =      18.15(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      636.000 to Point/Station      639.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
```

Upstream point/station elevation = 2902.400(Ft.)
Downstream point/station elevation = 2901.900(Ft.)
Pipe length = 169.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 49.053(CFS)
Nearest computed pipe diameter = 42.00(In.)
Calculated individual pipe flow = 49.053(CFS)
Normal flow depth in pipe = 31.03(In.)
Flow top width inside pipe = 36.90(In.)
Critical Depth = 26.25(In.)
Pipe flow velocity = 6.43(Ft/s)
Travel time through pipe = 0.44 min.
Time of concentration (TC) = 11.41 min.
End of computations, Total Study Area = 19.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 6C
100 YEAR STORM EVENT
FN: 6CPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 651.000 to Point/Station 652.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 507.000(Ft.)
Top (of initial area) elevation = 2915.900(Ft.)
Bottom (of initial area) elevation = 2910.000(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01164 s(%)= 1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.948 min.
Rainfall intensity = 3.164(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 8.674(CFS)
Total initial stream area = 3.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 652.000 to Point/Station 653.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.000(Ft.)
Downstream point/station elevation = 2904.200(Ft.)
Pipe length = 257.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 8.674(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 8.674(CFS)
Normal flow depth in pipe = 16.88(In.)
Flow top width inside pipe = 16.69(In.)
Critical Depth = 13.13(In.)
Pipe flow velocity = 4.19(Ft/s)
Travel time through pipe = 1.02 min.
Time of concentration (TC) = 9.97 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      652.000 to Point/Station      653.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.100(Ac.)
Runoff from this stream =      8.674(CFS)
Time of concentration =    9.97 min.
Rainfall intensity =     2.965(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      654.000 to Point/Station      655.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   507.000(Ft.)
Top (of initial area) elevation =  2915.900(Ft.)
Bottom (of initial area) elevation =  2910.000(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01164  s(%)=       1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.948 min.
Rainfall intensity =      3.164(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     17.068(CFS)
Total initial stream area =        6.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      655.000 to Point/Station      653.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2905.000(Ft.)
Downstream point/station elevation =  2904.200(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.068(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    17.068(CFS)
Normal flow depth in pipe =   12.54(In.)
Flow top width inside pipe =   16.55(In.)
Critical depth could not be calculated.
Pipe flow velocity =     12.98(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.97 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      655.000 to Point/Station      653.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      6.100(Ac.)
Runoff from this stream =     17.068(CFS)
Time of concentration =    8.97 min.
Rainfall intensity =     3.158(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      8.67     3.100      9.97    0.055      2.965
2     17.07     6.100      8.97    0.055      3.158
Qmax(1) =
          1.000 *    1.000 *     8.674) +
          0.938 *    1.000 *    17.068) + =      24.679
Qmax(2) =
          1.066 *    0.900 *     8.674) +
          1.000 *    1.000 *    17.068) + =      25.394

Total of 2 streams to confluence:
Flow rates before confluence point:
       8.674      17.068
Maximum flow rates at confluence using above data:
       24.679       25.394
Area of streams before confluence:
        3.100        6.100
Effective area values after confluence:
        9.200        8.890
Results of confluence:
Total flow rate =     25.394(CFS)
Time of concentration =     8.975 min.
Effective stream area after confluence =      8.890(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       9.20(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      653.000 to Point/Station      656.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.200(Ft.)
Downstream point/station elevation =  2903.100(Ft.)
Pipe length  =   381.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.394(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    25.394(CFS)
Normal flow depth in pipe =   24.33(In.)
Flow top width inside pipe =   29.05(In.)
Critical Depth =   20.03(In.)
Pipe flow velocity =      5.41(Ft/s)
Travel time through pipe =    1.17 min.
Time of concentration (TC) =    10.15 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      653.000 to Point/Station      656.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.890(Ac.)
Runoff from this stream =     25.394(CFS)
Time of concentration =   10.15 min.
Rainfall intensity =     2.933(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      657.000 to Point/Station      658.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   260.000(Ft.)
Top (of initial area) elevation =  2913.300(Ft.)
Bottom (of initial area) elevation =  2910.500(Ft.)
```

```
Difference in elevation =     2.800(Ft.)
Slope =    0.01077  s(%)=       1.08
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.957 min.
Rainfall intensity =      3.679(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =     15.005(CFS)
Total initial stream area =        4.600(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      658.000 to Point/Station      659.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2905.500(Ft.)
Downstream point/station elevation =  2903.700(Ft.)
Pipe length  =   601.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.005(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    15.005(CFS)
Normal flow depth in pipe =   19.76(In.)
Flow top width inside pipe =   23.92(In.)
Critical Depth =   16.18(In.)
Pipe flow velocity =      4.81(Ft/s)
Travel time through pipe =    2.08 min.
Time of concentration (TC) =     9.04 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      658.000 to Point/Station      659.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      4.600(Ac.)
Runoff from this stream =     15.005(CFS)
Time of concentration =    9.04 min.
Rainfall intensity =     3.145(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      660.000 to Point/Station      661.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   507.000(Ft.)
Top (of initial area) elevation =  2915.900(Ft.)
Bottom (of initial area) elevation =  2910.000(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01164  s(%)=       1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.948 min.
Rainfall intensity =      3.164(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     12.311(CFS)
Total initial stream area =        4.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      661.000 to Point/Station      659.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2905.000(Ft.)
```

```
Downstream point/station elevation =  2903.700(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.311(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    12.311(CFS)
Normal flow depth in pipe =    9.83(In.)
Flow top width inside pipe =   14.26(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.43(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     8.97 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      661.000 to Point/Station      659.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      4.400(Ac.)
Runoff from this stream =     12.311(CFS)
Time of concentration =    8.97 min.
Rainfall intensity =     3.159(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     15.01     4.600      9.04    0.055      3.145
2     12.31     4.400      8.97    0.055      3.159
Qmax(1) =
          1.000 *    1.000 *    15.005) +
          0.996 *    1.000 *    12.311) + =      27.261
Qmax(2) =
          1.004 *    0.993 *    15.005) +
          1.000 *    1.000 *    12.311) + =      27.273

Total of 2 streams to confluence:
Flow rates before confluence point:
      15.005      12.311
Maximum flow rates at confluence using above data:
       27.261       27.273
Area of streams before confluence:
        4.600        4.400
Effective area values after confluence:
        9.000        8.966
Results of confluence:
Total flow rate =     27.273(CFS)
Time of concentration =     8.972 min.
Effective stream area after confluence =      8.966(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       9.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      659.000 to Point/Station      656.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2903.700(Ft.)
Downstream point/station elevation =  2903.100(Ft.)
Pipe length  =    90.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    27.273(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    27.273(CFS)
Normal flow depth in pipe =   20.58(In.)
Flow top width inside pipe =   27.85(In.)
Critical Depth =   21.35(In.)
Pipe flow velocity =      7.61(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =     9.17 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      659.000 to Point/Station      656.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      8.966(Ac.)
Runoff from this stream =     27.273(CFS)
Time of concentration =    9.17 min.
Rainfall intensity =     3.118(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     25.39     8.890     10.15    0.055      2.933
2     27.27     8.966      9.17    0.055      3.118
Qmax(1) =
          1.000 *    1.000 *    25.394) +
          0.940 *    1.000 *    27.273) + =      51.027
Qmax(2) =
          1.064 *    0.903 *    25.394) +
          1.000 *    1.000 *    27.273) + =      51.684

Total of 2 main streams to confluence:
Flow rates before confluence point:
      26.394      28.273
Maximum flow rates at confluence using above data:
       51.027       51.684
Area of streams before confluence:
        8.890        8.966
Effective area values after confluence:
       17.857       16.999


Results of confluence:
Total flow rate =     51.684(CFS)
Time of concentration =     9.169 min.
Effective stream area after confluence  =     16.999(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      17.86(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      656.000 to Point/Station      661.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2905.000(Ft.)
Downstream point/station elevation =  2903.500(Ft.)
Pipe length  =   511.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    51.684(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    51.684(CFS)
Normal flow depth in pipe =   32.63(In.)
Flow top width inside pipe =   34.98(In.)
Critical Depth =   26.97(In.)
Pipe flow velocity =      6.45(Ft/s)
Travel time through pipe =    1.32 min.
Time of concentration (TC) =    10.49 min.
End of computations, Total Study Area =           18.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/10/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 6D
100 YEAR STORM EVENT
FN: 6DPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 671.000 to Point/Station 672.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 507.000(Ft.)
Top (of initial area) elevation = 2915.900(Ft.)
Bottom (of initial area) elevation = 2910.000(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01164 s(%)= 1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.948 min.
Rainfall intensity = 3.164(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 8.674(CFS)
Total initial stream area = 3.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 672.000 to Point/Station 673.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2905.000(Ft.)
Downstream point/station elevation = 2904.200(Ft.)
Pipe length = 257.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 8.674(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 8.674(CFS)
Normal flow depth in pipe = 16.88(In.)
Flow top width inside pipe = 16.69(In.)
Critical Depth = 13.13(In.)
Pipe flow velocity = 4.19(Ft/s)
Travel time through pipe = 1.02 min.
Time of concentration (TC) = 9.97 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      672.000 to Point/Station      673.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.100(Ac.)
Runoff from this stream =      8.674(CFS)
Time of concentration =    9.97 min.
Rainfall intensity =     2.965(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      674.000 to Point/Station      675.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   507.000(Ft.)
Top (of initial area) elevation =  2915.900(Ft.)
Bottom (of initial area) elevation =  2910.000(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01164  s(%)=       1.16
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.948 min.
Rainfall intensity =      3.164(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     17.068(CFS)
Total initial stream area =        6.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      675.000 to Point/Station      673.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2905.000(Ft.)
Downstream point/station elevation =  2904.200(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.068(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    17.068(CFS)
Normal flow depth in pipe =   12.54(In.)
Flow top width inside pipe =   16.55(In.)
Critical depth could not be calculated.
Pipe flow velocity =     12.98(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.97 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      675.000 to Point/Station      673.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      6.100(Ac.)
Runoff from this stream =     17.068(CFS)
Time of concentration =    8.97 min.
Rainfall intensity =     3.158(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      8.67     3.100      9.97    0.055      2.965
2     17.07     6.100      8.97    0.055      3.158
Qmax(1) =
          1.000 *    1.000 *     8.674) +
          0.938 *    1.000 *    17.068) + =      24.679
Qmax(2) =
          1.066 *    0.900 *     8.674) +
          1.000 *    1.000 *    17.068) + =      25.394

Total of 2 streams to confluence:
Flow rates before confluence point:
       8.674      17.068
Maximum flow rates at confluence using above data:
       24.679       25.394
Area of streams before confluence:
        3.100        6.100
Effective area values after confluence:
        9.200        8.890
Results of confluence:
Total flow rate =     25.394(CFS)
Time of concentration =     8.975 min.
Effective stream area after confluence =      8.890(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       9.20(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      673.000 to Point/Station      676.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2904.200(Ft.)
Downstream point/station elevation =  2903.100(Ft.)
Pipe length  =   381.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.394(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    25.394(CFS)
Normal flow depth in pipe =   24.33(In.)
Flow top width inside pipe =   29.05(In.)
Critical Depth =   20.03(In.)
Pipe flow velocity =      5.41(Ft/s)
Travel time through pipe =    1.17 min.
Time of concentration (TC) =    10.15 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      673.000 to Point/Station      676.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      8.890(Ac.)
Runoff from this stream =     25.394(CFS)
Time of concentration =   10.15 min.
Rainfall intensity =     2.933(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      677.000 to Point/Station      678.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   507.000(Ft.)
Top (of initial area) elevation =  2915.900(Ft.)
Bottom (of initial area) elevation =  2910.000(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01164  s(%)=       1.16
```

```
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.948 min.
Rainfall intensity =      3.164(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     20.425(CFS)
Total initial stream area =        7.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      678.000 to Point/Station      676.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2905.000(Ft.)
Downstream point/station elevation =  2903.100(Ft.)
Pipe length  =    81.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.425(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    20.425(CFS)
Normal flow depth in pipe =   14.77(In.)
Flow top width inside pipe =   19.19(In.)
Critical Depth =   19.30(In.)
Pipe flow velocity =     11.31(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =     9.07 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      678.000 to Point/Station      676.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      7.300(Ac.)
Runoff from this stream =     20.425(CFS)
Time of concentration =    9.07 min.
Rainfall intensity =     3.139(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     25.39     8.890     10.15    0.055      2.933
2     20.43     7.300      9.07    0.055      3.139
Qmax(1) =
          1.000 *    1.000 *    25.394) +
          0.933 *    1.000 *    20.425) + =      44.460
Qmax(2) =
          1.071 *    0.893 *    25.394) +
          1.000 *    1.000 *    20.425) + =      44.730

Total of 2 streams to confluence:
Flow rates before confluence point:
      25.394      20.425
Maximum flow rates at confluence using above data:
       44.460       44.730
Area of streams before confluence:
        8.890        7.300
Effective area values after confluence:
       16.190       15.243
Results of confluence:
Total flow rate =     44.730(CFS)
Time of concentration =     9.067 min.
Effective stream area after confluence =     15.243(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =      16.19(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      676.000 to Point/Station      679.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
```

Upstream point/station elevation = 2906.100(Ft.)
Downstream point/station elevation = 2904.800(Ft.)
Pipe length = 447.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 44.730(CFS)
Nearest computed pipe diameter = 42.00(In.)
Calculated individual pipe flow = 44.730(CFS)
Normal flow depth in pipe = 29.06(In.)
Flow top width inside pipe = 38.78(In.)
Critical Depth = 25.04(In.)
Pipe flow velocity = 6.30(Ft/s)
Travel time through pipe = 1.18 min.
Time of concentration (TC) = 10.25 min.
End of computations, Total Study Area = 16.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

BUILDING 7

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/14/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 7A
100 YEAR STORM EVENT
FN: 7APROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 711.000 to Point/Station 712.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 555.000(Ft.)
Top (of initial area) elevation = 2920.400(Ft.)
Bottom (of initial area) elevation = 2913.900(Ft.)
Difference in elevation = 6.500(Ft.)
Slope = 0.01171 s(%)= 1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.265 min.
Rainfall intensity = 3.098(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 7.943(CFS)
Total initial stream area = 2.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 712.000 to Point/Station 713.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2908.900(Ft.)
Downstream point/station elevation = 2907.900(Ft.)
Pipe length = 331.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 7.943(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 7.943(CFS)
Normal flow depth in pipe = 15.75(In.)
Flow top width inside pipe = 18.19(In.)
Critical Depth = 12.55(In.)
Pipe flow velocity = 4.10(Ft/s)
Travel time through pipe = 1.34 min.
Time of concentration (TC) = 10.61 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      712.000 to Point/Station      713.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      2.900(Ac.)
Runoff from this stream =      7.943(CFS)
Time of concentration =   10.61 min.
Rainfall intensity =     2.856(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      714.000 to Point/Station      715.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   555.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2913.900(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.01171  s(%)=       1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.265 min.
Rainfall intensity =      3.098(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     15.612(CFS)
Total initial stream area =        5.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      715.000 to Point/Station      713.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.900(Ft.)
Downstream point/station elevation =  2907.900(Ft.)
Pipe length  =   110.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.612(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    15.612(CFS)
Normal flow depth in pipe =   15.14(In.)
Flow top width inside pipe =   23.16(In.)
Critical Depth =   17.08(In.)
Pipe flow velocity =      7.48(Ft/s)
Travel time through pipe =    0.25 min.
Time of concentration (TC) =     9.51 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      715.000 to Point/Station      713.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      5.700(Ac.)
Runoff from this stream =     15.612(CFS)
Time of concentration =    9.51 min.
Rainfall intensity =     3.050(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      7.94     2.900     10.61    0.055      2.856
2     15.61     5.700      9.51    0.055      3.050
Qmax(1) =
          1.000 *    1.000 *     7.943) +
          0.935 *    1.000 *    15.612) + =      22.545
Qmax(2) =
          1.069 *    0.896 *     7.943) +
          1.000 *    1.000 *    15.612) + =      23.224

Total of 2 main streams to confluence:
Flow rates before confluence point:
       8.943      16.612
Maximum flow rates at confluence using above data:
       22.545       23.224
Area of streams before confluence:
        2.900        5.700
Effective area values after confluence:
        8.600        8.300


Results of confluence:
Total flow rate =     23.224(CFS)
Time of concentration =     9.510 min.
Effective stream area after confluence  =      8.300(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       8.60(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      713.000 to Point/Station      716.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2907.900(Ft.)
Downstream point/station elevation =  2906.700(Ft.)
Pipe length  =   390.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    23.224(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    23.224(CFS)
Normal flow depth in pipe =   22.17(In.)
Flow top width inside pipe =   30.99(In.)
Critical Depth =   19.13(In.)
Pipe flow velocity =      5.48(Ft/s)
Travel time through pipe =    1.19 min.
Time of concentration (TC) =    10.70 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      713.000 to Point/Station      716.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.300(Ac.)
Runoff from this stream =     23.224(CFS)
Time of concentration =   10.70 min.
Rainfall intensity =     2.842(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      717.000 to Point/Station      718.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   555.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2913.900(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.01171  s(%)=       1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.265 min.
Rainfall intensity =      3.098(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     19.173(CFS)
Total initial stream area =        7.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      718.000 to Point/Station      716.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.900(Ft.)
Downstream point/station elevation =  2906.700(Ft.)
Pipe length  =    71.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    19.173(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    19.173(CFS)
Normal flow depth in pipe =   12.80(In.)
Flow top width inside pipe =   20.49(In.)
Critical Depth =   18.93(In.)
Pipe flow velocity =     12.50(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     9.36 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      718.000 to Point/Station      716.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.000(Ac.)
Runoff from this stream =     19.173(CFS)
Time of concentration =    9.36 min.
Rainfall intensity =     3.079(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      719.000 to Point/Station      720.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   492.000(Ft.)
Top (of initial area) elevation =  2919.900(Ft.)
Bottom (of initial area) elevation =  2915.600(Ft.)
Difference in elevation =     4.300(Ft.)
Slope =    0.00874  s(%)=       0.87
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.362 min.
Rainfall intensity =      3.079(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =     18.780(CFS)
Total initial stream area =        6.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      720.000 to Point/Station      716.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2910.600(Ft.)
Downstream point/station elevation =  2906.700(Ft.)
Pipe length  =   411.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.780(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    18.780(CFS)
Normal flow depth in pipe =   17.04(In.)
Flow top width inside pipe =   21.78(In.)
Critical Depth =   18.71(In.)
Pipe flow velocity =      7.88(Ft/s)
Travel time through pipe =    0.87 min.
Time of concentration (TC) =    10.23 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      720.000 to Point/Station      716.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      6.900(Ac.)
Runoff from this stream =     18.780(CFS)
Time of concentration =   10.23 min.
Rainfall intensity =     2.919(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     23.22     8.300     10.70    0.055      2.842
2     19.17     7.000      9.36    0.055      3.079
3     18.78     6.900     10.23    0.055      2.919
Qmax(1) =
          1.000 *    1.000 *    23.224) +
          0.922 *    1.000 *    19.173) +
          0.973 *    1.000 *    18.780) + =      59.170
Qmax(2) =
          1.085 *    0.875 *    23.224) +
          1.000 *    1.000 *    19.173) +
          1.056 *    0.915 *    18.780) + =      59.364
Qmax(3) =
          1.028 *    0.956 *    23.224) +
          0.947 *    1.000 *    19.173) +
          1.000 *    1.000 *    18.780) + =      59.764

Total of 3 main streams to confluence:
Flow rates before confluence point:
      24.224      20.173      19.780
Maximum flow rates at confluence using above data:
       59.170       59.364       59.764
Area of streams before confluence:
        8.300        7.000        6.900
Effective area values after confluence:
       22.200       20.575       21.838


Results of confluence:
Total flow rate =     59.764(CFS)
Time of concentration =    10.231 min.
Effective stream area after confluence  =     21.838(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      22.20(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      716.000 to Point/Station      721.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  2907.400(Ft.)
Downstream point/station elevation =  2905.900(Ft.)
Pipe length  =   486.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    59.764(CFS)
Nearest computed pipe diameter  =     45.00(In.)
Calculated individual pipe flow  =    59.764(CFS)
Normal flow depth in pipe =   33.05(In.)
Flow top width inside pipe =   39.75(In.)
Critical Depth =   28.51(In.)
Pipe flow velocity =      6.87(Ft/s)
Travel time through pipe =    1.18 min.
Time of concentration (TC) =    11.41 min.
End of computations, Total Study Area =           22.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/14/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 7B
100 YEAR STORM EVENT
FN: 7BPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 731.000 to Point/Station 732.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 555.000(Ft.)
Top (of initial area) elevation = 2920.400(Ft.)
Bottom (of initial area) elevation = 2913.900(Ft.)
Difference in elevation = 6.500(Ft.)
Slope = 0.01171 s(%)= 1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.265 min.
Rainfall intensity = 3.098(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 7.943(CFS)
Total initial stream area = 2.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 732.000 to Point/Station 733.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2908.900(Ft.)
Downstream point/station elevation = 2907.900(Ft.)
Pipe length = 331.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 7.943(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 7.943(CFS)
Normal flow depth in pipe = 15.75(In.)
Flow top width inside pipe = 18.19(In.)
Critical Depth = 12.55(In.)
Pipe flow velocity = 4.10(Ft/s)
Travel time through pipe = 1.34 min.
Time of concentration (TC) = 10.61 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      732.000 to Point/Station      733.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      2.900(Ac.)
Runoff from this stream =      7.943(CFS)
Time of concentration =   10.61 min.
Rainfall intensity =     2.856(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      734.000 to Point/Station      735.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   555.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2913.900(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.01171  s(%)=       1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.265 min.
Rainfall intensity =      3.098(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =      7.943(CFS)
Total initial stream area =        2.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      735.000 to Point/Station      733.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2908.900(Ft.)
Downstream point/station elevation =  2907.900(Ft.)
Pipe length  =   100.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.943(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     7.943(CFS)
Normal flow depth in pipe =   11.70(In.)
Flow top width inside pipe =   17.17(In.)
Critical Depth =   13.09(In.)
Pipe flow velocity =      6.53(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =     9.52 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      735.000 to Point/Station      733.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.900(Ac.)
Runoff from this stream =      7.943(CFS)
Time of concentration =    9.52 min.
Rainfall intensity =     3.048(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      7.94     2.900     10.61    0.055      2.856
2      7.94     2.900      9.52    0.055      3.048
Qmax(1) =
          1.000 *    1.000 *     7.943) +
          0.936 *    1.000 *     7.943) + =      15.377
Qmax(2) =
          1.068 *    0.897 *     7.943) +
          1.000 *    1.000 *     7.943) + =      15.559

Total of 2 main streams to confluence:
Flow rates before confluence point:
       8.943       8.943
Maximum flow rates at confluence using above data:
       15.377       15.559
Area of streams before confluence:
        2.900        2.900
Effective area values after confluence:
        5.800        5.502


Results of confluence:
Total flow rate =     15.559(CFS)
Time of concentration =     9.521 min.
Effective stream area after confluence  =      5.502(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       5.80(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      733.000 to Point/Station      736.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2907.900(Ft.)
Downstream point/station elevation =  2907.400(Ft.)
Pipe length  =   153.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.559(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    15.559(CFS)
Normal flow depth in pipe =   19.64(In.)
Flow top width inside pipe =   24.05(In.)
Critical Depth =   16.50(In.)
Pipe flow velocity =      5.02(Ft/s)
Travel time through pipe =    0.51 min.
Time of concentration (TC) =    10.03 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      733.000 to Point/Station      736.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.502(Ac.)
Runoff from this stream =     15.559(CFS)
Time of concentration =   10.03 min.
Rainfall intensity =     2.954(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      737.000 to Point/Station      738.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   555.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2913.900(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.01171  s(%)=       1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.265 min.
Rainfall intensity =      3.098(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =      9.860(CFS)
Total initial stream area =        3.600(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      738.000 to Point/Station      736.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.900(Ft.)
Downstream point/station elevation =  2907.400(Ft.)
Pipe length  =    71.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.860(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     9.860(CFS)
Normal flow depth in pipe =   10.52(In.)
Flow top width inside pipe =   17.74(In.)
Critical Depth =   14.53(In.)
Pipe flow velocity =      9.18(Ft/s)
Travel time through pipe =    0.13 min.
Time of concentration (TC) =     9.39 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      738.000 to Point/Station      736.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.600(Ac.)
Runoff from this stream =      9.860(CFS)
Time of concentration =    9.39 min.
Rainfall intensity =     3.073(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)      (In/Hr)


1     15.56     5.502     10.03    0.055      2.954
2      9.86     3.600      9.39    0.055      3.073
Qmax(1) =
          1.000 *    1.000 *    15.559) +
          0.961 *    1.000 *     9.860) + =      25.033
Qmax(2) =
          1.041 *    0.937 *    15.559) +
          1.000 *    1.000 *     9.860) + =      25.029

Total of 2 main streams to confluence:
Flow rates before confluence point:
      16.559      10.860
Maximum flow rates at confluence using above data:
       25.033       25.029
Area of streams before confluence:
        5.502        3.600
Effective area values after confluence:
        9.102        8.755


Results of confluence:
Total flow rate =     25.033(CFS)
```

```
Time of concentration =    10.028 min.
Effective stream area after confluence  =      9.102(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       9.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      736.000 to Point/Station      782.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2906.500(Ft.)
Downstream point/station elevation =  2905.700(Ft.)
Pipe length  =   184.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.033(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    25.033(CFS)
Normal flow depth in pipe =   22.78(In.)
Flow top width inside pipe =   25.65(In.)
Critical Depth =   20.46(In.)
Pipe flow velocity =      6.25(Ft/s)
Travel time through pipe =    0.49 min.
Time of concentration (TC) =    10.52 min.
End of computations, Total Study Area =            9.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/14/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 7C
100 YEAR STORM EVENT
FN: 7CPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 751.000 to Point/Station 752.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 492.000(Ft.)
Top (of initial area) elevation = 2920.400(Ft.)
Bottom (of initial area) elevation = 2914.500(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01199 s(%)= 1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.788 min.
Rainfall intensity = 3.198(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.885
Subarea runoff = 8.770(CFS)
Total initial stream area = 3.100(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 752.000 to Point/Station 753.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2909.500(Ft.)
Downstream point/station elevation = 2908.700(Ft.)
Pipe length = 257.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 8.770(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 8.770(CFS)
Normal flow depth in pipe = 17.06(In.)
Flow top width inside pipe = 16.39(In.)
Critical Depth = 13.21(In.)
Pipe flow velocity = 4.19(Ft/s)
Travel time through pipe = 1.02 min.
Time of concentration (TC) = 9.81 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      752.000 to Point/Station      753.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.100(Ac.)
Runoff from this stream =      8.770(CFS)
Time of concentration =    9.81 min.
Rainfall intensity =     2.994(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      754.000 to Point/Station      755.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   492.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2914.500(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01199  s(%)=       1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.788 min.
Rainfall intensity =      3.198(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.885
Subarea runoff =      9.053(CFS)
Total initial stream area =        3.200(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      755.000 to Point/Station      753.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2909.500(Ft.)
Downstream point/station elevation =  2908.700(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.053(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     9.053(CFS)
Normal flow depth in pipe =    9.41(In.)
Flow top width inside pipe =   14.51(In.)
Critical Depth =   13.89(In.)
Pipe flow velocity =     11.18(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.82 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      755.000 to Point/Station      753.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.200(Ac.)
Runoff from this stream =      9.053(CFS)
Time of concentration =    8.82 min.
Rainfall intensity =     3.191(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      8.77     3.100      9.81    0.055      2.994
2      9.05     3.200      8.82    0.055      3.191
Qmax(1) =
          1.000 *    1.000 *     8.770) +
          0.937 *    1.000 *     9.053) + =      17.252
Qmax(2) =
          1.067 *    0.899 *     8.770) +
          1.000 *    1.000 *     9.053) + =      17.466

Total of 2 main streams to confluence:
Flow rates before confluence point:
       9.770      10.053
Maximum flow rates at confluence using above data:
       17.252       17.466
Area of streams before confluence:
        3.100        3.200
Effective area values after confluence:
        6.300        5.987


Results of confluence:
Total flow rate =     17.466(CFS)
Time of concentration =     8.819 min.
Effective stream area after confluence  =      5.987(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       6.30(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      753.000 to Point/Station      756.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.700(Ft.)
Downstream point/station elevation =  2908.000(Ft.)
Pipe length  =   235.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.466(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    17.466(CFS)
Normal flow depth in pipe =   19.92(In.)
Flow top width inside pipe =   28.34(In.)
Critical Depth =   16.97(In.)
Pipe flow velocity =      5.04(Ft/s)
Travel time through pipe =    0.78 min.
Time of concentration (TC) =     9.60 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      753.000 to Point/Station      756.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.987(Ac.)
Runoff from this stream =     17.466(CFS)
Time of concentration =    9.60 min.
Rainfall intensity =     3.034(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      757.000 to Point/Station      758.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   492.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2914.500(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01199  s(%)=       1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.788 min.
Rainfall intensity =      3.198(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.885
Subarea runoff =     19.520(CFS)
Total initial stream area =        6.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      758.000 to Point/Station      756.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2909.500(Ft.)
Downstream point/station elevation =  2908.000(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    19.520(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    19.520(CFS)
Normal flow depth in pipe =   11.05(In.)
Flow top width inside pipe =   17.53(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.17(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     8.81 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      758.000 to Point/Station      756.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.900(Ac.)
Runoff from this stream =     19.520(CFS)
Time of concentration =    8.81 min.
Rainfall intensity =     3.194(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1     17.47     5.987      9.60    0.055      3.034
2     19.52     6.900      8.81    0.055      3.194
Qmax(1) =
          1.000 *    1.000 *    17.466) +
          0.949 *    1.000 *    19.520) + =      35.991
Qmax(2) =
          1.054 *    0.918 *    17.466) +
          1.000 *    1.000 *    19.520) + =      36.413

Total of 2 main streams to confluence:
Flow rates before confluence point:
      18.466      20.520
Maximum flow rates at confluence using above data:
       35.991       36.413
Area of streams before confluence:
        5.987        6.900
Effective area values after confluence:
       12.887       12.395


Results of confluence:
Total flow rate =     36.413(CFS)
```

```
Time of concentration =     8.808 min.
Effective stream area after confluence  =     12.395(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      12.89(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      756.000 to Point/Station      759.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.000(Ft.)
Downstream point/station elevation =  2906.600(Ft.)
Pipe length  =   471.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    36.413(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    36.413(CFS)
Normal flow depth in pipe =   29.52(In.)
Flow top width inside pipe =   27.66(In.)
Critical Depth =   23.54(In.)
Pipe flow velocity =      5.86(Ft/s)
Travel time through pipe =    1.34 min.
Time of concentration (TC) =    10.15 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      756.000 to Point/Station      759.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     12.395(Ac.)
Runoff from this stream =     36.413(CFS)
Time of concentration =   10.15 min.
Rainfall intensity =     2.934(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      760.000 to Point/Station      761.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   492.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2914.500(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01199  s(%)=       1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.788 min.
Rainfall intensity =      3.198(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.885
Subarea runoff =     22.631(CFS)
Total initial stream area =        8.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      761.000 to Point/Station      759.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2909.500(Ft.)
Downstream point/station elevation =  2906.600(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    22.631(CFS)
```

```
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    22.631(CFS)
Normal flow depth in pipe =   11.58(In.)
Flow top width inside pipe =   12.59(In.)
Critical depth could not be calculated.
Pipe flow velocity =     22.24(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     8.80 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      761.000 to Point/Station      759.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      8.000(Ac.)
Runoff from this stream =     22.631(CFS)
Time of concentration =    8.80 min.
Rainfall intensity =     3.195(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      762.000 to Point/Station      763.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   271.000(Ft.)
Top (of initial area) elevation =  2923.000(Ft.)
Bottom (of initial area) elevation =  2917.600(Ft.)
Difference in elevation =     5.400(Ft.)
Slope =    0.01993  s(%)=       1.99
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.254 min.
Rainfall intensity =      3.922(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =     16.358(CFS)
Total initial stream area =        4.700(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      763.000 to Point/Station      759.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2912.600(Ft.)
Downstream point/station elevation =  2906.600(Ft.)
Pipe length  =   256.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.358(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    16.358(CFS)
Normal flow depth in pipe =   12.63(In.)
Flow top width inside pipe =   20.56(In.)
Critical Depth =   17.87(In.)
Pipe flow velocity =     10.82(Ft/s)
Travel time through pipe =    0.39 min.
Time of concentration (TC) =     6.65 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      763.000 to Point/Station      759.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
```

```
In Main Stream number: 3
Stream flow area =      4.700(Ac.)
Runoff from this stream =     16.358(CFS)
Time of concentration =    6.65 min.
Rainfall intensity =     3.781(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1     36.41    12.395     10.15    0.055      2.934
2     22.63     8.000      8.80    0.055      3.195
3     16.36     4.700      6.65    0.055      3.781
Qmax(1) =
          1.000 *    1.000 *    36.413) +
          0.917 *    1.000 *    22.631) +
          0.773 *    1.000 *    16.358) + =      69.803
Qmax(2) =
          1.091 *    0.868 *    36.413) +
          1.000 *    1.000 *    22.631) +
          0.843 *    1.000 *    16.358) + =      70.872
Qmax(3) =
          1.294 *    0.655 *    36.413) +
          1.187 *    0.755 *    22.631) +
          1.000 *    1.000 *    16.358) + =      67.519

Total of 3 main streams to confluence:
Flow rates before confluence point:
      37.413      23.631      17.358
Maximum flow rates at confluence using above data:
       69.803       70.872       67.519
Area of streams before confluence:
       12.395        8.000        4.700
Effective area values after confluence:
       25.095       23.455       18.863


Results of confluence:
Total flow rate =     70.872(CFS)
Time of concentration =     8.804 min.
Effective stream area after confluence  =     23.455(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      25.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      759.000 to Point/Station      764.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2907.100(Ft.)
Downstream point/station elevation =  2905.900(Ft.)
Pipe length  =   400.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    70.872(CFS)
Nearest computed pipe diameter  =     48.00(In.)
Calculated individual pipe flow  =    70.872(CFS)
Normal flow depth in pipe =   35.63(In.)
Flow top width inside pipe =   41.99(In.)
Critical Depth =   30.56(In.)
Pipe flow velocity =      7.09(Ft/s)
Travel time through pipe =    0.94 min.
Time of concentration (TC) =     9.74 min.
End of computations, Total Study Area =           25.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  69.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 04/14/25

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE RATIONAL METHOD HYDROLOGY, 7D
100 YEAR STORM EVENT
FN: 7DPROPRAT100.OUT ABE

Program License Serial Number 6585

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.582(In.)
100 Year storm 1 hour rainfall = 1.010(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.010 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 771.000 to Point/Station 772.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 492.000(Ft.)
Top (of initial area) elevation = 2920.400(Ft.)
Bottom (of initial area) elevation = 2914.500(Ft.)
Difference in elevation = 5.900(Ft.)
Slope = 0.01199 s(%)= 1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.788 min.
Rainfall intensity = 3.198(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.885
Subarea runoff = 8.487(CFS)
Total initial stream area = 3.000(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++
Process from Point/Station 772.000 to Point/Station 773.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2909.500(Ft.)
Downstream point/station elevation = 2908.700(Ft.)
Pipe length = 257.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 8.487(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 8.487(CFS)
Normal flow depth in pipe = 16.50(In.)
Flow top width inside pipe = 17.23(In.)
Critical Depth = 12.98(In.)
Pipe flow velocity = 4.19(Ft/s)
Travel time through pipe = 1.02 min.
Time of concentration (TC) = 9.81 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      772.000 to Point/Station      773.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.000(Ac.)
Runoff from this stream =      8.487(CFS)
Time of concentration =    9.81 min.
Rainfall intensity =     2.993(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      774.000 to Point/Station      775.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   492.000(Ft.)
Top (of initial area) elevation =  2920.400(Ft.)
Bottom (of initial area) elevation =  2914.500(Ft.)
Difference in elevation =     5.900(Ft.)
Slope =    0.01199  s(%)=       1.20
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.788 min.
Rainfall intensity =      3.198(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.885
Subarea runoff =     13.579(CFS)
Total initial stream area =        4.800(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      775.000 to Point/Station      773.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  2909.500(Ft.)
Downstream point/station elevation =  2908.700(Ft.)
Pipe length  =    21.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.579(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    13.579(CFS)
Normal flow depth in pipe =   10.70(In.)
Flow top width inside pipe =   17.68(In.)
Critical Depth =   16.44(In.)
Pipe flow velocity =     12.40(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.82 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      775.000 to Point/Station      773.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      4.800(Ac.)
Runoff from this stream =     13.579(CFS)
Time of concentration =    8.82 min.
Rainfall intensity =     3.192(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
```

```
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      8.49     3.000      9.81    0.055      2.993
2     13.58     4.800      8.82    0.055      3.192
Qmax(1) =
          1.000 *    1.000 *     8.487) +
          0.937 *    1.000 *    13.579) + =      21.207
Qmax(2) =
          1.068 *    0.899 *     8.487) +
          1.000 *    1.000 *    13.579) + =      21.720

Total of 2 main streams to confluence:
Flow rates before confluence point:
       9.487      14.579
Maximum flow rates at confluence using above data:
       21.207       21.720
Area of streams before confluence:
        3.000        4.800
Effective area values after confluence:
        7.800        7.496


Results of confluence:
Total flow rate =     21.720(CFS)
Time of concentration =     8.816 min.
Effective stream area after confluence  =      7.496(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       7.80(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      773.000 to Point/Station      776.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.700(Ft.)
Downstream point/station elevation =  2907.200(Ft.)
Pipe length  =   513.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.720(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    21.720(CFS)
Normal flow depth in pipe =   24.05(In.)
Flow top width inside pipe =   23.93(In.)
Critical Depth =   19.01(In.)
Pipe flow velocity =      5.15(Ft/s)
Travel time through pipe =    1.66 min.
Time of concentration (TC) =    10.48 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      773.000 to Point/Station      776.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      7.496(Ac.)
Runoff from this stream =     21.720(CFS)
Time of concentration =   10.48 min.
Rainfall intensity =     2.878(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      777.000 to Point/Station      778.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   234.000(Ft.)
Top (of initial area) elevation =  2918.600(Ft.)
Bottom (of initial area) elevation =  2916.600(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00855  s(%)=       0.85
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.985 min.
Rainfall intensity =      3.670(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =      6.182(CFS)
Total initial stream area =        1.900(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      778.000 to Point/Station      776.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2911.600(Ft.)
Downstream point/station elevation =  2907.200(Ft.)
Pipe length  =    30.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.182(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     6.182(CFS)
Normal flow depth in pipe =    7.18(In.)
Flow top width inside pipe =    7.22(In.)
Critical depth could not be calculated.
Pipe flow velocity =     16.34(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     7.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      778.000 to Point/Station      776.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.900(Ac.)
Runoff from this stream =      6.182(CFS)
Time of concentration =    7.02 min.
Rainfall intensity =     3.661(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1     21.72     7.496     10.48    0.055      2.878
2      6.18     1.900      7.02    0.055      3.661
Qmax(1) =
          1.000 *    1.000 *    21.720) +
          0.783 *    1.000 *     6.182) + =      26.560
Qmax(2) =
          1.277 *    0.670 *    21.720) +
          1.000 *    1.000 *     6.182) + =      24.761

Total of 2 main streams to confluence:
Flow rates before confluence point:
      22.720       7.182
Maximum flow rates at confluence using above data:
       26.560       24.761
Area of streams before confluence:
        7.496        1.900
Effective area values after confluence:
        9.396        6.920


Results of confluence:
Total flow rate =     26.560(CFS)
```

```
Time of concentration =    10.476 min.
Effective stream area after confluence  =      9.396(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =       9.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      776.000 to Point/Station      779.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2907.200(Ft.)
Downstream point/station elevation =  2905.700(Ft.)
Pipe length  =   482.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.560(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    26.560(CFS)
Normal flow depth in pipe =   24.47(In.)
Flow top width inside pipe =   28.90(In.)
Critical Depth =   20.50(In.)
Pipe flow velocity =      5.62(Ft/s)
Travel time through pipe =    1.43 min.
Time of concentration (TC) =    11.91 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      776.000 to Point/Station      779.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      9.396(Ac.)
Runoff from this stream =     26.560(CFS)
Time of concentration =   11.91 min.
Rainfall intensity =     2.665(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      780.000 to Point/Station      781.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   421.000(Ft.)
Top (of initial area) elevation =  2919.000(Ft.)
Bottom (of initial area) elevation =  2913.700(Ft.)
Difference in elevation =     5.300(Ft.)
Slope =    0.01259  s(%)=       1.26
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.177 min.
Rainfall intensity =      3.339(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.885
Subarea runoff =      9.755(CFS)
Total initial stream area =        3.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      781.000 to Point/Station      779.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2908.700(Ft.)
Downstream point/station elevation =  2905.700(Ft.)
Pipe length  =   104.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.755(CFS)
```

```
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     9.755(CFS)
Normal flow depth in pipe =   11.02(In.)
Flow top width inside pipe =   13.25(In.)
Critical Depth =   14.14(In.)
Pipe flow velocity =     10.10(Ft/s)
Travel time through pipe =    0.17 min.
Time of concentration (TC) =     8.35 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      781.000 to Point/Station      779.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.300(Ac.)
Runoff from this stream =      9.755(CFS)
Time of concentration =    8.35 min.
Rainfall intensity =     3.298(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1     26.56     9.396     11.91    0.055      2.665
2      9.76     3.300      8.35    0.055      3.298
Qmax(1) =
          1.000 *    1.000 *    26.560) +
          0.805 *    1.000 *     9.755) + =      34.413
Qmax(2) =
          1.242 *    0.701 *    26.560) +
          1.000 *    1.000 *     9.755) + =      32.893

Total of 2 main streams to confluence:
Flow rates before confluence point:
      27.560      10.755
Maximum flow rates at confluence using above data:
       34.413       32.893
Area of streams before confluence:
        9.396        3.300
Effective area values after confluence:
       12.696        9.889


Results of confluence:
Total flow rate =     34.413(CFS)
Time of concentration =    11.905 min.
Effective stream area after confluence  =     12.696(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total =      12.70(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      779.000 to Point/Station      782.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  2906.000(Ft.)
Downstream point/station elevation =  2905.700(Ft.)
Pipe length  =    81.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    34.413(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    34.413(CFS)
Normal flow depth in pipe =   25.45(In.)
Flow top width inside pipe =   32.77(In.)
Critical Depth =   22.87(In.)
Pipe flow velocity =      6.44(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =    12.11 min.
End of computations, Total Study Area =           13.00 (Ac.)
The following figures may
```

be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 69.0

APPENDIX C – HYDRAULIC ANALYSIS CALCULATIONS

ON-SITE UNDERGROUND DETENTION CHAMBERS SIZING CALCULATIONS

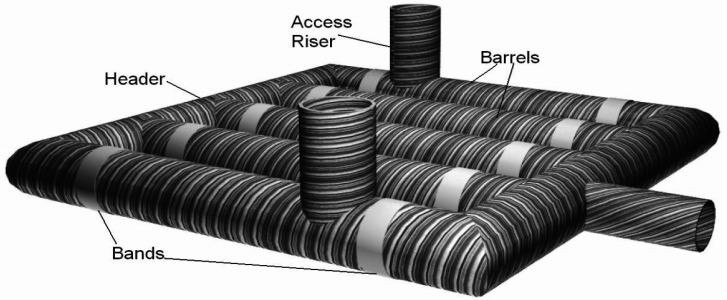
BUILDING 1

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

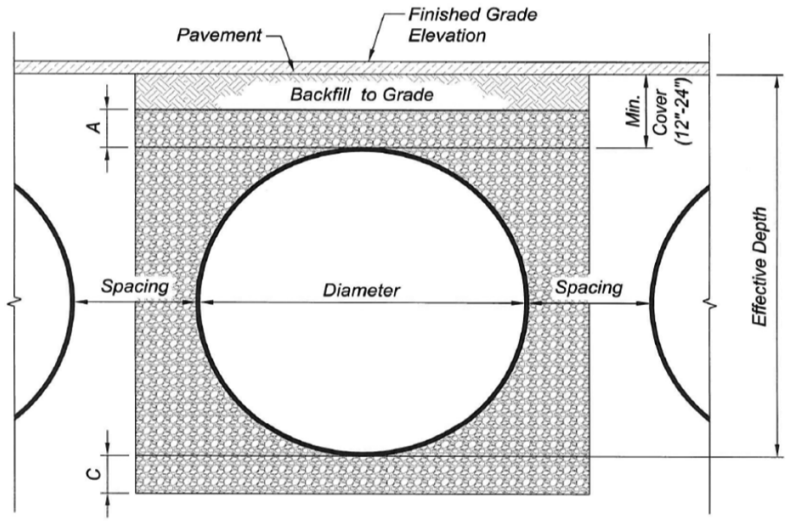
Date:	4/17/2025
Project Name:	Adelanto Industrial Park - 1A
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	109,575
Limiting Width (ft):	60.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	76,755	cf	
Porous Stone Storage:	33,252	cf	
Total Storage Provided:	110,007	cf	100.4% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	295.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 306. ft		

CONTECH Materials

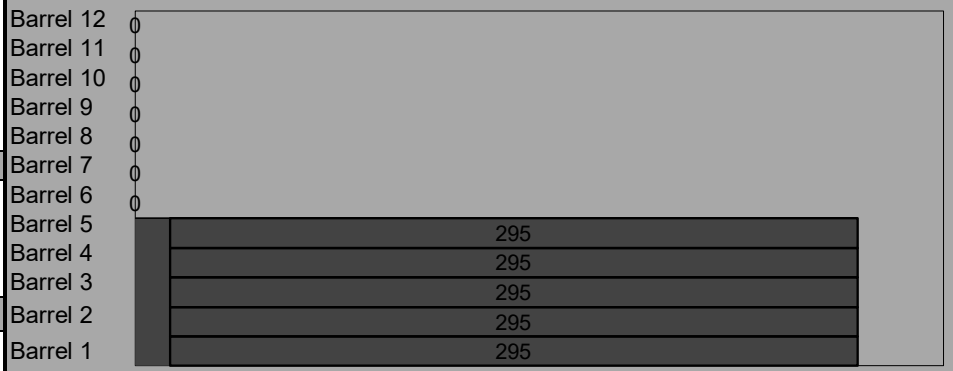
Total CMP Footage:	1,527	ft
Approximate Total Pieces:	68	pcs
Approximate Coupling Bands:	67	bands
Approximate Truckloads:	34	trucks

Construction Quantities**

Total Excavation:	5610	cy
Porous Stone Backfill For Storage:	3079	cy stone
Backfill to Grade Excluding Stone:	-312	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



© 2007 CONTECH Stormwater Solutions

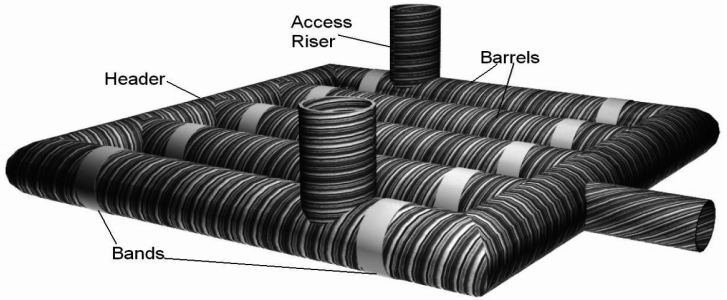
BUILDING 2

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

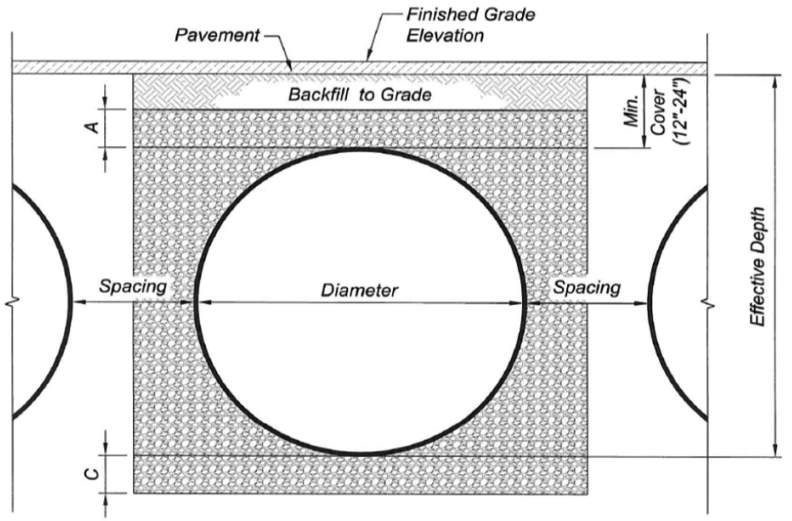
Date:	4/17/2025
Project Name:	Adelanto Industrial Park - 2A
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	245,434
Limiting Width (ft):	60.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	171,757	cf	
Porous Stone Storage:	74,253	cf	
Total Storage Provided:	246,010	cf	100.2% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	673.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 684. ft		

CONTECH Materials

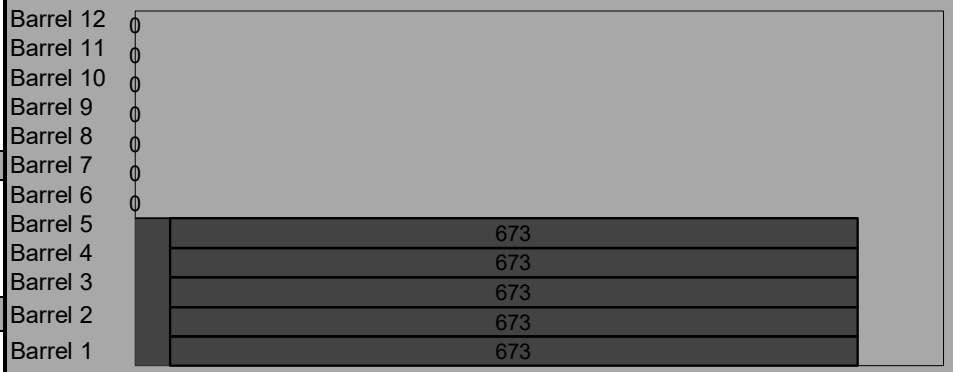
Total CMP Footage:	3,417	ft
Approximate Total Pieces:	148	pcs
Approximate Coupling Bands:	147	bands
Approximate Truckloads:	74	trucks

Construction Quantities**

Total Excavation:	12540	cy
Porous Stone Backfill For Storage:	6875	cy stone
Backfill to Grade Excluding Stone:	-697	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



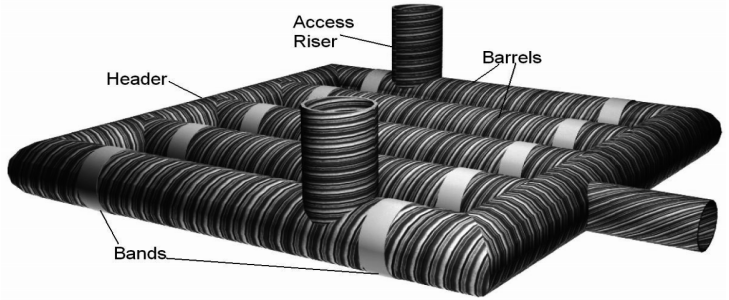
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

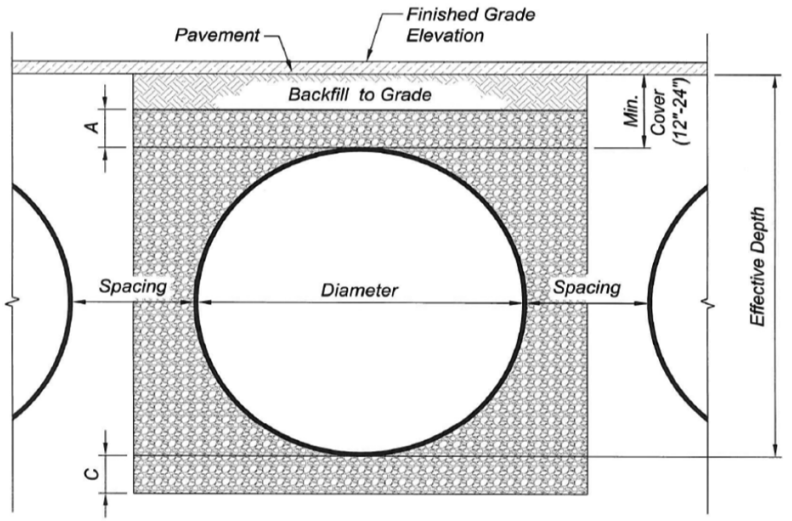
Date:	4/17/2025
Project Name:	Adelanto Industrial Park - 2B
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	136,966
Limiting Width (ft):	90.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	96,359	cf	
Porous Stone Storage:	41,712	cf	
Total Storage Provided:	138,071	cf	100.8% Of Required Storage
Number of Barrels:	8	barrels	
Length per Barrel:	229.0	ft	
Length Per Header:	85.0	ft	
Rectangular Footprint (W x L):	88. ft x 240. ft		

CONTECH Materials

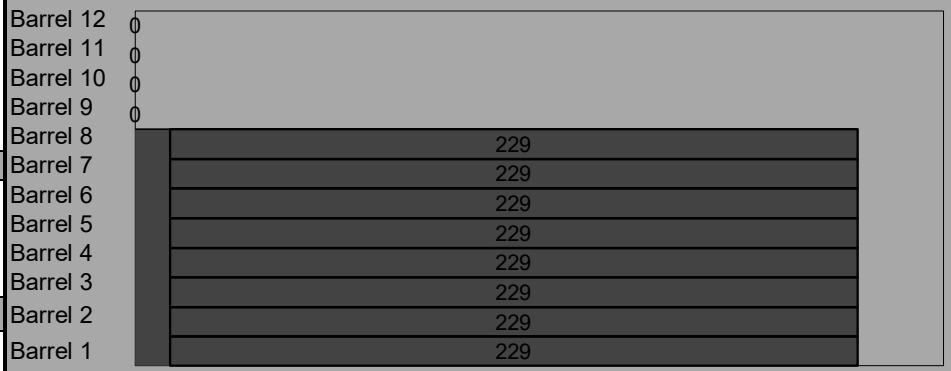
Total CMP Footage:	1,917	ft
Approximate Total Pieces:	84	pcs
Approximate Coupling Bands:	83	bands
Approximate Truckloads:	42	trucks

Construction Quantities**

Total Excavation:	7040	cy
Porous Stone Backfill For Storage:	3862	cy stone
Backfill to Grade Excluding Stone:	-391	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



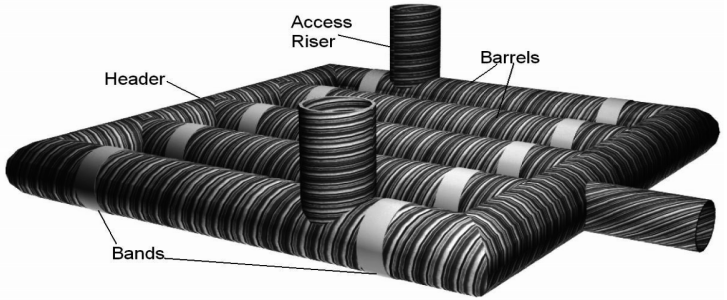
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

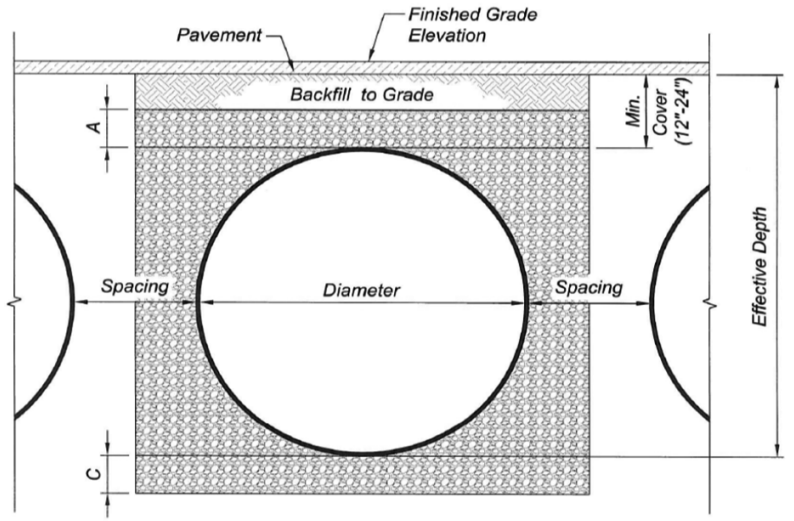
Date:	4/17/2025
Project Name:	Adelanto Industrial Park - 2C
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	200,515
Limiting Width (ft):	60.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	140,341	cf	
Porous Stone Storage:	60,695	cf	
Total Storage Provided:	201,036	cf	100.3% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	548.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 559. ft		

CONTECH Materials

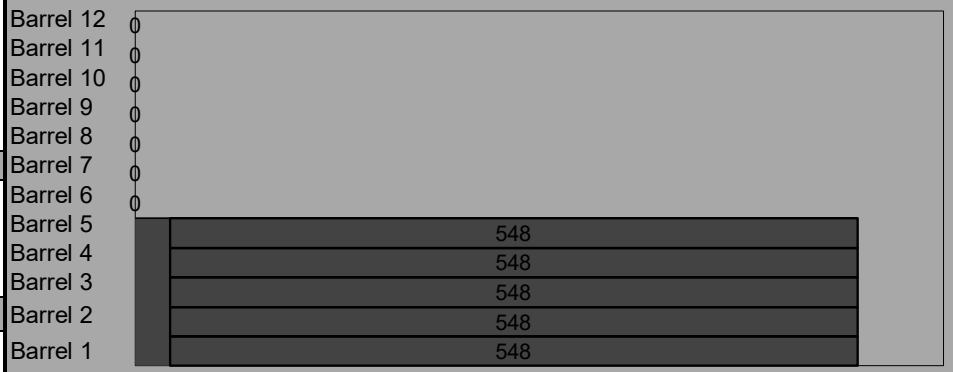
Total CMP Footage:	2,792	ft
Approximate Total Pieces:	118	pcs
Approximate Coupling Bands:	117	bands
Approximate Truckloads:	59	trucks

Construction Quantities**

Total Excavation:	10249	cy
Porous Stone Backfill For Storage:	5620	cy stone
Backfill to Grade Excluding Stone:	-569	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



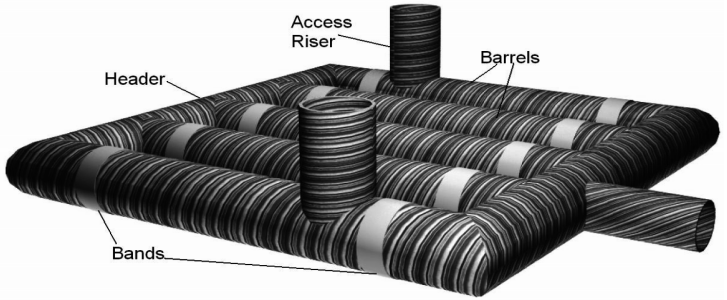
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

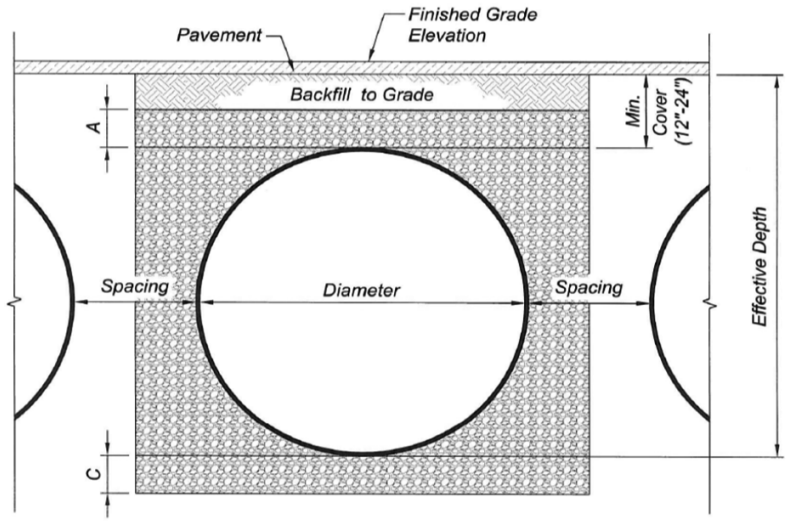
Date:	4/17/2025
Project Name:	Adelanto Industrial Park - 2D
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	96,424
Limiting Width (ft):	60.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	67,708	cf	
Porous Stone Storage:	29,347	cf	
Total Storage Provided:	97,055	cf	100.7% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	259.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 270. ft		

CONTECH Materials

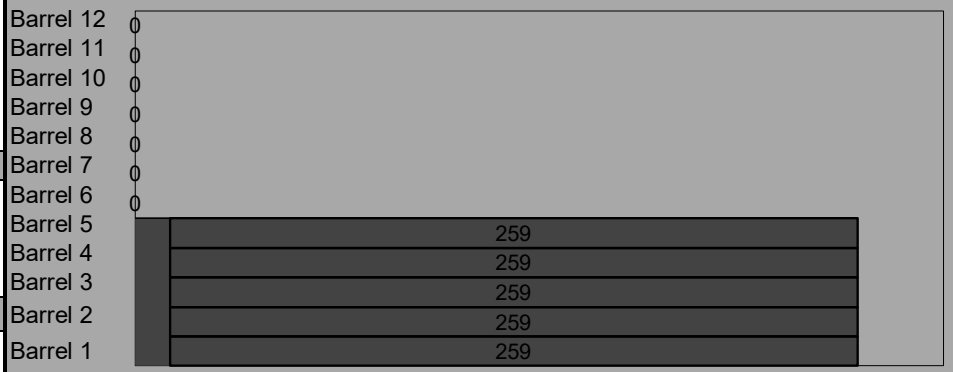
Total CMP Footage:	1,347	ft
Approximate Total Pieces:	58	pcs
Approximate Coupling Bands:	57	bands
Approximate Truckloads:	29	trucks

Construction Quantities**

Total Excavation:	4950	cy
Porous Stone Backfill For Storage:	2717	cy stone
Backfill to Grade Excluding Stone:	-275	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



© 2007 CONTECH Stormwater Solutions

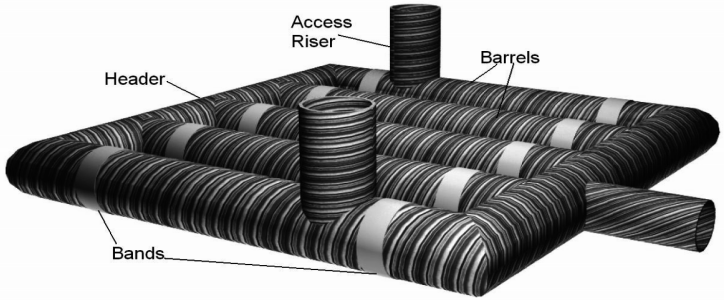
BUILDING 3

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

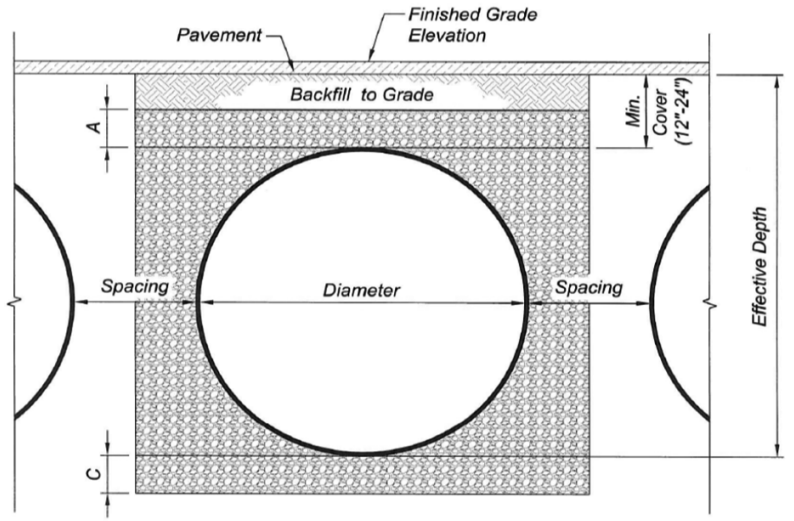
Date:	4/14/2025
Project Name:	Adelanto Industrial Park - 3A
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	249,817
Limiting Width (ft):	56.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	174,773	cf	
Porous Stone Storage:	75,555	cf	
Total Storage Provided:	250,328	cf	100.2% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	685.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 696. ft		

CONTECH Materials

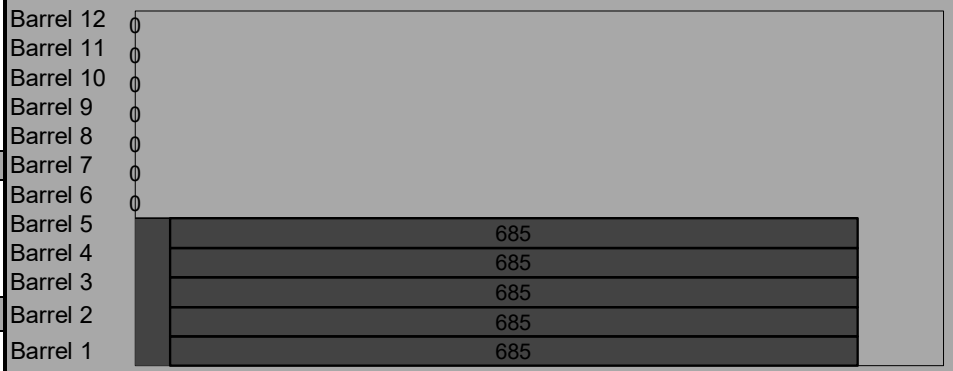
Total CMP Footage:	3,477	ft
Approximate Total Pieces:	148	pcs
Approximate Coupling Bands:	147	bands
Approximate Truckloads:	74	trucks

Construction Quantities**

Total Excavation:	12760	cy
Porous Stone Backfill For Storage:	6996	cy stone
Backfill to Grade Excluding Stone:	-709	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



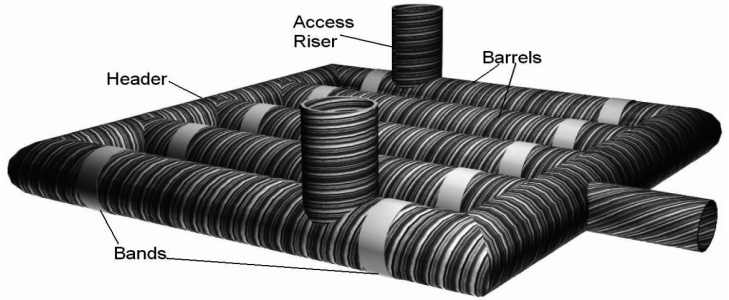
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

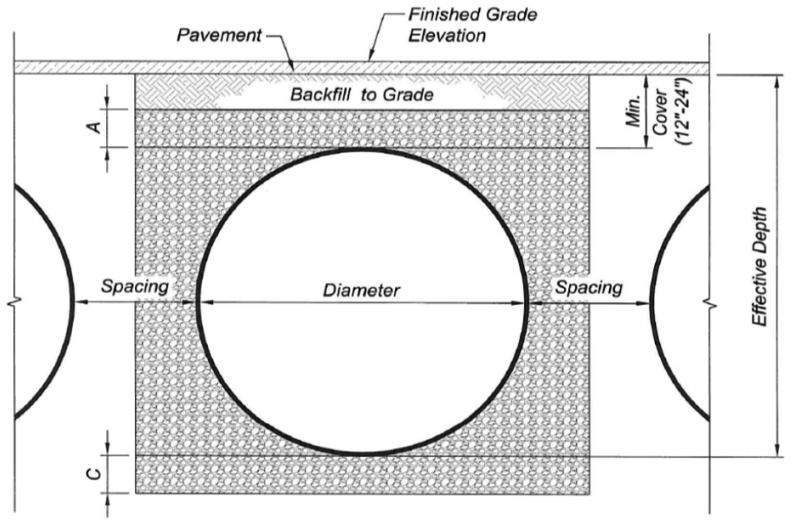
Date:	4/17/2025
Project Name:	Adelanto Industrial Park - 3B
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	228,999
Limiting Width (ft):	56.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	160,196	cf	
Porous Stone Storage:	69,264	cf	
Total Storage Provided:	229,460	cf	100.2% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	627.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 638. ft		

CONTECH Materials

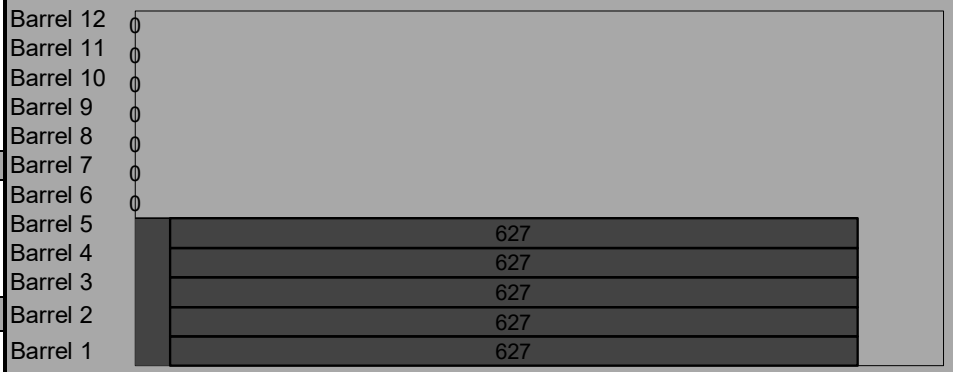
Total CMP Footage:	3,187	ft
Approximate Total Pieces:	138	pcs
Approximate Coupling Bands:	137	bands
Approximate Truckloads:	69	trucks

Construction Quantities**

Total Excavation:	11697	cy
Porous Stone Backfill For Storage:	6413	cy stone
Backfill to Grade Excluding Stone:	-649	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



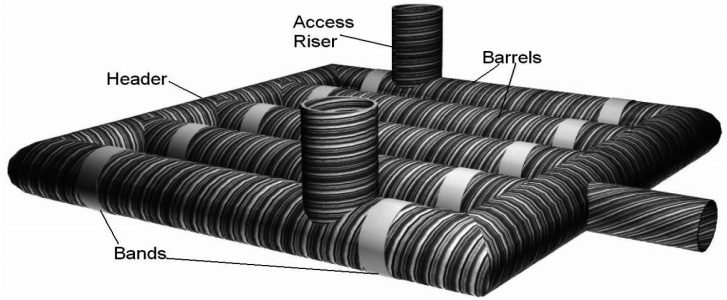
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

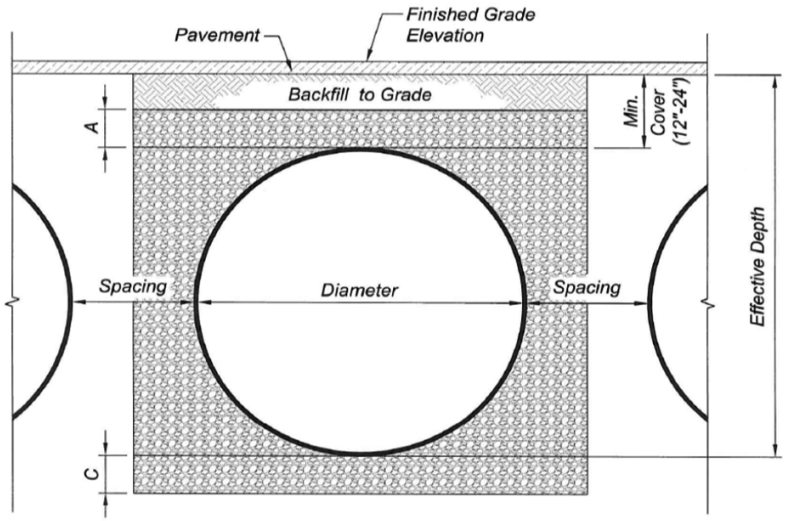
Date:	4/17/2025
Project Name:	Adelanto Industrial Park - 3C
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	228,999
Limiting Width (ft):	90.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	72
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

28.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	147,507	cf	
Porous Stone Storage:	81,937	cf	
Total Storage Provided:	229,444	cf	100.2% Of Required Storage
Number of Barrels:	10	barrels	
Length per Barrel:	513.0	ft	
Length Per Header:	87.0	ft	
Rectangular Footprint (W x L):	90. ft x 522. ft		

CONTECH Materials

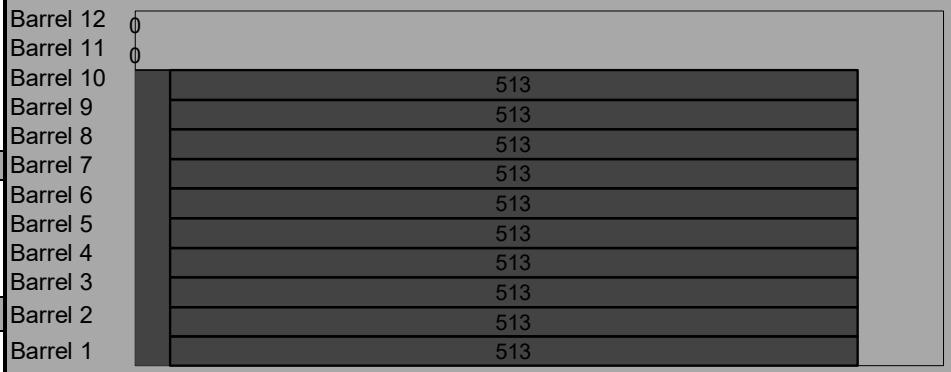
Total CMP Footage:	5,217	ft
Approximate Total Pieces:	224	pcs
Approximate Coupling Bands:	223	bands
Approximate Truckloads:	112	trucks

Construction Quantities**

Total Excavation:	15660	cy
Porous Stone Backfill For Storage:	7587	cy stone
Backfill to Grade Excluding Stone:	2610	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



Barrel Footage (w/o headers)

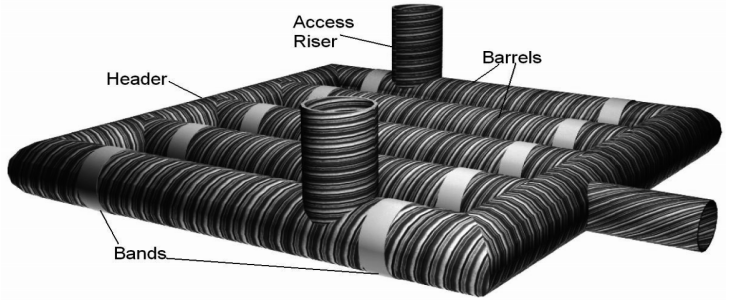
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

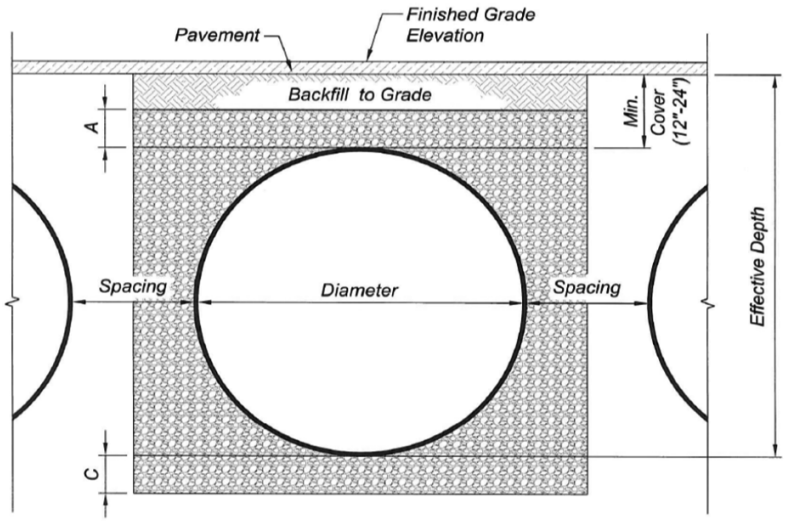
Date:	4/17/2025
Project Name:	Adelanto Industrial Park - 3D
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	213,662
Limiting Width (ft):	80.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	149,741	cf	
Porous Stone Storage:	64,751	cf	
Total Storage Provided:	214,492	cf	100.4% Of Required Storage
Number of Barrels:	7	barrels	
Length per Barrel:	415.0	ft	
Length Per Header:	74.0	ft	
Rectangular Footprint (W x L):	77. ft x 426. ft		

CONTECH Materials

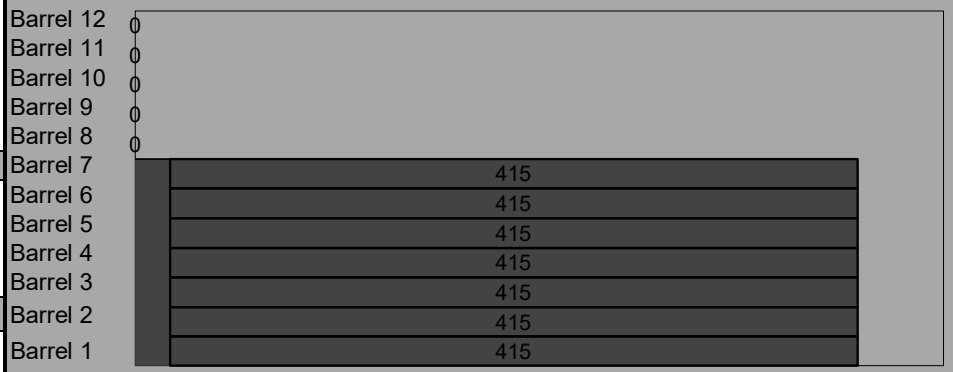
Total CMP Footage:	2,979	ft
Approximate Total Pieces:	130	pcs
Approximate Coupling Bands:	129	bands
Approximate Truckloads:	65	trucks

Construction Quantities**

Total Excavation:	10934	cy
Porous Stone Backfill For Storage:	5995	cy stone
Backfill to Grade Excluding Stone:	-607	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



© 2007 CONTECH Stormwater Solutions

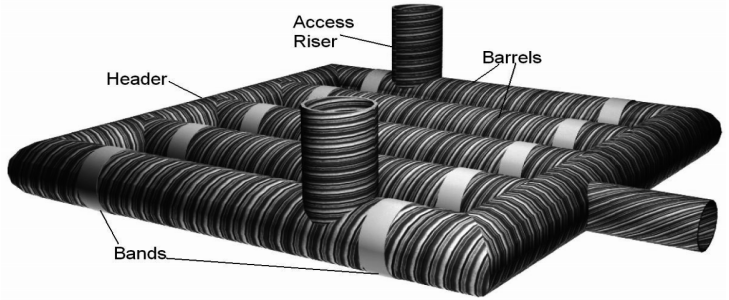
BUILDING 4

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

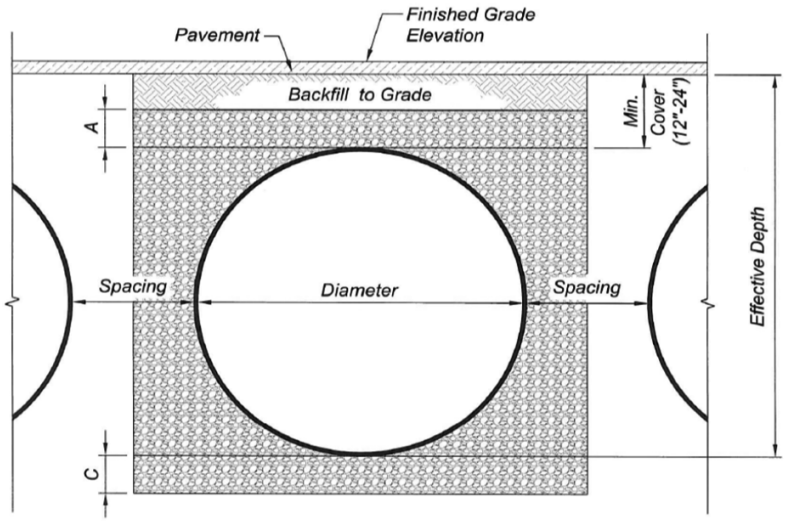
Date:	4/16/2025
Project Name:	Adelanto Industrial Park - 4C
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	236,670
Limiting Width (ft):	90.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	60
Number Of Headers:	1
Spacing between Barrels (ft):	2.50
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

19.63 ft^2 Pipe Area



System Sizing

Pipe Storage:	148,224	cf	
Porous Stone Storage:	88,965	cf	
Total Storage Provided:	237,189	cf	100.2% Of Required Storage
Number of Barrels:	11	barrels	
Length per Barrel:	679.0	ft	
Length Per Header:	80.0	ft	
Rectangular Footprint (W x L):	83. ft x 687. ft		

CONTECH Materials

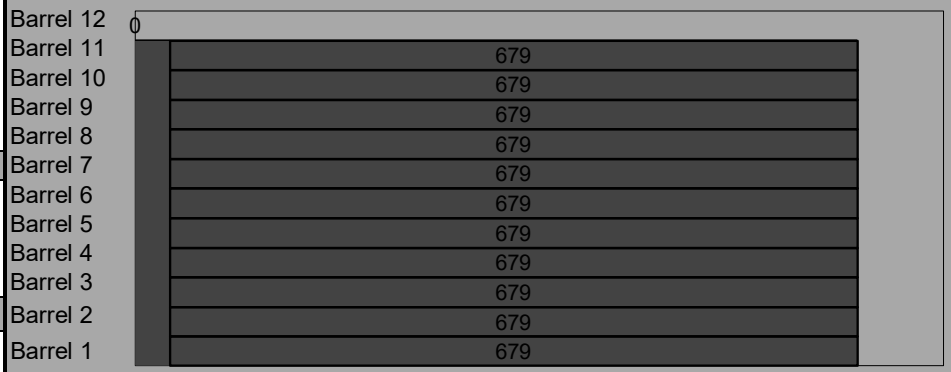
Total CMP Footage:	7,549	ft
Approximate Total Pieces:	323	pcs
Approximate Coupling Bands:	322	bands
Approximate Truckloads:	81	trucks

Construction Quantities**

Total Excavation:	19007	cy
Porous Stone Backfill For Storage:	8237	cy stone
Backfill to Grade Excluding Stone:	5280	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



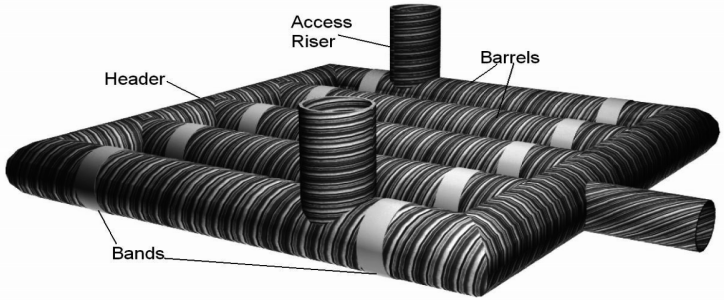
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

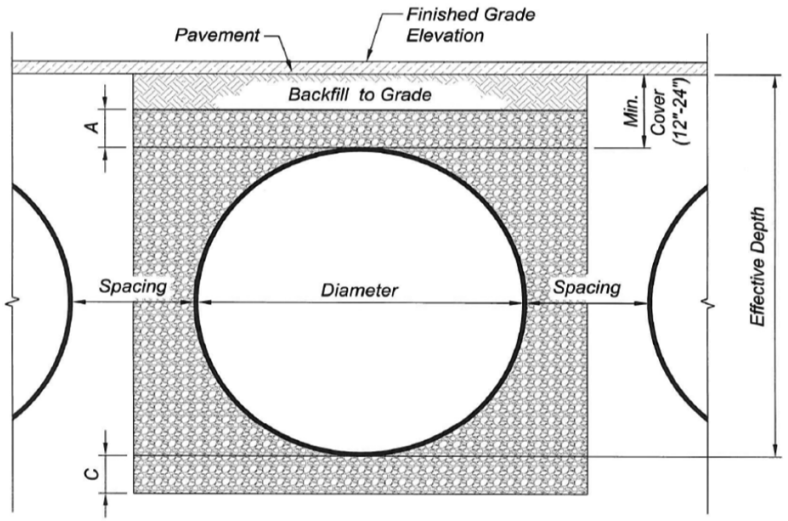
Date:	4/16/2025
Project Name:	Adelanto Industrial Park - 4D
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	198,320
Limiting Width (ft):	85.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	72
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

28.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	127,913	cf	
Porous Stone Storage:	71,064	cf	
Total Storage Provided:	198,977	cf	100.3% Of Required Storage
Number of Barrels:	9	barrels	
Length per Barrel:	494.0	ft	
Length Per Header:	78.0	ft	
Rectangular Footprint (W x L):	81. ft x 503. ft		

CONTECH Materials

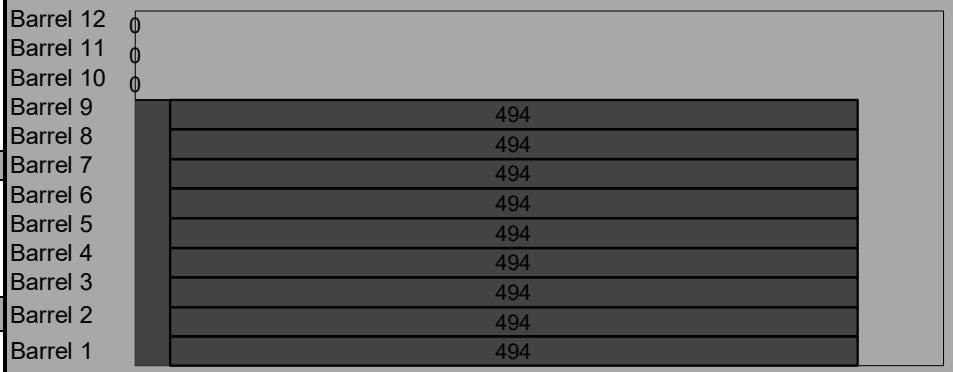
Total CMP Footage:	4,524	ft
Approximate Total Pieces:	193	pcs
Approximate Coupling Bands:	192	bands
Approximate Truckloads:	97	trucks

Construction Quantities**

Total Excavation:	13581	cy
Porous Stone Backfill For Storage:	6580	cy stone
Backfill to Grade Excluding Stone:	2264	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



© 2007 CONTECH Stormwater Solutions

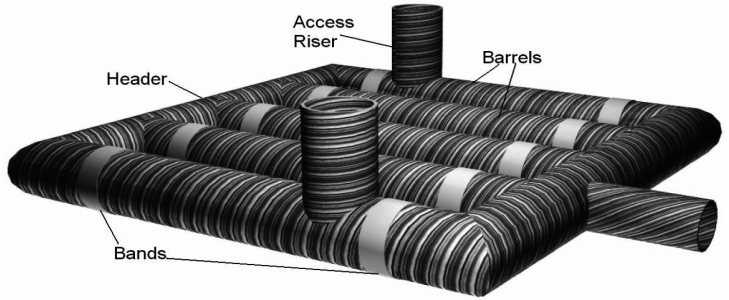
BUILDING 5

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

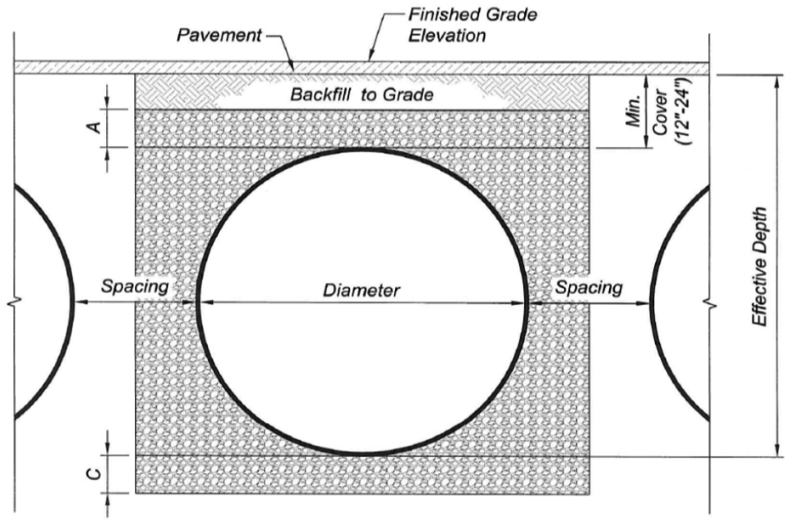
Date:	3/13/2025
Project Name:	Adelanto Industrial Park - 5B
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	405,382
Limiting Width (ft):	80.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	2
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	284,000	cf	
Porous Stone Storage:	121,943	cf	
Total Storage Provided:	405,943	cf	100.1% Of Required Storage
Number of Barrels:	7	barrels	
Length per Barrel:	786.0	ft	
Length Per Header:	74.0	ft	
Rectangular Footprint (W x L):	77. ft x 805. ft		

CONTECH Materials

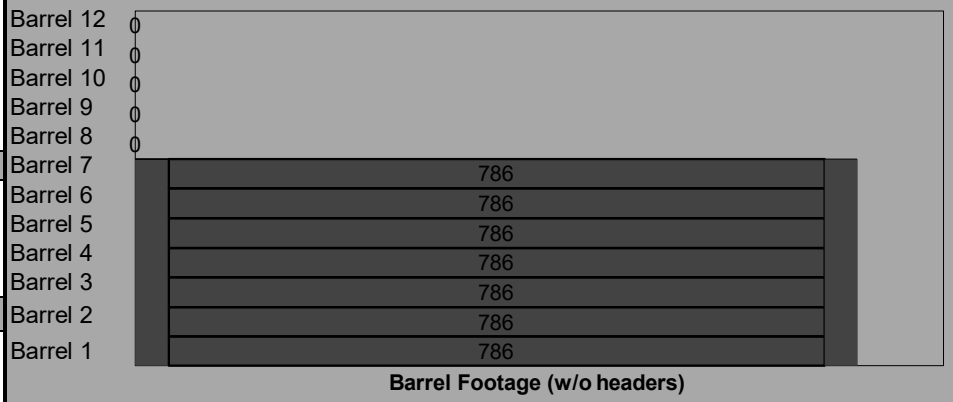
Total CMP Footage:	5,650	ft
Approximate Total Pieces:	239	pcs
Approximate Coupling Bands:	244	bands
Approximate Truckloads:	120	trucks

Construction Quantities**

Total Excavation:	20662	cy
Porous Stone Backfill For Storage:	11291	cy stone
Backfill to Grade Excluding Stone:	-1148	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



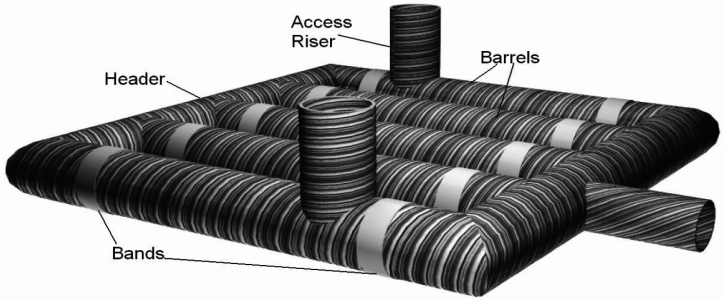
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

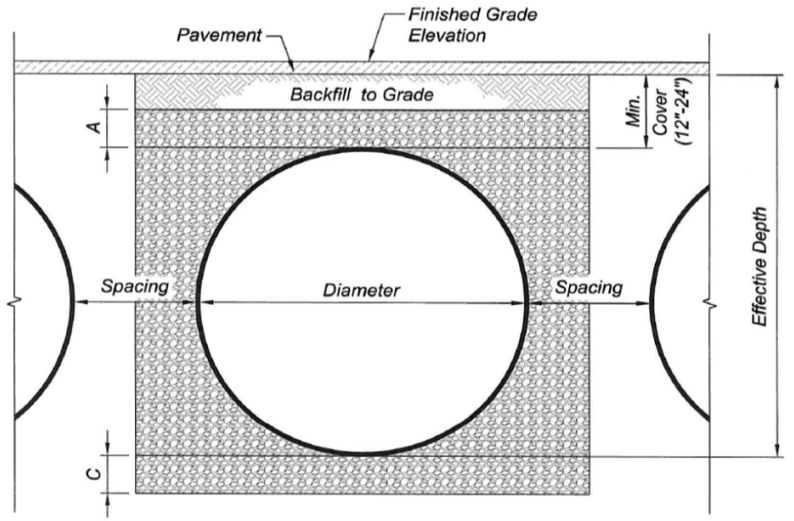
Date:	3/13/2025
Project Name:	Adelanto Industrial Park - 5C
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	142,446
Limiting Width (ft):	80.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	72
Number Of Headers:	2
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

28.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	92,344	cf	
Porous Stone Storage:	50,758	cf	
Total Storage Provided:	143,102	cf	100.5% Of Required Storage
Number of Barrels:	8	barrels	
Length per Barrel:	391.0	ft	
Length Per Header:	69.0	ft	
Rectangular Footprint (W x L):	72. ft x 406. ft		

CONTECH Materials

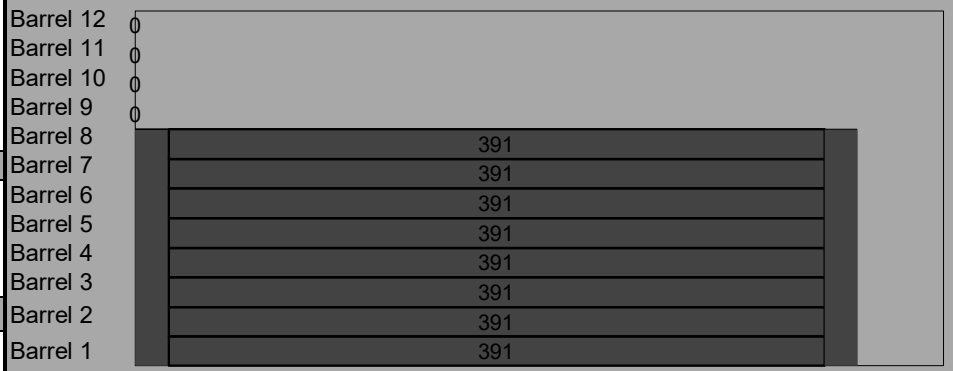
Total CMP Footage:	3,266	ft
Approximate Total Pieces:	142	pcs
Approximate Coupling Bands:	148	bands
Approximate Truckloads:	71	trucks

Construction Quantities**

Total Excavation:	9744	cy
Porous Stone Backfill For Storage:	4700	cy stone
Backfill to Grade Excluding Stone:	1624	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



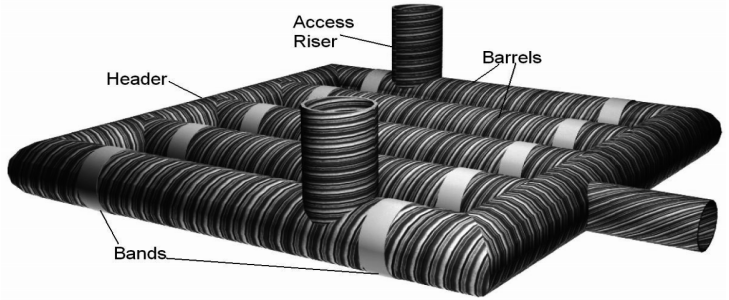
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

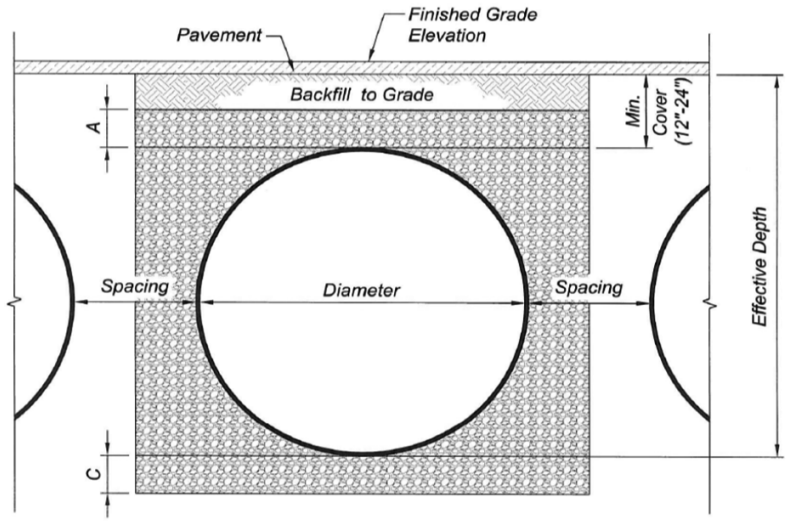
Date:	3/13/2025
Project Name:	Adelanto Industrial Park - 5D
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	312,264
Limiting Width (ft):	60.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	218,504	cf	
Porous Stone Storage:	94,428	cf	
Total Storage Provided:	312,932	cf	100.2% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	859.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 870. ft		

CONTECH Materials

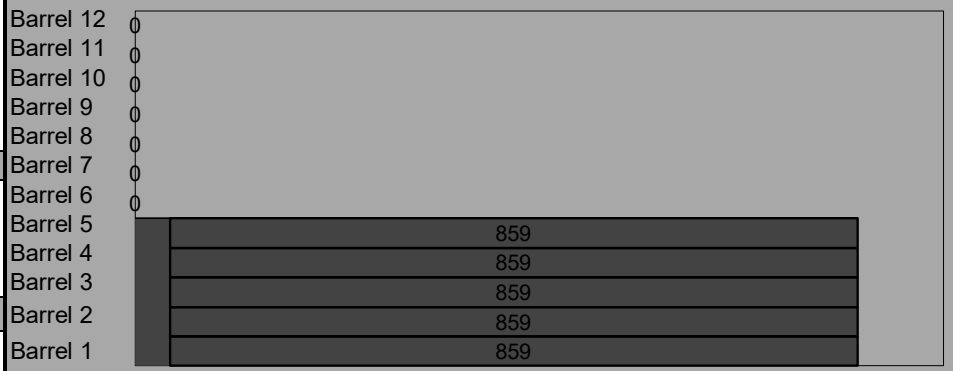
Total CMP Footage:	4,347	ft
Approximate Total Pieces:	183	pcs
Approximate Coupling Bands:	182	bands
Approximate Truckloads:	92	trucks

Construction Quantities**

Total Excavation:	15950	cy
Porous Stone Backfill For Storage:	8743	cy stone
Backfill to Grade Excluding Stone:	-886	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



© 2007 CONTECH Stormwater Solutions

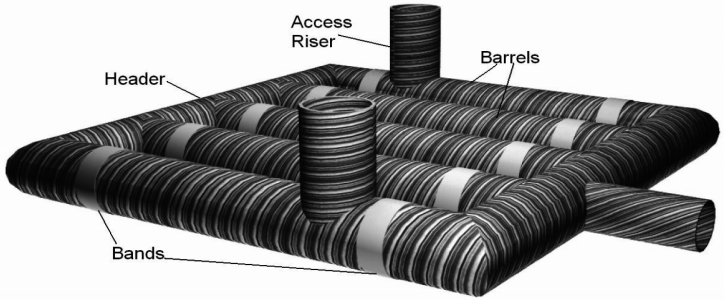
BUILDING 6

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

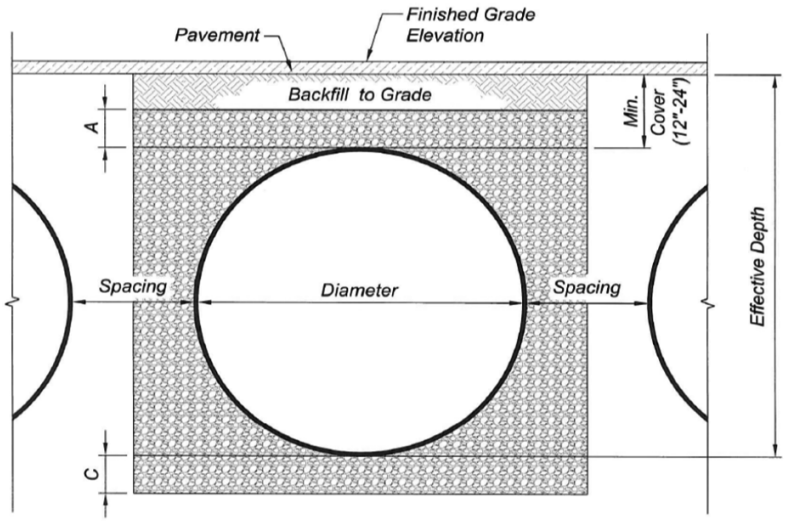
Date:	3/13/2025
Project Name:	Adelanto Industrial Park - 6A
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	231,173
Limiting Width (ft):	60.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	161,704	cf	
Porous Stone Storage:	69,914	cf	
Total Storage Provided:	231,618	cf	100.2% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	633.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 644. ft		

CONTECH Materials

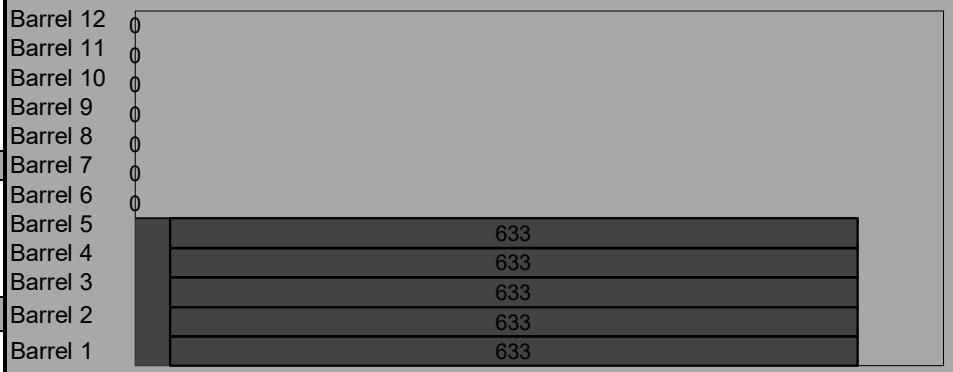
Total CMP Footage:	3,217	ft
Approximate Total Pieces:	138	pcs
Approximate Coupling Bands:	137	bands
Approximate Truckloads:	69	trucks

Construction Quantities**

Total Excavation:	11807	cy
Porous Stone Backfill For Storage:	6474	cy stone
Backfill to Grade Excluding Stone:	-656	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



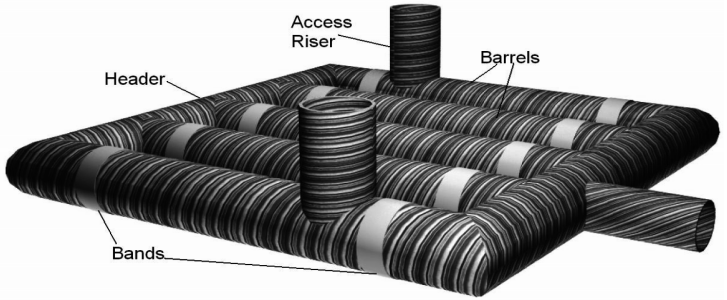
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

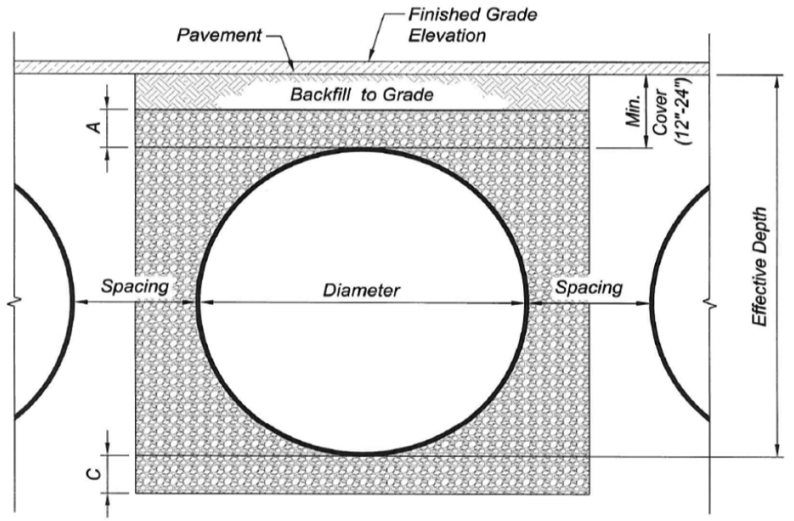
Date:	3/13/2025
Project Name:	Adelanto Industrial Park - 6B
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	209,262
Limiting Width (ft):	60.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	146,373	cf	
Porous Stone Storage:	63,298	cf	
Total Storage Provided:	209,671	cf	100.2% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	572.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 583. ft		

CONTECH Materials

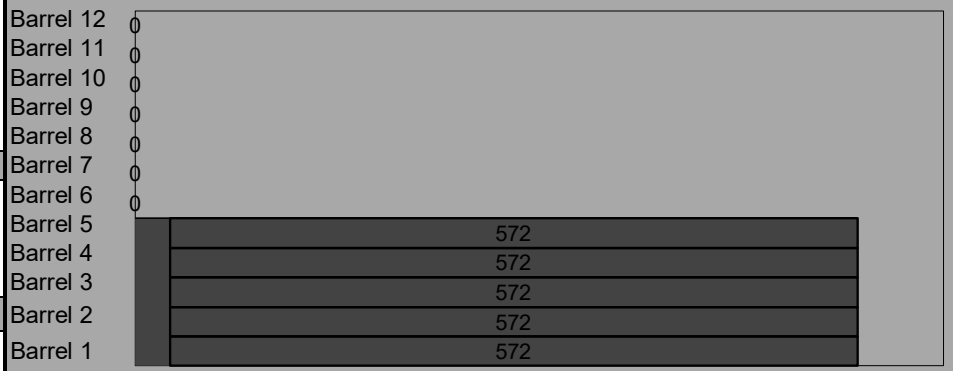
Total CMP Footage:	2,912	ft
Approximate Total Pieces:	123	pcs
Approximate Coupling Bands:	122	bands
Approximate Truckloads:	62	trucks

Construction Quantities**

Total Excavation:	10689	cy
Porous Stone Backfill For Storage:	5861	cy stone
Backfill to Grade Excluding Stone:	-593	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



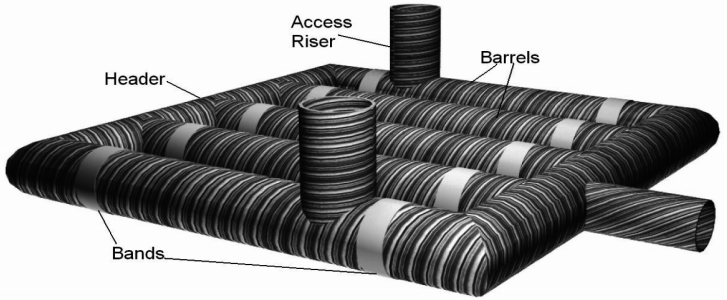
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

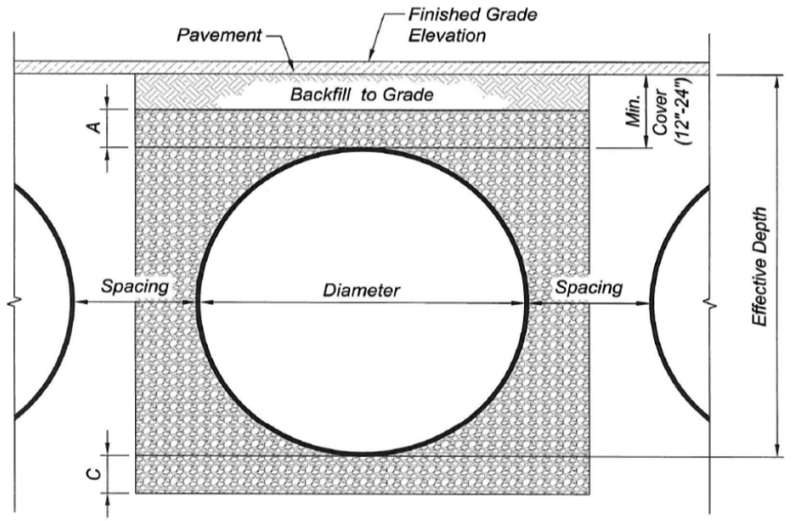
Date:	4/16/2025
Project Name:	Adelanto Industrial Park - 6C
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	199,418
Limiting Width (ft):	60.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	139,587	cf	
Porous Stone Storage:	60,369	cf	
Total Storage Provided:	199,956	cf	100.3% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	545.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 556. ft		

CONTECH Materials

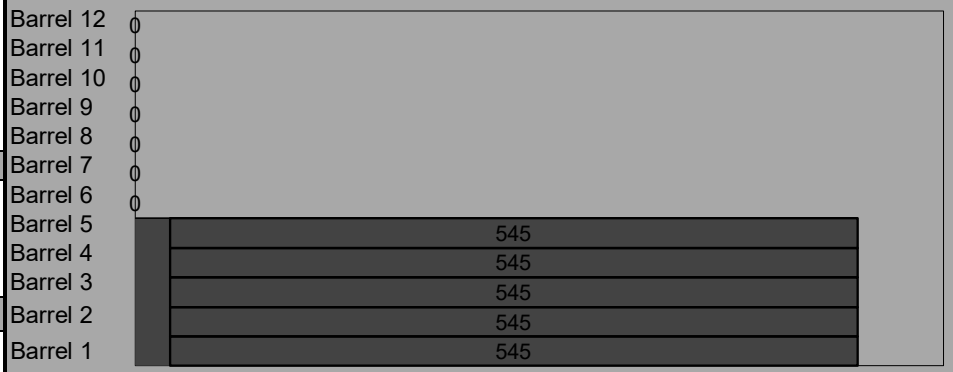
Total CMP Footage:	2,777	ft
Approximate Total Pieces:	118	pcs
Approximate Coupling Bands:	117	bands
Approximate Truckloads:	59	trucks

Construction Quantities**

Total Excavation:	10194	cy
Porous Stone Backfill For Storage:	5590	cy stone
Backfill to Grade Excluding Stone:	-566	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



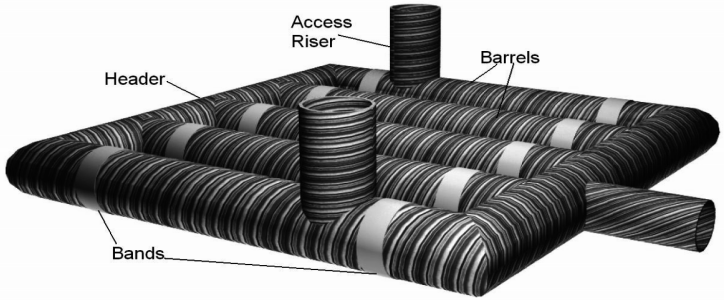
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

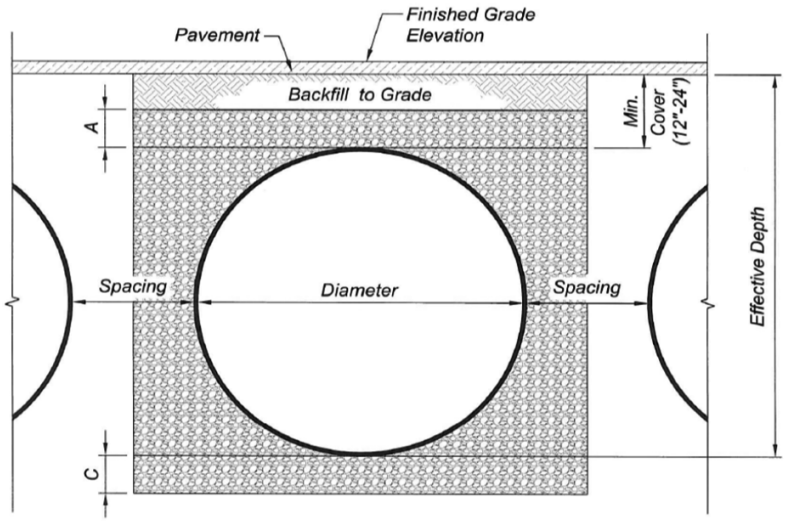
Date:	4/16/2025
Project Name:	Adelanto Industrial Park - 6D
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	180,774
Limiting Width (ft):	60.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	72
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

28.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	116,462	cf	
Porous Stone Storage:	64,709	cf	
Total Storage Provided:	181,171	cf	100.2% Of Required Storage
Number of Barrels:	6	barrels	
Length per Barrel:	678.0	ft	
Length Per Header:	51.0	ft	
Rectangular Footprint (W x L):	54. ft x 687. ft		

CONTECH Materials

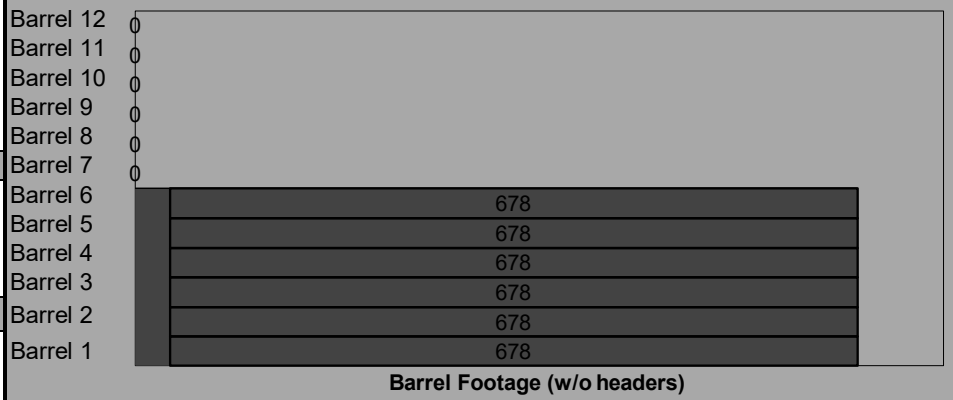
Total CMP Footage:	4,119	ft
Approximate Total Pieces:	177	pcs
Approximate Coupling Bands:	176	bands
Approximate Truckloads:	89	trucks

Construction Quantities**

Total Excavation:	12366	cy
Porous Stone Backfill For Storage:	5992	cy stone
Backfill to Grade Excluding Stone:	2061	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



© 2007 CONTECH Stormwater Solutions

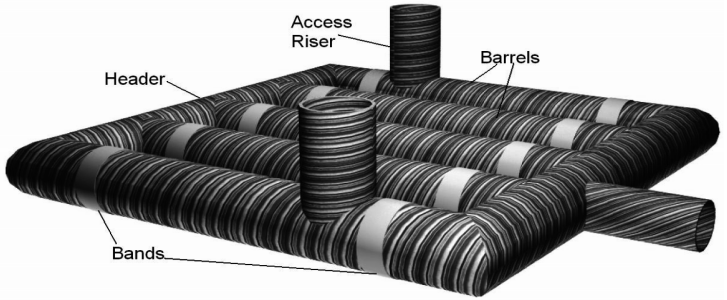
BUILDING 7

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

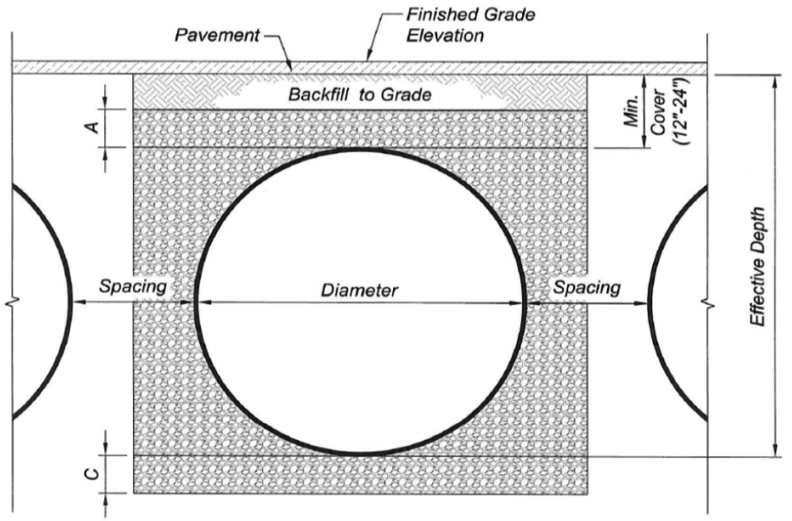
Date:	4/16/2025
Project Name:	Adelanto Industrial Park - 7A
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	246,528
Limiting Width (ft):	60.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	172,511	cf	
Porous Stone Storage:	74,579	cf	
Total Storage Provided:	247,090	cf	100.2% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	676.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 687. ft		

CONTECH Materials

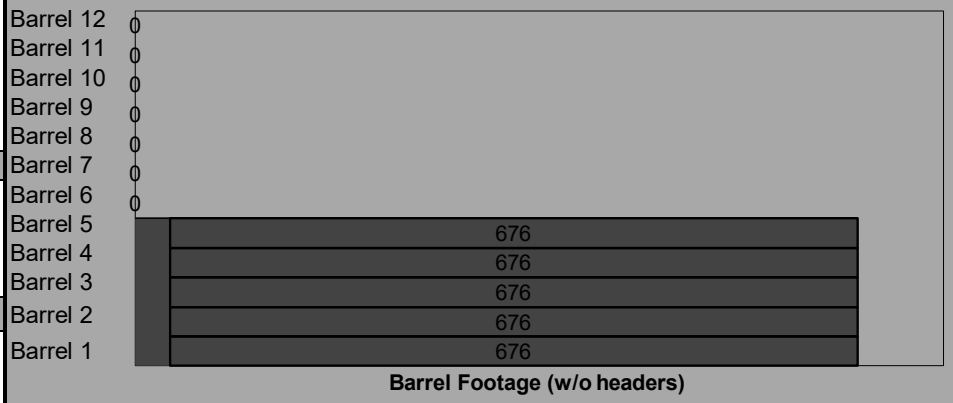
Total CMP Footage:	3,432	ft
Approximate Total Pieces:	148	pcs
Approximate Coupling Bands:	147	bands
Approximate Truckloads:	74	trucks

Construction Quantities**

Total Excavation:	12595	cy
Porous Stone Backfill For Storage:	6905	cy stone
Backfill to Grade Excluding Stone:	-700	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



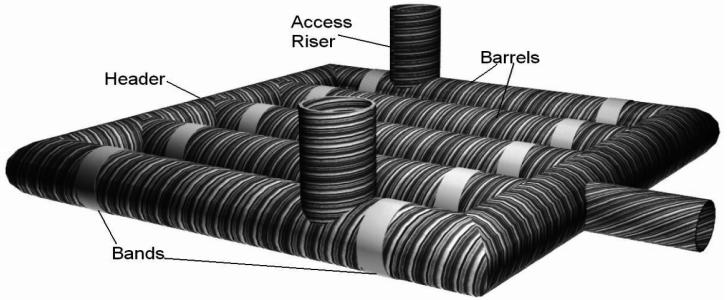
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

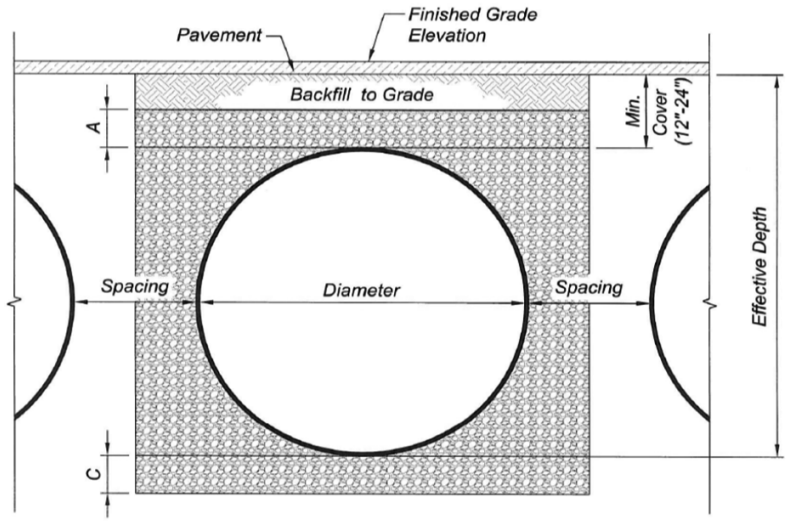
Date:	4/16/2025
Project Name:	Adelanto Industrial Park - 7B
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	102,998
Limiting Width (ft):	60.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	72,231	cf	
Porous Stone Storage:	31,299	cf	
Total Storage Provided:	103,531	cf	100.5% Of Required Storage
Number of Barrels:	5	barrels	
Length per Barrel:	277.0	ft	
Length Per Header:	52.0	ft	
Rectangular Footprint (W x L):	55. ft x 288. ft		

CONTECH Materials

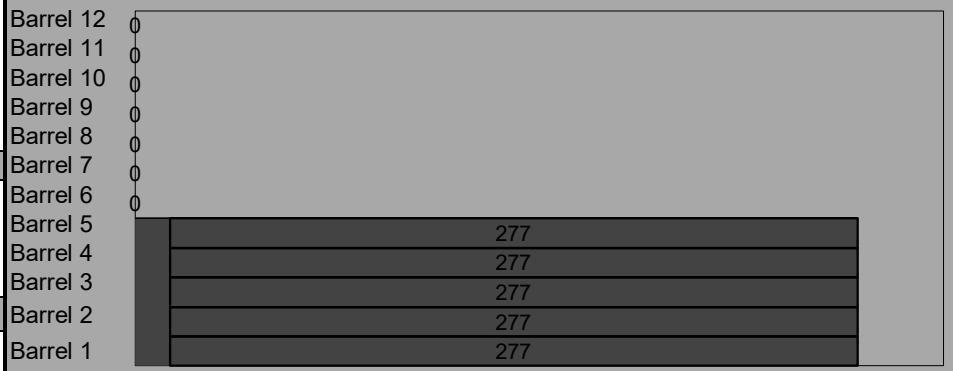
Total CMP Footage:	1,437	ft
Approximate Total Pieces:	63	pcs
Approximate Coupling Bands:	62	bands
Approximate Truckloads:	32	trucks

Construction Quantities**

Total Excavation:	5280	cy
Porous Stone Backfill For Storage:	2898	cy stone
Backfill to Grade Excluding Stone:	-293	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



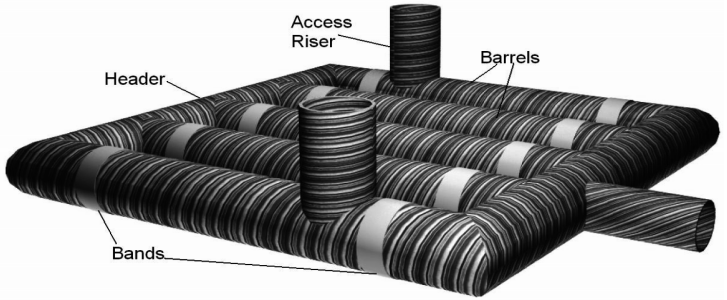
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

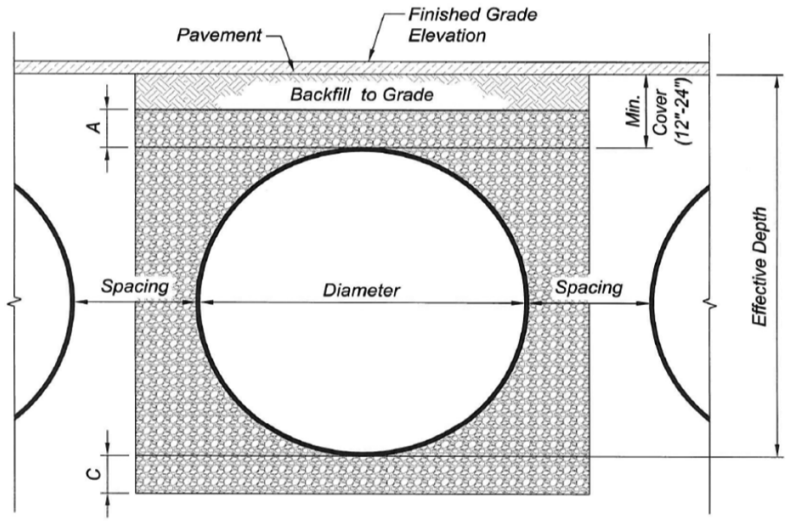
Date:	4/16/2025
Project Name:	Adelanto Industrial Park - 7C
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	283,780
Limiting Width (ft):	80.00
Invert Depth Below Asphalt (ft):	9.00
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	72
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

28.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	182,680	cf	
Porous Stone Storage:	101,456	cf	
Total Storage Provided:	284,136	cf	100.1% Of Required Storage
Number of Barrels:	8	barrels	
Length per Barrel:	799.0	ft	
Length Per Header:	69.0	ft	
Rectangular Footprint (W x L):	72. ft x 808. ft		

CONTECH Materials

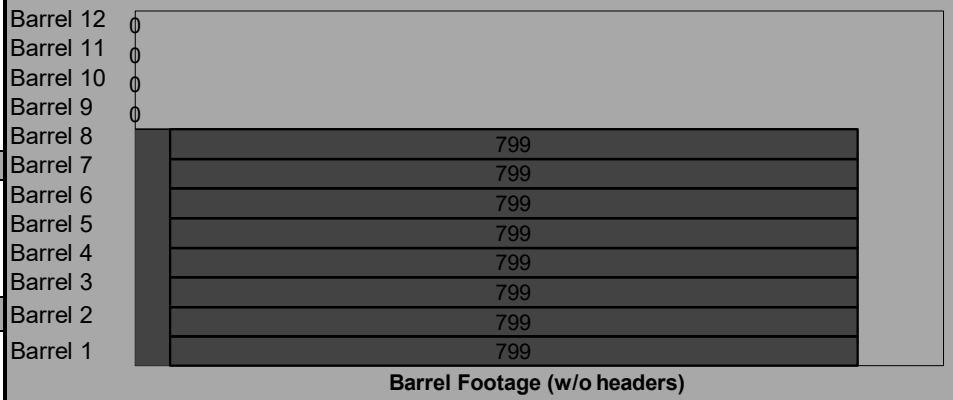
Total CMP Footage:	6,461	ft
Approximate Total Pieces:	275	pcs
Approximate Coupling Bands:	274	bands
Approximate Truckloads:	138	trucks

Construction Quantities**

Total Excavation:	19392	cy
Porous Stone Backfill For Storage:	9394	cy stone
Backfill to Grade Excluding Stone:	3232	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



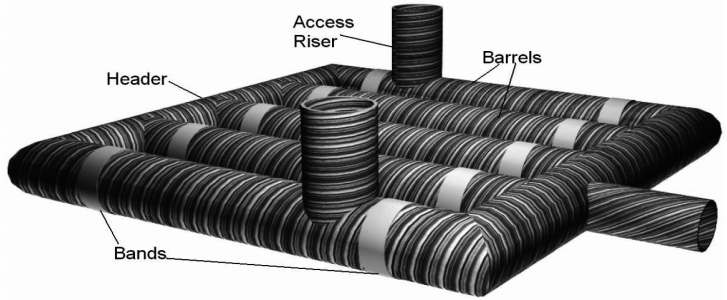
© 2007 CONTECH Stormwater Solutions

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com



Project Summary

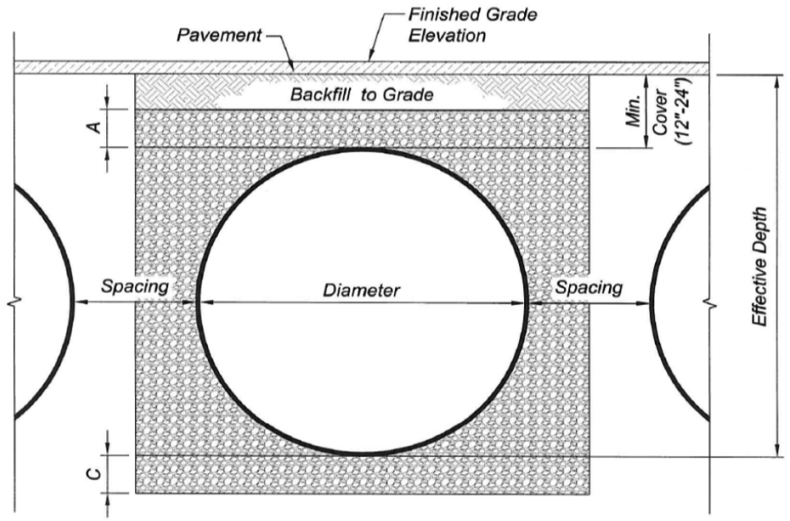
Date:	4/16/2025
Project Name:	Adelanto Industrial Park - 7D
City / County:	Adelanto, San Bernardino
State:	CA
Designed By:	ABE
Company:	Albert A. Webb Associates
Telephone:	(951) 686-1070

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	142,446
Limiting Width (ft):	35.00
Invert Depth Below Asphalt (ft):	11.50
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	1.5
Depth A: Porous Stone Above Pipe (in):	12
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	99,676	cf	
Porous Stone Storage:	43,144	cf	
Total Storage Provided:	142,821	cf	100.3% Of Required Storage
Number of Barrels:	3	barrels	
Length per Barrel:	651.0	ft	
Length Per Header:	30.0	ft	
Rectangular Footprint (W x L):	33. ft x 662. ft		

CONTECH Materials

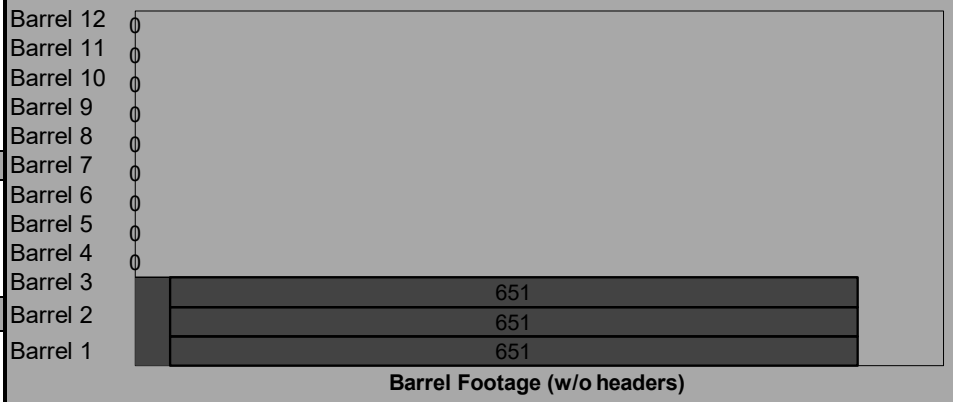
Total CMP Footage:	1,983	ft
Approximate Total Pieces:	86	pcs
Approximate Coupling Bands:	85	bands
Approximate Truckloads:	43	trucks

Construction Quantities**

Total Excavation:	9305	cy
Porous Stone Backfill For Storage:	3995	cy stone
Backfill to Grade Excluding Stone:	1618	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout

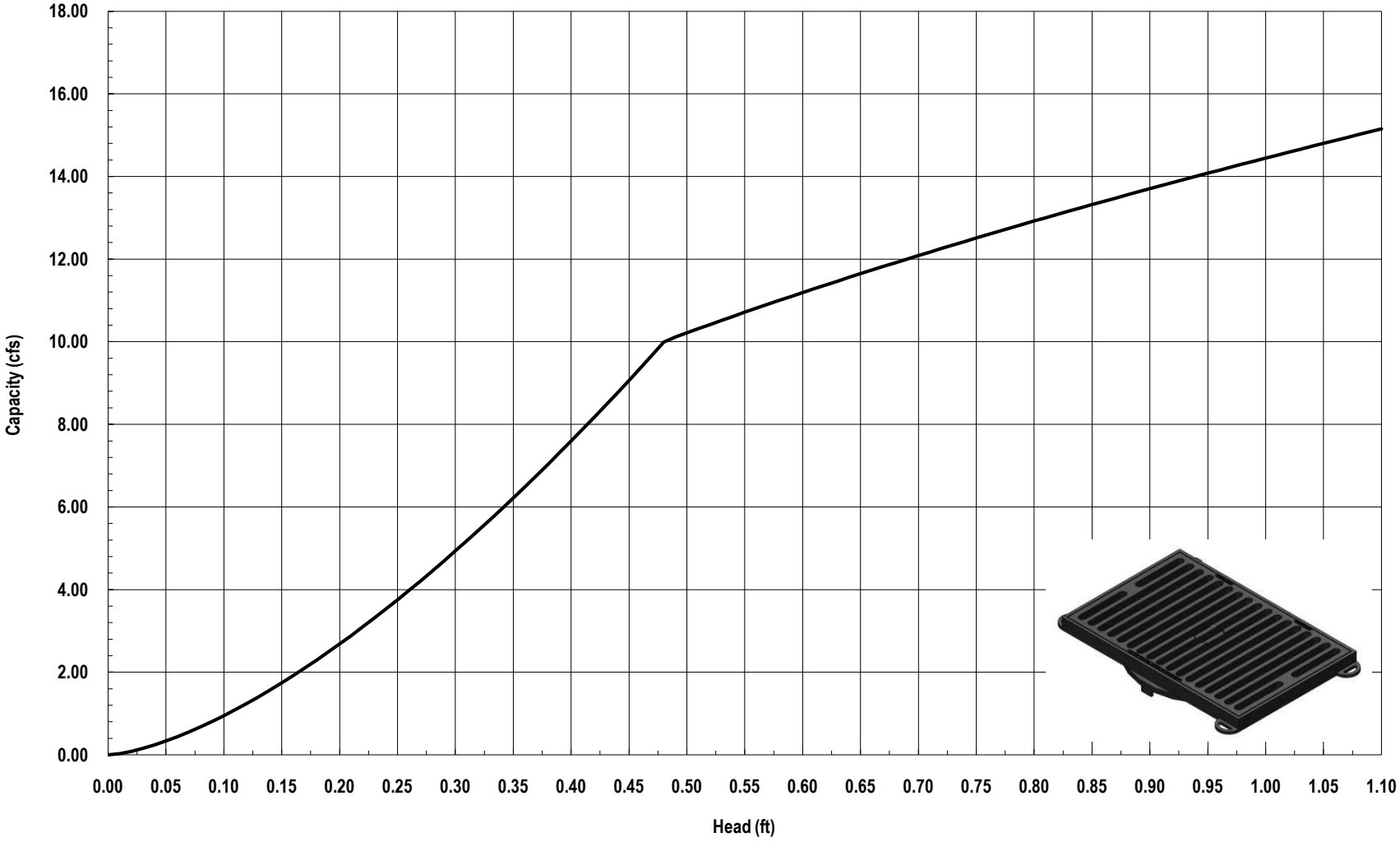


© 2007 CONTECH Stormwater Solutions

ON-SITE INLET SIZING CALCULATIONS

IN FINAL ENGINEERING, EACH INLET WILL BE EVALUATED

Nyloplast 2' x 3' Road & Highway Grate Inlet Capacity Chart



PRELIMINARY Qs

Q= CFS

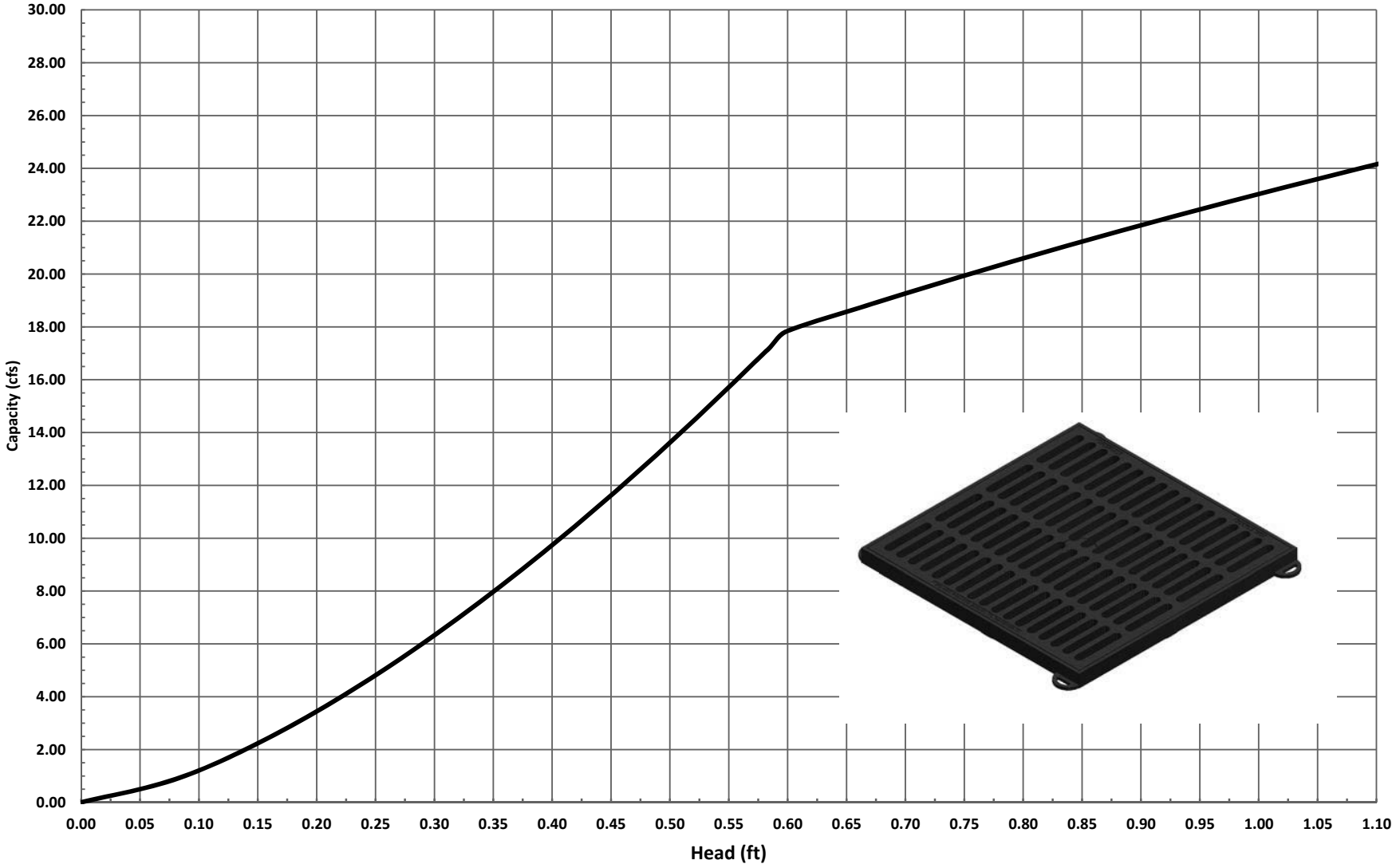
$Q_{2\text{-GRATES}}$= Q/2 = CFS

$Q_{1.5\text{-CLOGGING FACTOR}}$= Q*1.5 =

Nyloplast®
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490
© Nyloplast Inlet Capacity Charts June 2012

IN FINAL ENGINEERING, EACH INLET WILL BE EVALUATED

Nyloplast 3' x 3' Road & Highway Inlet Capacity Chart



PRELIMINARY Qs
Q= CFS
$Q_{2\text{-GRATES}}$= Q/2 = CFS
$Q_{1.5\text{-CLOGGING FACTOR}}$= Q*1.5 =

Nyloplast

3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490

© Nyloplast Inlet Capacity Charts June 2012

OFF-SITE PIPE SIZING CALCULATIONS

Hydraulic Analysis Report

Project Data

Project Title: Adelanto Industrial Park Pipe Sizing

Designer: ABE

Project Date: Wednesday, May 7, 2025

Project Units: U.S. Customary Units

Notes:

Channel Analysis: Line A (Pipe)

Notes:

Input Parameters

Channel Type: Circular

Pipe Diameter 6.00 ft

Longitudinal Slope: 0.0030 ft/ft

Manning's n: 0.0150

Flow 185.8000 cfs

Result Parameters

Depth 4.5530 ft

Area of Flow 23.0203 ft^2

Wetted Perimeter 12.6894 ft

Hydraulic Radius 1.8141 ft

Average Velocity 8.0711 ft/s

Top Width 5.1335 ft

Froude Number: 0.6717

Critical Depth 3.7207 ft

Critical Velocity 10.0872 ft/s

Critical Slope: 0.0051 ft/ft

Critical Top Width 5.82 ft

Calculated Max Shear Stress 0.8523 lb/ft^2

Calculated Avg Shear Stress 0.3396 lb/ft^2

Channel Analysis: Line A (Shallow RCB)

Notes:

Input Parameters

Channel Type: Rectangular

Channel Width 15.00 ft

Longitudinal Slope: 0.0030 ft/ft

Manning's n: 0.0150

Flow 185.8000 cfs

Result Parameters

Depth 1.7874 ft

Area of Flow 26.8109 ft^2

Wetted Perimeter 18.5748 ft

Hydraulic Radius 1.4434 ft

Average Velocity 6.9300 ft/s

Top Width 15.0000 ft

Froude Number: 0.9135

Critical Depth 1.6827 ft

Critical Velocity 7.3610 ft/s

Critical Slope: 0.0036 ft/ft

Critical Top Width 15.00 ft

Calculated Max Shear Stress 0.3346 lb/ft^2

Calculated Avg Shear Stress 0.2702 lb/ft^2

Channel Analysis: Line B (Pipe)

Notes:

Input Parameters

Channel Type: Circular

Pipe Diameter 3.50 ft

Longitudinal Slope: 0.0030 ft/ft

Manning's n: 0.0150

Flow 46.9000 cfs

Result Parameters

Depth 2.8134 ft

Area of Flow 8.2887 ft^2

Wetted Perimeter 7.7837 ft

Hydraulic Radius 1.0649 ft

Average Velocity 5.6583 ft/s

Top Width 2.7797 ft

Froude Number: 0.5775

Critical Depth 2.1362 ft

Critical Velocity 7.6244 ft/s

Critical Slope: 0.0061 ft/ft

Critical Top Width 3.41 ft

Calculated Max Shear Stress 0.5267 lb/ft^2

Calculated Avg Shear Stress 0.1993 lb/ft^2

Channel Analysis: Line B (Shallow RCB)

Notes:

Input Parameters

Channel Type: Rectangular

Channel Width 4.00 ft

Longitudinal Slope: 0.0030 ft/ft

Manning's n: 0.0150

Flow 46.9000 cfs

Result Parameters

Depth 2.1199 ft

Area of Flow 8.4794 ft^2

Wetted Perimeter 8.2397 ft

Hydraulic Radius 1.0291 ft

Average Velocity 5.5310 ft/s

Top Width 4.0000 ft

Froude Number: 0.6695

Critical Depth 1.6223 ft

Critical Velocity 7.2275 ft/s

Critical Slope: 0.0062 ft/ft

Critical Top Width 4.00 ft

Calculated Max Shear Stress 0.3968 lb/ft^2

Calculated Avg Shear Stress 0.1926 lb/ft^2

Channel Analysis: Line C (Pipe)

Notes:

Input Parameters

Channel Type: Circular

Pipe Diameter 4.00 ft

Longitudinal Slope: 0.0030 ft/ft

Manning's n: 0.0150

Flow 72.2000 cfs

Result Parameters

Depth 3.5492 ft

Area of Flow 11.7870 ft^2

Wetted Perimeter 9.8274 ft

Hydraulic Radius 1.1994 ft

Average Velocity 6.1254 ft/s

Top Width 2.5299 ft

Froude Number: 0.5001

Critical Depth 2.5703 ft

Critical Velocity 8.4611 ft/s

Critical Slope: 0.0061 ft/ft

Critical Top Width 3.83 ft

Calculated Max Shear Stress 0.6644 lb/ft^2

Calculated Avg Shear Stress 0.2245 lb/ft^2

Channel Analysis: Line C (Shallow RCB)

Notes:

Input Parameters

Channel Type: Rectangular

Channel Width 10.00 ft

Longitudinal Slope: 0.0030 ft/ft

Manning's n: 0.0150

Flow 72.2000 cfs

Result Parameters

Depth 1.3020 ft

Area of Flow 13.0203 ft^2

Wetted Perimeter 12.6041 ft

Hydraulic Radius 1.0330 ft

Average Velocity 5.5452 ft/s

Top Width 10.0000 ft

Froude Number: 0.8564

Critical Depth 1.1742 ft

Critical Velocity 6.1489 ft/s

Critical Slope: 0.0041 ft/ft

Critical Top Width 10.00 ft

Calculated Max Shear Stress 0.2437 lb/ft^2

Calculated Avg Shear Stress 0.1934 lb/ft^2

Channel Analysis: Line D (Pipe)

Notes:

Input Parameters

Channel Type: Circular

Pipe Diameter 5.50 ft

Longitudinal Slope: 0.0030 ft/ft

Manning's n: 0.0150

Flow 169.8000 cfs

Result Parameters

Depth 4.9433 ft

Area of Flow 22.4997 ft^2

Wetted Perimeter 13.7172 ft

Hydraulic Radius 1.6402 ft

Average Velocity 7.5468 ft/s

Top Width 3.3178 ft

Froude Number: 0.5107

Critical Depth 3.6416 ft

Critical Velocity 10.1703 ft/s

Critical Slope: 0.0056 ft/ft

Critical Top Width 5.20 ft

Calculated Max Shear Stress 0.9254 lb/ft^2

Calculated Avg Shear Stress 0.3071 lb/ft^2

Channel Analysis: Line D (Shallow RCB)

Notes:

Input Parameters

Channel Type: Rectangular

Channel Width 8.00 ft

Longitudinal Slope: 0.0030 ft/ft

Manning's n: 0.0150

Flow 169.8000 cfs

Result Parameters

Depth 2.8034 ft

Area of Flow 22.4270 ft^2

Wetted Perimeter 13.6067 ft

Hydraulic Radius 1.6482 ft

Average Velocity 7.5712 ft/s

Top Width 8.0000 ft

Froude Number: 0.7969

Critical Depth 2.4096 ft

Critical Velocity 8.8085 ft/s

Critical Slope: 0.0046 ft/ft

Critical Top Width 8.00 ft

Calculated Max Shear Stress 0.5248 lb/ft^2

Calculated Avg Shear Stress 0.3085 lb/ft^2

OFF-SITE CHANNEL SIZING CALCULATIONS

Hydraulic Analysis Report

Project Data

Project Title: 24-0505 Preliminary Channel Sizing

Designer: ABE

Project Date: Friday, January 10, 2025

Project Units: U.S. Customary Units

Notes:

Channel Analysis: 100yr Flows (1.5:1) Flatter Slope

Notes:

Input Parameters

Channel Type: Trapezoidal

Side Slope 1 (Z1): 1.5000 ft/ft

Side Slope 2 (Z2): 1.5000 ft/ft

Channel Width 25.00 ft

Longitudinal Slope: 0.0010 ft/ft

Manning's n: 0.0150

Flow 850.0000 cfs

Result Parameters

Depth 4.0439 ft

Area of Flow 125.6270 ft^2

Wetted Perimeter 39.5805 ft

Hydraulic Radius 3.1740 ft

Average Velocity 6.7661 ft/s

Top Width 37.1317 ft

Froude Number: 0.6482

Critical Depth 3.0914 ft

Critical Velocity 9.2773 ft/s

Critical Slope: 0.0025 ft/ft

Critical Top Width 34.27 ft

Calculated Max Shear Stress 0.2523 lb/ft^2

Calculated Avg Shear Stress 0.1981 lb/ft^2

Hydraulic Analysis Report

Project Data

Project Title: Adelanto Industrial Park Pipe Sizing

Designer: ABE

Project Date: Wednesday, May 7, 2025

Project Units: U.S. Customary Units

Notes:

Channel Analysis: ADMP Channel 1 (RCB)

Notes:

Input Parameters

Channel Type: Rectangular

Channel Width 24.00 ft

Longitudinal Slope: 0.0050 ft/ft

Manning's n: 0.0150

Flow 819.0000 cfs

Result Parameters

Depth 2.8131 ft

Area of Flow 67.5153 ft^2

Wetted Perimeter 29.6263 ft

Hydraulic Radius 2.2789 ft

Average Velocity 12.1306 ft/s

Top Width 24.0000 ft

Froude Number: 1.2746

Critical Depth 3.3070 ft

Critical Velocity 10.3191 ft/s

Critical Slope: 0.0030 ft/ft

Critical Top Width 24.00 ft

Calculated Max Shear Stress 0.8777 lb/ft^2

Calculated Avg Shear Stress 0.7110 lb/ft^2

Hydraulic Analysis Report

Project Data

Project Title: 24-0505 Preliminary Channel Sizing

Designer: ABE

Project Date: Friday, January 10, 2025

Project Units: U.S. Customary Units

Notes:

Channel Analysis: Channel 1A MPD Flows (1.5:1)

Notes:

Input Parameters

Channel Type: Trapezoidal

Side Slope 1 (Z1): 1.5000 ft/ft

Side Slope 2 (Z2): 1.5000 ft/ft

Channel Width 12.00 ft

Longitudinal Slope: 0.0030 ft/ft

Manning's n: 0.0150

Flow 1028.0000 cfs

Result Parameters

Depth 4.6918 ft

Area of Flow 89.3217 ft^2

Wetted Perimeter 28.9166 ft

Hydraulic Radius 3.0889 ft

Average Velocity 11.5090 ft/s

Top Width 26.0755 ft

Froude Number: 1.0958

Critical Depth 4.9380 ft

Critical Velocity 10.7270 ft/s

Critical Slope: 0.0025 ft/ft

Critical Top Width 26.81 ft

Calculated Max Shear Stress 0.8783 lb/ft^2

Calculated Avg Shear Stress 0.5782 lb/ft^2

PRELIMINARY CHANNEL 1 WSPG CALCULATIONS

```
T1 MILESKI - ADELANTO INDUSTRIAL PARK                                          0
T2 MASTER PLAN CHANNEL 1
T3 FN: CHL1.WSW
SO   1000.0002891.100  1                        2891.100
REM  INITIAL HGL ASSUMES PIPE RUNNING FULL
R    1075.4002891.520  1      .013                          .000    .000 0
R    1310.6802892.170  1      .013                       -89.870
BE   1310.6802892.170  2      .500
TS   1360.6802892.310  3      .014                          .000   0.000 0
R    1948.1802893.950  3      .014                          .000   0.000 0
TS   1998.1802894.090  5      .014                          .000   0.000 0
BX   1998.1802894.090  4
R    2313.4802894.970  4      .013                        90.327
BE   2313.4802894.970  5      .500
TS   2363.4802895.020  3      .014                          .000   0.000 0
R    2675.0002895.330  3      .014                          .000   0.000 0
TS   2725.0002895.380  5      .014                          .000   0.000 0
BX   2725.0002895.380  4
R    2804.6502896.000  4      .013                          .000   0.000 0
BE   2804.6502896.000  5      .500
TS   2854.6502896.050  3      .014                          .000   0.000 0
R    3285.2902896.480  3      .014                          .000   0.000 0
TS   3335.2902896.530  5      .014                          .000   0.000 0
BX   3335.2902896.530  4
R    3425.1902899.100  4      .013                          .000   0.000 0
BE   3425.1902899.100  5      .500
TS   3475.1902899.150  3      .014                          .000   0.000 0
R    3813.6202899.490  3      .014                          .000   0.000 0
TS   3863.6202899.540  5      .014                          .000   0.000 0
BX   3863.6202899.540  4
R    3953.5102901.740  4      .013                          .000   0.000 0
BE   3953.5102901.740  5      .500
TS   4003.5102901.790  3      .014                          .000   0.000 0
R    4782.1502902.570  3      .014                          .000   0.000 0
TS   4832.1502902.620  5      .014                          .000   0.000 0
BX   4832.1502902.620  4
R    4932.0302904.840  4      .013                          .000   0.000 0
BE   4932.0302904.840  5      .500
TS   4982.0302904.890  3      .014                          .000   0.000 0
R    5331.4302905.240  3      .014                          .000   0.000 0
TS   5381.4302905.290  5      .014                          .000   0.000 0
BX   5381.4302905.290  4
R    5461.6802905.690  4      .013                          .000   0.000 0
BE   5461.6802905.690  5      .500
TS   5511.6802905.740  3      .014                          .000   0.000 0
R    5704.9502905.930  3      .014                          .000   0.000 0
TS   5767.3602905.990  5      .014                          .000   0.000 0
BX   5767.3602905.990  4
R    5859.6002906.460  4      .013                       -15.100
BE   5859.6002906.460  5      .500
TS   5909.6002906.510  3      .014                        -8.185
R    6287.6302906.880  3      .014                       -61.884
R    7250.9002907.850  3      .014                          .000   0.000 0
SH   7250.9002907.850  3                        2906.850
CD   1  3   6    .500   3.000   52.000  .000  .000   .00
CD   2  1   0    .000   3.000   52.000  .000  .000   .00
CD   3  1   0    .000   7.000   25.000 1.500 1.500   .00
CD   4  3   3    .500   4.000   25.500  .000  .000   .00
CD   5  1   0    .000   4.000   25.500  .000  .000   .00
Q           781.000   .0
```

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	3	6	.500	3.000	52.000	.000	.000	.00										
CD	2	1	0	.000	3.000	52.000	.000	.000	.00										
CD	3	1	0	.000	7.000	25.000	1.500	1.500	.00										
CD	4	3	3	.500	4.000	25.500	.000	.000	.00										
CD	5	1	0	.000	4.000	25.500	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
MILESKI - ADELANTO INDUSTRIAL PARK
HEADING LINE NO 2 IS -
MASTER PLAN CHANNEL 1
HEADING LINE NO 3 IS -
FN: CHL1.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	2891.100	1	2891.100

REMARKS: INITIAL HGL ASSUMES PIPE RUNNING FULL

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1075.400	2891.520	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1310.680	2892.170	1	.013	150.001	-89.870	.000	0

ELEMENT NO 4 IS A BRIDGE ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1310.680	2892.170	2	.500

ELEMENT NO 5 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1360.680	2892.310	3	.014	.000	.000

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1948.180	2893.950	3	.014	.000	.000	.000	0

ELEMENT NO 7 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1998.180	2894.090	5	.014	.000	.000

ELEMENT NO 8 IS A BRIDGE EXIT *

U/S DATA	STATION	INVERT	SECT
	1998.180	2894.090	4

ELEMENT NO 9 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2313.480	2894.970	4	.013	199.999	90.327	.000	0

ELEMENT NO 10 IS A BRIDGE ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	2313.480	2894.970	5	.500

ELEMENT NO 11 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	2363.480	2895.020	3	.014	.000	.000

ELEMENT NO 12 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2675.000	2895.330	3	.014	.000	.000	.000	0

ELEMENT NO 13 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	2725.000	2895.380	5	.014	.000	.000

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 14 IS A BRIDGE EXIT *

U/S DATA	STATION	INVERT	SECT
	2725.000	2895.380	4

ELEMENT NO 15 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2804.650	2896.000	4	.013	.000	.000	.000	0

ELEMENT NO 16 IS A BRIDGE ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	2804.650	2896.000	5	.500

ELEMENT NO 17 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	2854.650	2896.050	3	.014	.000	.000

ELEMENT NO 18 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3285.290	2896.480	3	.014	.000	.000	.000	0

ELEMENT NO 19 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	3335.290	2896.530	5	.014	.000	.000

ELEMENT NO 20 IS A BRIDGE EXIT *

U/S DATA	STATION	INVERT	SECT
	3335.290	2896.530	4

ELEMENT NO 21 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3425.190	2899.100	4	.013	.000	.000	.000	0

ELEMENT NO 22 IS A BRIDGE ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	3425.190	2899.100	5	.500

ELEMENT NO 23 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	3475.190	2899.150	3	.014	.000	.000

ELEMENT NO 24 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3813.620	2899.490	3	.014	.000	.000	.000	0

ELEMENT NO 25 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	3863.620	2899.540	5	.014	.000	.000

ELEMENT NO 26 IS A BRIDGE EXIT *

U/S DATA	STATION	INVERT	SECT
	3863.620	2899.540	4

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 27 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3953.510	2901.740	4	.013	.000	.000	.000	0

ELEMENT NO 28 IS A BRIDGE ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	3953.510	2901.740	5	.500

ELEMENT NO 29 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	4003.510	2901.790	3	.014	.000	.000

ELEMENT NO 30 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4782.150	2902.570	3	.014	.000	.000	.000	0

ELEMENT NO 31 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	4832.150	2902.620	5	.014	.000	.000

ELEMENT NO 32 IS A BRIDGE EXIT *

U/S DATA	STATION	INVERT	SECT
	4832.150	2902.620	4

ELEMENT NO 33 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4932.030	2904.840	4	.013	.000	.000	.000	0

ELEMENT NO 34 IS A BRIDGE ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	4932.030	2904.840	5	.500

ELEMENT NO 35 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	4982.030	2904.890	3	.014	.000	.000

ELEMENT NO 36 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5331.430	2905.240	3	.014	.000	.000	.000	0

ELEMENT NO 37 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	5381.430	2905.290	5	.014	.000	.000

ELEMENT NO 38 IS A BRIDGE EXIT *

U/S DATA	STATION	INVERT	SECT
	5381.430	2905.290	4

ELEMENT NO 39 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5461.680	2905.690	4	.013	.000	.000	.000	0

ELEMENT NO 40 IS A BRIDGE ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	5461.680	2905.690	5	.500

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 41 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	5511.680	2905.740	3	.014	.000	.000

ELEMENT NO 42 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5704.950	2905.930	3	.014	.000	.000	.000	0

```
ELEMENT NO  43 IS A TRANSITION        *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                             5767.360 2905.990    5              .014                           .000     .000
ELEMENT NO  44 IS A BRIDGE EXIT                          *
                  U/S DATA   STATION    INVERT  SECT
                             5767.360 2905.990    4
ELEMENT NO  45 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             5859.600 2906.460    4              .013                        349.998  -15.100      .000     0
ELEMENT NO  46 IS A BRIDGE ENTRANCE                      *
                  U/S DATA   STATION    INVERT  SECT             FP
                             5859.600 2906.460    5              .500
ELEMENT NO  47 IS A TRANSITION        *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                             5909.600 2906.510    3              .014                        350.005   -8.185
ELEMENT NO  48 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             6287.630 2906.880    3              .014                        350.002  -61.884      .000     0
ELEMENT NO  49 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             7250.900 2907.850    3              .014                           .000     .000      .000     0
ELEMENT NO  50 IS A SYSTEM HEADWORKS                     *                    *
                  U/S DATA   STATION    INVERT  SECT                          W S ELEV
                             7250.900 2907.850    3                         2906.850
```

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 2-25-2025 Time: 5:12: 2

MILESKI - ADELANTO INDUSTRIAL PARK

MASTER PLAN CHANNEL 1

FN: CHL1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	2891.100	1.736	2892.836	781.00	9.18	1.31	2894.15	.00	1.99	52.00	3.000	52.000	.00	6 .5
53.220	.0056					.0050	.27	1.74	1.27	1.71	.013	.00	.00	BOX
1053.220	2891.396	1.809	2893.206	781.00	8.81	1.21	2894.41	.00	1.99	52.00	3.000	52.000	.00	6 .5
18.141	.0056					.0044	.08	1.81	1.19	1.71	.013	.00	.00	BOX
1071.361	2891.498	1.897	2893.395	781.00	8.40	1.10	2894.49	.00	1.99	52.00	3.000	52.000	.00	6 .5
4.039	.0056					.0038	.02	1.90	1.11	1.71	.013	.00	.00	BOX
1075.400	2891.520	1.991	2893.511	781.00	8.01	1.00	2894.51	.33	1.99	52.00	3.000	52.000	.00	6 .5
11.549	.0028					.0031	.04	2.32	1.03	2.18	.013	.00	.00	BOX
1086.949	2891.552	2.088	2893.640	781.00	7.63	.90	2894.54	.30	1.99	52.00	3.000	52.000	.00	6 .5
97.958	.0028					.0028	.27	2.38	.96	2.18	.013	.00	.00	BOX
1184.907	2891.823	2.179	2894.002	781.00	7.31	.83	2894.83	.27	1.99	52.00	3.000	52.000	.00	6 .5
10.587	.0028					.0028	.03	2.45	.90	2.18	.013	.00	.00	BOX
1195.494	2891.852	2.179	2894.031	781.00	7.31	.83	2894.86	.27	1.99	52.00	3.000	52.000	.00	6 .5
HYDRAULIC JUMP														
1195.494	2891.852	1.812	2893.664	781.00	8.80	1.20	2894.87	.39	1.99	52.00	3.000	52.000	.00	6 .5
10.248	.0028					.0049	.05	2.20	1.19	2.18	.013	.00	.00	BOX
1205.742	2891.880	1.760	2893.639	781.00	9.06	1.27	2894.91	.42	1.99	52.00	3.000	52.000	.00	6 .5
16.846	.0028					.0055	.09	2.18	1.24	2.18	.013	.00	.00	BOX

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1222.589	2891.927	1.678	2893.604	781.00	9.50	1.40	2895.01	.46	1.99	52.00	3.000	52.000	.00	6 .5
17.672	.0028				.0063	.11	2.14	1.33	2.18	.013	.00	.00		BOX
1240.260	2891.975	1.600	2893.575	781.00	9.96	1.54	2895.12	.50	1.99	52.00	3.000	52.000	.00	6 .5
17.924	.0028				.0072	.13	2.10	1.43	2.18	.013	.00	.00		BOX
1258.184	2892.025	1.525	2893.550	781.00	10.45	1.70	2895.25	.55	1.99	52.00	3.000	52.000	.00	6 .5
17.837	.0028				.0083	.15	2.08	1.54	2.18	.013	.00	.00		BOX
1276.021	2892.074	1.454	2893.528	781.00	10.96	1.87	2895.39	.61	1.99	52.00	3.000	52.000	.00	6 .5
17.542	.0028				.0095	.17	2.06	1.65	2.18	.013	.00	.00		BOX
1293.564	2892.123	1.387	2893.509	781.00	11.50	2.05	2895.56	.67	1.99	52.00	3.000	52.000	.00	6 .5
17.116	.0028				.0110	.19	2.06	1.77	2.18	.013	.00	.00		BOX
1310.680	2892.170	1.322	2893.492	781.00	12.06	2.26	2895.75	.00	1.99	52.00	3.000	52.000	.00	6 .5
BRIDGE ENTRANCE														
1310.680	2892.170	1.174	2893.344	781.00	12.79	2.54	2895.89	.00	1.91	52.00	3.000	52.000	.00	0 .0
TRANS STR	.0028				.0076	.38	1.17	2.08		.014	.00	.00		TRAP
1360.680	2892.310	2.750	2895.059	781.00	9.75	1.48	2896.54	.00	2.93	33.25	7.000	25.000	1.50	0 .0
102.574	.0028				.0028	.29	2.75	1.11	2.75	.014	.00	1.50		TRAP
1463.254	2892.596	2.750	2895.346	781.00	9.75	1.48	2896.82	.00	2.93	33.25	7.000	25.000	1.50	0 .0
139.982	.0028				.0028	.40	2.75	1.11	2.75	.014	.00	1.50		TRAP

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1603.237	2892.987	2.717	2895.704	781.00	9.89	1.52	2897.22	.00	2.93	33.15	7.000	25.000	1.50	0 .0
118.591	.0028					.0031	.37	2.72	1.13	2.75	.014	.00	1.50	TRAP
1721.828	2893.318	2.606	2895.924	781.00	10.37	1.67	2897.59	.00	2.93	32.82	7.000	25.000	1.50	0 .0
72.386	.0028					.0036	.26	2.61	1.21	2.75	.014	.00	1.50	TRAP
1794.214	2893.520	2.498	2896.018	781.00	10.87	1.84	2897.85	.00	2.93	32.49	7.000	25.000	1.50	0 .0
58.048	.0028					.0042	.24	2.50	1.29	2.75	.014	.00	1.50	TRAP
1852.262	2893.682	2.395	2896.077	781.00	11.41	2.02	2898.10	.00	2.93	32.18	7.000	25.000	1.50	0 .0
50.468	.0028					.0048	.24	2.39	1.38	2.75	.014	.00	1.50	TRAP
1902.729	2893.823	2.295	2896.118	781.00	11.96	2.22	2898.34	.00	2.93	31.89	7.000	25.000	1.50	0 .0
45.451	.0028					.0056	.25	2.30	1.47	2.75	.014	.00	1.50	TRAP
1948.180	2893.950	2.200	2896.150	781.00	12.55	2.44	2898.59	.00	2.93	31.60	7.000	25.000	1.50	0 .0
TRANS STR	.0028					.0053	.27	2.20	1.58		.014	.00	1.50	TRAP
1998.180	2894.090	2.547	2896.637	781.00	12.02	2.25	2898.88	.74	3.08	25.50	4.000	25.500	.00	0 .0
BRIDGE EXIT														
1998.180	2894.090	3.204	2897.294	781.00	10.16	1.60	2898.90	.19	3.20	25.50	4.000	25.500	.00	3 .5
7.957	.0028					.0039	.03	3.40	1.03	3.81	.013	.00	.00	BOX
2006.137	2894.112	3.360	2897.473	781.00	9.68	1.46	2898.93	.17	3.20	25.50	4.000	25.500	.00	3 .5
36.572	.0028					.0034	.13	3.54	.96	3.81	.013	.00	.00	BOX

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2042.709	2894.214	3.524	2897.739	781.00	9.23	1.32	2899.06	.16	3.20	25.50	4.000	25.500	.00	3 .5
118.263	.0028					.0030	.36	3.68	.89	3.81	.013	.00	.00	BOX
2160.972	2894.544	3.696	2898.241	781.00	8.80	1.20	2899.44	.14	3.20	25.50	4.000	25.500	.00	3 .5
152.508	.0028					.0029	.44	3.84	.83	3.81	.013	.00	.00	BOX
---------- WARNING - Flow depth near top of box conduit ----------														
2313.480	2894.970	3.765	2898.735	781.00	8.64	1.16	2899.90	.00	3.20	25.50	4.000	25.500	.00	3 .5
BRIDGE ENTRANCE														
---------- WARNING - Flow depth near top of box conduit ----------														
2313.480	2894.970	4.139	2899.109	781.00	7.40	.85	2899.96	.00	3.08	25.50	4.000	25.500	.00	0 .0
TRANS STR	.0010					.0008	.04	4.14	.64		.014	.00	.00	TRAP
2363.480	2895.020	4.572	2899.593	781.00	5.36	.45	2900.04	.00	2.93	38.72	7.000	25.000	1.50	0 .0
273.271	.0010					.0005	.14	4.57	.49	3.71	.014	.00	1.50	TRAP
2636.750	2895.292	4.396	2899.688	781.00	5.62	.49	2900.18	.00	2.93	38.19	7.000	25.000	1.50	0 .0
38.250	.0010					.0006	.02	4.40	.52	3.71	.014	.00	1.50	TRAP
2675.000	2895.330	4.373	2899.703	781.00	5.66	.50	2900.20	.00	2.93	38.12	7.000	25.000	1.50	0 .0
TRANS STR	.0010					.0008	.04	4.37	.52		.014	.00	1.50	TRAP

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2725.000	2895.380	4.055	2899.435	781.00	7.55	.89	2900.32	.00	3.08	25.50	4.000	25.500	.00	0 .0
BRIDGE EXIT														
2725.000	2895.380	4.055	2899.435	781.00	8.14	1.03	2900.46	.00	3.20	25.50	4.000	25.500	.00	3 .5
14.425	.0078					.0040	.06	4.06	.74	2.59	.013	.00	.00	BOX
2739.425	2895.492	4.000	2899.492	781.00	8.14	1.03	2900.52	.00	3.20	25.50	4.000	25.500	.00	3 .5
16.160	.0078					.0025	.04	4.00	.74	2.59	.013	.00	.00	BOX
2755.585	2895.618	3.813	2899.431	781.00	8.53	1.13	2900.56	.00	3.20	25.50	4.000	25.500	.00	3 .5
13.381	.0078					.0028	.04	3.81	.79	2.59	.013	.00	.00	BOX
---------- WARNING - Flow depth near top of box conduit ----------														
2768.966	2895.722	3.635	2899.358	781.00	8.95	1.24	2900.60	.00	3.20	25.50	4.000	25.500	.00	3 .5
3.020	.0078					.0032	.01	3.64	.85	2.59	.013	.00	.00	BOX
---------- WARNING - Flow depth near top of box conduit ----------														
2771.986	2895.746	3.592	2899.337	781.00	9.06	1.27	2900.61	.00	3.20	25.50	4.000	25.500	.00	3 .5
HYDRAULIC JUMP														
2771.986	2895.746	2.844	2898.590	781.00	11.44	2.03	2900.62	.00	3.20	25.50	4.000	25.500	.00	3 .5
15.042	.0078					.0059	.09	2.84	1.23	2.59	.013	.00	.00	BOX

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2787.028	2895.863	2.912	2898.775	781.00	11.18	1.94	2900.71	.00	3.20	25.50	4.000	25.500	.00	3 .5
13.980	.0078				.0053	.07	2.91	1.19	2.59	.013	.00	.00		BOX
2801.009	2895.972	3.054	2899.026	781.00	10.66	1.76	2900.79	.00	3.20	25.50	4.000	25.500	.00	3 .5
3.641	.0078				.0047	.02	3.05	1.11	2.59	.013	.00	.00		BOX
2804.650	2896.000	3.204	2899.204	781.00	10.16	1.60	2900.81	.00	3.20	25.50	4.000	25.500	.00	3 .5
BRIDGE ENTRANCE														
2804.650	2896.000	3.946	2899.946	781.00	7.76	.94	2900.88	.00	3.08	25.50	4.000	25.500	.00	0 .0
TRANS STR	.0010				.0009	.04	3.95	.69		.014	.00	.00		TRAP
2854.650	2896.050	4.442	2900.492	781.00	5.55	.48	2900.97	.00	2.93	38.33	7.000	25.000	1.50	0 .0
288.610	.0010				.0006	.16	4.44	.51	3.70	.014	.00	1.50		TRAP
3143.260	2896.338	4.270	2900.609	781.00	5.82	.53	2901.14	.00	2.93	37.81	7.000	25.000	1.50	0 .0
107.002	.0010				.0006	.07	4.27	.54	3.70	.014	.00	1.50		TRAP
3250.262	2896.445	4.211	2900.656	781.00	5.92	.54	2901.20	.00	2.93	37.63	7.000	25.000	1.50	0 .0
HYDRAULIC JUMP														
3250.262	2896.445	1.918	2898.363	781.00	14.61	3.31	2901.68	.00	2.93	30.75	7.000	25.000	1.50	0 .0
8.191	.0010				.0097	.08	1.92	1.95	3.70	.014	.00	1.50		TRAP
3258.453	2896.453	1.900	2898.354	781.00	14.76	3.38	2901.73	.00	2.93	30.70	7.000	25.000	1.50	0 .0
26.837	.0010				.0106	.28	1.90	1.98	3.70	.014	.00	1.50		TRAP

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
3285.290	2896.480	1.820	2898.300	781.00	15.48	3.72	2902.02	.00	2.93	30.46	7.000	25.000	1.50	0 .0
TRANS STR	.0010				.0126	.63	1.82	2.12		.014	.00	1.50		TRAP
3335.290	2896.530	1.807	2898.337	781.00	16.95	4.46	2902.80	.00	3.08	25.50	4.000	25.500	.00	0 .0
BRIDGE EXIT														
3335.290	2896.530	1.950	2898.480	781.00	16.69	4.33	2902.81	.00	3.20	25.50	4.000	25.500	.00	3 .5
10.861	.0286				.0166	.18	1.95	2.17	1.63	.013	.00	.00		BOX
3346.151	2896.841	1.989	2898.830	781.00	16.36	4.16	2902.99	.00	3.20	25.50	4.000	25.500	.00	3 .5
20.876	.0286				.0151	.32	1.99	2.11	1.63	.013	.00	.00		BOX
3367.027	2897.438	2.086	2899.523	781.00	15.60	3.78	2903.30	.00	3.20	25.50	4.000	25.500	.00	3 .5
15.764	.0286				.0133	.21	2.09	1.96	1.63	.013	.00	.00		BOX
3382.791	2897.888	2.188	2900.076	781.00	14.87	3.44	2903.51	.00	3.20	25.50	4.000	25.500	.00	3 .5
12.109	.0286				.0116	.14	2.19	1.83	1.63	.013	.00	.00		BOX
3394.900	2898.234	2.294	2900.529	781.00	14.18	3.12	2903.65	.00	3.20	25.50	4.000	25.500	.00	3 .5
9.343	.0286				.0102	.10	2.29	1.70	1.63	.013	.00	.00		BOX
3404.243	2898.501	2.406	2900.908	781.00	13.52	2.84	2903.75	.00	3.20	25.50	4.000	25.500	.00	3 .5
7.158	.0286				.0089	.06	2.41	1.58	1.63	.013	.00	.00		BOX
3411.402	2898.706	2.524	2901.230	781.00	12.89	2.58	2903.81	.00	3.20	25.50	4.000	25.500	.00	3 .5
5.375	.0286				.0078	.04	2.52	1.47	1.63	.013	.00	.00		BOX

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3416.777	2898.860	2.647	2901.507	781.00	12.29	2.35	2903.85	.00	3.20	25.50	4.000	25.500	.00	3 .5
3.879	.0286					.0069	.03	2.65	1.37	1.63	.013	.00	.00	BOX
3420.655	2898.970	2.776	2901.747	781.00	11.72	2.13	2903.88	.00	3.20	25.50	4.000	25.500	.00	3 .5
2.594	.0286					.0061	.02	2.78	1.28	1.63	.013	.00	.00	BOX
3423.250	2899.045	2.912	2901.957	781.00	11.18	1.94	2903.90	.00	3.20	25.50	4.000	25.500	.00	3 .5
1.470	.0286					.0053	.01	2.91	1.19	1.63	.013	.00	.00	BOX
3424.720	2899.087	3.054	2902.141	781.00	10.66	1.76	2903.90	.00	3.20	25.50	4.000	25.500	.00	3 .5
.470	.0286					.0047	.00	3.05	1.11	1.63	.013	.00	.00	BOX
3425.190	2899.100	3.204	2902.304	781.00	10.16	1.60	2903.91	.00	3.20	25.50	4.000	25.500	.00	3 .5
BRIDGE ENTRANCE														
3425.190	2899.100	3.946	2903.046	781.00	7.76	.94	2903.98	.00	3.08	25.50	4.000	25.500	.00	0 .0
TRANS STR	.0010					.0009	.04	3.95	.69		.014	.00	.00	TRAP
3475.190	2899.150	4.443	2903.593	781.00	5.55	.48	2904.07	.00	2.93	38.33	7.000	25.000	1.50	0 .0
284.128	.0010					.0006	.16	4.44	.51	3.70	.014	.00	1.50	TRAP
3759.318	2899.435	4.271	2903.707	781.00	5.82	.53	2904.23	.00	2.93	37.81	7.000	25.000	1.50	0 .0
44.311	.0010					.0006	.03	4.27	.54	3.70	.014	.00	1.50	TRAP
3803.629	2899.480	4.245	2903.725	781.00	5.87	.53	2904.26	.00	2.93	37.73	7.000	25.000	1.50	0 .0
HYDRAULIC JUMP														

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
3803.629	2899.480	1.900	2901.380	781.00	14.76	3.38	2904.76	.00	2.93	30.70	7.000	25.000	1.50	0 .0
9.991	.0010					.0101	.10	1.90	1.98	3.70	.014	.00	1.50	TRAP
3813.620	2899.490	1.875	2901.365	781.00	14.98	3.48	2904.85	.00	2.93	30.62	7.000	25.000	1.50	0 .0
TRANS STR	.0010					.0112	.56	1.87	2.02		.014	.00	1.50	TRAP
3863.620	2899.540	1.881	2901.421	781.00	16.28	4.12	2905.54	.00	3.08	25.50	4.000	25.500	.00	0 .0
BRIDGE EXIT														
3863.620	2899.540	2.035	2901.575	781.00	15.99	3.97	2905.54	.00	3.20	25.50	4.000	25.500	.00	3 .5
14.256	.0245					.0146	.21	2.04	2.04	1.72	.013	.00	.00	BOX
3877.876	2899.889	2.086	2901.975	781.00	15.60	3.78	2905.75	.00	3.20	25.50	4.000	25.500	.00	3 .5
21.544	.0245					.0133	.29	2.09	1.96	1.72	.013	.00	.00	BOX
3899.420	2900.416	2.188	2902.604	781.00	14.87	3.44	2906.04	.00	3.20	25.50	4.000	25.500	.00	3 .5
15.983	.0245					.0116	.19	2.19	1.83	1.72	.013	.00	.00	BOX
3915.403	2900.807	2.294	2903.102	781.00	14.18	3.12	2906.23	.00	3.20	25.50	4.000	25.500	.00	3 .5
12.033	.0245					.0102	.12	2.29	1.70	1.72	.013	.00	.00	BOX
3927.436	2901.102	2.406	2903.508	781.00	13.52	2.84	2906.35	.00	3.20	25.50	4.000	25.500	.00	3 .5
9.054	.0245					.0089	.08	2.41	1.58	1.72	.013	.00	.00	BOX
3936.490	2901.323	2.524	2903.847	781.00	12.89	2.58	2906.43	.00	3.20	25.50	4.000	25.500	.00	3 .5
6.705	.0245					.0078	.05	2.52	1.47	1.72	.013	.00	.00	BOX

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3943.195	2901.488	2.647	2904.135	781.00	12.29	2.35	2906.48	.00	3.20	25.50	4.000	25.500	.00	3 .5
4.787	.0245					.0069	.03	2.65	1.37	1.72	.013	.00	.00	BOX
3947.981	2901.605	2.776	2904.381	781.00	11.72	2.13	2906.51	.00	3.20	25.50	4.000	25.500	.00	3 .5
3.174	.0245					.0061	.02	2.78	1.28	1.72	.013	.00	.00	BOX
3951.156	2901.682	2.912	2904.594	781.00	11.18	1.94	2906.53	.00	3.20	25.50	4.000	25.500	.00	3 .5
1.787	.0245					.0053	.01	2.91	1.19	1.72	.013	.00	.00	BOX
3952.942	2901.726	3.054	2904.780	781.00	10.66	1.76	2906.54	.00	3.20	25.50	4.000	25.500	.00	3 .5
.568	.0245					.0047	.00	3.05	1.11	1.72	.013	.00	.00	BOX
3953.510	2901.740	3.204	2904.944	781.00	10.16	1.60	2906.55	.00	3.20	25.50	4.000	25.500	.00	3 .5
BRIDGE ENTRANCE														
3953.510	2901.740	3.946	2905.686	781.00	7.76	.94	2906.62	.00	3.08	25.50	4.000	25.500	.00	0 .0
TRANS STR	.0010					.0009	.04	3.95	.69		.014	.00	.00	TRAP
4003.510	2901.790	4.442	2906.232	781.00	5.55	.48	2906.71	.00	2.93	38.33	7.000	25.000	1.50	0 .0
286.326	.0010					.0006	.16	4.44	.51	3.70	.014	.00	1.50	TRAP
4289.836	2902.077	4.270	2906.347	781.00	5.82	.53	2906.87	.00	2.93	37.81	7.000	25.000	1.50	0 .0
325.460	.0010					.0007	.21	4.27	.54	3.70	.014	.00	1.50	TRAP
4615.296	2902.403	4.104	2906.507	781.00	6.11	.58	2907.09	.00	2.93	37.31	7.000	25.000	1.50	0 .0
122.071	.0010					.0007	.09	4.10	.58	3.70	.014	.00	1.50	TRAP

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
4737.367	2902.525	4.048	2906.573	781.00	6.21	.60	2907.17	.00	2.93	37.14	7.000	25.000	1.50	0 .0
HYDRAULIC JUMP														
4737.367	2902.525	2.026	2904.551	781.00	13.75	2.93	2907.49	.00	2.93	31.08	7.000	25.000	1.50	0 .0
17.417	.0010					.0083	.14	2.03	1.79	3.70	.014	.00	1.50	TRAP
4754.785	2902.543	1.973	2904.516	781.00	14.16	3.11	2907.63	.00	2.93	30.92	7.000	25.000	1.50	0 .0
27.365	.0010					.0093	.26	1.97	1.87	3.70	.014	.00	1.50	TRAP
4782.150	2902.570	1.890	2904.460	781.00	14.85	3.42	2907.88	.00	2.93	30.67	7.000	25.000	1.50	0 .0
TRANS STR	.0010					.0109	.54	1.89	2.00		.014	.00	1.50	TRAP
4832.150	2902.620	1.901	2904.521	781.00	16.11	4.03	2908.55	.00	3.08	25.50	4.000	25.500	.00	0 .0
BRIDGE EXIT														
4832.151	2902.620	2.059	2904.679	781.00	15.80	3.88	2908.56	.00	3.20	25.50	4.000	25.500	.00	3 .5
9.188	.0222					.0144	.13	2.06	2.00	1.78	.013	.00	.00	BOX
4841.339	2902.824	2.086	2904.910	781.00	15.60	3.78	2908.69	.00	3.20	25.50	4.000	25.500	.00	3 .5
26.939	.0222					.0133	.36	2.09	1.96	1.78	.013	.00	.00	BOX
4868.279	2903.423	2.188	2905.611	781.00	14.87	3.44	2909.05	.00	3.20	25.50	4.000	25.500	.00	3 .5
19.367	.0222					.0116	.22	2.19	1.83	1.78	.013	.00	.00	BOX
4887.646	2903.854	2.294	2906.148	781.00	14.18	3.12	2909.27	.00	3.20	25.50	4.000	25.500	.00	3 .5
14.278	.0222					.0102	.15	2.29	1.70	1.78	.013	.00	.00	BOX

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 2-25-2025 Time: 5:12: 2

MILESKI - ADELANTO INDUSTRIAL PARK

MASTER PLAN CHANNEL 1

FN: CHL1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
4901.923	2904.171	2.406	2906.577	781.00	13.52	2.84	2909.42	.00	3.20	25.50	4.000	25.500	.00	3 .5
10.585	.0222				.0089	.09	2.41	1.58	1.78	.013	.00	.00		BOX
4912.508	2904.406	2.524	2906.930	781.00	12.89	2.58	2909.51	.00	3.20	25.50	4.000	25.500	.00	3 .5
7.753	.0222				.0078	.06	2.52	1.47	1.78	.013	.00	.00		BOX
4920.261	2904.579	2.647	2907.226	781.00	12.29	2.35	2909.57	.00	3.20	25.50	4.000	25.500	.00	3 .5
5.488	.0222				.0069	.04	2.65	1.37	1.78	.013	.00	.00		BOX
4925.750	2904.701	2.776	2907.477	781.00	11.72	2.13	2909.61	.00	3.20	25.50	4.000	25.500	.00	3 .5
3.616	.0222				.0061	.02	2.78	1.28	1.78	.013	.00	.00		BOX
4929.365	2904.781	2.912	2907.693	781.00	11.18	1.94	2909.63	.00	3.20	25.50	4.000	25.500	.00	3 .5
2.024	.0222				.0053	.01	2.91	1.19	1.78	.013	.00	.00		BOX
4931.390	2904.826	3.054	2907.880	781.00	10.66	1.76	2909.64	.00	3.20	25.50	4.000	25.500	.00	3 .5
.640	.0222				.0047	.00	3.05	1.11	1.78	.013	.00	.00		BOX
4932.030	2904.840	3.204	2908.044	781.00	10.16	1.60	2909.65	.00	3.20	25.50	4.000	25.500	.00	3 .5
BRIDGE ENTRANCE														
4932.030	2904.840	3.946	2908.786	781.00	7.76	.94	2909.72	.00	3.08	25.50	4.000	25.500	.00	0 .0
TRANS STR	.0010				.0009	.04	3.95	.69		.014	.00	.00		TRAP
4982.030	2904.890	4.443	2909.333	781.00	5.55	.48	2909.81	.00	2.93	38.33	7.000	25.000	1.50	0 .0
286.028	.0010				.0006	.16	4.44	.51	3.70	.014	.00	1.50		TRAP

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
5268.058	2905.177	4.271	2909.448	781.00	5.82	.53	2909.97	.00	2.93	37.81	7.000	25.000	1.50	0 .0
63.372	.0010				.0006	.04	4.27	.54	3.70	.014	.00	1.50		TRAP
5331.430	2905.240	4.237	2909.477	781.00	5.88	.54	2910.01	.00	2.93	37.71	7.000	25.000	1.50	0 .0
TRANS STR	.0010				.0010	.05	4.24	.55		.014	.00	1.50		TRAP
5381.430	2905.290	3.896	2909.186	781.00	7.86	.96	2910.15	.00	3.08	25.50	4.000	25.500	.00	0 .0
BRIDGE EXIT														
5381.430	2905.290	3.515	2908.805	781.00	9.26	1.33	2910.14	.00	3.20	25.50	4.000	25.500	.00	3 .5
23.151	.0050				.0035	.08	3.52	.90	3.06	.013	.00	.00		BOX
5404.581	2905.406	3.351	2908.757	781.00	9.71	1.46	2910.22	.00	3.20	25.50	4.000	25.500	.00	3 .5
HYDRAULIC JUMP														
5404.581	2905.406	3.058	2908.464	781.00	10.64	1.76	2910.22	.00	3.20	25.50	4.000	25.500	.00	3 .5
20.272	.0050				.0050	.10	3.06	1.11	3.06	.013	.00	.00		BOX
5424.854	2905.506	3.058	2908.564	781.00	10.64	1.76	2910.32	.00	3.20	25.50	4.000	25.500	.00	3 .5
36.827	.0050				.0047	.17	3.06	1.11	3.06	.013	.00	.00		BOX
5461.680	2905.690	3.204	2908.894	781.00	10.16	1.60	2910.50	.00	3.20	25.50	4.000	25.500	.00	3 .5
BRIDGE ENTRANCE														
5461.680	2905.690	3.946	2909.636	781.00	7.76	.94	2910.57	.00	3.08	25.50	4.000	25.500	.00	0 .0
TRANS STR	.0010				.0009	.04	3.95	.69		.014	.00	.00		TRAP

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
5511.680	2905.740	4.442	2910.182	781.00	5.55	.48	2910.66	.00	2.93	38.33	7.000	25.000	1.50	0 .0
193.270	.0010					.0006	.11	4.44	.51	3.72	.014	.00	1.50	TRAP
5704.950	2905.930	4.329	2910.259	781.00	5.73	.51	2910.77	.00	2.93	37.99	7.000	25.000	1.50	0 .0
TRANS STR	.0010					.0009	.05	4.33	.53		.014	.00	1.50	TRAP
5767.360	2905.990	4.005	2909.995	781.00	7.65	.91	2910.90	.17	3.08	25.50	4.000	25.500	.00	0 .0
BRIDGE EXIT														
5767.360	2905.990	4.005	2909.995	781.00	8.14	1.03	2911.02	.00	3.20	25.50	4.000	25.500	.00	3 .5
69.584	.0051					.0040	.28	.00	.74	3.03	.013	.00	.00	BOX
5836.944	2906.344	4.000	2910.344	781.00	8.14	1.03	2911.37	4.00	3.20	25.50	4.000	25.500	.00	3 .5
22.656	.0051					.0025	.06	4.00	.74	3.03	.013	.00	.00	BOX
5859.600	2906.460	3.876	2910.336	781.00	8.40	1.09	2911.43	4.00	3.20	25.50	4.000	25.500	.00	3 .5
BRIDGE ENTRANCE														
---------- WARNING - Flow depth near top of box conduit ----------														
5859.600	2906.460	4.210	2910.670	781.00	7.28	.82	2911.49	.16	3.08	25.50	4.000	25.500	.00	0 .0
TRANS STR	.0010					.0007	.04	4.37	.62		.014	.00	.00	TRAP
5909.600	2906.510	4.623	2911.133	781.00	5.29	.43	2911.57	.06	2.93	38.87	7.000	25.000	1.50	0 .0
277.636	.0010					.0005	.14	4.68	.48	3.73	.014	.00	1.50	TRAP

MILESKI - ADELANTO INDUSTRIAL PARK
MASTER PLAN CHANNEL 1
FN: CHL1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
6187.236	2906.782	4.445	2911.227	781.00	5.55	.48	2911.71	.06	2.93	38.34	7.000	25.000	1.50	0 .0
100.394	.0010					.0005	.05	4.51	.51	3.73	.014	.00	1.50	TRAP
6287.630	2906.880	4.386	2911.266	781.00	5.64	.49	2911.76	.00	2.93	38.16	7.000	25.000	1.50	0 .0
292.525	.0010					.0006	.17	4.39	.52	3.69	.014	.00	1.50	TRAP
6580.155	2907.175	4.216	2911.390	781.00	5.91	.54	2911.93	.00	2.93	37.65	7.000	25.000	1.50	0 .0
339.579	.0010					.0007	.23	4.22	.56	3.69	.014	.00	1.50	TRAP
6919.734	2907.517	4.051	2911.568	781.00	6.20	.60	2912.17	.00	2.93	37.15	7.000	25.000	1.50	0 .0
331.166	.0010					.0008	.26	4.05	.59	3.69	.014	.00	1.50	TRAP
7250.900	2907.850	3.928	2911.778	781.00	6.44	.64	2912.42	.00	2.93	36.78	7.000	25.000	1.50	0 .0

APPENDIX D – BASIN ANALYSIS CALCULATIONS

EXISTING CONDITION UNIT HYDROGRAPHS

EXISTING CONDITION
10-YEAR, 24-HOUR UNIT HYDROGRAPH

UHEXOFF

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/18/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, OFFSITE
EXISTING CONDITION, 5-YEAR 24-HOUR
FN: UHEXOFF5.OUT - ABE

Storm Event Year = 5

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1715.40	1	0.60
Rainfall data for year 2		
1715.40	6	0.70
Rainfall data for year 2		
1715.40	24	1.20
Rainfall data for year 100		

```
          1715.40            1           1.00
-------------------------------------------------------------------
Rainfall data for year 100
          1715.40            6           1.90
-------------------------------------------------------------------
Rainfall data for year 100
          1715.40           24           3.40
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  SCS curve     Area     Area     Fp(Fig C6)    Ap      Fm
No.(AMCII) NO.(AMC 2)    (Ac.)    Fraction     (In/Hr)  (dec.)   (In/Hr)
 86.0      86.0       1715.40      1.000     0.265    1.000    0.265

Area-averaged adjusted loss rate Fm (In/Hr) =  0.265

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
  1715.40   1.000         86.0      86.0       1.63     0.373

Area-averaged catchment yield fraction, Y =  0.373
Area-averaged low loss fraction, Yb =  0.627
User entry of time of concentration  =   1.080 (hours)
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =    1715.40(Ac.)
Catchment Lag time =   0.864 hours
Unit interval =  10.000 minutes
Unit interval percentage of lag time = 19.2901
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.265(In/Hr)
Average low loss rate fraction (Yb) = 0.627 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.177(In)
Computed peak 30-minute rainfall =  0.363(In)
Specified peak 1-hour rainfall =  0.480(In)
Computed peak 3-hour rainfall =  0.744(In)
Specified peak 6-hour rainfall =  0.981(In)
Specified peak 24-hour rainfall =  1.715(In)


Rainfall depth area reduction factors:
Using a total area of    1715.40(Ac.) (Ref: fig. E-4)

5-minute factor = 0.920     Adjusted rainfall =  0.163(In)
30-minute factor = 0.920    Adjusted rainfall =  0.334(In)
```

1-hour factor = 0.920 Adjusted rainfall = 0.441(In)
3-hour factor = 0.990 Adjusted rainfall = 0.736(In)
6-hour factor = 0.995 Adjusted rainfall = 0.976(In)
24-hour factor = 0.998 Adjusted rainfall = 1.712(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 10372.81 (CFS))	
1	1.704	176.713
2	6.551	502.841
3	14.962	872.420
4	26.851	1233.236
5	40.500	1415.779
6	53.146	1311.704
7	61.923	910.510
8	68.000	630.293
9	72.316	447.690
10	75.521	332.445
11	78.269	285.062
12	80.599	241.646
13	82.612	208.896
14	84.417	187.146
15	86.029	167.221
16	87.405	142.706
17	88.597	123.714
18	89.755	120.056
19	90.799	108.326
20	91.651	88.373
21	92.492	87.204
22	93.172	70.533
23	93.789	64.030
24	94.397	63.126
25	94.978	60.243
26	95.556	59.977
27	96.046	50.795
28	96.471	44.020
29	96.886	43.067
30	97.243	37.066
31	97.590	36.017
32	97.907	32.804
33	98.177	28.056
34	98.444	27.643
35	98.655	21.948
36	98.848	20.009
37	99.041	20.009

38	99.234	20.009
39	99.427	20.009
40	99.620	20.009
41	99.812	20.009
42	100.000	19.449

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2154	0.0522
2	0.2842	0.0309
3	0.3342	0.0235
4	0.3750	0.0195
5	0.4100	0.0169
6	0.4410	0.0151
7	0.4739	0.0161
8	0.5044	0.0150
9	0.5328	0.0140
10	0.5597	0.0132
11	0.5851	0.0126
12	0.6094	0.0120
13	0.6325	0.0115
14	0.6548	0.0110
15	0.6762	0.0106
16	0.6969	0.0102
17	0.7169	0.0099
18	0.7362	0.0096
19	0.7526	0.0081
20	0.7684	0.0079
21	0.7838	0.0076
22	0.7988	0.0074
23	0.8134	0.0072
24	0.8275	0.0071
25	0.8414	0.0069
26	0.8549	0.0067
27	0.8681	0.0066
28	0.8811	0.0064
29	0.8937	0.0063
30	0.9061	0.0062
31	0.9183	0.0060
32	0.9302	0.0059
33	0.9419	0.0058
34	0.9534	0.0057
35	0.9647	0.0056
36	0.9758	0.0055
37	0.9867	0.0054
38	0.9974	0.0053
39	1.0080	0.0053
40	1.0184	0.0052
41	1.0286	0.0051
42	1.0387	0.0050

43	1.0487	0.0050
44	1.0585	0.0049
45	1.0682	0.0048
46	1.0777	0.0048
47	1.0872	0.0047
48	1.0965	0.0046
49	1.1057	0.0046
50	1.1148	0.0045
51	1.1238	0.0045
52	1.1327	0.0044
53	1.1414	0.0044
54	1.1501	0.0043
55	1.1587	0.0043
56	1.1672	0.0042
57	1.1756	0.0042
58	1.1839	0.0041
59	1.1922	0.0041
60	1.2003	0.0041
61	1.2084	0.0040
62	1.2164	0.0040
63	1.2243	0.0039
64	1.2321	0.0039
65	1.2399	0.0039
66	1.2476	0.0038
67	1.2552	0.0038
68	1.2628	0.0038
69	1.2703	0.0037
70	1.2777	0.0037
71	1.2851	0.0037
72	1.2924	0.0036
73	1.2996	0.0036
74	1.3068	0.0036
75	1.3139	0.0036
76	1.3210	0.0035
77	1.3280	0.0035
78	1.3350	0.0035
79	1.3419	0.0034
80	1.3488	0.0034
81	1.3556	0.0034
82	1.3623	0.0034
83	1.3690	0.0033
84	1.3757	0.0033
85	1.3823	0.0033
86	1.3889	0.0033
87	1.3954	0.0033
88	1.4019	0.0032
89	1.4083	0.0032
90	1.4147	0.0032
91	1.4211	0.0032
92	1.4274	0.0031

93	1.4336	0.0031
94	1.4399	0.0031
95	1.4461	0.0031
96	1.4522	0.0031
97	1.4583	0.0031
98	1.4644	0.0030
99	1.4704	0.0030
100	1.4764	0.0030
101	1.4824	0.0030
102	1.4883	0.0030
103	1.4942	0.0029
104	1.5001	0.0029
105	1.5059	0.0029
106	1.5117	0.0029
107	1.5175	0.0029
108	1.5232	0.0029
109	1.5289	0.0028
110	1.5346	0.0028
111	1.5402	0.0028
112	1.5458	0.0028
113	1.5514	0.0028
114	1.5570	0.0028
115	1.5625	0.0028
116	1.5680	0.0027
117	1.5735	0.0027
118	1.5789	0.0027
119	1.5843	0.0027
120	1.5897	0.0027
121	1.5950	0.0027
122	1.6004	0.0027
123	1.6057	0.0026
124	1.6110	0.0026
125	1.6162	0.0026
126	1.6214	0.0026
127	1.6266	0.0026
128	1.6318	0.0026
129	1.6370	0.0026
130	1.6421	0.0026
131	1.6472	0.0026
132	1.6523	0.0025
133	1.6574	0.0025
134	1.6624	0.0025
135	1.6674	0.0025
136	1.6724	0.0025
137	1.6774	0.0025
138	1.6823	0.0025
139	1.6873	0.0025
140	1.6922	0.0025
141	1.6971	0.0024
142	1.7019	0.0024

143	1.7068	0.0024	
144	1.7116	0.0024	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0048	0.0030	0.0018
2	0.0049	0.0030	0.0018
3	0.0049	0.0031	0.0018
4	0.0049	0.0031	0.0018
5	0.0050	0.0031	0.0018
6	0.0050	0.0031	0.0019
7	0.0050	0.0031	0.0019
8	0.0051	0.0032	0.0019
9	0.0051	0.0032	0.0019
10	0.0051	0.0032	0.0019
11	0.0052	0.0032	0.0019
12	0.0052	0.0033	0.0019
13	0.0052	0.0033	0.0020
14	0.0053	0.0033	0.0020
15	0.0053	0.0033	0.0020
16	0.0053	0.0033	0.0020
17	0.0054	0.0034	0.0020
18	0.0054	0.0034	0.0020
19	0.0055	0.0034	0.0020
20	0.0055	0.0035	0.0021
21	0.0056	0.0035	0.0021
22	0.0056	0.0035	0.0021
23	0.0056	0.0035	0.0021
24	0.0057	0.0036	0.0021
25	0.0057	0.0036	0.0021
26	0.0058	0.0036	0.0022
27	0.0058	0.0037	0.0022
28	0.0059	0.0037	0.0022
29	0.0059	0.0037	0.0022
30	0.0060	0.0038	0.0022
31	0.0060	0.0038	0.0023
32	0.0061	0.0038	0.0023
33	0.0062	0.0039	0.0023
34	0.0062	0.0039	0.0023
35	0.0063	0.0039	0.0023
36	0.0063	0.0040	0.0024
37	0.0064	0.0040	0.0024
38	0.0065	0.0040	0.0024
39	0.0065	0.0041	0.0024
40	0.0066	0.0041	0.0025
41	0.0067	0.0042	0.0025
42	0.0067	0.0042	0.0025
43	0.0068	0.0043	0.0025

44	0.0069	0.0043	0.0026
45	0.0070	0.0044	0.0026
46	0.0070	0.0044	0.0026
47	0.0071	0.0045	0.0027
48	0.0072	0.0045	0.0027
49	0.0073	0.0046	0.0027
50	0.0074	0.0046	0.0028
51	0.0075	0.0047	0.0028
52	0.0076	0.0048	0.0028
53	0.0077	0.0048	0.0029
54	0.0078	0.0049	0.0029
55	0.0079	0.0050	0.0030
56	0.0080	0.0050	0.0030
57	0.0081	0.0051	0.0030
58	0.0083	0.0052	0.0031
59	0.0084	0.0053	0.0031
60	0.0085	0.0054	0.0032
61	0.0087	0.0054	0.0032
62	0.0088	0.0055	0.0033
63	0.0090	0.0056	0.0034
64	0.0091	0.0057	0.0034
65	0.0093	0.0058	0.0035
66	0.0095	0.0060	0.0035
67	0.0097	0.0061	0.0036
68	0.0099	0.0062	0.0037
69	0.0101	0.0063	0.0038
70	0.0103	0.0065	0.0039
71	0.0106	0.0066	0.0039
72	0.0108	0.0068	0.0040
73	0.0111	0.0070	0.0041
74	0.0114	0.0071	0.0043
75	0.0117	0.0073	0.0044
76	0.0120	0.0075	0.0045
77	0.0124	0.0078	0.0046
78	0.0128	0.0080	0.0048
79	0.0132	0.0083	0.0049
80	0.0137	0.0086	0.0051
81	0.0142	0.0089	0.0053
82	0.0148	0.0093	0.0055
83	0.0154	0.0096	0.0057
84	0.0161	0.0101	0.0060
85	0.0194	0.0121	0.0072
86	0.0203	0.0127	0.0076
87	0.0214	0.0134	0.0080
88	0.0227	0.0142	0.0085
89	0.0242	0.0152	0.0090
90	0.0261	0.0164	0.0097
91	0.0285	0.0179	0.0106
92	0.0316	0.0198	0.0118
93	0.0310	0.0194	0.0116

94	0.0376	0.0236	0.0140
95	0.0500	0.0314	0.0187
96	0.0901	0.0442	0.0459
97	0.1941	0.0442	0.1499
98	0.0382	0.0239	0.0142
99	0.0317	0.0199	0.0118
100	0.0262	0.0164	0.0098
101	0.0227	0.0142	0.0085
102	0.0203	0.0127	0.0076
103	0.0161	0.0101	0.0060
104	0.0148	0.0093	0.0055
105	0.0137	0.0086	0.0051
106	0.0128	0.0080	0.0048
107	0.0120	0.0075	0.0045
108	0.0114	0.0071	0.0043
109	0.0108	0.0068	0.0040
110	0.0103	0.0065	0.0039
111	0.0099	0.0062	0.0037
112	0.0095	0.0060	0.0035
113	0.0091	0.0057	0.0034
114	0.0088	0.0055	0.0033
115	0.0085	0.0054	0.0032
116	0.0083	0.0052	0.0031
117	0.0080	0.0050	0.0030
118	0.0078	0.0049	0.0029
119	0.0076	0.0048	0.0028
120	0.0074	0.0046	0.0028
121	0.0072	0.0045	0.0027
122	0.0070	0.0044	0.0026
123	0.0069	0.0043	0.0026
124	0.0067	0.0042	0.0025
125	0.0066	0.0041	0.0025
126	0.0065	0.0040	0.0024
127	0.0063	0.0040	0.0024
128	0.0062	0.0039	0.0023
129	0.0061	0.0038	0.0023
130	0.0060	0.0038	0.0022
131	0.0059	0.0037	0.0022
132	0.0058	0.0036	0.0022
133	0.0057	0.0036	0.0021
134	0.0056	0.0035	0.0021
135	0.0055	0.0035	0.0021
136	0.0054	0.0034	0.0020
137	0.0053	0.0033	0.0020
138	0.0053	0.0033	0.0020
139	0.0052	0.0033	0.0019
140	0.0051	0.0032	0.0019
141	0.0051	0.0032	0.0019
142	0.0050	0.0031	0.0019
143	0.0049	0.0031	0.0018

144 0.0049 0.0030 0.0018

Total soil rain loss = 0.98(In)
Total effective rainfall = 0.73(In)
Peak flow rate in flood hydrograph = 359.47(CFS)

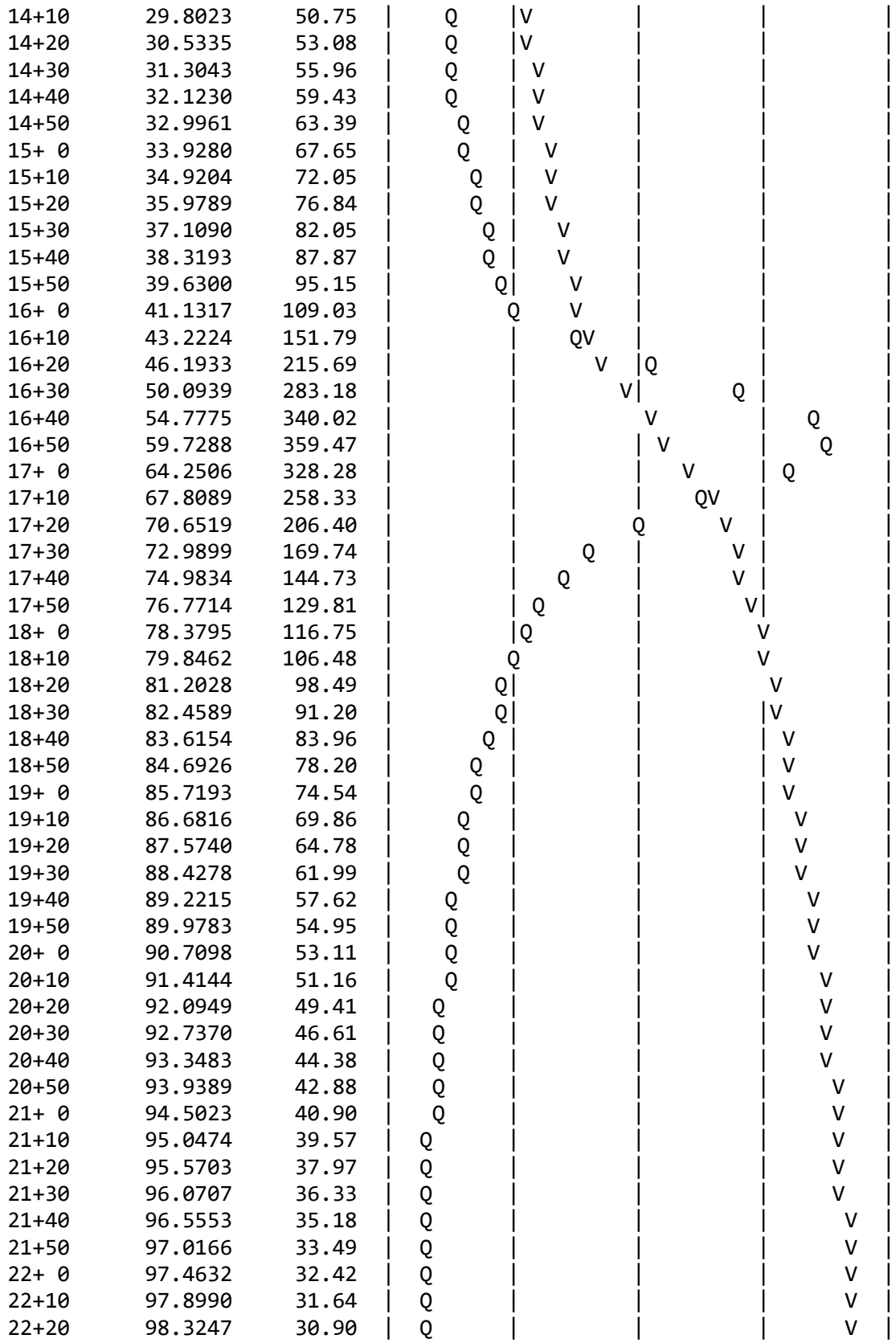
++

24 - 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 10 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	100.0	200.0	300.0	400.0
0+10	0.0044	0.32	Q				
0+20	0.0213	1.23	Q				
0+30	0.0599	2.81	Q				
0+40	0.1294	5.04	Q				
0+50	0.2345	7.63	Q				
1+ 0	0.3727	10.04	VQ				
1+10	0.5345	11.74	VQ				
1+20	0.7129	12.95	VQ				
1+30	0.9036	13.84	VQ				
1+40	1.1038	14.53	VQ				
1+50	1.3123	15.14	VQ				
2+ 0	1.5283	15.68	VQ				
2+10	1.7509	16.16	VQ				
2+20	1.9796	16.61	VQ				
2+30	2.2141	17.02	VQ				
2+40	2.4537	17.40	VQ				
2+50	2.6981	17.74	Q				
3+ 0	2.9472	18.08	|Q				
3+10	3.2007	18.41	|Q				
3+20	3.4583	18.70	|Q				
3+30	3.7199	18.99	|Q				
3+40	3.9851	19.26	|Q				
3+50	4.2540	19.52	|Q				
4+ 0	4.5264	19.78	|Q				
4+10	4.8024	20.04	|VQ				
4+20	5.0820	20.30	|VQ				
4+30	5.3651	20.55	| Q				
4+40	5.6515	20.79	| Q				
4+50	5.9413	21.04	| Q				
5+ 0	6.2344	21.28	| Q				
5+10	6.5307	21.52	| Q				
5+20	6.8304	21.75	| Q				
5+30	7.1332	21.99	| Q				
5+40	7.4394	22.23	| Q				

5+50	7.7487	22.46	Q				
6+ 0	8.0613	22.69	QV				
6+10	8.3772	22.93	QV				
6+20	8.6964	23.18	QV				
6+30	9.0191	23.43	QV				
6+40	9.3453	23.68	QV				
6+50	9.6751	23.94	QV				
7+ 0	10.0085	24.21	QV				
7+10	10.3452	24.45	QV				
7+20	10.6853	24.69	Q V				
7+30	11.0289	24.94	Q V				
7+40	11.3760	25.20	Q V				
7+50	11.7267	25.46	Q V				
8+ 0	12.0812	25.74	Q V				
8+10	12.4396	26.02	Q V				
8+20	12.8019	26.31	Q V				
8+30	13.1684	26.60	Q V				
8+40	13.5391	26.91	Q V				
8+50	13.9141	27.23	Q V				
9+ 0	14.2937	27.56	Q V				
9+10	14.6779	27.90	Q V				
9+20	15.0670	28.25	Q V				
9+30	15.4611	28.61	Q V				
9+40	15.8603	28.98	Q V				
9+50	16.2649	29.37	Q V				
10+ 0	16.6750	29.78	Q V				
10+10	17.0909	30.19	Q V				
10+20	17.5128	30.63	Q V				
10+30	17.9409	31.08	Q V				
10+40	18.3756	31.55	Q V				
10+50	18.8170	32.05	Q V				
11+ 0	19.2655	32.56	Q V				
11+10	19.7213	33.10	Q V				
11+20	20.1849	33.66	Q V				
11+30	20.6566	34.24	Q V				
11+40	21.1368	34.86	Q V				
11+50	21.6259	35.51	Q V				
12+ 0	22.1245	36.19	Q V				
12+10	22.6329	36.91	Q V				
12+20	23.1519	37.68	Q V				
12+30	23.6822	38.50	Q V				
12+40	24.2244	39.37	Q V				
12+50	24.7794	40.29	Q V				
13+ 0	25.3479	41.28	Q V				
13+10	25.9309	42.32	Q V				
13+20	26.5293	43.45	Q V				
13+30	27.1443	44.65	Q V				
13+40	27.7773	45.95	Q V				
13+50	28.4297	47.36	Q V				
14+ 0	29.1033	48.90	Q V				



22+30	98.7408	30.21	| Q	|	|	|	V |
22+40	99.1470	29.50	| Q	|	|	|	V |
22+50	99.5425	28.71	| Q	|	|	|	V |
23+ 0	99.9195	27.37	| Q	|	|	|	V |
23+10	100.2514	24.10	| Q	|	|	|	V |
23+20	100.5748	23.49	| Q	|	|	|	V |
23+30	100.8908	22.94	| Q	|	|	|	V |
23+40	101.2001	22.45	| Q	|	|	|	V |
23+50	101.5032	22.01	| Q	|	|	|	V|
24+ 0	101.8006	21.59	| Q	|	|	|	V|
24+10	102.0885	20.90	| Q	|	|	|	V|
24+20	102.3592	19.65	|Q	|	|	|	V|
24+30	102.6040	17.77	|Q	|	|	|	V|
24+40	102.8145	15.28	|Q	|	|	|	V|
24+50	102.9867	12.51	|Q	|	|	|	V|
25+ 0	103.1239	9.96	Q	|	|	|	V|
25+10	103.2363	8.17	Q	|	|	|	V|
25+20	103.3314	6.90	Q	|	|	|	V|
25+30	103.4139	5.99	Q	|	|	|	V|
25+40	103.4868	5.29	Q	|	|	|	V|
25+50	103.5515	4.70	Q	|	|	|	V|
26+ 0	103.6091	4.19	Q	|	|	|	V|
26+10	103.6607	3.74	Q	|	|	|	V|
26+20	103.7068	3.35	Q	|	|	|	V|
26+30	103.7481	3.00	Q	|	|	|	V|
26+40	103.7852	2.69	Q	|	|	|	V|
26+50	103.8186	2.43	Q	|	|	|	V|
27+ 0	103.8486	2.18	Q	|	|	|	V|
27+10	103.8754	1.95	Q	|	|	|	V|
27+20	103.8996	1.76	Q	|	|	|	V|
27+30	103.9214	1.58	Q	|	|	|	V|
27+40	103.9410	1.43	Q	|	|	|	V|
27+50	103.9588	1.29	Q	|	|	|	V|
28+ 0	103.9747	1.16	Q	|	|	|	V|
28+10	103.9890	1.03	Q	|	|	|	V|
28+20	104.0015	0.91	Q	|	|	|	V|
28+30	104.0126	0.81	Q	|	|	|	V|
28+40	104.0225	0.72	Q	|	|	|	V|
28+50	104.0312	0.63	Q	|	|	|	V|
29+ 0	104.0388	0.55	Q	|	|	|	V|
29+10	104.0455	0.48	Q	|	|	|	V|
29+20	104.0512	0.42	Q	|	|	|	V|
29+30	104.0562	0.36	Q	|	|	|	V|
29+40	104.0604	0.31	Q	|	|	|	V|
29+50	104.0640	0.26	Q	|	|	|	V|
30+ 0	104.0671	0.22	Q	|	|	|	V|
30+10	104.0697	0.19	Q	|	|	|	V|
30+20	104.0717	0.15	Q	|	|	|	V|
30+30	104.0732	0.11	Q	|	|	|	V|
30+40	104.0742	0.07	Q	|	|	|	V|

```
   30+50     104.0747      0.04  Q         |         |         |        V|
-------------------------------------------------------------------------
```

UHEXWESTOFF

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/18/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, OFFSITE WEST
EXISTING CONDITION, 5-YEAR 24-HOUR
FN: UHEXWESTOFF5.OUT - ABE

Storm Event Year = 5

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
39.40	1	0.60
Rainfall data for year 2		
39.40	6	0.70
Rainfall data for year 2		
39.40	24	1.20
Rainfall data for year 100		

```
            39.40            1           1.00
--------------------------------------------------------------------
Rainfall data for year 100
            39.40            6           1.90
--------------------------------------------------------------------
Rainfall data for year 100
            39.40           24           3.40
--------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  SCS curve     Area     Area     Fp(Fig C6)    Ap      Fm
No.(AMCII) NO.(AMC 2)    (Ac.)    Fraction     (In/Hr)  (dec.)   (In/Hr)
 86.0      86.0         39.40      1.000     0.265    0.890    0.236

Area-averaged adjusted loss rate Fm (In/Hr) =  0.236

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    35.07   0.890         86.0      86.0       1.63     0.373
     4.33   0.110         98.0      98.0       0.20     0.870

Area-averaged catchment yield fraction, Y =  0.428
Area-averaged low loss fraction, Yb =  0.572
User entry of time of concentration  =   0.690 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      39.40(Ac.)
Catchment Lag time =   0.552 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 15.0966
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.236(In/Hr)
Average low loss rate fraction (Yb) = 0.572 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.177(In)
Computed peak 30-minute rainfall =  0.363(In)
Specified peak 1-hour rainfall =  0.480(In)
Computed peak 3-hour rainfall =  0.744(In)
Specified peak 6-hour rainfall =  0.981(In)
Specified peak 24-hour rainfall =  1.715(In)


Rainfall depth area reduction factors:
Using a total area of      39.40(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998     Adjusted rainfall =  0.177(In)
```

30-minute factor = 0.998 Adjusted rainfall = 0.363(In)
1-hour factor = 0.998 Adjusted rainfall = 0.479(In)
3-hour factor = 1.000 Adjusted rainfall = 0.744(In)
6-hour factor = 1.000 Adjusted rainfall = 0.981(In)
24-hour factor = 1.000 Adjusted rainfall = 1.715(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 476.49 (CFS))	
1	1.308	6.234
2	4.542	15.408
3	9.938	25.710
4	17.425	35.676
5	27.101	46.109
6	37.783	50.895
7	48.446	50.810
8	56.836	39.979
9	63.010	29.416
10	67.693	22.315
11	71.258	16.990
12	74.036	13.237
13	76.329	10.924
14	78.444	10.077
15	80.267	8.687
16	81.900	7.781
17	83.392	7.110
18	84.749	6.466
19	86.003	5.977
20	87.094	5.199
21	88.069	4.644
22	88.975	4.316
23	89.880	4.316
24	90.706	3.933
25	91.374	3.185
26	92.038	3.165
27	92.680	3.055
28	93.185	2.408
29	93.668	2.302
30	94.151	2.299
31	94.613	2.205
32	95.066	2.158
33	95.519	2.158
34	95.925	1.935
35	96.258	1.587
36	96.590	1.583

37	96.913	1.536
38	97.190	1.322
39	97.462	1.295
40	97.732	1.285
41	97.960	1.087
42	98.171	1.007
43	98.382	1.007
44	98.567	0.879
45	98.718	0.720
46	98.869	0.719
47	99.020	0.719
48	99.171	0.719
49	99.322	0.719
50	99.473	0.719
51	99.624	0.719
52	99.775	0.719
53	100.000	0.360

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1772	0.1772
2	0.2338	0.0566
3	0.2749	0.0412
4	0.3085	0.0335
5	0.3373	0.0288
6	0.3628	0.0255
7	0.3859	0.0231
8	0.4070	0.0212
9	0.4267	0.0196
10	0.4450	0.0184
11	0.4623	0.0173
12	0.4787	0.0164
13	0.4943	0.0156
14	0.5092	0.0149
15	0.5235	0.0143
16	0.5372	0.0137
17	0.5504	0.0132
18	0.5632	0.0128
19	0.5755	0.0123
20	0.5875	0.0120
21	0.5991	0.0116
22	0.6104	0.0113
23	0.6214	0.0110
24	0.6321	0.0107
25	0.6425	0.0104
26	0.6527	0.0102
27	0.6626	0.0100
28	0.6723	0.0097
29	0.6819	0.0095
30	0.6912	0.0093

31	0.7004	0.0091
32	0.7093	0.0090
33	0.7181	0.0088
34	0.7268	0.0086
35	0.7353	0.0085
36	0.7436	0.0084
37	0.7518	0.0082
38	0.7599	0.0081
39	0.7678	0.0079
40	0.7756	0.0078
41	0.7833	0.0077
42	0.7909	0.0076
43	0.7983	0.0075
44	0.8057	0.0074
45	0.8130	0.0073
46	0.8201	0.0072
47	0.8272	0.0071
48	0.8342	0.0070
49	0.8411	0.0069
50	0.8479	0.0068
51	0.8547	0.0067
52	0.8613	0.0067
53	0.8679	0.0066
54	0.8744	0.0065
55	0.8809	0.0064
56	0.8872	0.0064
57	0.8935	0.0063
58	0.8997	0.0062
59	0.9059	0.0062
60	0.9120	0.0061
61	0.9181	0.0060
62	0.9240	0.0060
63	0.9300	0.0059
64	0.9358	0.0059
65	0.9417	0.0058
66	0.9474	0.0058
67	0.9531	0.0057
68	0.9588	0.0057
69	0.9644	0.0056
70	0.9700	0.0056
71	0.9755	0.0055
72	0.9809	0.0055
73	0.9864	0.0055
74	0.9918	0.0054
75	0.9972	0.0054
76	1.0026	0.0053
77	1.0079	0.0053
78	1.0131	0.0053
79	1.0183	0.0052
80	1.0235	0.0052

81	1.0286	0.0051
82	1.0337	0.0051
83	1.0388	0.0051
84	1.0438	0.0050
85	1.0488	0.0050
86	1.0538	0.0050
87	1.0587	0.0049
88	1.0636	0.0049
89	1.0684	0.0049
90	1.0733	0.0048
91	1.0781	0.0048
92	1.0828	0.0048
93	1.0875	0.0047
94	1.0922	0.0047
95	1.0969	0.0047
96	1.1016	0.0046
97	1.1062	0.0046
98	1.1107	0.0046
99	1.1153	0.0046
100	1.1198	0.0045
101	1.1243	0.0045
102	1.1288	0.0045
103	1.1332	0.0044
104	1.1377	0.0044
105	1.1421	0.0044
106	1.1464	0.0044
107	1.1508	0.0043
108	1.1551	0.0043
109	1.1594	0.0043
110	1.1637	0.0043
111	1.1679	0.0043
112	1.1722	0.0042
113	1.1764	0.0042
114	1.1806	0.0042
115	1.1847	0.0042
116	1.1889	0.0041
117	1.1930	0.0041
118	1.1971	0.0041
119	1.2012	0.0041
120	1.2052	0.0041
121	1.2093	0.0040
122	1.2133	0.0040
123	1.2173	0.0040
124	1.2213	0.0040
125	1.2252	0.0040
126	1.2292	0.0039
127	1.2331	0.0039
128	1.2370	0.0039
129	1.2409	0.0039
130	1.2447	0.0039

131	1.2486	0.0039
132	1.2524	0.0038
133	1.2562	0.0038
134	1.2600	0.0038
135	1.2638	0.0038
136	1.2676	0.0038
137	1.2713	0.0037
138	1.2751	0.0037
139	1.2788	0.0037
140	1.2825	0.0037
141	1.2862	0.0037
142	1.2898	0.0037
143	1.2935	0.0037
144	1.2971	0.0036
145	1.3007	0.0036
146	1.3044	0.0036
147	1.3079	0.0036
148	1.3115	0.0036
149	1.3151	0.0036
150	1.3186	0.0036
151	1.3222	0.0035
152	1.3257	0.0035
153	1.3292	0.0035
154	1.3327	0.0035
155	1.3362	0.0035
156	1.3397	0.0035
157	1.3431	0.0035
158	1.3466	0.0034
159	1.3500	0.0034
160	1.3534	0.0034
161	1.3568	0.0034
162	1.3602	0.0034
163	1.3636	0.0034
164	1.3669	0.0034
165	1.3703	0.0034
166	1.3736	0.0033
167	1.3770	0.0033
168	1.3803	0.0033
169	1.3836	0.0033
170	1.3869	0.0033
171	1.3902	0.0033
172	1.3934	0.0033
173	1.3967	0.0033
174	1.3999	0.0032
175	1.4032	0.0032
176	1.4064	0.0032
177	1.4096	0.0032
178	1.4128	0.0032
179	1.4160	0.0032
180	1.4192	0.0032

181	1.4224	0.0032
182	1.4255	0.0032
183	1.4287	0.0032
184	1.4318	0.0031
185	1.4350	0.0031
186	1.4381	0.0031
187	1.4412	0.0031
188	1.4443	0.0031
189	1.4474	0.0031
190	1.4505	0.0031
191	1.4535	0.0031
192	1.4566	0.0031
193	1.4597	0.0031
194	1.4627	0.0030
195	1.4657	0.0030
196	1.4688	0.0030
197	1.4718	0.0030
198	1.4748	0.0030
199	1.4778	0.0030
200	1.4808	0.0030
201	1.4837	0.0030
202	1.4867	0.0030
203	1.4897	0.0030
204	1.4926	0.0030
205	1.4956	0.0029
206	1.4985	0.0029
207	1.5014	0.0029
208	1.5044	0.0029
209	1.5073	0.0029
210	1.5102	0.0029
211	1.5131	0.0029
212	1.5160	0.0029
213	1.5188	0.0029
214	1.5217	0.0029
215	1.5246	0.0029
216	1.5274	0.0029
217	1.5303	0.0028
218	1.5331	0.0028
219	1.5359	0.0028
220	1.5388	0.0028
221	1.5416	0.0028
222	1.5444	0.0028
223	1.5472	0.0028
224	1.5500	0.0028
225	1.5528	0.0028
226	1.5555	0.0028
227	1.5583	0.0028
228	1.5611	0.0028
229	1.5638	0.0028
230	1.5666	0.0027

231	1.5693	0.0027
232	1.5721	0.0027
233	1.5748	0.0027
234	1.5775	0.0027
235	1.5802	0.0027
236	1.5829	0.0027
237	1.5856	0.0027
238	1.5883	0.0027
239	1.5910	0.0027
240	1.5937	0.0027
241	1.5964	0.0027
242	1.5990	0.0027
243	1.6017	0.0027
244	1.6043	0.0027
245	1.6070	0.0026
246	1.6096	0.0026
247	1.6123	0.0026
248	1.6149	0.0026
249	1.6175	0.0026
250	1.6201	0.0026
251	1.6227	0.0026
252	1.6253	0.0026
253	1.6279	0.0026
254	1.6305	0.0026
255	1.6331	0.0026
256	1.6357	0.0026
257	1.6383	0.0026
258	1.6408	0.0026
259	1.6434	0.0026
260	1.6459	0.0026
261	1.6485	0.0025
262	1.6510	0.0025
263	1.6536	0.0025
264	1.6561	0.0025
265	1.6586	0.0025
266	1.6611	0.0025
267	1.6637	0.0025
268	1.6662	0.0025
269	1.6687	0.0025
270	1.6712	0.0025
271	1.6737	0.0025
272	1.6761	0.0025
273	1.6786	0.0025
274	1.6811	0.0025
275	1.6836	0.0025
276	1.6860	0.0025
277	1.6885	0.0025
278	1.6910	0.0025
279	1.6934	0.0024
280	1.6958	0.0024

281	1.6983	0.0024
282	1.7007	0.0024
283	1.7031	0.0024
284	1.7056	0.0024
285	1.7080	0.0024
286	1.7104	0.0024
287	1.7128	0.0024
288	1.7152	0.0024

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0024	0.0014	0.0010
2	0.0024	0.0014	0.0010
3	0.0024	0.0014	0.0010
4	0.0024	0.0014	0.0010
5	0.0024	0.0014	0.0010
6	0.0024	0.0014	0.0010
7	0.0024	0.0014	0.0010
8	0.0025	0.0014	0.0010
9	0.0025	0.0014	0.0011
10	0.0025	0.0014	0.0011
11	0.0025	0.0014	0.0011
12	0.0025	0.0014	0.0011
13	0.0025	0.0014	0.0011
14	0.0025	0.0014	0.0011
15	0.0025	0.0014	0.0011
16	0.0025	0.0014	0.0011
17	0.0025	0.0014	0.0011
18	0.0025	0.0015	0.0011
19	0.0025	0.0015	0.0011
20	0.0026	0.0015	0.0011
21	0.0026	0.0015	0.0011
22	0.0026	0.0015	0.0011
23	0.0026	0.0015	0.0011
24	0.0026	0.0015	0.0011
25	0.0026	0.0015	0.0011
26	0.0026	0.0015	0.0011
27	0.0026	0.0015	0.0011
28	0.0026	0.0015	0.0011
29	0.0026	0.0015	0.0011
30	0.0026	0.0015	0.0011
31	0.0027	0.0015	0.0011
32	0.0027	0.0015	0.0011
33	0.0027	0.0015	0.0011
34	0.0027	0.0015	0.0011
35	0.0027	0.0015	0.0012
36	0.0027	0.0015	0.0012
37	0.0027	0.0016	0.0012

38	0.0027	0.0016	0.0012
39	0.0027	0.0016	0.0012
40	0.0027	0.0016	0.0012
41	0.0028	0.0016	0.0012
42	0.0028	0.0016	0.0012
43	0.0028	0.0016	0.0012
44	0.0028	0.0016	0.0012
45	0.0028	0.0016	0.0012
46	0.0028	0.0016	0.0012
47	0.0028	0.0016	0.0012
48	0.0028	0.0016	0.0012
49	0.0029	0.0016	0.0012
50	0.0029	0.0016	0.0012
51	0.0029	0.0016	0.0012
52	0.0029	0.0017	0.0012
53	0.0029	0.0017	0.0012
54	0.0029	0.0017	0.0012
55	0.0029	0.0017	0.0013
56	0.0029	0.0017	0.0013
57	0.0030	0.0017	0.0013
58	0.0030	0.0017	0.0013
59	0.0030	0.0017	0.0013
60	0.0030	0.0017	0.0013
61	0.0030	0.0017	0.0013
62	0.0030	0.0017	0.0013
63	0.0030	0.0017	0.0013
64	0.0030	0.0017	0.0013
65	0.0031	0.0018	0.0013
66	0.0031	0.0018	0.0013
67	0.0031	0.0018	0.0013
68	0.0031	0.0018	0.0013
69	0.0031	0.0018	0.0013
70	0.0031	0.0018	0.0013
71	0.0032	0.0018	0.0013
72	0.0032	0.0018	0.0014
73	0.0032	0.0018	0.0014
74	0.0032	0.0018	0.0014
75	0.0032	0.0018	0.0014
76	0.0032	0.0018	0.0014
77	0.0032	0.0019	0.0014
78	0.0033	0.0019	0.0014
79	0.0033	0.0019	0.0014
80	0.0033	0.0019	0.0014
81	0.0033	0.0019	0.0014
82	0.0033	0.0019	0.0014
83	0.0034	0.0019	0.0014
84	0.0034	0.0019	0.0014
85	0.0034	0.0019	0.0015
86	0.0034	0.0019	0.0015
87	0.0034	0.0020	0.0015

88	0.0034	0.0020	0.0015
89	0.0035	0.0020	0.0015
90	0.0035	0.0020	0.0015
91	0.0035	0.0020	0.0015
92	0.0035	0.0020	0.0015
93	0.0036	0.0020	0.0015
94	0.0036	0.0020	0.0015
95	0.0036	0.0021	0.0015
96	0.0036	0.0021	0.0015
97	0.0036	0.0021	0.0016
98	0.0037	0.0021	0.0016
99	0.0037	0.0021	0.0016
100	0.0037	0.0021	0.0016
101	0.0037	0.0021	0.0016
102	0.0037	0.0021	0.0016
103	0.0038	0.0022	0.0016
104	0.0038	0.0022	0.0016
105	0.0038	0.0022	0.0016
106	0.0039	0.0022	0.0016
107	0.0039	0.0022	0.0017
108	0.0039	0.0022	0.0017
109	0.0039	0.0023	0.0017
110	0.0040	0.0023	0.0017
111	0.0040	0.0023	0.0017
112	0.0040	0.0023	0.0017
113	0.0041	0.0023	0.0017
114	0.0041	0.0023	0.0017
115	0.0041	0.0024	0.0018
116	0.0041	0.0024	0.0018
117	0.0042	0.0024	0.0018
118	0.0042	0.0024	0.0018
119	0.0043	0.0024	0.0018
120	0.0043	0.0024	0.0018
121	0.0043	0.0025	0.0018
122	0.0043	0.0025	0.0019
123	0.0044	0.0025	0.0019
124	0.0044	0.0025	0.0019
125	0.0045	0.0026	0.0019
126	0.0045	0.0026	0.0019
127	0.0046	0.0026	0.0019
128	0.0046	0.0026	0.0020
129	0.0046	0.0027	0.0020
130	0.0047	0.0027	0.0020
131	0.0047	0.0027	0.0020
132	0.0048	0.0027	0.0020
133	0.0048	0.0028	0.0021
134	0.0049	0.0028	0.0021
135	0.0049	0.0028	0.0021
136	0.0050	0.0028	0.0021
137	0.0050	0.0029	0.0022

138	0.0051	0.0029	0.0022
139	0.0051	0.0029	0.0022
140	0.0052	0.0030	0.0022
141	0.0053	0.0030	0.0022
142	0.0053	0.0030	0.0023
143	0.0054	0.0031	0.0023
144	0.0054	0.0031	0.0023
145	0.0055	0.0031	0.0023
146	0.0055	0.0032	0.0024
147	0.0056	0.0032	0.0024
148	0.0057	0.0032	0.0024
149	0.0058	0.0033	0.0025
150	0.0058	0.0033	0.0025
151	0.0059	0.0034	0.0025
152	0.0060	0.0034	0.0026
153	0.0061	0.0035	0.0026
154	0.0062	0.0035	0.0026
155	0.0063	0.0036	0.0027
156	0.0064	0.0036	0.0027
157	0.0065	0.0037	0.0028
158	0.0066	0.0038	0.0028
159	0.0067	0.0039	0.0029
160	0.0068	0.0039	0.0029
161	0.0070	0.0040	0.0030
162	0.0071	0.0041	0.0030
163	0.0073	0.0042	0.0031
164	0.0074	0.0042	0.0032
165	0.0076	0.0043	0.0032
166	0.0077	0.0044	0.0033
167	0.0079	0.0045	0.0034
168	0.0081	0.0046	0.0034
169	0.0084	0.0048	0.0036
170	0.0085	0.0049	0.0036
171	0.0088	0.0050	0.0038
172	0.0090	0.0051	0.0038
173	0.0093	0.0053	0.0040
174	0.0095	0.0055	0.0041
175	0.0100	0.0057	0.0043
176	0.0102	0.0058	0.0044
177	0.0107	0.0061	0.0046
178	0.0110	0.0063	0.0047
179	0.0116	0.0066	0.0050
180	0.0120	0.0068	0.0051
181	0.0128	0.0073	0.0055
182	0.0132	0.0076	0.0057
183	0.0143	0.0082	0.0061
184	0.0149	0.0085	0.0064
185	0.0164	0.0094	0.0070
186	0.0173	0.0099	0.0074
187	0.0196	0.0112	0.0084

188	0.0212	0.0121	0.0091
189	0.0255	0.0146	0.0109
190	0.0288	0.0165	0.0123
191	0.0412	0.0197	0.0215
192	0.0566	0.0197	0.0369
193	0.1772	0.0197	0.1575
194	0.0335	0.0192	0.0143
195	0.0231	0.0132	0.0099
196	0.0184	0.0105	0.0079
197	0.0156	0.0089	0.0067
198	0.0137	0.0079	0.0059
199	0.0123	0.0071	0.0053
200	0.0113	0.0065	0.0048
201	0.0104	0.0060	0.0045
202	0.0097	0.0056	0.0042
203	0.0091	0.0052	0.0039
204	0.0086	0.0049	0.0037
205	0.0082	0.0047	0.0035
206	0.0078	0.0045	0.0033
207	0.0075	0.0043	0.0032
208	0.0072	0.0041	0.0031
209	0.0069	0.0039	0.0030
210	0.0067	0.0038	0.0028
211	0.0064	0.0037	0.0028
212	0.0062	0.0036	0.0027
213	0.0060	0.0035	0.0026
214	0.0059	0.0034	0.0025
215	0.0057	0.0033	0.0024
216	0.0056	0.0032	0.0024
217	0.0055	0.0031	0.0023
218	0.0053	0.0031	0.0023
219	0.0052	0.0030	0.0022
220	0.0051	0.0029	0.0022
221	0.0050	0.0029	0.0021
222	0.0049	0.0028	0.0021
223	0.0048	0.0027	0.0020
224	0.0047	0.0027	0.0020
225	0.0046	0.0026	0.0020
226	0.0045	0.0026	0.0019
227	0.0044	0.0025	0.0019
228	0.0044	0.0025	0.0019
229	0.0043	0.0025	0.0018
230	0.0042	0.0024	0.0018
231	0.0042	0.0024	0.0018
232	0.0041	0.0023	0.0018
233	0.0040	0.0023	0.0017
234	0.0040	0.0023	0.0017
235	0.0039	0.0022	0.0017
236	0.0039	0.0022	0.0017
237	0.0038	0.0022	0.0016

238	0.0038	0.0022	0.0016
239	0.0037	0.0021	0.0016
240	0.0037	0.0021	0.0016
241	0.0036	0.0021	0.0016
242	0.0036	0.0020	0.0015
243	0.0035	0.0020	0.0015
244	0.0035	0.0020	0.0015
245	0.0035	0.0020	0.0015
246	0.0034	0.0020	0.0015
247	0.0034	0.0019	0.0014
248	0.0033	0.0019	0.0014
249	0.0033	0.0019	0.0014
250	0.0033	0.0019	0.0014
251	0.0032	0.0019	0.0014
252	0.0032	0.0018	0.0014
253	0.0032	0.0018	0.0014
254	0.0031	0.0018	0.0013
255	0.0031	0.0018	0.0013
256	0.0031	0.0018	0.0013
257	0.0031	0.0017	0.0013
258	0.0030	0.0017	0.0013
259	0.0030	0.0017	0.0013
260	0.0030	0.0017	0.0013
261	0.0029	0.0017	0.0013
262	0.0029	0.0017	0.0012
263	0.0029	0.0017	0.0012
264	0.0029	0.0016	0.0012
265	0.0028	0.0016	0.0012
266	0.0028	0.0016	0.0012
267	0.0028	0.0016	0.0012
268	0.0028	0.0016	0.0012
269	0.0028	0.0016	0.0012
270	0.0027	0.0016	0.0012
271	0.0027	0.0016	0.0012
272	0.0027	0.0015	0.0012
273	0.0027	0.0015	0.0011
274	0.0027	0.0015	0.0011
275	0.0026	0.0015	0.0011
276	0.0026	0.0015	0.0011
277	0.0026	0.0015	0.0011
278	0.0026	0.0015	0.0011
279	0.0026	0.0015	0.0011
280	0.0025	0.0015	0.0011
281	0.0025	0.0014	0.0011
282	0.0025	0.0014	0.0011
283	0.0025	0.0014	0.0011
284	0.0025	0.0014	0.0011
285	0.0025	0.0014	0.0011
286	0.0024	0.0014	0.0010
287	0.0024	0.0014	0.0010

```
      288              0.0024           0.0014              0.0010
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.88(In)
      Total effective rainfall =      0.83(In)
      Peak flow rate in flood hydrograph =     13.59(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - 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   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
----------------------------------------------------------------------------
  0+ 5       0.0000      0.01  Q          |          |          |          |
  0+10       0.0002      0.02  Q          |          |          |          |
  0+15       0.0005      0.05  Q          |          |          |          |
  0+20       0.0011      0.09  Q          |          |          |          |
  0+25       0.0020      0.13  Q          |          |          |          |
  0+30       0.0033      0.19  Q          |          |          |          |
  0+35       0.0050      0.24  Q          |          |          |          |
  0+40       0.0069      0.28  Q          |          |          |          |
  0+45       0.0090      0.31  Q          |          |          |          |
  0+50       0.0114      0.34  Q          |          |          |          |
  0+55       0.0138      0.35  Q          |          |          |          |
  1+ 0       0.0163      0.37  Q          |          |          |          |
  1+ 5       0.0190      0.38  Q          |          |          |          |
  1+10       0.0217      0.39  Q          |          |          |          |
  1+15       0.0244      0.40  Q          |          |          |          |
  1+20       0.0273      0.41  Q          |          |          |          |
  1+25       0.0302      0.42  Q          |          |          |          |
  1+30       0.0331      0.43  Q          |          |          |          |
  1+35       0.0361      0.44  Q          |          |          |          |
  1+40       0.0392      0.44  Q          |          |          |          |
  1+45       0.0423      0.45  Q          |          |          |          |
  1+50       0.0454      0.46  Q          |          |          |          |
  1+55       0.0486      0.46  Q          |          |          |          |
  2+ 0       0.0518      0.47  Q          |          |          |          |
  2+ 5       0.0551      0.47  Q          |          |          |          |
  2+10       0.0584      0.48  Q          |          |          |          |
  2+15       0.0617      0.48  Q          |          |          |          |
  2+20       0.0650      0.49  Q          |          |          |          |
  2+25       0.0684      0.49  QV         |          |          |          |
  2+30       0.0718      0.49  QV         |          |          |          |
  2+35       0.0752      0.50  QV         |          |          |          |
  2+40       0.0787      0.50  |Q         |          |          |          |
  2+45       0.0822      0.51  |Q         |          |          |          |
  2+50       0.0857      0.51  |Q         |          |          |          |
```

```
2+55       0.0892      0.51  |Q         |          |          |          |
3+ 0       0.0928      0.52  |Q         |          |          |          |
3+ 5       0.0963      0.52  |Q         |          |          |          |
3+10       0.1000      0.52  |Q         |          |          |          |
3+15       0.1036      0.53  |Q         |          |          |          |
3+20       0.1072      0.53  |Q         |          |          |          |
3+25       0.1109      0.53  |Q         |          |          |          |
3+30       0.1146      0.54  |Q         |          |          |          |
3+35       0.1183      0.54  |Q         |          |          |          |
3+40       0.1220      0.54  |Q         |          |          |          |
3+45       0.1258      0.54  |Q         |          |          |          |
3+50       0.1296      0.55  |Q         |          |          |          |
3+55       0.1333      0.55  |Q         |          |          |          |
4+ 0       0.1372      0.55  |QV        |          |          |          |
4+ 5       0.1410      0.56  |QV        |          |          |          |
4+10       0.1448      0.56  |QV        |          |          |          |
4+15       0.1487      0.56  |QV        |          |          |          |
4+20       0.1526      0.57  |QV        |          |          |          |
4+25       0.1565      0.57  |QV        |          |          |          |
4+30       0.1604      0.57  |QV        |          |          |          |
4+35       0.1644      0.57  |QV        |          |          |          |
4+40       0.1683      0.57  |QV        |          |          |          |
4+45       0.1723      0.58  |QV        |          |          |          |
4+50       0.1763      0.58  |QV        |          |          |          |
4+55       0.1803      0.58  |QV        |          |          |          |
5+ 0       0.1843      0.58  |QV        |          |          |          |
5+ 5       0.1884      0.59  |QV        |          |          |          |
5+10       0.1924      0.59  |QV        |          |          |          |
5+15       0.1965      0.59  |QV        |          |          |          |
5+20       0.2006      0.59  |QV        |          |          |          |
5+25       0.2047      0.60  |Q V       |          |          |          |
5+30       0.2088      0.60  |Q V       |          |          |          |
5+35       0.2130      0.60  |Q V       |          |          |          |
5+40       0.2171      0.60  |Q V       |          |          |          |
5+45       0.2213      0.61  |Q V       |          |          |          |
5+50       0.2255      0.61  |Q V       |          |          |          |
5+55       0.2298      0.61  |Q V       |          |          |          |
6+ 0       0.2340      0.62  |Q V       |          |          |          |
6+ 5       0.2383      0.62  |Q V       |          |          |          |
6+10       0.2425      0.62  |Q V       |          |          |          |
6+15       0.2468      0.62  |Q V       |          |          |          |
6+20       0.2512      0.63  |Q V       |          |          |          |
6+25       0.2555      0.63  |Q V       |          |          |          |
6+30       0.2599      0.63  |Q V       |          |          |          |
6+35       0.2643      0.64  |Q V       |          |          |          |
6+40       0.2687      0.64  |Q V       |          |          |          |
6+45       0.2731      0.64  |Q  V      |          |          |          |
6+50       0.2775      0.65  |Q  V      |          |          |          |
6+55       0.2820      0.65  |Q  V      |          |          |          |
7+ 0       0.2865      0.65  |Q  V      |          |          |          |
```

7+ 5	0.2910	0.66	|Q V |	|	|	|
7+10	0.2956	0.66	|Q V |	|	|	|
7+15	0.3001	0.66	|Q V |	|	|	|
7+20	0.3047	0.67	|Q V |	|	|	|
7+25	0.3093	0.67	|Q V |	|	|	|
7+30	0.3140	0.67	|Q V |	|	|	|
7+35	0.3186	0.68	|Q V |	|	|	|
7+40	0.3233	0.68	|Q V |	|	|	|
7+45	0.3280	0.68	|Q V |	|	|	|
7+50	0.3328	0.69	|Q V |	|	|	|
7+55	0.3375	0.69	|Q V |	|	|	|
8+ 0	0.3423	0.70	|Q V |	|	|	|
8+ 5	0.3471	0.70	|Q V |	|	|	|
8+10	0.3520	0.70	|Q V |	|	|	|
8+15	0.3569	0.71	|Q V |	|	|	|
8+20	0.3618	0.71	|Q V |	|	|	|
8+25	0.3667	0.72	|Q V |	|	|	|
8+30	0.3717	0.72	|Q V |	|	|	|
8+35	0.3767	0.72	|Q V |	|	|	|
8+40	0.3817	0.73	|Q V |	|	|	|
8+45	0.3867	0.73	|Q V |	|	|	|
8+50	0.3918	0.74	|Q V |	|	|	|
8+55	0.3969	0.74	|Q V |	|	|	|
9+ 0	0.4021	0.75	|Q V |	|	|	|
9+ 5	0.4073	0.75	|Q V |	|	|	|
9+10	0.4125	0.76	|Q V |	|	|	|
9+15	0.4177	0.76	|Q V |	|	|	|
9+20	0.4230	0.77	|Q V |	|	|	|
9+25	0.4283	0.77	|Q V |	|	|	|
9+30	0.4337	0.78	|Q V |	|	|	|
9+35	0.4391	0.78	|Q V |	|	|	|
9+40	0.4445	0.79	|Q V |	|	|	|
9+45	0.4500	0.79	|Q V |	|	|	|
9+50	0.4555	0.80	|Q V |	|	|	|
9+55	0.4611	0.81	|Q V |	|	|	|
10+ 0	0.4666	0.81	|Q V |	|	|	|
10+ 5	0.4723	0.82	|Q V |	|	|	|
10+10	0.4779	0.82	|Q V |	|	|	|
10+15	0.4837	0.83	|Q V |	|	|	|
10+20	0.4894	0.84	|Q V |	|	|	|
10+25	0.4952	0.84	|Q V |	|	|	|
10+30	0.5011	0.85	|Q V |	|	|	|
10+35	0.5070	0.86	|Q V |	|	|	|
10+40	0.5129	0.86	|Q V |	|	|	|
10+45	0.5189	0.87	|Q V |	|	|	|
10+50	0.5250	0.88	|Q V |	|	|	|
10+55	0.5311	0.89	|Q V |	|	|	|
11+ 0	0.5372	0.89	|Q V |	|	|	|
11+ 5	0.5434	0.90	|Q V |	|	|	|
11+10	0.5497	0.91	|Q V |	|	|	|

```
11+15       0.5560      0.92  |Q      V |          |          |          |
11+20       0.5624      0.93  |Q      V |          |          |          |
11+25       0.5688      0.93  |Q      V |          |          |          |
11+30       0.5753      0.94  |Q      V |          |          |          |
11+35       0.5818      0.95  |Q      V |          |          |          |
11+40       0.5884      0.96  |Q      V |          |          |          |
11+45       0.5951      0.97  |Q      V |          |          |          |
11+50       0.6019      0.98  |Q      V |          |          |          |
11+55       0.6087      0.99  |Q      V |          |          |          |
12+ 0       0.6156      1.00  | Q      V|          |          |          |
12+ 5       0.6225      1.01  | Q      V|          |          |          |
12+10       0.6296      1.02  | Q      V|          |          |          |
12+15       0.6367      1.03  | Q      V|          |          |          |
12+20       0.6439      1.04  | Q      V|          |          |          |
12+25       0.6511      1.05  | Q      V|          |          |          |
12+30       0.6585      1.07  | Q      V|          |          |          |
12+35       0.6659      1.08  | Q      V|          |          |          |
12+40       0.6734      1.09  | Q      V|          |          |          |
12+45       0.6810      1.10  | Q      V|          |          |          |
12+50       0.6887      1.12  | Q       V          |          |          |
12+55       0.6964      1.13  | Q       V          |          |          |
13+ 0       0.7043      1.14  | Q       V          |          |          |
13+ 5       0.7123      1.16  | Q       V          |          |          |
13+10       0.7204      1.18  | Q       V          |          |          |
13+15       0.7286      1.19  | Q       V          |          |          |
13+20       0.7370      1.21  | Q       V          |          |          |
13+25       0.7454      1.23  | Q       V          |          |          |
13+30       0.7540      1.25  | Q       |V         |          |          |
13+35       0.7628      1.27  | Q       |V         |          |          |
13+40       0.7716      1.29  | Q       |V         |          |          |
13+45       0.7807      1.31  | Q       |V         |          |          |
13+50       0.7898      1.33  | Q       |V         |          |          |
13+55       0.7992      1.36  | Q       |V         |          |          |
14+ 0       0.8087      1.38  | Q       |V         |          |          |
14+ 5       0.8184      1.41  | Q       | V        |          |          |
14+10       0.8282      1.44  | Q       | V        |          |          |
14+15       0.8383      1.46  | Q       | V        |          |          |
14+20       0.8486      1.50  | Q       | V        |          |          |
14+25       0.8592      1.53  |  Q      | V        |          |          |
14+30       0.8700      1.57  |  Q      | V        |          |          |
14+35       0.8810      1.60  |  Q      | V        |          |          |
14+40       0.8923      1.64  |  Q      |  V       |          |          |
14+45       0.9039      1.69  |  Q      |  V       |          |          |
14+50       0.9159      1.73  |  Q      |  V       |          |          |
14+55       0.9282      1.78  |  Q      |  V       |          |          |
15+ 0       0.9408      1.84  |  Q      |  V       |          |          |
15+ 5       0.9539      1.90  |  Q      |  V       |          |          |
15+10       0.9674      1.96  |  Q      |   V      |          |          |
15+15       0.9814      2.04  |   Q     |   V      |          |          |
15+20       0.9960      2.12  |   Q     |   V      |          |          |
```

15+25	1.0112	2.21	Q	V			
15+30	1.0271	2.31	Q	V			
15+35	1.0438	2.43	Q	V			
15+40	1.0614	2.56	Q	V			
15+45	1.0802	2.73	Q	V			
15+50	1.1004	2.93	Q	V			
15+55	1.1227	3.23	Q	V			
16+ 0	1.1484	3.74	Q	V			
16+ 5	1.1846	5.25	Q	V			
16+10	1.2344	7.23	Q	V			
16+15	1.2986	9.33	QV				
16+20	1.3763	11.27	V Q				
16+25	1.4658	13.00	V	Q			
16+30	1.5594	13.59	V	Q			
16+35	1.6496	13.10	V Q				
16+40	1.7253	11.00	Q	V			
16+45	1.7870	8.96	Q	V			
16+50	1.8384	7.47	Q	V			
16+55	1.8819	6.31	Q	V			
17+ 0	1.9195	5.47	Q	V			
17+ 5	1.9533	4.90	Q	V			
17+10	1.9846	4.56	Q	V			
17+15	2.0134	4.18	Q	V			
17+20	2.0402	3.89	Q	V			
17+25	2.0653	3.65	Q	V			
17+30	2.0889	3.43	Q	V			
17+35	2.1112	3.23	Q	V			
17+40	2.1319	3.01	Q	V			
17+45	2.1514	2.84	Q	V			
17+50	2.1701	2.71	Q	V			
17+55	2.1881	2.62	Q	V			
18+ 0	2.2052	2.48	Q	V			
18+ 5	2.2210	2.30	Q	V			
18+10	2.2364	2.23	Q	V			
18+15	2.2512	2.15	Q	V			
18+20	2.2650	2.00	Q	V			
18+25	2.2783	1.94	Q	V			
18+30	2.2913	1.89	Q	V			
18+35	2.3039	1.83	Q	V			
18+40	2.3162	1.79	Q	V			
18+45	2.3282	1.74	Q	V			
18+50	2.3396	1.66	Q	V			
18+55	2.3505	1.58	Q	V			
19+ 0	2.3611	1.54	Q	V			
19+ 5	2.3714	1.49	Q	V			
19+10	2.3812	1.43	Q	V			
19+15	2.3908	1.40	Q	V			
19+20	2.4002	1.36	Q	V			
19+25	2.4092	1.30	Q	V			
19+30	2.4179	1.26	Q	V			

19+35	2.4264	1.23	Q				V
19+40	2.4345	1.19	Q				V
19+45	2.4424	1.14	Q				V
19+50	2.4501	1.12	Q				V
19+55	2.4577	1.10	Q				V
20+ 0	2.4651	1.08	Q				V
20+ 5	2.4724	1.06	Q				V
20+10	2.4796	1.04	Q				V
20+15	2.4866	1.02	Q				V
20+20	2.4934	0.98	Q				V
20+25	2.4996	0.90	Q				V
20+30	2.5054	0.83	Q				V
20+35	2.5110	0.82	Q				V
20+40	2.5165	0.80	Q				V
20+45	2.5219	0.79	Q				V
20+50	2.5272	0.77	Q				V
20+55	2.5325	0.76	Q				V
21+ 0	2.5376	0.75	Q				V
21+ 5	2.5427	0.74	Q				V
21+10	2.5478	0.73	Q				V
21+15	2.5527	0.72	Q				V
21+20	2.5576	0.71	Q				V
21+25	2.5625	0.70	Q				V
21+30	2.5673	0.69	Q				V
21+35	2.5720	0.69	Q				V
21+40	2.5767	0.68	Q				V
21+45	2.5813	0.67	Q				V
21+50	2.5858	0.66	Q				V
21+55	2.5904	0.66	Q				V
22+ 0	2.5948	0.65	Q				V
22+ 5	2.5993	0.64	Q				V
22+10	2.6036	0.64	Q				V
22+15	2.6080	0.63	Q				V
22+20	2.6123	0.62	Q				V
22+25	2.6165	0.62	Q				V
22+30	2.6208	0.61	Q				V
22+35	2.6249	0.61	Q				V
22+40	2.6291	0.60	Q				V
22+45	2.6332	0.60	Q				V
22+50	2.6372	0.59	Q				V
22+55	2.6413	0.59	Q				V
23+ 0	2.6453	0.58	Q				V
23+ 5	2.6492	0.58	Q				V
23+10	2.6531	0.57	Q				V
23+15	2.6570	0.57	Q				V
23+20	2.6609	0.56	Q				V
23+25	2.6647	0.56	Q				V
23+30	2.6686	0.55	Q				V
23+35	2.6723	0.55	Q				V
23+40	2.6761	0.54	Q				V

```
23+45       2.6798      0.54  |Q        |         |         |         V|
23+50       2.6835      0.54  |Q        |         |         |         V|
23+55       2.6872      0.53  |Q        |         |         |         V|
24+ 0       2.6908      0.53  |Q        |         |         |         V|
24+ 5       2.6944      0.52  |Q        |         |         |         V|
24+10       2.6978      0.50  Q         |         |         |         V|
24+15       2.7010      0.47  Q         |         |         |         V|
24+20       2.7040      0.43  Q         |         |         |         V|
24+25       2.7066      0.38  Q         |         |         |         V|
24+30       2.7088      0.32  Q         |         |         |         V|
24+35       2.7107      0.27  Q         |         |         |         V|
24+40       2.7122      0.23  Q         |         |         |         V|
24+45       2.7136      0.19  Q         |         |         |         V|
24+50       2.7147      0.17  Q         |         |         |         V|
24+55       2.7158      0.15  Q         |         |         |         V|
25+ 0       2.7167      0.14  Q         |         |         |         V|
25+ 5       2.7176      0.12  Q         |         |         |         V|
25+10       2.7184      0.11  Q         |         |         |         V|
25+15       2.7191      0.10  Q         |         |         |         V|
25+20       2.7197      0.10  Q         |         |         |         V|
25+25       2.7203      0.09  Q         |         |         |         V|
25+30       2.7209      0.08  Q         |         |         |         V|
25+35       2.7214      0.07  Q         |         |         |         V|
25+40       2.7219      0.07  Q         |         |         |         V|
25+45       2.7223      0.06  Q         |         |         |         V|
25+50       2.7227      0.06  Q         |         |         |         V|
25+55       2.7231      0.05  Q         |         |         |         V|
26+ 0       2.7234      0.05  Q         |         |         |         V|
26+ 5       2.7237      0.04  Q         |         |         |         V|
26+10       2.7240      0.04  Q         |         |         |         V|
26+15       2.7242      0.04  Q         |         |         |         V|
26+20       2.7245      0.03  Q         |         |         |         V|
26+25       2.7247      0.03  Q         |         |         |         V|
26+30       2.7249      0.03  Q         |         |         |         V|
26+35       2.7251      0.03  Q         |         |         |         V|
26+40       2.7253      0.02  Q         |         |         |         V|
26+45       2.7254      0.02  Q         |         |         |         V|
26+50       2.7256      0.02  Q         |         |         |         V|
26+55       2.7257      0.02  Q         |         |         |         V|
27+ 0       2.7258      0.02  Q         |         |         |         V|
27+ 5       2.7259      0.02  Q         |         |         |         V|
27+10       2.7260      0.01  Q         |         |         |         V|
27+15       2.7261      0.01  Q         |         |         |         V|
27+20       2.7262      0.01  Q         |         |         |         V|
27+25       2.7262      0.01  Q         |         |         |         V|
27+30       2.7263      0.01  Q         |         |         |         V|
27+35       2.7263      0.01  Q         |         |         |         V|
27+40       2.7264      0.01  Q         |         |         |         V|
27+45       2.7264      0.01  Q         |         |         |         V|
27+50       2.7264      0.00  Q         |         |         |         V|
```

27+55	2.7265	0.00	Q	|	|	|	V|
28+ 0	2.7265	0.00	Q	|	|	|	V|
28+ 5	2.7265	0.00	Q	|	|	|	V|
28+10	2.7265	0.00	Q	|	|	|	V|
28+15	2.7265	0.00	Q	|	|	|	V|
28+20	2.7265	0.00	Q	|	|	|	V|

UHEXEASTOFF

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/18/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, OFFSITE EAST
EXISTING CONDITION, 5-YEAR 24-HOUR
FN: UHEXEASTOFF5.OUT - ABE

Storm Event Year = 5

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
201.70	1	0.60
Rainfall data for year 2		
201.70	6	0.70
Rainfall data for year 2		
201.70	24	1.20

Rainfall data for year 100

```
           201.70            1           1.00
------------------------------------------------------------------------
Rainfall data for year 100
           201.70            6           1.90
------------------------------------------------------------------------
Rainfall data for year 100
           201.70           24           3.40
------------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  SCS curve     Area     Area     Fp(Fig C6)    Ap      Fm
No.(AMCII) NO.(AMC 2)    (Ac.)    Fraction     (In/Hr)  (dec.)   (In/Hr)
 86.0      86.0        201.70      1.000     0.265    1.000    0.265

Area-averaged adjusted loss rate Fm (In/Hr) =  0.265

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
   201.70   1.000         86.0      86.0       1.63     0.373

Area-averaged catchment yield fraction, Y =  0.373
Area-averaged low loss fraction, Yb =  0.627
User entry of time of concentration  =   0.500 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =     201.70(Ac.)
Catchment Lag time =   0.400 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 20.8333
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.265(In/Hr)
Average low loss rate fraction (Yb) = 0.627 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.177(In)
Computed peak 30-minute rainfall =  0.363(In)
Specified peak 1-hour rainfall =  0.480(In)
Computed peak 3-hour rainfall =  0.744(In)
Specified peak 6-hour rainfall =  0.981(In)
Specified peak 24-hour rainfall =  1.715(In)


Rainfall depth area reduction factors:
Using a total area of     201.70(Ac.) (Ref: fig. E-4)

5-minute factor = 0.991     Adjusted rainfall =  0.176(In)
30-minute factor = 0.991    Adjusted rainfall =  0.360(In)
```

1-hour factor = 0.991 Adjusted rainfall = 0.475(In)
3-hour factor = 0.999 Adjusted rainfall = 0.743(In)
6-hour factor = 0.999 Adjusted rainfall = 0.980(In)
24-hour factor = 1.000 Adjusted rainfall = 1.715(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 2439.31 (CFS))	
1	1.860	45.371
2	7.407	135.300
3	17.108	236.654
4	30.585	328.738
5	45.419	361.858
6	57.401	292.256
7	65.292	192.509
8	70.763	133.438
9	74.572	92.909
10	77.645	74.968
11	80.242	63.341
12	82.458	54.071
13	84.417	47.770
14	86.143	42.119
15	87.605	35.655
16	88.875	30.979
17	90.118	30.329
18	91.142	24.962
19	92.058	22.360
20	92.895	20.409
21	93.567	16.384
22	94.230	16.181
23	94.862	15.429
24	95.487	15.246
25	96.029	13.213
26	96.488	11.180
27	96.931	10.814
28	97.313	9.310
29	97.686	9.107
30	98.004	7.765
31	98.296	7.115
32	98.561	6.464
33	98.771	5.123
34	98.979	5.082
35	99.188	5.082
36	99.396	5.082
37	99.604	5.082

38	99.813	5.082
39	100.000	4.574

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1758	0.1758
2	0.2320	0.0562
3	0.2728	0.0408
4	0.3061	0.0333
5	0.3347	0.0286
6	0.3600	0.0253
7	0.3829	0.0229
8	0.4039	0.0210
9	0.4234	0.0195
10	0.4416	0.0182
11	0.4588	0.0172
12	0.4751	0.0162
13	0.4908	0.0157
14	0.5058	0.0150
15	0.5202	0.0144
16	0.5341	0.0138
17	0.5474	0.0133
18	0.5603	0.0129
19	0.5728	0.0125
20	0.5848	0.0121
21	0.5966	0.0117
22	0.6080	0.0114
23	0.6191	0.0111
24	0.6299	0.0108
25	0.6404	0.0106
26	0.6507	0.0103
27	0.6608	0.0101
28	0.6707	0.0099
29	0.6803	0.0096
30	0.6898	0.0095
31	0.6990	0.0093
32	0.7081	0.0091
33	0.7171	0.0089
34	0.7258	0.0088
35	0.7344	0.0086
36	0.7429	0.0085
37	0.7511	0.0082
38	0.7592	0.0081
39	0.7671	0.0079
40	0.7749	0.0078
41	0.7826	0.0077
42	0.7902	0.0076
43	0.7977	0.0075
44	0.8050	0.0074
45	0.8123	0.0073

46	0.8195	0.0072
47	0.8266	0.0071
48	0.8336	0.0070
49	0.8405	0.0069
50	0.8473	0.0068
51	0.8540	0.0067
52	0.8607	0.0067
53	0.8673	0.0066
54	0.8738	0.0065
55	0.8803	0.0064
56	0.8866	0.0064
57	0.8929	0.0063
58	0.8992	0.0062
59	0.9053	0.0062
60	0.9114	0.0061
61	0.9175	0.0061
62	0.9235	0.0060
63	0.9294	0.0059
64	0.9353	0.0059
65	0.9411	0.0058
66	0.9469	0.0058
67	0.9526	0.0057
68	0.9583	0.0057
69	0.9639	0.0056
70	0.9695	0.0056
71	0.9750	0.0055
72	0.9805	0.0055
73	0.9859	0.0055
74	0.9913	0.0054
75	0.9967	0.0054
76	1.0021	0.0053
77	1.0074	0.0053
78	1.0126	0.0053
79	1.0178	0.0052
80	1.0230	0.0052
81	1.0281	0.0051
82	1.0332	0.0051
83	1.0383	0.0051
84	1.0433	0.0050
85	1.0483	0.0050
86	1.0533	0.0050
87	1.0582	0.0049
88	1.0631	0.0049
89	1.0680	0.0049
90	1.0728	0.0048
91	1.0776	0.0048
92	1.0823	0.0048
93	1.0871	0.0047
94	1.0918	0.0047
95	1.0964	0.0047

96	1.1011	0.0046
97	1.1057	0.0046
98	1.1103	0.0046
99	1.1148	0.0046
100	1.1193	0.0045
101	1.1238	0.0045
102	1.1283	0.0045
103	1.1328	0.0044
104	1.1372	0.0044
105	1.1416	0.0044
106	1.1460	0.0044
107	1.1503	0.0043
108	1.1546	0.0043
109	1.1589	0.0043
110	1.1632	0.0043
111	1.1675	0.0043
112	1.1717	0.0042
113	1.1759	0.0042
114	1.1801	0.0042
115	1.1842	0.0042
116	1.1884	0.0041
117	1.1925	0.0041
118	1.1966	0.0041
119	1.2007	0.0041
120	1.2047	0.0041
121	1.2088	0.0040
122	1.2128	0.0040
123	1.2168	0.0040
124	1.2208	0.0040
125	1.2247	0.0040
126	1.2287	0.0039
127	1.2326	0.0039
128	1.2365	0.0039
129	1.2404	0.0039
130	1.2443	0.0039
131	1.2481	0.0039
132	1.2520	0.0038
133	1.2558	0.0038
134	1.2596	0.0038
135	1.2634	0.0038
136	1.2671	0.0038
137	1.2709	0.0037
138	1.2746	0.0037
139	1.2783	0.0037
140	1.2820	0.0037
141	1.2857	0.0037
142	1.2894	0.0037
143	1.2930	0.0037
144	1.2967	0.0036
145	1.3003	0.0036

146	1.3039	0.0036
147	1.3075	0.0036
148	1.3111	0.0036
149	1.3146	0.0036
150	1.3182	0.0036
151	1.3217	0.0035
152	1.3252	0.0035
153	1.3288	0.0035
154	1.3323	0.0035
155	1.3357	0.0035
156	1.3392	0.0035
157	1.3427	0.0035
158	1.3461	0.0034
159	1.3495	0.0034
160	1.3529	0.0034
161	1.3564	0.0034
162	1.3597	0.0034
163	1.3631	0.0034
164	1.3665	0.0034
165	1.3698	0.0034
166	1.3732	0.0033
167	1.3765	0.0033
168	1.3798	0.0033
169	1.3831	0.0033
170	1.3864	0.0033
171	1.3897	0.0033
172	1.3930	0.0033
173	1.3962	0.0033
174	1.3995	0.0032
175	1.4027	0.0032
176	1.4060	0.0032
177	1.4092	0.0032
178	1.4124	0.0032
179	1.4156	0.0032
180	1.4188	0.0032
181	1.4219	0.0032
182	1.4251	0.0032
183	1.4283	0.0032
184	1.4314	0.0031
185	1.4345	0.0031
186	1.4376	0.0031
187	1.4408	0.0031
188	1.4439	0.0031
189	1.4470	0.0031
190	1.4500	0.0031
191	1.4531	0.0031
192	1.4562	0.0031
193	1.4592	0.0031
194	1.4623	0.0030
195	1.4653	0.0030

196	1.4683	0.0030
197	1.4714	0.0030
198	1.4744	0.0030
199	1.4774	0.0030
200	1.4803	0.0030
201	1.4833	0.0030
202	1.4863	0.0030
203	1.4893	0.0030
204	1.4922	0.0030
205	1.4952	0.0029
206	1.4981	0.0029
207	1.5010	0.0029
208	1.5039	0.0029
209	1.5069	0.0029
210	1.5098	0.0029
211	1.5127	0.0029
212	1.5155	0.0029
213	1.5184	0.0029
214	1.5213	0.0029
215	1.5242	0.0029
216	1.5270	0.0029
217	1.5299	0.0028
218	1.5327	0.0028
219	1.5355	0.0028
220	1.5384	0.0028
221	1.5412	0.0028
222	1.5440	0.0028
223	1.5468	0.0028
224	1.5496	0.0028
225	1.5524	0.0028
226	1.5551	0.0028
227	1.5579	0.0028
228	1.5607	0.0028
229	1.5634	0.0028
230	1.5662	0.0027
231	1.5689	0.0027
232	1.5717	0.0027
233	1.5744	0.0027
234	1.5771	0.0027
235	1.5798	0.0027
236	1.5825	0.0027
237	1.5852	0.0027
238	1.5879	0.0027
239	1.5906	0.0027
240	1.5933	0.0027
241	1.5960	0.0027
242	1.5986	0.0027
243	1.6013	0.0027
244	1.6040	0.0027
245	1.6066	0.0026

246	1.6092	0.0026
247	1.6119	0.0026
248	1.6145	0.0026
249	1.6171	0.0026
250	1.6197	0.0026
251	1.6224	0.0026
252	1.6250	0.0026
253	1.6276	0.0026
254	1.6301	0.0026
255	1.6327	0.0026
256	1.6353	0.0026
257	1.6379	0.0026
258	1.6404	0.0026
259	1.6430	0.0026
260	1.6456	0.0026
261	1.6481	0.0025
262	1.6507	0.0025
263	1.6532	0.0025
264	1.6557	0.0025
265	1.6583	0.0025
266	1.6608	0.0025
267	1.6633	0.0025
268	1.6658	0.0025
269	1.6683	0.0025
270	1.6708	0.0025
271	1.6733	0.0025
272	1.6758	0.0025
273	1.6783	0.0025
274	1.6807	0.0025
275	1.6832	0.0025
276	1.6857	0.0025
277	1.6881	0.0025
278	1.6906	0.0025
279	1.6930	0.0024
280	1.6955	0.0024
281	1.6979	0.0024
282	1.7004	0.0024
283	1.7028	0.0024
284	1.7052	0.0024
285	1.7076	0.0024
286	1.7100	0.0024
287	1.7125	0.0024
288	1.7149	0.0024

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0024	0.0015	0.0009
2	0.0024	0.0015	0.0009

3	0.0024	0.0015	0.0009
4	0.0024	0.0015	0.0009
5	0.0024	0.0015	0.0009
6	0.0024	0.0015	0.0009
7	0.0024	0.0015	0.0009
8	0.0025	0.0015	0.0009
9	0.0025	0.0015	0.0009
10	0.0025	0.0015	0.0009
11	0.0025	0.0016	0.0009
12	0.0025	0.0016	0.0009
13	0.0025	0.0016	0.0009
14	0.0025	0.0016	0.0009
15	0.0025	0.0016	0.0009
16	0.0025	0.0016	0.0009
17	0.0025	0.0016	0.0009
18	0.0025	0.0016	0.0009
19	0.0025	0.0016	0.0010
20	0.0026	0.0016	0.0010
21	0.0026	0.0016	0.0010
22	0.0026	0.0016	0.0010
23	0.0026	0.0016	0.0010
24	0.0026	0.0016	0.0010
25	0.0026	0.0016	0.0010
26	0.0026	0.0016	0.0010
27	0.0026	0.0016	0.0010
28	0.0026	0.0016	0.0010
29	0.0026	0.0017	0.0010
30	0.0026	0.0017	0.0010
31	0.0027	0.0017	0.0010
32	0.0027	0.0017	0.0010
33	0.0027	0.0017	0.0010
34	0.0027	0.0017	0.0010
35	0.0027	0.0017	0.0010
36	0.0027	0.0017	0.0010
37	0.0027	0.0017	0.0010
38	0.0027	0.0017	0.0010
39	0.0027	0.0017	0.0010
40	0.0027	0.0017	0.0010
41	0.0028	0.0017	0.0010
42	0.0028	0.0017	0.0010
43	0.0028	0.0017	0.0010
44	0.0028	0.0018	0.0010
45	0.0028	0.0018	0.0010
46	0.0028	0.0018	0.0011
47	0.0028	0.0018	0.0011
48	0.0028	0.0018	0.0011
49	0.0029	0.0018	0.0011
50	0.0029	0.0018	0.0011
51	0.0029	0.0018	0.0011
52	0.0029	0.0018	0.0011

53	0.0029	0.0018	0.0011
54	0.0029	0.0018	0.0011
55	0.0029	0.0018	0.0011
56	0.0029	0.0018	0.0011
57	0.0030	0.0019	0.0011
58	0.0030	0.0019	0.0011
59	0.0030	0.0019	0.0011
60	0.0030	0.0019	0.0011
61	0.0030	0.0019	0.0011
62	0.0030	0.0019	0.0011
63	0.0030	0.0019	0.0011
64	0.0030	0.0019	0.0011
65	0.0031	0.0019	0.0011
66	0.0031	0.0019	0.0011
67	0.0031	0.0019	0.0012
68	0.0031	0.0019	0.0012
69	0.0031	0.0020	0.0012
70	0.0031	0.0020	0.0012
71	0.0032	0.0020	0.0012
72	0.0032	0.0020	0.0012
73	0.0032	0.0020	0.0012
74	0.0032	0.0020	0.0012
75	0.0032	0.0020	0.0012
76	0.0032	0.0020	0.0012
77	0.0032	0.0020	0.0012
78	0.0033	0.0020	0.0012
79	0.0033	0.0021	0.0012
80	0.0033	0.0021	0.0012
81	0.0033	0.0021	0.0012
82	0.0033	0.0021	0.0012
83	0.0034	0.0021	0.0013
84	0.0034	0.0021	0.0013
85	0.0034	0.0021	0.0013
86	0.0034	0.0021	0.0013
87	0.0034	0.0021	0.0013
88	0.0034	0.0022	0.0013
89	0.0035	0.0022	0.0013
90	0.0035	0.0022	0.0013
91	0.0035	0.0022	0.0013
92	0.0035	0.0022	0.0013
93	0.0036	0.0022	0.0013
94	0.0036	0.0022	0.0013
95	0.0036	0.0023	0.0013
96	0.0036	0.0023	0.0013
97	0.0036	0.0023	0.0014
98	0.0037	0.0023	0.0014
99	0.0037	0.0023	0.0014
100	0.0037	0.0023	0.0014
101	0.0037	0.0023	0.0014
102	0.0037	0.0024	0.0014

103	0.0038	0.0024	0.0014
104	0.0038	0.0024	0.0014
105	0.0038	0.0024	0.0014
106	0.0039	0.0024	0.0014
107	0.0039	0.0024	0.0015
108	0.0039	0.0024	0.0015
109	0.0039	0.0025	0.0015
110	0.0040	0.0025	0.0015
111	0.0040	0.0025	0.0015
112	0.0040	0.0025	0.0015
113	0.0041	0.0025	0.0015
114	0.0041	0.0026	0.0015
115	0.0041	0.0026	0.0015
116	0.0041	0.0026	0.0015
117	0.0042	0.0026	0.0016
118	0.0042	0.0026	0.0016
119	0.0043	0.0027	0.0016
120	0.0043	0.0027	0.0016
121	0.0043	0.0027	0.0016
122	0.0043	0.0027	0.0016
123	0.0044	0.0028	0.0016
124	0.0044	0.0028	0.0017
125	0.0045	0.0028	0.0017
126	0.0045	0.0028	0.0017
127	0.0046	0.0029	0.0017
128	0.0046	0.0029	0.0017
129	0.0046	0.0029	0.0017
130	0.0047	0.0029	0.0017
131	0.0047	0.0030	0.0018
132	0.0048	0.0030	0.0018
133	0.0048	0.0030	0.0018
134	0.0049	0.0030	0.0018
135	0.0049	0.0031	0.0018
136	0.0050	0.0031	0.0018
137	0.0050	0.0032	0.0019
138	0.0051	0.0032	0.0019
139	0.0051	0.0032	0.0019
140	0.0052	0.0032	0.0019
141	0.0053	0.0033	0.0020
142	0.0053	0.0033	0.0020
143	0.0054	0.0034	0.0020
144	0.0054	0.0034	0.0020
145	0.0055	0.0034	0.0020
146	0.0055	0.0035	0.0021
147	0.0056	0.0035	0.0021
148	0.0057	0.0036	0.0021
149	0.0058	0.0036	0.0022
150	0.0058	0.0036	0.0022
151	0.0059	0.0037	0.0022
152	0.0060	0.0038	0.0022

153	0.0061	0.0038	0.0023
154	0.0062	0.0039	0.0023
155	0.0063	0.0040	0.0024
156	0.0064	0.0040	0.0024
157	0.0065	0.0041	0.0024
158	0.0066	0.0041	0.0025
159	0.0067	0.0042	0.0025
160	0.0068	0.0043	0.0025
161	0.0070	0.0044	0.0026
162	0.0071	0.0044	0.0026
163	0.0073	0.0046	0.0027
164	0.0074	0.0046	0.0028
165	0.0076	0.0048	0.0028
166	0.0077	0.0048	0.0029
167	0.0079	0.0050	0.0030
168	0.0081	0.0051	0.0030
169	0.0085	0.0053	0.0032
170	0.0086	0.0054	0.0032
171	0.0089	0.0056	0.0033
172	0.0091	0.0057	0.0034
173	0.0095	0.0059	0.0035
174	0.0096	0.0060	0.0036
175	0.0101	0.0063	0.0038
176	0.0103	0.0065	0.0038
177	0.0108	0.0068	0.0040
178	0.0111	0.0070	0.0041
179	0.0117	0.0074	0.0044
180	0.0121	0.0076	0.0045
181	0.0129	0.0081	0.0048
182	0.0133	0.0084	0.0050
183	0.0144	0.0090	0.0054
184	0.0150	0.0094	0.0056
185	0.0162	0.0102	0.0061
186	0.0172	0.0108	0.0064
187	0.0195	0.0122	0.0073
188	0.0210	0.0132	0.0078
189	0.0253	0.0159	0.0094
190	0.0286	0.0179	0.0107
191	0.0408	0.0221	0.0188
192	0.0562	0.0221	0.0341
193	0.1758	0.0221	0.1537
194	0.0333	0.0209	0.0124
195	0.0229	0.0144	0.0085
196	0.0182	0.0114	0.0068
197	0.0157	0.0099	0.0059
198	0.0138	0.0087	0.0052
199	0.0125	0.0078	0.0047
200	0.0114	0.0071	0.0043
201	0.0106	0.0066	0.0039
202	0.0099	0.0062	0.0037

203	0.0093	0.0058	0.0035
204	0.0088	0.0055	0.0033
205	0.0082	0.0051	0.0031
206	0.0078	0.0049	0.0029
207	0.0075	0.0047	0.0028
208	0.0072	0.0045	0.0027
209	0.0069	0.0043	0.0026
210	0.0067	0.0042	0.0025
211	0.0064	0.0040	0.0024
212	0.0062	0.0039	0.0023
213	0.0061	0.0038	0.0023
214	0.0059	0.0037	0.0022
215	0.0057	0.0036	0.0021
216	0.0056	0.0035	0.0021
217	0.0055	0.0034	0.0020
218	0.0053	0.0033	0.0020
219	0.0052	0.0033	0.0019
220	0.0051	0.0032	0.0019
221	0.0050	0.0031	0.0019
222	0.0049	0.0031	0.0018
223	0.0048	0.0030	0.0018
224	0.0047	0.0029	0.0018
225	0.0046	0.0029	0.0017
226	0.0045	0.0028	0.0017
227	0.0044	0.0028	0.0017
228	0.0044	0.0027	0.0016
229	0.0043	0.0027	0.0016
230	0.0042	0.0027	0.0016
231	0.0042	0.0026	0.0016
232	0.0041	0.0026	0.0015
233	0.0040	0.0025	0.0015
234	0.0040	0.0025	0.0015
235	0.0039	0.0025	0.0015
236	0.0039	0.0024	0.0014
237	0.0038	0.0024	0.0014
238	0.0038	0.0024	0.0014
239	0.0037	0.0023	0.0014
240	0.0037	0.0023	0.0014
241	0.0036	0.0023	0.0014
242	0.0036	0.0022	0.0013
243	0.0035	0.0022	0.0013
244	0.0035	0.0022	0.0013
245	0.0035	0.0022	0.0013
246	0.0034	0.0021	0.0013
247	0.0034	0.0021	0.0013
248	0.0033	0.0021	0.0012
249	0.0033	0.0021	0.0012
250	0.0033	0.0021	0.0012
251	0.0032	0.0020	0.0012
252	0.0032	0.0020	0.0012

253	0.0032	0.0020	0.0012
254	0.0031	0.0020	0.0012
255	0.0031	0.0020	0.0012
256	0.0031	0.0019	0.0012
257	0.0031	0.0019	0.0011
258	0.0030	0.0019	0.0011
259	0.0030	0.0019	0.0011
260	0.0030	0.0019	0.0011
261	0.0029	0.0018	0.0011
262	0.0029	0.0018	0.0011
263	0.0029	0.0018	0.0011
264	0.0029	0.0018	0.0011
265	0.0028	0.0018	0.0011
266	0.0028	0.0018	0.0011
267	0.0028	0.0018	0.0010
268	0.0028	0.0017	0.0010
269	0.0028	0.0017	0.0010
270	0.0027	0.0017	0.0010
271	0.0027	0.0017	0.0010
272	0.0027	0.0017	0.0010
273	0.0027	0.0017	0.0010
274	0.0027	0.0017	0.0010
275	0.0026	0.0017	0.0010
276	0.0026	0.0016	0.0010
277	0.0026	0.0016	0.0010
278	0.0026	0.0016	0.0010
279	0.0026	0.0016	0.0010
280	0.0025	0.0016	0.0009
281	0.0025	0.0016	0.0009
282	0.0025	0.0016	0.0009
283	0.0025	0.0016	0.0009
284	0.0025	0.0016	0.0009
285	0.0025	0.0015	0.0009
286	0.0024	0.0015	0.0009
287	0.0024	0.0015	0.0009
288	0.0024	0.0015	0.0009

Total soil rain loss = 0.97(In)
Total effective rainfall = 0.74(In)
Peak flow rate in flood hydrograph = 82.07(CFS)

++

24 - 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 5 Minute intervals ((CFS))

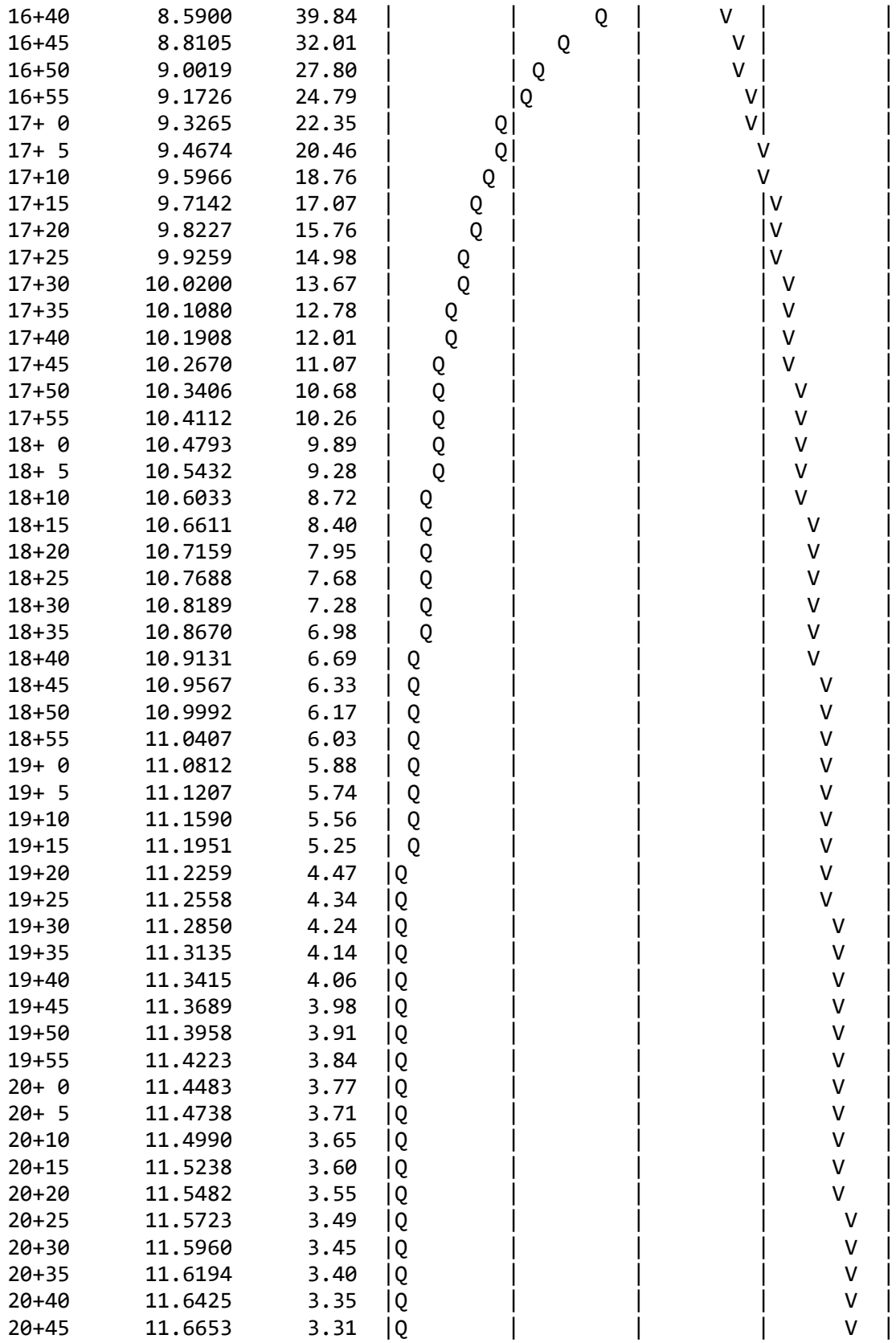
Time(h+m) Volume Ac.Ft Q(CFS) 0 22.5 45.0 67.5 90.0

0+ 5	0.0003	0.04	Q				
0+10	0.0014	0.16	Q				
0+15	0.0040	0.37	Q				
0+20	0.0086	0.67	Q				
0+25	0.0155	1.00	Q				
0+30	0.0242	1.26	Q				
0+35	0.0341	1.44	Q				
0+40	0.0448	1.56	Q				
0+45	0.0562	1.65	Q				
0+50	0.0681	1.72	Q				
0+55	0.0804	1.79	Q				
1+ 0	0.0930	1.84	Q				
1+ 5	0.1061	1.89	Q				
1+10	0.1194	1.93	Q				
1+15	0.1329	1.97	Q				
1+20	0.1468	2.01	Q				
1+25	0.1608	2.04	Q				
1+30	0.1750	2.07	Q				
1+35	0.1895	2.10	Q				
1+40	0.2041	2.12	Q				
1+45	0.2188	2.14	Q				
1+50	0.2337	2.16	Q				
1+55	0.2488	2.19	Q				
2+ 0	0.2640	2.21	Q				
2+ 5	0.2793	2.23	Q				
2+10	0.2948	2.24	Q				
2+15	0.3103	2.26	VQ				
2+20	0.3260	2.28	|Q				
2+25	0.3418	2.29	|Q				
2+30	0.3577	2.31	|Q				
2+35	0.3737	2.32	|Q				
2+40	0.3898	2.34	|Q				
2+45	0.4060	2.35	|Q				
2+50	0.4223	2.36	|Q				
2+55	0.4386	2.38	|Q				
3+ 0	0.4551	2.39	|Q				
3+ 5	0.4716	2.40	|Q				
3+10	0.4883	2.42	|Q				
3+15	0.5050	2.43	|Q				
3+20	0.5218	2.44	|Q				
3+25	0.5386	2.45	|Q				
3+30	0.5556	2.46	|Q				
3+35	0.5725	2.47	|Q				
3+40	0.5896	2.48	|Q				
3+45	0.6067	2.48	|Q				
3+50	0.6239	2.49	|Q				
3+55	0.6411	2.50	|QV				
4+ 0	0.6584	2.51	|QV				
4+ 5	0.6758	2.52	|QV				

```
4+10       0.6933      2.53  |QV       |         |         |         |
4+15       0.7108      2.54  |QV       |         |         |         |
4+20       0.7284      2.55  |QV       |         |         |         |
4+25       0.7461      2.56  |QV       |         |         |         |
4+30       0.7638      2.58  |QV       |         |         |         |
4+35       0.7816      2.59  |QV       |         |         |         |
4+40       0.7995      2.60  |QV       |         |         |         |
4+45       0.8175      2.61  |QV       |         |         |         |
4+50       0.8355      2.62  |QV       |         |         |         |
4+55       0.8536      2.63  |QV       |         |         |         |
5+ 0       0.8718      2.64  |QV       |         |         |         |
5+ 5       0.8901      2.65  |QV       |         |         |         |
5+10       0.9084      2.66  |QV       |         |         |         |
5+15       0.9268      2.68  |QV       |         |         |         |
5+20       0.9453      2.69  |Q V      |         |         |         |
5+25       0.9639      2.70  |Q V      |         |         |         |
5+30       0.9826      2.71  |Q V      |         |         |         |
5+35       1.0013      2.72  |Q V      |         |         |         |
5+40       1.0202      2.74  |Q V      |         |         |         |
5+45       1.0391      2.75  |Q V      |         |         |         |
5+50       1.0581      2.76  |Q V      |         |         |         |
5+55       1.0772      2.77  |Q V      |         |         |         |
6+ 0       1.0964      2.79  |Q V      |         |         |         |
6+ 5       1.1157      2.80  |Q V      |         |         |         |
6+10       1.1351      2.81  |Q V      |         |         |         |
6+15       1.1545      2.83  |Q V      |         |         |         |
6+20       1.1741      2.84  |Q V      |         |         |         |
6+25       1.1937      2.85  |Q V      |         |         |         |
6+30       1.2135      2.87  |Q V      |         |         |         |
6+35       1.2333      2.88  |Q V      |         |         |         |
6+40       1.2533      2.90  |Q  V     |         |         |         |
6+45       1.2733      2.91  |Q  V     |         |         |         |
6+50       1.2935      2.93  |Q  V     |         |         |         |
6+55       1.3137      2.94  |Q  V     |         |         |         |
7+ 0       1.3341      2.96  |Q  V     |         |         |         |
7+ 5       1.3546      2.97  |Q  V     |         |         |         |
7+10       1.3751      2.99  |Q  V     |         |         |         |
7+15       1.3958      3.00  |Q  V     |         |         |         |
7+20       1.4166      3.02  |Q  V     |         |         |         |
7+25       1.4375      3.03  |Q  V     |         |         |         |
7+30       1.4585      3.05  |Q  V     |         |         |         |
7+35       1.4796      3.07  |Q  V     |         |         |         |
7+40       1.5009      3.09  |Q  V     |         |         |         |
7+45       1.5223      3.10  |Q  V     |         |         |         |
7+50       1.5437      3.12  |Q  V     |         |         |         |
7+55       1.5654      3.14  |Q   V    |         |         |         |
8+ 0       1.5871      3.16  |Q   V    |         |         |         |
8+ 5       1.6089      3.17  |Q   V    |         |         |         |
8+10       1.6309      3.19  |Q   V    |         |         |         |
8+15       1.6531      3.21  |Q   V    |         |         |         |
```

8+20	1.6753	3.23	Q V			
8+25	1.6977	3.25	Q V			
8+30	1.7202	3.27	Q V			
8+35	1.7429	3.29	Q V			
8+40	1.7657	3.31	Q V			
8+45	1.7886	3.33	Q V			
8+50	1.8117	3.35	Q V			
8+55	1.8350	3.37	Q V			
9+ 0	1.8584	3.40	Q V			
9+ 5	1.8819	3.42	Q V			
9+10	1.9056	3.44	Q V			
9+15	1.9295	3.47	Q V			
9+20	1.9535	3.49	Q V			
9+25	1.9777	3.51	Q V			
9+30	2.0020	3.54	Q V			
9+35	2.0266	3.56	Q V			
9+40	2.0513	3.59	Q V			
9+45	2.0762	3.61	Q V			
9+50	2.1012	3.64	Q V			
9+55	2.1265	3.67	Q V			
10+ 0	2.1519	3.69	Q V			
10+ 5	2.1776	3.72	Q V			
10+10	2.2034	3.75	Q V			
10+15	2.2295	3.78	Q V			
10+20	2.2557	3.81	Q V			
10+25	2.2822	3.84	Q V			
10+30	2.3088	3.87	Q V			
10+35	2.3357	3.90	Q V			
10+40	2.3628	3.94	Q V			
10+45	2.3902	3.97	Q V			
10+50	2.4177	4.00	Q V			
10+55	2.4456	4.04	Q V			
11+ 0	2.4736	4.07	Q V			
11+ 5	2.5019	4.11	Q V			
11+10	2.5305	4.15	Q V			
11+15	2.5593	4.19	Q V			
11+20	2.5885	4.23	Q V			
11+25	2.6179	4.27	Q V			
11+30	2.6475	4.31	Q V			
11+35	2.6775	4.35	Q V			
11+40	2.7078	4.40	Q V			
11+45	2.7383	4.44	Q V			
11+50	2.7692	4.49	Q V			
11+55	2.8005	4.53	Q V			
12+ 0	2.8320	4.58	Q V			
12+ 5	2.8639	4.63	Q V			
12+10	2.8962	4.68	Q V			
12+15	2.9288	4.73	Q V			
12+20	2.9617	4.78	Q V			
12+25	2.9950	4.83	Q V			

```
12+30       3.0287      4.89  | Q      V|          |          |          |
12+35       3.0628      4.95  | Q      V|          |          |          |
12+40       3.0972      5.01  | Q      V|          |          |          |
12+45       3.1322      5.07  | Q       V          |          |          |
12+50       3.1675      5.14  | Q       V          |          |          |
12+55       3.2034      5.21  | Q       V          |          |          |
13+ 0       3.2397      5.28  | Q       V          |          |          |
13+ 5       3.2766      5.35  | Q       V          |          |          |
13+10       3.3140      5.43  | Q       V          |          |          |
13+15       3.3520      5.51  | Q       V          |          |          |
13+20       3.3905      5.59  | Q       V          |          |          |
13+25       3.4296      5.68  | Q       V          |          |          |
13+30       3.4694      5.77  | Q       |V         |          |          |
13+35       3.5098      5.87  | Q       |V         |          |          |
13+40       3.5510      5.97  | Q       |V         |          |          |
13+45       3.5928      6.08  | Q       |V         |          |          |
13+50       3.6354      6.19  | Q       |V         |          |          |
13+55       3.6788      6.30  | Q       |V         |          |          |
14+ 0       3.7231      6.43  | Q       |V         |          |          |
14+ 5       3.7683      6.56  | Q       | V        |          |          |
14+10       3.8145      6.70  | Q       | V        |          |          |
14+15       3.8617      6.86  |  Q      | V        |          |          |
14+20       3.9102      7.03  |  Q      | V        |          |          |
14+25       3.9599      7.22  |  Q      | V        |          |          |
14+30       4.0109      7.41  |  Q      | V        |          |          |
14+35       4.0632      7.61  |  Q      | V        |          |          |
14+40       4.1171      7.81  |  Q      |  V       |          |          |
14+45       4.1724      8.04  |  Q      |  V       |          |          |
14+50       4.2294      8.28  |  Q      |  V       |          |          |
14+55       4.2882      8.54  |  Q      |  V       |          |          |
15+ 0       4.3489      8.82  |  Q      |  V       |          |          |
15+ 5       4.4118      9.13  |   Q     |   V      |          |          |
15+10       4.4770      9.47  |   Q     |   V      |          |          |
15+15       4.5448      9.85  |   Q     |   V      |          |          |
15+20       4.6156     10.27  |   Q     |   V      |          |          |
15+25       4.6896     10.75  |   Q     |   V      |          |          |
15+30       4.7674     11.29  |    Q    |    V     |          |          |
15+35       4.8494     11.91  |    Q    |    V     |          |          |
15+40       4.9364     12.64  |    Q    |    V     |          |          |
15+45       5.0296     13.53  |     Q   |     V    |          |          |
15+50       5.1308     14.68  |     Q   |     V    |          |          |
15+55       5.2439     16.44  |      Q  |     V    |          |          |
16+ 0       5.3800     19.76  |       Q |      V   |          |          |
16+ 5       5.5913     30.69  |         |  Q   V   |          |          |
16+10       5.9222     48.05  |         |       V |Q         |          |
16+15       6.3767     65.99  |         |         V        Q|          |
16+20       6.9269     79.88  |         |         | V      |    Q     |
16+25       7.4921     82.07  |         |         |  V     |     Q    |
16+30       7.9639     68.50  |         |         |    V   Q          |
16+35       8.3156     51.07  |         |         | Q   V  |          |
```



```
20+50      11.6878      3.27  |Q        |         |         |      V  |
20+55      11.7101      3.23  |Q        |         |         |      V  |
21+ 0      11.7320      3.19  |Q        |         |         |      V  |
21+ 5      11.7537      3.15  |Q        |         |         |      V  |
21+10      11.7752      3.12  |Q        |         |         |      V  |
21+15      11.7964      3.08  |Q        |         |         |      V  |
21+20      11.8174      3.05  |Q        |         |         |      V  |
21+25      11.8381      3.01  |Q        |         |         |      V  |
21+30      11.8586      2.98  |Q        |         |         |      V  |
21+35      11.8790      2.95  |Q        |         |         |      V  |
21+40      11.8991      2.92  |Q        |         |         |       V |
21+45      11.9189      2.89  |Q        |         |         |       V |
21+50      11.9386      2.86  |Q        |         |         |       V |
21+55      11.9581      2.83  |Q        |         |         |       V |
22+ 0      11.9775      2.80  |Q        |         |         |       V |
22+ 5      11.9966      2.78  |Q        |         |         |       V |
22+10      12.0156      2.75  |Q        |         |         |       V |
22+15      12.0343      2.73  |Q        |         |         |       V |
22+20      12.0529      2.70  |Q        |         |         |       V |
22+25      12.0714      2.68  |Q        |         |         |       V |
22+30      12.0897      2.66  |Q        |         |         |       V |
22+35      12.1078      2.63  |Q        |         |         |       V |
22+40      12.1258      2.61  |Q        |         |         |       V |
22+45      12.1436      2.59  |Q        |         |         |       V |
22+50      12.1613      2.57  |Q        |         |         |       V |
22+55      12.1788      2.55  |Q        |         |         |       V |
23+ 0      12.1962      2.53  |Q        |         |         |       V |
23+ 5      12.2135      2.51  |Q        |         |         |        V|
23+10      12.2306      2.49  |Q        |         |         |        V|
23+15      12.2476      2.47  |Q        |         |         |        V|
23+20      12.2644      2.45  |Q        |         |         |        V|
23+25      12.2812      2.43  |Q        |         |         |        V|
23+30      12.2978      2.41  |Q        |         |         |        V|
23+35      12.3143      2.39  |Q        |         |         |        V|
23+40      12.3306      2.38  |Q        |         |         |        V|
23+45      12.3469      2.36  |Q        |         |         |        V|
23+50      12.3630      2.34  |Q        |         |         |        V|
23+55      12.3791      2.33  |Q        |         |         |        V|
24+ 0      12.3950      2.31  |Q        |         |         |        V|
24+ 5      12.4105      2.25  |Q        |         |         |        V|
24+10      12.4251      2.12  Q         |         |         |        V|
24+15      12.4381      1.89  Q         |         |         |        V|
24+20      12.4490      1.59  Q         |         |         |        V|
24+25      12.4576      1.25  Q         |         |         |        V|
24+30      12.4644      0.98  Q         |         |         |        V|
24+35      12.4699      0.80  Q         |         |         |        V|
24+40      12.4746      0.68  Q         |         |         |        V|
24+45      12.4786      0.59  Q         |         |         |        V|
24+50      12.4822      0.52  Q         |         |         |        V|
24+55      12.4854      0.46  Q         |         |         |        V|
```

```
  25+ 0      12.4882      0.41  Q          |          |          |         V|
  25+ 5      12.4906      0.36  Q          |          |          |         V|
  25+10      12.4929      0.32  Q          |          |          |         V|
  25+15      12.4948      0.29  Q          |          |          |         V|
  25+20      12.4966      0.26  Q          |          |          |         V|
  25+25      12.4982      0.23  Q          |          |          |         V|
  25+30      12.4996      0.20  Q          |          |          |         V|
  25+35      12.5008      0.18  Q          |          |          |         V|
  25+40      12.5020      0.16  Q          |          |          |         V|
  25+45      12.5030      0.15  Q          |          |          |         V|
  25+50      12.5039      0.13  Q          |          |          |         V|
  25+55      12.5047      0.12  Q          |          |          |         V|
  26+ 0      12.5054      0.10  Q          |          |          |         V|
  26+ 5      12.5060      0.09  Q          |          |          |         V|
  26+10      12.5066      0.08  Q          |          |          |         V|
  26+15      12.5070      0.07  Q          |          |          |         V|
  26+20      12.5075      0.06  Q          |          |          |         V|
  26+25      12.5078      0.05  Q          |          |          |         V|
  26+30      12.5081      0.04  Q          |          |          |         V|
  26+35      12.5084      0.04  Q          |          |          |         V|
  26+40      12.5086      0.03  Q          |          |          |         V|
  26+45      12.5088      0.03  Q          |          |          |         V|
  26+50      12.5090      0.02  Q          |          |          |         V|
  26+55      12.5091      0.02  Q          |          |          |         V|
  27+ 0      12.5092      0.01  Q          |          |          |         V|
  27+ 5      12.5092      0.01  Q          |          |          |         V|
  27+10      12.5093      0.00  Q          |          |          |          V
-------------------------------------------------------------------------
```

UHEX01CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/18/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 1
EXISTING CONDITION, 5-YEAR 24-HOUR
FN: UHEX01CUL5.OUT - ABE

Storm Event Year = 5

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
75.60	1	0.60
Rainfall data for year 2		
75.60	6	0.70
Rainfall data for year 2		
75.60	24	1.20
Rainfall data for year 100		

```
            75.60            1           1.00
----------------------------------------------------------------------
Rainfall data for year 100
            75.60            6           1.90
----------------------------------------------------------------------
Rainfall data for year 100
            75.60           24           3.40
----------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  SCS curve     Area     Area     Fp(Fig C6)    Ap      Fm
No.(AMCII) NO.(AMC 2)    (Ac.)    Fraction     (In/Hr)  (dec.)   (In/Hr)
 86.0      86.0         75.60      1.000     0.265    0.520    0.138

Area-averaged adjusted loss rate Fm (In/Hr) =  0.138

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    39.31   0.520         86.0      86.0       1.63     0.373
    36.29   0.480         98.0      98.0       0.20     0.870

Area-averaged catchment yield fraction, Y =  0.612
Area-averaged low loss fraction, Yb =  0.388
User entry of time of concentration  =   0.900 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      75.60(Ac.)
Catchment Lag time =   0.720 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 11.5741
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.138(In/Hr)
Average low loss rate fraction (Yb) = 0.388 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.177(In)
Computed peak 30-minute rainfall =  0.363(In)
Specified peak 1-hour rainfall =  0.480(In)
Computed peak 3-hour rainfall =  0.744(In)
Specified peak 6-hour rainfall =  0.981(In)
Specified peak 24-hour rainfall =  1.715(In)


Rainfall depth area reduction factors:
Using a total area of      75.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.996     Adjusted rainfall =  0.177(In)
```

30-minute factor = 0.996 Adjusted rainfall = 0.362(In)
1-hour factor = 0.996 Adjusted rainfall = 0.478(In)
3-hour factor = 1.000 Adjusted rainfall = 0.743(In)
6-hour factor = 1.000 Adjusted rainfall = 0.981(In)
24-hour factor = 1.000 Adjusted rainfall = 1.715(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 914.29 (CFS))	
1	1.003	9.171
2	3.200	20.090
3	6.434	29.568
4	11.135	42.973
5	16.922	52.915
6	24.207	66.601
7	32.193	73.022
8	40.500	75.947
9	48.688	74.865
10	55.240	59.897
11	60.556	48.604
12	64.593	36.910
13	68.059	31.695
14	70.792	24.982
15	73.066	20.796
16	74.949	17.215
17	76.664	15.678
18	78.293	14.893
19	79.694	12.815
20	81.047	12.367
21	82.227	10.787
22	83.373	10.480
23	84.417	9.541
24	85.430	9.263
25	86.317	8.108
26	87.150	7.615
27	87.903	6.887
28	88.597	6.349
29	89.292	6.349
30	89.986	6.349
31	90.627	5.860
32	91.142	4.705
33	91.651	4.656
34	92.160	4.656
35	92.656	4.533
36	93.048	3.585

37	93.419	3.386
38	93.789	3.386
39	94.159	3.385
40	94.515	3.257
41	94.863	3.175
42	95.210	3.175
43	95.557	3.175
44	95.875	2.904
45	96.131	2.345
46	96.386	2.328
47	96.640	2.328
48	96.890	2.279
49	97.104	1.962
50	97.312	1.905
51	97.521	1.905
52	97.729	1.899
53	97.907	1.631
54	98.069	1.481
55	98.231	1.481
56	98.393	1.481
57	98.539	1.332
58	98.655	1.064
59	98.771	1.058
60	98.887	1.058
61	99.002	1.058
62	99.118	1.058
63	99.234	1.058
64	99.350	1.058
65	99.465	1.058
66	99.581	1.058
67	99.697	1.058
68	99.812	1.058
69	99.928	1.058
70	100.000	0.656

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1769	0.1769
2	0.2334	0.0565
3	0.2745	0.0411
4	0.3079	0.0335
5	0.3367	0.0288
6	0.3622	0.0255
7	0.3852	0.0230
8	0.4063	0.0211
9	0.4259	0.0196
10	0.4443	0.0183
11	0.4615	0.0173
12	0.4779	0.0163
13	0.4935	0.0156

14	0.5085	0.0149
15	0.5228	0.0143
16	0.5365	0.0137
17	0.5498	0.0132
18	0.5626	0.0128
19	0.5749	0.0124
20	0.5869	0.0120
21	0.5985	0.0116
22	0.6098	0.0113
23	0.6209	0.0110
24	0.6316	0.0107
25	0.6420	0.0105
26	0.6522	0.0102
27	0.6622	0.0100
28	0.6720	0.0098
29	0.6815	0.0096
30	0.6909	0.0094
31	0.7001	0.0092
32	0.7091	0.0090
33	0.7179	0.0088
34	0.7266	0.0087
35	0.7351	0.0085
36	0.7435	0.0084
37	0.7516	0.0082
38	0.7597	0.0081
39	0.7676	0.0079
40	0.7754	0.0078
41	0.7831	0.0077
42	0.7907	0.0076
43	0.7982	0.0075
44	0.8056	0.0074
45	0.8128	0.0073
46	0.8200	0.0072
47	0.8271	0.0071
48	0.8341	0.0070
49	0.8410	0.0069
50	0.8478	0.0068
51	0.8545	0.0067
52	0.8612	0.0067
53	0.8678	0.0066
54	0.8743	0.0065
55	0.8807	0.0064
56	0.8871	0.0064
57	0.8934	0.0063
58	0.8996	0.0062
59	0.9058	0.0062
60	0.9119	0.0061
61	0.9179	0.0060
62	0.9239	0.0060
63	0.9299	0.0059

64	0.9357	0.0059
65	0.9415	0.0058
66	0.9473	0.0058
67	0.9530	0.0057
68	0.9587	0.0057
69	0.9643	0.0056
70	0.9699	0.0056
71	0.9754	0.0055
72	0.9808	0.0055
73	0.9863	0.0055
74	0.9917	0.0054
75	0.9971	0.0054
76	1.0024	0.0053
77	1.0077	0.0053
78	1.0130	0.0053
79	1.0182	0.0052
80	1.0234	0.0052
81	1.0285	0.0051
82	1.0336	0.0051
83	1.0387	0.0051
84	1.0437	0.0050
85	1.0487	0.0050
86	1.0537	0.0050
87	1.0586	0.0049
88	1.0635	0.0049
89	1.0683	0.0049
90	1.0732	0.0048
91	1.0779	0.0048
92	1.0827	0.0048
93	1.0874	0.0047
94	1.0921	0.0047
95	1.0968	0.0047
96	1.1014	0.0046
97	1.1061	0.0046
98	1.1106	0.0046
99	1.1152	0.0046
100	1.1197	0.0045
101	1.1242	0.0045
102	1.1287	0.0045
103	1.1331	0.0044
104	1.1376	0.0044
105	1.1420	0.0044
106	1.1463	0.0044
107	1.1507	0.0043
108	1.1550	0.0043
109	1.1593	0.0043
110	1.1636	0.0043
111	1.1678	0.0043
112	1.1721	0.0042
113	1.1763	0.0042

114	1.1805	0.0042
115	1.1846	0.0042
116	1.1888	0.0041
117	1.1929	0.0041
118	1.1970	0.0041
119	1.2011	0.0041
120	1.2051	0.0041
121	1.2092	0.0040
122	1.2132	0.0040
123	1.2172	0.0040
124	1.2211	0.0040
125	1.2251	0.0040
126	1.2291	0.0039
127	1.2330	0.0039
128	1.2369	0.0039
129	1.2408	0.0039
130	1.2446	0.0039
131	1.2485	0.0039
132	1.2523	0.0038
133	1.2561	0.0038
134	1.2599	0.0038
135	1.2637	0.0038
136	1.2675	0.0038
137	1.2712	0.0037
138	1.2750	0.0037
139	1.2787	0.0037
140	1.2824	0.0037
141	1.2861	0.0037
142	1.2897	0.0037
143	1.2934	0.0037
144	1.2970	0.0036
145	1.3006	0.0036
146	1.3043	0.0036
147	1.3078	0.0036
148	1.3114	0.0036
149	1.3150	0.0036
150	1.3185	0.0036
151	1.3221	0.0035
152	1.3256	0.0035
153	1.3291	0.0035
154	1.3326	0.0035
155	1.3361	0.0035
156	1.3396	0.0035
157	1.3430	0.0035
158	1.3465	0.0034
159	1.3499	0.0034
160	1.3533	0.0034
161	1.3567	0.0034
162	1.3601	0.0034
163	1.3635	0.0034

164	1.3668	0.0034
165	1.3702	0.0034
166	1.3735	0.0033
167	1.3769	0.0033
168	1.3802	0.0033
169	1.3835	0.0033
170	1.3868	0.0033
171	1.3901	0.0033
172	1.3933	0.0033
173	1.3966	0.0033
174	1.3998	0.0032
175	1.4031	0.0032
176	1.4063	0.0032
177	1.4095	0.0032
178	1.4127	0.0032
179	1.4159	0.0032
180	1.4191	0.0032
181	1.4223	0.0032
182	1.4254	0.0032
183	1.4286	0.0032
184	1.4317	0.0031
185	1.4349	0.0031
186	1.4380	0.0031
187	1.4411	0.0031
188	1.4442	0.0031
189	1.4473	0.0031
190	1.4504	0.0031
191	1.4534	0.0031
192	1.4565	0.0031
193	1.4596	0.0031
194	1.4626	0.0030
195	1.4656	0.0030
196	1.4687	0.0030
197	1.4717	0.0030
198	1.4747	0.0030
199	1.4777	0.0030
200	1.4807	0.0030
201	1.4837	0.0030
202	1.4866	0.0030
203	1.4896	0.0030
204	1.4925	0.0030
205	1.4955	0.0029
206	1.4984	0.0029
207	1.5013	0.0029
208	1.5043	0.0029
209	1.5072	0.0029
210	1.5101	0.0029
211	1.5130	0.0029
212	1.5159	0.0029
213	1.5187	0.0029

214	1.5216	0.0029
215	1.5245	0.0029
216	1.5273	0.0029
217	1.5302	0.0028
218	1.5330	0.0028
219	1.5358	0.0028
220	1.5387	0.0028
221	1.5415	0.0028
222	1.5443	0.0028
223	1.5471	0.0028
224	1.5499	0.0028
225	1.5527	0.0028
226	1.5554	0.0028
227	1.5582	0.0028
228	1.5610	0.0028
229	1.5637	0.0028
230	1.5665	0.0027
231	1.5692	0.0027
232	1.5720	0.0027
233	1.5747	0.0027
234	1.5774	0.0027
235	1.5801	0.0027
236	1.5828	0.0027
237	1.5855	0.0027
238	1.5882	0.0027
239	1.5909	0.0027
240	1.5936	0.0027
241	1.5963	0.0027
242	1.5989	0.0027
243	1.6016	0.0027
244	1.6042	0.0027
245	1.6069	0.0026
246	1.6095	0.0026
247	1.6122	0.0026
248	1.6148	0.0026
249	1.6174	0.0026
250	1.6200	0.0026
251	1.6226	0.0026
252	1.6252	0.0026
253	1.6278	0.0026
254	1.6304	0.0026
255	1.6330	0.0026
256	1.6356	0.0026
257	1.6382	0.0026
258	1.6407	0.0026
259	1.6433	0.0026
260	1.6459	0.0026
261	1.6484	0.0025
262	1.6509	0.0025
263	1.6535	0.0025

264	1.6560	0.0025
265	1.6585	0.0025
266	1.6611	0.0025
267	1.6636	0.0025
268	1.6661	0.0025
269	1.6686	0.0025
270	1.6711	0.0025
271	1.6736	0.0025
272	1.6761	0.0025
273	1.6785	0.0025
274	1.6810	0.0025
275	1.6835	0.0025
276	1.6860	0.0025
277	1.6884	0.0025
278	1.6909	0.0025
279	1.6933	0.0024
280	1.6958	0.0024
281	1.6982	0.0024
282	1.7006	0.0024
283	1.7031	0.0024
284	1.7055	0.0024
285	1.7079	0.0024
286	1.7103	0.0024
287	1.7127	0.0024
288	1.7151	0.0024

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0024	0.0009	0.0015
2	0.0024	0.0009	0.0015
3	0.0024	0.0009	0.0015
4	0.0024	0.0009	0.0015
5	0.0024	0.0009	0.0015
6	0.0024	0.0009	0.0015
7	0.0024	0.0010	0.0015
8	0.0025	0.0010	0.0015
9	0.0025	0.0010	0.0015
10	0.0025	0.0010	0.0015
11	0.0025	0.0010	0.0015
12	0.0025	0.0010	0.0015
13	0.0025	0.0010	0.0015
14	0.0025	0.0010	0.0015
15	0.0025	0.0010	0.0015
16	0.0025	0.0010	0.0015
17	0.0025	0.0010	0.0015
18	0.0025	0.0010	0.0016
19	0.0025	0.0010	0.0016
20	0.0026	0.0010	0.0016

21	0.0026	0.0010	0.0016
22	0.0026	0.0010	0.0016
23	0.0026	0.0010	0.0016
24	0.0026	0.0010	0.0016
25	0.0026	0.0010	0.0016
26	0.0026	0.0010	0.0016
27	0.0026	0.0010	0.0016
28	0.0026	0.0010	0.0016
29	0.0026	0.0010	0.0016
30	0.0026	0.0010	0.0016
31	0.0027	0.0010	0.0016
32	0.0027	0.0010	0.0016
33	0.0027	0.0010	0.0016
34	0.0027	0.0010	0.0016
35	0.0027	0.0010	0.0017
36	0.0027	0.0011	0.0017
37	0.0027	0.0011	0.0017
38	0.0027	0.0011	0.0017
39	0.0027	0.0011	0.0017
40	0.0027	0.0011	0.0017
41	0.0028	0.0011	0.0017
42	0.0028	0.0011	0.0017
43	0.0028	0.0011	0.0017
44	0.0028	0.0011	0.0017
45	0.0028	0.0011	0.0017
46	0.0028	0.0011	0.0017
47	0.0028	0.0011	0.0017
48	0.0028	0.0011	0.0017
49	0.0029	0.0011	0.0017
50	0.0029	0.0011	0.0018
51	0.0029	0.0011	0.0018
52	0.0029	0.0011	0.0018
53	0.0029	0.0011	0.0018
54	0.0029	0.0011	0.0018
55	0.0029	0.0011	0.0018
56	0.0029	0.0011	0.0018
57	0.0030	0.0011	0.0018
58	0.0030	0.0012	0.0018
59	0.0030	0.0012	0.0018
60	0.0030	0.0012	0.0018
61	0.0030	0.0012	0.0018
62	0.0030	0.0012	0.0018
63	0.0030	0.0012	0.0019
64	0.0030	0.0012	0.0019
65	0.0031	0.0012	0.0019
66	0.0031	0.0012	0.0019
67	0.0031	0.0012	0.0019
68	0.0031	0.0012	0.0019
69	0.0031	0.0012	0.0019
70	0.0031	0.0012	0.0019

71	0.0032	0.0012	0.0019
72	0.0032	0.0012	0.0019
73	0.0032	0.0012	0.0019
74	0.0032	0.0012	0.0020
75	0.0032	0.0012	0.0020
76	0.0032	0.0013	0.0020
77	0.0032	0.0013	0.0020
78	0.0033	0.0013	0.0020
79	0.0033	0.0013	0.0020
80	0.0033	0.0013	0.0020
81	0.0033	0.0013	0.0020
82	0.0033	0.0013	0.0020
83	0.0034	0.0013	0.0021
84	0.0034	0.0013	0.0021
85	0.0034	0.0013	0.0021
86	0.0034	0.0013	0.0021
87	0.0034	0.0013	0.0021
88	0.0034	0.0013	0.0021
89	0.0035	0.0013	0.0021
90	0.0035	0.0014	0.0021
91	0.0035	0.0014	0.0021
92	0.0035	0.0014	0.0022
93	0.0036	0.0014	0.0022
94	0.0036	0.0014	0.0022
95	0.0036	0.0014	0.0022
96	0.0036	0.0014	0.0022
97	0.0036	0.0014	0.0022
98	0.0037	0.0014	0.0022
99	0.0037	0.0014	0.0023
100	0.0037	0.0014	0.0023
101	0.0037	0.0014	0.0023
102	0.0037	0.0015	0.0023
103	0.0038	0.0015	0.0023
104	0.0038	0.0015	0.0023
105	0.0038	0.0015	0.0023
106	0.0039	0.0015	0.0024
107	0.0039	0.0015	0.0024
108	0.0039	0.0015	0.0024
109	0.0039	0.0015	0.0024
110	0.0040	0.0015	0.0024
111	0.0040	0.0016	0.0024
112	0.0040	0.0016	0.0025
113	0.0041	0.0016	0.0025
114	0.0041	0.0016	0.0025
115	0.0041	0.0016	0.0025
116	0.0041	0.0016	0.0025
117	0.0042	0.0016	0.0026
118	0.0042	0.0016	0.0026
119	0.0043	0.0017	0.0026
120	0.0043	0.0017	0.0026

121	0.0043	0.0017	0.0026
122	0.0043	0.0017	0.0027
123	0.0044	0.0017	0.0027
124	0.0044	0.0017	0.0027
125	0.0045	0.0017	0.0027
126	0.0045	0.0017	0.0028
127	0.0046	0.0018	0.0028
128	0.0046	0.0018	0.0028
129	0.0046	0.0018	0.0028
130	0.0047	0.0018	0.0029
131	0.0047	0.0018	0.0029
132	0.0048	0.0018	0.0029
133	0.0048	0.0019	0.0030
134	0.0049	0.0019	0.0030
135	0.0049	0.0019	0.0030
136	0.0050	0.0019	0.0030
137	0.0050	0.0020	0.0031
138	0.0051	0.0020	0.0031
139	0.0051	0.0020	0.0031
140	0.0052	0.0020	0.0032
141	0.0053	0.0020	0.0032
142	0.0053	0.0021	0.0032
143	0.0054	0.0021	0.0033
144	0.0054	0.0021	0.0033
145	0.0055	0.0021	0.0033
146	0.0055	0.0021	0.0034
147	0.0056	0.0022	0.0034
148	0.0057	0.0022	0.0035
149	0.0058	0.0022	0.0035
150	0.0058	0.0023	0.0036
151	0.0059	0.0023	0.0036
152	0.0060	0.0023	0.0037
153	0.0061	0.0024	0.0037
154	0.0062	0.0024	0.0038
155	0.0063	0.0024	0.0039
156	0.0064	0.0025	0.0039
157	0.0065	0.0025	0.0040
158	0.0066	0.0026	0.0040
159	0.0067	0.0026	0.0041
160	0.0068	0.0026	0.0042
161	0.0070	0.0027	0.0043
162	0.0071	0.0027	0.0043
163	0.0073	0.0028	0.0044
164	0.0074	0.0029	0.0045
165	0.0076	0.0029	0.0046
166	0.0077	0.0030	0.0047
167	0.0079	0.0031	0.0049
168	0.0081	0.0031	0.0049
169	0.0084	0.0033	0.0051
170	0.0085	0.0033	0.0052

171	0.0088	0.0034	0.0054
172	0.0090	0.0035	0.0055
173	0.0094	0.0036	0.0057
174	0.0096	0.0037	0.0058
175	0.0100	0.0039	0.0061
176	0.0102	0.0040	0.0062
177	0.0107	0.0042	0.0066
178	0.0110	0.0043	0.0067
179	0.0116	0.0045	0.0071
180	0.0120	0.0047	0.0073
181	0.0128	0.0050	0.0078
182	0.0132	0.0051	0.0081
183	0.0143	0.0056	0.0088
184	0.0149	0.0058	0.0091
185	0.0163	0.0063	0.0100
186	0.0173	0.0067	0.0106
187	0.0196	0.0076	0.0120
188	0.0211	0.0082	0.0129
189	0.0255	0.0099	0.0156
190	0.0288	0.0112	0.0176
191	0.0411	0.0115	0.0296
192	0.0565	0.0115	0.0450
193	0.1769	0.0115	0.1654
194	0.0335	0.0115	0.0220
195	0.0230	0.0089	0.0141
196	0.0183	0.0071	0.0112
197	0.0156	0.0061	0.0096
198	0.0137	0.0053	0.0084
199	0.0124	0.0048	0.0076
200	0.0113	0.0044	0.0069
201	0.0105	0.0041	0.0064
202	0.0098	0.0038	0.0060
203	0.0092	0.0036	0.0056
204	0.0087	0.0034	0.0053
205	0.0082	0.0032	0.0050
206	0.0078	0.0030	0.0048
207	0.0075	0.0029	0.0046
208	0.0072	0.0028	0.0044
209	0.0069	0.0027	0.0042
210	0.0067	0.0026	0.0041
211	0.0064	0.0025	0.0039
212	0.0062	0.0024	0.0038
213	0.0060	0.0023	0.0037
214	0.0059	0.0023	0.0036
215	0.0057	0.0022	0.0035
216	0.0056	0.0022	0.0034
217	0.0055	0.0021	0.0033
218	0.0053	0.0021	0.0033
219	0.0052	0.0020	0.0032
220	0.0051	0.0020	0.0031

221	0.0050	0.0019	0.0031
222	0.0049	0.0019	0.0030
223	0.0048	0.0019	0.0029
224	0.0047	0.0018	0.0029
225	0.0046	0.0018	0.0028
226	0.0045	0.0018	0.0028
227	0.0044	0.0017	0.0027
228	0.0044	0.0017	0.0027
229	0.0043	0.0017	0.0026
230	0.0042	0.0016	0.0026
231	0.0042	0.0016	0.0025
232	0.0041	0.0016	0.0025
233	0.0040	0.0016	0.0025
234	0.0040	0.0015	0.0024
235	0.0039	0.0015	0.0024
236	0.0039	0.0015	0.0024
237	0.0038	0.0015	0.0023
238	0.0038	0.0015	0.0023
239	0.0037	0.0014	0.0023
240	0.0037	0.0014	0.0022
241	0.0036	0.0014	0.0022
242	0.0036	0.0014	0.0022
243	0.0035	0.0014	0.0022
244	0.0035	0.0014	0.0021
245	0.0035	0.0013	0.0021
246	0.0034	0.0013	0.0021
247	0.0034	0.0013	0.0021
248	0.0033	0.0013	0.0020
249	0.0033	0.0013	0.0020
250	0.0033	0.0013	0.0020
251	0.0032	0.0013	0.0020
252	0.0032	0.0012	0.0020
253	0.0032	0.0012	0.0019
254	0.0031	0.0012	0.0019
255	0.0031	0.0012	0.0019
256	0.0031	0.0012	0.0019
257	0.0031	0.0012	0.0019
258	0.0030	0.0012	0.0019
259	0.0030	0.0012	0.0018
260	0.0030	0.0012	0.0018
261	0.0029	0.0011	0.0018
262	0.0029	0.0011	0.0018
263	0.0029	0.0011	0.0018
264	0.0029	0.0011	0.0018
265	0.0028	0.0011	0.0017
266	0.0028	0.0011	0.0017
267	0.0028	0.0011	0.0017
268	0.0028	0.0011	0.0017
269	0.0028	0.0011	0.0017
270	0.0027	0.0011	0.0017

271	0.0027	0.0011	0.0017
272	0.0027	0.0010	0.0016
273	0.0027	0.0010	0.0016
274	0.0027	0.0010	0.0016
275	0.0026	0.0010	0.0016
276	0.0026	0.0010	0.0016
277	0.0026	0.0010	0.0016
278	0.0026	0.0010	0.0016
279	0.0026	0.0010	0.0016
280	0.0025	0.0010	0.0016
281	0.0025	0.0010	0.0015
282	0.0025	0.0010	0.0015
283	0.0025	0.0010	0.0015
284	0.0025	0.0010	0.0015
285	0.0025	0.0010	0.0015
286	0.0024	0.0009	0.0015
287	0.0024	0.0009	0.0015
288	0.0024	0.0009	0.0015

Total soil rain loss = 0.59(In)
Total effective rainfall = 1.12(In)
Peak flow rate in flood hydrograph = 25.62(CFS)

++

24 - 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

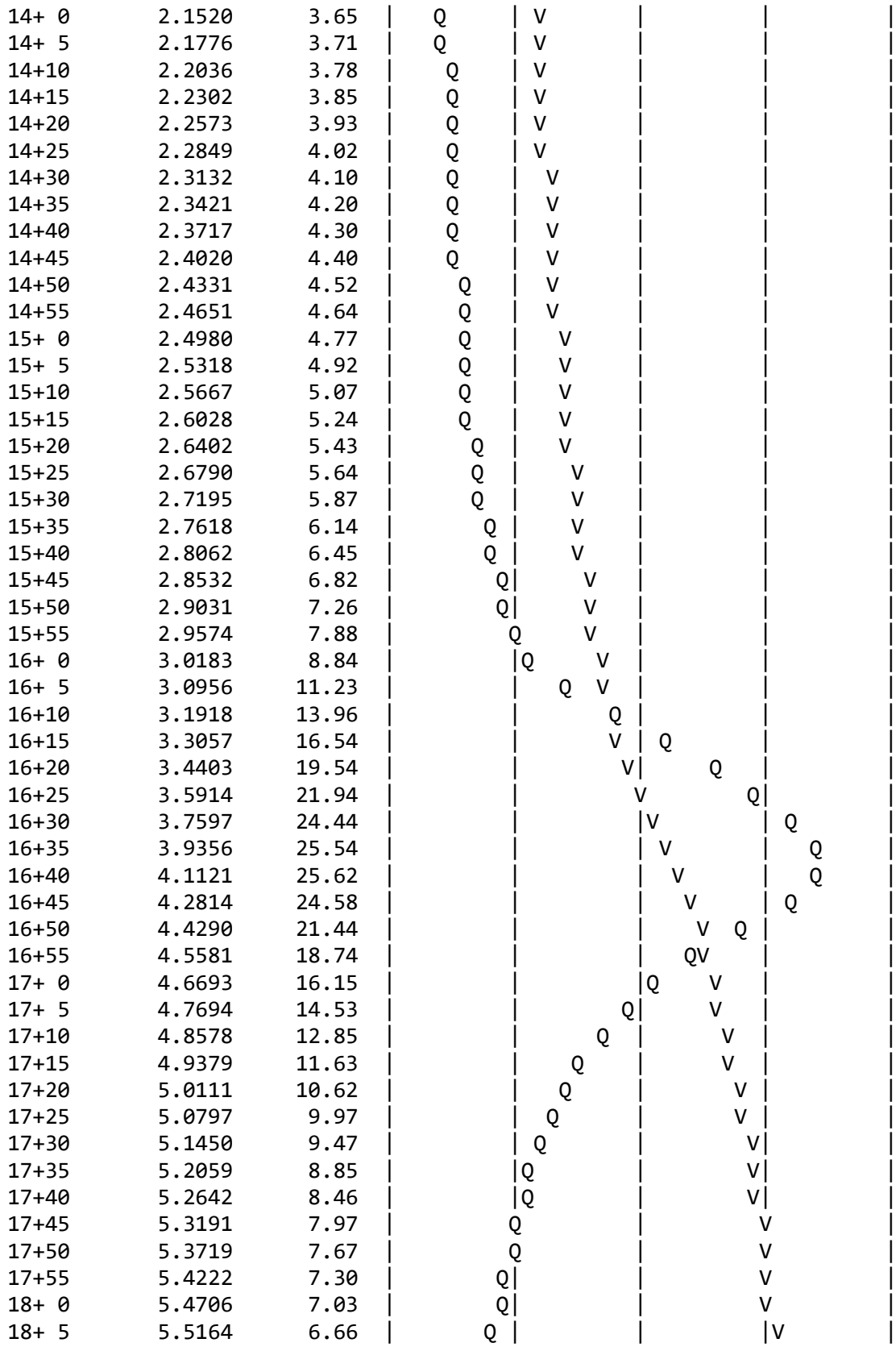
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0004	0.04	Q	|	|	|	|
0+15	0.0010	0.09	Q	|	|	|	|
0+20	0.0020	0.15	Q	|	|	|	|
0+25	0.0036	0.23	Q	|	|	|	|
0+30	0.0058	0.33	Q	|	|	|	|
0+35	0.0088	0.44	Q	|	|	|	|
0+40	0.0126	0.55	Q	|	|	|	|
0+45	0.0172	0.66	Q	|	|	|	|
0+50	0.0223	0.75	Q	|	|	|	|
0+55	0.0280	0.82	VQ	|	|	|	|
1+ 0	0.0341	0.88	VQ	|	|	|	|
1+ 5	0.0405	0.93	VQ	|	|	|	|
1+10	0.0471	0.97	VQ	|	|	|	|
1+15	0.0541	1.00	VQ	|	|	|	|
1+20	0.0612	1.03	VQ	|	|	|	|
1+25	0.0684	1.06	VQ	|	|	|	|

1+30	0.0759	1.08	VQ	|	|	|	|
1+35	0.0835	1.11	VQ	|	|	|	|
1+40	0.0913	1.13	VQ	|	|	|	|
1+45	0.0992	1.15	VQ	|	|	|	|
1+50	0.1072	1.17	VQ	|	|	|	|
1+55	0.1154	1.18	VQ	|	|	|	|
2+ 0	0.1237	1.20	VQ	|	|	|	|
2+ 5	0.1321	1.22	VQ	|	|	|	|
2+10	0.1406	1.23	VQ	|	|	|	|
2+15	0.1491	1.25	VQ	|	|	|	|
2+20	0.1578	1.26	VQ	|	|	|	|
2+25	0.1666	1.28	VQ	|	|	|	|
2+30	0.1755	1.29	VQ	|	|	|	|
2+35	0.1845	1.30	|Q	|	|	|	|
2+40	0.1935	1.31	|Q	|	|	|	|
2+45	0.2026	1.32	|Q	|	|	|	|
2+50	0.2118	1.34	|Q	|	|	|	|
2+55	0.2211	1.35	|Q	|	|	|	|
3+ 0	0.2305	1.36	|Q	|	|	|	|
3+ 5	0.2399	1.37	|Q	|	|	|	|
3+10	0.2494	1.38	|Q	|	|	|	|
3+15	0.2589	1.39	|Q	|	|	|	|
3+20	0.2686	1.40	|Q	|	|	|	|
3+25	0.2783	1.41	|Q	|	|	|	|
3+30	0.2880	1.42	|Q	|	|	|	|
3+35	0.2978	1.43	|Q	|	|	|	|
3+40	0.3077	1.44	|Q	|	|	|	|
3+45	0.3177	1.45	|Q	|	|	|	|
3+50	0.3277	1.45	|Q	|	|	|	|
3+55	0.3378	1.46	|Q	|	|	|	|
4+ 0	0.3479	1.47	|Q	|	|	|	|
4+ 5	0.3581	1.48	|QV	|	|	|	|
4+10	0.3684	1.49	|QV	|	|	|	|
4+15	0.3787	1.50	|QV	|	|	|	|
4+20	0.3891	1.51	| Q	|	|	|	|
4+25	0.3995	1.52	| Q	|	|	|	|
4+30	0.4100	1.52	| Q	|	|	|	|
4+35	0.4206	1.53	| Q	|	|	|	|
4+40	0.4312	1.54	| Q	|	|	|	|
4+45	0.4418	1.55	| Q	|	|	|	|
4+50	0.4525	1.56	| Q	|	|	|	|
4+55	0.4633	1.56	| Q	|	|	|	|
5+ 0	0.4741	1.57	| Q	|	|	|	|
5+ 5	0.4850	1.58	| Q	|	|	|	|
5+10	0.4960	1.59	| Q	|	|	|	|
5+15	0.5070	1.60	| Q	|	|	|	|
5+20	0.5180	1.60	| Q	|	|	|	|
5+25	0.5291	1.61	| Q	|	|	|	|
5+30	0.5403	1.62	| QV	|	|	|	|
5+35	0.5515	1.63	| QV	|	|	|	|

5+40	0.5628	1.64	QV				
5+45	0.5742	1.65	QV				
5+50	0.5856	1.66	QV				
5+55	0.5970	1.66	QV				
6+ 0	0.6085	1.67	QV				
6+ 5	0.6201	1.68	QV				
6+10	0.6317	1.69	QV				
6+15	0.6434	1.69	QV				
6+20	0.6551	1.70	QV				
6+25	0.6669	1.71	QV				
6+30	0.6787	1.72	QV				
6+35	0.6906	1.73	QV				
6+40	0.7025	1.73	QV				
6+45	0.7145	1.74	Q V				
6+50	0.7266	1.75	Q V				
6+55	0.7387	1.76	Q V				
7+ 0	0.7509	1.77	Q V				
7+ 5	0.7631	1.78	Q V				
7+10	0.7754	1.79	Q V				
7+15	0.7878	1.80	Q V				
7+20	0.8002	1.80	Q V				
7+25	0.8127	1.81	Q V				
7+30	0.8253	1.82	Q V				
7+35	0.8379	1.83	Q V				
7+40	0.8506	1.84	Q V				
7+45	0.8634	1.85	Q V				
7+50	0.8762	1.86	Q V				
7+55	0.8891	1.87	Q V				
8+ 0	0.9021	1.88	Q V				
8+ 5	0.9151	1.89	Q V				
8+10	0.9282	1.90	Q V				
8+15	0.9414	1.92	Q V				
8+20	0.9547	1.93	Q V				
8+25	0.9680	1.94	Q V				
8+30	0.9814	1.95	Q V				
8+35	0.9949	1.96	Q V				
8+40	1.0085	1.97	Q V				
8+45	1.0222	1.98	Q V				
8+50	1.0359	2.00	Q V				
8+55	1.0498	2.01	Q V				
9+ 0	1.0637	2.02	Q V				
9+ 5	1.0777	2.03	Q V				
9+10	1.0918	2.05	Q V				
9+15	1.1059	2.06	Q V				
9+20	1.1202	2.07	Q V				
9+25	1.1346	2.09	Q V				
9+30	1.1490	2.10	Q V				
9+35	1.1636	2.11	Q V				
9+40	1.1783	2.13	Q V				
9+45	1.1930	2.14	Q V				

9+50	1.2079	2.16	Q V			
9+55	1.2228	2.17	Q V			
10+ 0	1.2379	2.19	Q V			
10+ 5	1.2531	2.20	Q V			
10+10	1.2684	2.22	Q V			
10+15	1.2838	2.24	Q V			
10+20	1.2993	2.25	Q V			
10+25	1.3149	2.27	Q V			
10+30	1.3307	2.29	Q V			
10+35	1.3466	2.31	Q V			
10+40	1.3626	2.32	Q V			
10+45	1.3787	2.34	Q V			
10+50	1.3949	2.36	Q V			
10+55	1.4113	2.38	Q V			
11+ 0	1.4279	2.40	Q V			
11+ 5	1.4445	2.42	Q V			
11+10	1.4613	2.44	Q V			
11+15	1.4783	2.46	Q V			
11+20	1.4954	2.48	Q V			
11+25	1.5127	2.51	Q V			
11+30	1.5301	2.53	Q V			
11+35	1.5477	2.55	Q V			
11+40	1.5654	2.58	Q V			
11+45	1.5833	2.60	Q V			
11+50	1.6014	2.63	Q V			
11+55	1.6197	2.65	Q V			
12+ 0	1.6381	2.68	Q V			
12+ 5	1.6568	2.71	Q V			
12+10	1.6756	2.73	Q V			
12+15	1.6946	2.76	Q V			
12+20	1.7138	2.79	Q V			
12+25	1.7333	2.82	Q V			
12+30	1.7529	2.85	Q V			
12+35	1.7727	2.88	Q V			
12+40	1.7928	2.91	Q V			
12+45	1.8130	2.94	Q V			
12+50	1.8336	2.98	Q V			
12+55	1.8543	3.01	Q V			
13+ 0	1.8753	3.05	Q V			
13+ 5	1.8966	3.09	Q V			
13+10	1.9182	3.13	Q V			
13+15	1.9400	3.17	Q V			
13+20	1.9622	3.22	Q V			
13+25	1.9847	3.26	Q V			
13+30	2.0075	3.31	Q V			
13+35	2.0306	3.36	Q V			
13+40	2.0541	3.41	Q V			
13+45	2.0780	3.47	Q V			
13+50	2.1023	3.52	Q V			
13+55	2.1269	3.58	Q V			



18+10	5.5604	6.39	Q			V
18+15	5.6025	6.11	Q			V
18+20	5.6430	5.88	Q			V
18+25	5.6826	5.74	Q			V
18+30	5.7210	5.58	Q			V
18+35	5.7579	5.36	Q			V
18+40	5.7928	5.07	Q			V
18+45	5.8268	4.94	Q			V
18+50	5.8600	4.82	Q			V
18+55	5.8922	4.68	Q			V
19+ 0	5.9228	4.44	Q			V
19+ 5	5.9525	4.31	Q			V
19+10	5.9816	4.23	Q			V
19+15	6.0101	4.15	Q			V
19+20	6.0380	4.05	Q			V
19+25	6.0653	3.96	Q			V
19+30	6.0921	3.89	Q			V
19+35	6.1183	3.81	Q			V
19+40	6.1437	3.68	Q			V
19+45	6.1680	3.53	Q			V
19+50	6.1919	3.46	Q			V
19+55	6.2152	3.40	Q			V
20+ 0	6.2381	3.32	Q			V
20+ 5	6.2603	3.22	Q			V
20+10	6.2820	3.15	Q			V
20+15	6.3033	3.10	Q			V
20+20	6.3243	3.04	Q			V
20+25	6.3445	2.94	Q			V
20+30	6.3643	2.87	Q			V
20+35	6.3838	2.82	Q			V
20+40	6.4028	2.77	Q			V
20+45	6.4214	2.70	Q			V
20+50	6.4395	2.62	Q			V
20+55	6.4572	2.58	Q			V
21+ 0	6.4747	2.54	Q			V
21+ 5	6.4919	2.50	Q			V
21+10	6.5089	2.47	Q			V
21+15	6.5257	2.43	Q			V
21+20	6.5422	2.40	Q			V
21+25	6.5585	2.37	Q			V
21+30	6.5745	2.33	Q			V
21+35	6.5903	2.29	Q			V
21+40	6.6058	2.25	Q			V
21+45	6.6209	2.20	Q			V
21+50	6.6353	2.08	Q			V
21+55	6.6487	1.95	Q			V
22+ 0	6.6619	1.91	Q			V
22+ 5	6.6748	1.88	Q			V
22+10	6.6876	1.86	Q			V
22+15	6.7002	1.83	Q			V

```
22+20       6.7127      1.81  | Q       |         |         |      V  |
22+25       6.7250      1.79  | Q       |         |         |       V |
22+30       6.7372      1.77  | Q       |         |         |       V |
22+35       6.7492      1.75  | Q       |         |         |       V |
22+40       6.7611      1.73  | Q       |         |         |       V |
22+45       6.7729      1.71  | Q       |         |         |       V |
22+50       6.7845      1.69  | Q       |         |         |       V |
22+55       6.7961      1.68  | Q       |         |         |       V |
23+ 0       6.8075      1.66  | Q       |         |         |       V |
23+ 5       6.8188      1.64  | Q       |         |         |       V |
23+10       6.8301      1.63  | Q       |         |         |       V |
23+15       6.8412      1.61  | Q       |         |         |       V |
23+20       6.8522      1.60  | Q       |         |         |       V |
23+25       6.8631      1.59  | Q       |         |         |       V |
23+30       6.8740      1.57  | Q       |         |         |       V |
23+35       6.8847      1.56  | Q       |         |         |       V |
23+40       6.8953      1.55  | Q       |         |         |        V|
23+45       6.9059      1.53  | Q       |         |         |        V|
23+50       6.9164      1.52  | Q       |         |         |        V|
23+55       6.9268      1.51  | Q       |         |         |        V|
24+ 0       6.9371      1.50  |Q        |         |         |        V|
24+ 5       6.9472      1.47  |Q        |         |         |        V|
24+10       6.9571      1.43  |Q        |         |         |        V|
24+15       6.9666      1.38  |Q        |         |         |        V|
24+20       6.9755      1.30  |Q        |         |         |        V|
24+25       6.9839      1.22  |Q        |         |         |        V|
24+30       6.9916      1.11  |Q        |         |         |        V|
24+35       6.9984      0.99  |Q        |         |         |        V|
24+40       7.0044      0.88  |Q        |         |         |        V|
24+45       7.0097      0.76  |Q        |         |         |        V|
24+50       7.0143      0.67  Q         |         |         |        V|
24+55       7.0183      0.59  Q         |         |         |        V|
25+ 0       7.0220      0.53  Q         |         |         |        V|
25+ 5       7.0253      0.48  Q         |         |         |        V|
25+10       7.0283      0.44  Q         |         |         |        V|
25+15       7.0311      0.41  Q         |         |         |        V|
25+20       7.0337      0.38  Q         |         |         |        V|
25+25       7.0361      0.35  Q         |         |         |        V|
25+30       7.0384      0.33  Q         |         |         |        V|
25+35       7.0405      0.31  Q         |         |         |        V|
25+40       7.0425      0.29  Q         |         |         |        V|
25+45       7.0443      0.27  Q         |         |         |        V|
25+50       7.0460      0.25  Q         |         |         |        V|
25+55       7.0476      0.23  Q         |         |         |        V|
26+ 0       7.0492      0.22  Q         |         |         |        V|
26+ 5       7.0506      0.21  Q         |         |         |        V|
26+10       7.0519      0.19  Q         |         |         |        V|
26+15       7.0531      0.18  Q         |         |         |        V|
26+20       7.0543      0.17  Q         |         |         |        V|
26+25       7.0554      0.16  Q         |         |         |        V|
```

26+30	7.0564	0.15	Q	|	|	|	V|
26+35	7.0574	0.14	Q	|	|	|	V|
26+40	7.0583	0.13	Q	|	|	|	V|
26+45	7.0592	0.12	Q	|	|	|	V|
26+50	7.0600	0.12	Q	|	|	|	V|
26+55	7.0607	0.11	Q	|	|	|	V|
27+ 0	7.0614	0.10	Q	|	|	|	V|
27+ 5	7.0621	0.10	Q	|	|	|	V|
27+10	7.0627	0.09	Q	|	|	|	V|
27+15	7.0633	0.09	Q	|	|	|	V|
27+20	7.0638	0.08	Q	|	|	|	V|
27+25	7.0644	0.07	Q	|	|	|	V|
27+30	7.0648	0.07	Q	|	|	|	V|
27+35	7.0653	0.06	Q	|	|	|	V|
27+40	7.0657	0.06	Q	|	|	|	V|
27+45	7.0661	0.06	Q	|	|	|	V|
27+50	7.0664	0.05	Q	|	|	|	V|
27+55	7.0668	0.05	Q	|	|	|	V|
28+ 0	7.0671	0.04	Q	|	|	|	V|
28+ 5	7.0674	0.04	Q	|	|	|	V|
28+10	7.0676	0.04	Q	|	|	|	V|
28+15	7.0679	0.04	Q	|	|	|	V|
28+20	7.0681	0.03	Q	|	|	|	V|
28+25	7.0683	0.03	Q	|	|	|	V|
28+30	7.0685	0.03	Q	|	|	|	V|
28+35	7.0687	0.02	Q	|	|	|	V|
28+40	7.0688	0.02	Q	|	|	|	V|
28+45	7.0690	0.02	Q	|	|	|	V|
28+50	7.0691	0.02	Q	|	|	|	V|
28+55	7.0692	0.02	Q	|	|	|	V|
29+ 0	7.0693	0.02	Q	|	|	|	V|
29+ 5	7.0694	0.01	Q	|	|	|	V|
29+10	7.0695	0.01	Q	|	|	|	V|
29+15	7.0696	0.01	Q	|	|	|	V|
29+20	7.0696	0.01	Q	|	|	|	V|
29+25	7.0697	0.01	Q	|	|	|	V|
29+30	7.0697	0.01	Q	|	|	|	V|
29+35	7.0697	0.00	Q	|	|	|	V|
29+40	7.0698	0.00	Q	|	|	|	V|
29+45	7.0698	0.00	Q	|	|	|	V|

UHEX02CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/18/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 2
EXISTING CONDITION, 5-YEAR 24-HOUR
FN: UHEX02CUL5.OUT - ABE

Storm Event Year = 5

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
223.50	1	0.60
Rainfall data for year 2		
223.50	6	0.70
Rainfall data for year 2		
223.50	24	1.20
Rainfall data for year 100		

```
           223.50            1           1.00
------------------------------------------------------------------------
Rainfall data for year 100
           223.50            6           1.90
------------------------------------------------------------------------
Rainfall data for year 100
           223.50           24           3.40
------------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  SCS curve     Area     Area     Fp(Fig C6)    Ap      Fm
No.(AMCII) NO.(AMC 2)    (Ac.)    Fraction     (In/Hr)  (dec.)   (In/Hr)
 86.0      86.0        223.50      1.000     0.265    0.640    0.170

Area-averaged adjusted loss rate Fm (In/Hr) =  0.170

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
   143.04   0.640         86.0      86.0       1.63     0.373
    80.46   0.360         98.0      98.0       0.20     0.870

Area-averaged catchment yield fraction, Y =  0.552
Area-averaged low loss fraction, Yb =  0.448
User entry of time of concentration  =   0.920 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =     223.50(Ac.)
Catchment Lag time =   0.736 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 11.3225
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.170(In/Hr)
Average low loss rate fraction (Yb) = 0.448 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.177(In)
Computed peak 30-minute rainfall =  0.363(In)
Specified peak 1-hour rainfall =  0.480(In)
Computed peak 3-hour rainfall =  0.744(In)
Specified peak 6-hour rainfall =  0.981(In)
Specified peak 24-hour rainfall =  1.715(In)


Rainfall depth area reduction factors:
Using a total area of     223.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.990     Adjusted rainfall =  0.176(In)
```

30-minute factor = 0.990 Adjusted rainfall = 0.360(In)
1-hour factor = 0.990 Adjusted rainfall = 0.475(In)
3-hour factor = 0.999 Adjusted rainfall = 0.743(In)
6-hour factor = 0.999 Adjusted rainfall = 0.980(In)
24-hour factor = 1.000 Adjusted rainfall = 1.715(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 2702.95 (CFS))	
1	0.981	26.524
2	3.116	57.698
3	6.220	83.892
4	10.734	122.019
5	16.272	149.698
6	23.299	189.921
7	31.033	209.063
8	39.141	219.158
9	47.263	219.514
10	53.983	181.660
11	59.477	148.489
12	63.666	113.224
13	67.176	94.868
14	70.068	78.169
15	72.392	62.821
16	74.348	52.872
17	76.049	45.994
18	77.707	44.810
19	79.136	38.614
20	80.493	36.675
21	81.711	32.931
22	82.843	30.604
23	83.918	29.050
24	84.915	26.943
25	85.865	25.690
26	86.688	22.238
27	87.486	21.569
28	88.182	18.814
29	88.861	18.362
30	89.541	18.362
31	90.219	18.343
32	90.793	15.502
33	91.291	13.466
34	91.789	13.466
35	92.288	13.466
36	92.755	12.637

37	93.125	9.991
38	93.487	9.793
39	93.849	9.793
40	94.211	9.773
41	94.557	9.351
42	94.896	9.181
43	95.236	9.181
44	95.576	9.181
45	95.884	8.317
46	96.134	6.764
47	96.383	6.733
48	96.632	6.733
49	96.877	6.623
50	97.088	5.712
51	97.292	5.509
52	97.496	5.509
53	97.700	5.509
54	97.881	4.887
55	98.039	4.285
56	98.198	4.285
57	98.356	4.285
58	98.507	4.070
59	98.624	3.162
60	98.737	3.060
61	98.850	3.060
62	98.963	3.060
63	99.077	3.060
64	99.190	3.060
65	99.303	3.060
66	99.416	3.060
67	99.529	3.060
68	99.643	3.060
69	99.756	3.060
70	99.869	3.060
71	100.000	1.530

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1756	0.1756
2	0.2318	0.0561
3	0.2726	0.0408
4	0.3058	0.0332
5	0.3344	0.0286
6	0.3597	0.0253
7	0.3825	0.0229
8	0.4035	0.0210
9	0.4230	0.0195
10	0.4412	0.0182
11	0.4583	0.0171
12	0.4746	0.0162

13	0.4903	0.0157
14	0.5054	0.0150
15	0.5198	0.0144
16	0.5336	0.0139
17	0.5470	0.0134
18	0.5599	0.0129
19	0.5724	0.0125
20	0.5845	0.0121
21	0.5962	0.0117
22	0.6076	0.0114
23	0.6188	0.0111
24	0.6296	0.0108
25	0.6402	0.0106
26	0.6505	0.0103
27	0.6606	0.0101
28	0.6704	0.0099
29	0.6801	0.0097
30	0.6896	0.0095
31	0.6989	0.0093
32	0.7080	0.0091
33	0.7169	0.0089
34	0.7257	0.0088
35	0.7343	0.0086
36	0.7428	0.0085
37	0.7510	0.0082
38	0.7591	0.0081
39	0.7670	0.0079
40	0.7748	0.0078
41	0.7825	0.0077
42	0.7901	0.0076
43	0.7976	0.0075
44	0.8049	0.0074
45	0.8122	0.0073
46	0.8194	0.0072
47	0.8265	0.0071
48	0.8335	0.0070
49	0.8404	0.0069
50	0.8472	0.0068
51	0.8540	0.0067
52	0.8606	0.0067
53	0.8672	0.0066
54	0.8737	0.0065
55	0.8802	0.0064
56	0.8865	0.0064
57	0.8928	0.0063
58	0.8991	0.0062
59	0.9053	0.0062
60	0.9114	0.0061
61	0.9174	0.0061
62	0.9234	0.0060

63	0.9293	0.0059
64	0.9352	0.0059
65	0.9410	0.0058
66	0.9468	0.0058
67	0.9525	0.0057
68	0.9582	0.0057
69	0.9638	0.0056
70	0.9694	0.0056
71	0.9749	0.0055
72	0.9804	0.0055
73	0.9859	0.0055
74	0.9913	0.0054
75	0.9967	0.0054
76	1.0020	0.0053
77	1.0073	0.0053
78	1.0125	0.0053
79	1.0178	0.0052
80	1.0229	0.0052
81	1.0281	0.0051
82	1.0332	0.0051
83	1.0382	0.0051
84	1.0433	0.0050
85	1.0483	0.0050
86	1.0532	0.0050
87	1.0581	0.0049
88	1.0630	0.0049
89	1.0679	0.0049
90	1.0727	0.0048
91	1.0775	0.0048
92	1.0823	0.0048
93	1.0870	0.0047
94	1.0917	0.0047
95	1.0964	0.0047
96	1.1010	0.0046
97	1.1056	0.0046
98	1.1102	0.0046
99	1.1147	0.0046
100	1.1193	0.0045
101	1.1238	0.0045
102	1.1282	0.0045
103	1.1327	0.0044
104	1.1371	0.0044
105	1.1415	0.0044
106	1.1459	0.0044
107	1.1502	0.0043
108	1.1546	0.0043
109	1.1589	0.0043
110	1.1631	0.0043
111	1.1674	0.0043
112	1.1716	0.0042

113	1.1758	0.0042
114	1.1800	0.0042
115	1.1842	0.0042
116	1.1883	0.0041
117	1.1924	0.0041
118	1.1965	0.0041
119	1.2006	0.0041
120	1.2047	0.0041
121	1.2087	0.0040
122	1.2127	0.0040
123	1.2167	0.0040
124	1.2207	0.0040
125	1.2247	0.0040
126	1.2286	0.0039
127	1.2325	0.0039
128	1.2364	0.0039
129	1.2403	0.0039
130	1.2442	0.0039
131	1.2481	0.0039
132	1.2519	0.0038
133	1.2557	0.0038
134	1.2595	0.0038
135	1.2633	0.0038
136	1.2671	0.0038
137	1.2708	0.0037
138	1.2745	0.0037
139	1.2783	0.0037
140	1.2820	0.0037
141	1.2856	0.0037
142	1.2893	0.0037
143	1.2930	0.0037
144	1.2966	0.0036
145	1.3002	0.0036
146	1.3038	0.0036
147	1.3074	0.0036
148	1.3110	0.0036
149	1.3146	0.0036
150	1.3181	0.0036
151	1.3217	0.0035
152	1.3252	0.0035
153	1.3287	0.0035
154	1.3322	0.0035
155	1.3357	0.0035
156	1.3391	0.0035
157	1.3426	0.0035
158	1.3460	0.0034
159	1.3495	0.0034
160	1.3529	0.0034
161	1.3563	0.0034
162	1.3597	0.0034

163	1.3631	0.0034
164	1.3664	0.0034
165	1.3698	0.0034
166	1.3731	0.0033
167	1.3765	0.0033
168	1.3798	0.0033
169	1.3831	0.0033
170	1.3864	0.0033
171	1.3897	0.0033
172	1.3929	0.0033
173	1.3962	0.0033
174	1.3994	0.0032
175	1.4027	0.0032
176	1.4059	0.0032
177	1.4091	0.0032
178	1.4123	0.0032
179	1.4155	0.0032
180	1.4187	0.0032
181	1.4219	0.0032
182	1.4250	0.0032
183	1.4282	0.0032
184	1.4313	0.0031
185	1.4345	0.0031
186	1.4376	0.0031
187	1.4407	0.0031
188	1.4438	0.0031
189	1.4469	0.0031
190	1.4500	0.0031
191	1.4531	0.0031
192	1.4561	0.0031
193	1.4592	0.0031
194	1.4622	0.0030
195	1.4653	0.0030
196	1.4683	0.0030
197	1.4713	0.0030
198	1.4743	0.0030
199	1.4773	0.0030
200	1.4803	0.0030
201	1.4833	0.0030
202	1.4862	0.0030
203	1.4892	0.0030
204	1.4922	0.0030
205	1.4951	0.0029
206	1.4980	0.0029
207	1.5010	0.0029
208	1.5039	0.0029
209	1.5068	0.0029
210	1.5097	0.0029
211	1.5126	0.0029
212	1.5155	0.0029

213	1.5184	0.0029
214	1.5212	0.0029
215	1.5241	0.0029
216	1.5270	0.0029
217	1.5298	0.0028
218	1.5326	0.0028
219	1.5355	0.0028
220	1.5383	0.0028
221	1.5411	0.0028
222	1.5439	0.0028
223	1.5467	0.0028
224	1.5495	0.0028
225	1.5523	0.0028
226	1.5551	0.0028
227	1.5579	0.0028
228	1.5606	0.0028
229	1.5634	0.0028
230	1.5661	0.0027
231	1.5689	0.0027
232	1.5716	0.0027
233	1.5743	0.0027
234	1.5771	0.0027
235	1.5798	0.0027
236	1.5825	0.0027
237	1.5852	0.0027
238	1.5879	0.0027
239	1.5906	0.0027
240	1.5932	0.0027
241	1.5959	0.0027
242	1.5986	0.0027
243	1.6012	0.0027
244	1.6039	0.0027
245	1.6065	0.0026
246	1.6092	0.0026
247	1.6118	0.0026
248	1.6145	0.0026
249	1.6171	0.0026
250	1.6197	0.0026
251	1.6223	0.0026
252	1.6249	0.0026
253	1.6275	0.0026
254	1.6301	0.0026
255	1.6327	0.0026
256	1.6353	0.0026
257	1.6378	0.0026
258	1.6404	0.0026
259	1.6430	0.0026
260	1.6455	0.0026
261	1.6481	0.0025
262	1.6506	0.0025

263	1.6531	0.0025
264	1.6557	0.0025
265	1.6582	0.0025
266	1.6607	0.0025
267	1.6632	0.0025
268	1.6658	0.0025
269	1.6683	0.0025
270	1.6708	0.0025
271	1.6732	0.0025
272	1.6757	0.0025
273	1.6782	0.0025
274	1.6807	0.0025
275	1.6832	0.0025
276	1.6856	0.0025
277	1.6881	0.0025
278	1.6905	0.0025
279	1.6930	0.0024
280	1.6954	0.0024
281	1.6979	0.0024
282	1.7003	0.0024
283	1.7027	0.0024
284	1.7052	0.0024
285	1.7076	0.0024
286	1.7100	0.0024
287	1.7124	0.0024
288	1.7148	0.0024

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0024	0.0011	0.0013
2	0.0024	0.0011	0.0013
3	0.0024	0.0011	0.0013
4	0.0024	0.0011	0.0013
5	0.0024	0.0011	0.0013
6	0.0024	0.0011	0.0013
7	0.0024	0.0011	0.0014
8	0.0025	0.0011	0.0014
9	0.0025	0.0011	0.0014
10	0.0025	0.0011	0.0014
11	0.0025	0.0011	0.0014
12	0.0025	0.0011	0.0014
13	0.0025	0.0011	0.0014
14	0.0025	0.0011	0.0014
15	0.0025	0.0011	0.0014
16	0.0025	0.0011	0.0014
17	0.0025	0.0011	0.0014
18	0.0025	0.0011	0.0014
19	0.0025	0.0011	0.0014

20	0.0026	0.0011	0.0014
21	0.0026	0.0012	0.0014
22	0.0026	0.0012	0.0014
23	0.0026	0.0012	0.0014
24	0.0026	0.0012	0.0014
25	0.0026	0.0012	0.0014
26	0.0026	0.0012	0.0014
27	0.0026	0.0012	0.0014
28	0.0026	0.0012	0.0015
29	0.0026	0.0012	0.0015
30	0.0026	0.0012	0.0015
31	0.0027	0.0012	0.0015
32	0.0027	0.0012	0.0015
33	0.0027	0.0012	0.0015
34	0.0027	0.0012	0.0015
35	0.0027	0.0012	0.0015
36	0.0027	0.0012	0.0015
37	0.0027	0.0012	0.0015
38	0.0027	0.0012	0.0015
39	0.0027	0.0012	0.0015
40	0.0027	0.0012	0.0015
41	0.0028	0.0012	0.0015
42	0.0028	0.0012	0.0015
43	0.0028	0.0012	0.0015
44	0.0028	0.0013	0.0015
45	0.0028	0.0013	0.0016
46	0.0028	0.0013	0.0016
47	0.0028	0.0013	0.0016
48	0.0028	0.0013	0.0016
49	0.0029	0.0013	0.0016
50	0.0029	0.0013	0.0016
51	0.0029	0.0013	0.0016
52	0.0029	0.0013	0.0016
53	0.0029	0.0013	0.0016
54	0.0029	0.0013	0.0016
55	0.0029	0.0013	0.0016
56	0.0029	0.0013	0.0016
57	0.0030	0.0013	0.0016
58	0.0030	0.0013	0.0016
59	0.0030	0.0013	0.0016
60	0.0030	0.0013	0.0017
61	0.0030	0.0013	0.0017
62	0.0030	0.0014	0.0017
63	0.0030	0.0014	0.0017
64	0.0030	0.0014	0.0017
65	0.0031	0.0014	0.0017
66	0.0031	0.0014	0.0017
67	0.0031	0.0014	0.0017
68	0.0031	0.0014	0.0017
69	0.0031	0.0014	0.0017

70	0.0031	0.0014	0.0017
71	0.0032	0.0014	0.0017
72	0.0032	0.0014	0.0017
73	0.0032	0.0014	0.0018
74	0.0032	0.0014	0.0018
75	0.0032	0.0014	0.0018
76	0.0032	0.0014	0.0018
77	0.0032	0.0015	0.0018
78	0.0033	0.0015	0.0018
79	0.0033	0.0015	0.0018
80	0.0033	0.0015	0.0018
81	0.0033	0.0015	0.0018
82	0.0033	0.0015	0.0018
83	0.0034	0.0015	0.0019
84	0.0034	0.0015	0.0019
85	0.0034	0.0015	0.0019
86	0.0034	0.0015	0.0019
87	0.0034	0.0015	0.0019
88	0.0034	0.0015	0.0019
89	0.0035	0.0016	0.0019
90	0.0035	0.0016	0.0019
91	0.0035	0.0016	0.0019
92	0.0035	0.0016	0.0019
93	0.0036	0.0016	0.0020
94	0.0036	0.0016	0.0020
95	0.0036	0.0016	0.0020
96	0.0036	0.0016	0.0020
97	0.0036	0.0016	0.0020
98	0.0037	0.0016	0.0020
99	0.0037	0.0017	0.0020
100	0.0037	0.0017	0.0020
101	0.0037	0.0017	0.0021
102	0.0037	0.0017	0.0021
103	0.0038	0.0017	0.0021
104	0.0038	0.0017	0.0021
105	0.0038	0.0017	0.0021
106	0.0039	0.0017	0.0021
107	0.0039	0.0017	0.0021
108	0.0039	0.0017	0.0022
109	0.0039	0.0018	0.0022
110	0.0040	0.0018	0.0022
111	0.0040	0.0018	0.0022
112	0.0040	0.0018	0.0022
113	0.0041	0.0018	0.0022
114	0.0041	0.0018	0.0023
115	0.0041	0.0018	0.0023
116	0.0041	0.0019	0.0023
117	0.0042	0.0019	0.0023
118	0.0042	0.0019	0.0023
119	0.0043	0.0019	0.0023

120	0.0043	0.0019	0.0024
121	0.0043	0.0019	0.0024
122	0.0043	0.0019	0.0024
123	0.0044	0.0020	0.0024
124	0.0044	0.0020	0.0024
125	0.0045	0.0020	0.0025
126	0.0045	0.0020	0.0025
127	0.0046	0.0020	0.0025
128	0.0046	0.0021	0.0025
129	0.0046	0.0021	0.0026
130	0.0047	0.0021	0.0026
131	0.0047	0.0021	0.0026
132	0.0048	0.0021	0.0026
133	0.0048	0.0022	0.0027
134	0.0049	0.0022	0.0027
135	0.0049	0.0022	0.0027
136	0.0050	0.0022	0.0027
137	0.0050	0.0023	0.0028
138	0.0051	0.0023	0.0028
139	0.0051	0.0023	0.0028
140	0.0052	0.0023	0.0029
141	0.0053	0.0024	0.0029
142	0.0053	0.0024	0.0029
143	0.0054	0.0024	0.0030
144	0.0054	0.0024	0.0030
145	0.0055	0.0025	0.0030
146	0.0055	0.0025	0.0030
147	0.0056	0.0025	0.0031
148	0.0057	0.0025	0.0031
149	0.0058	0.0026	0.0032
150	0.0058	0.0026	0.0032
151	0.0059	0.0027	0.0033
152	0.0060	0.0027	0.0033
153	0.0061	0.0027	0.0034
154	0.0062	0.0028	0.0034
155	0.0063	0.0028	0.0035
156	0.0064	0.0029	0.0035
157	0.0065	0.0029	0.0036
158	0.0066	0.0030	0.0036
159	0.0067	0.0030	0.0037
160	0.0068	0.0031	0.0038
161	0.0070	0.0031	0.0039
162	0.0071	0.0032	0.0039
163	0.0073	0.0033	0.0040
164	0.0074	0.0033	0.0041
165	0.0076	0.0034	0.0042
166	0.0077	0.0034	0.0042
167	0.0079	0.0036	0.0044
168	0.0081	0.0036	0.0045
169	0.0085	0.0038	0.0047

170	0.0086	0.0039	0.0048
171	0.0089	0.0040	0.0049
172	0.0091	0.0041	0.0050
173	0.0095	0.0042	0.0052
174	0.0097	0.0043	0.0053
175	0.0101	0.0045	0.0056
176	0.0103	0.0046	0.0057
177	0.0108	0.0049	0.0060
178	0.0111	0.0050	0.0061
179	0.0117	0.0053	0.0065
180	0.0121	0.0054	0.0067
181	0.0129	0.0058	0.0071
182	0.0134	0.0060	0.0074
183	0.0144	0.0065	0.0080
184	0.0150	0.0067	0.0083
185	0.0162	0.0073	0.0090
186	0.0171	0.0077	0.0095
187	0.0195	0.0087	0.0107
188	0.0210	0.0094	0.0116
189	0.0253	0.0113	0.0140
190	0.0286	0.0128	0.0158
191	0.0408	0.0141	0.0267
192	0.0561	0.0141	0.0420
193	0.1756	0.0141	0.1615
194	0.0332	0.0141	0.0191
195	0.0229	0.0102	0.0126
196	0.0182	0.0082	0.0101
197	0.0157	0.0071	0.0087
198	0.0139	0.0062	0.0077
199	0.0125	0.0056	0.0069
200	0.0114	0.0051	0.0063
201	0.0106	0.0047	0.0058
202	0.0099	0.0044	0.0054
203	0.0093	0.0042	0.0051
204	0.0088	0.0039	0.0048
205	0.0082	0.0037	0.0045
206	0.0078	0.0035	0.0043
207	0.0075	0.0033	0.0041
208	0.0072	0.0032	0.0040
209	0.0069	0.0031	0.0038
210	0.0067	0.0030	0.0037
211	0.0064	0.0029	0.0036
212	0.0062	0.0028	0.0034
213	0.0061	0.0027	0.0033
214	0.0059	0.0026	0.0032
215	0.0057	0.0026	0.0032
216	0.0056	0.0025	0.0031
217	0.0055	0.0024	0.0030
218	0.0053	0.0024	0.0029
219	0.0052	0.0023	0.0029

220	0.0051	0.0023	0.0028
221	0.0050	0.0022	0.0028
222	0.0049	0.0022	0.0027
223	0.0048	0.0021	0.0026
224	0.0047	0.0021	0.0026
225	0.0046	0.0021	0.0025
226	0.0045	0.0020	0.0025
227	0.0044	0.0020	0.0025
228	0.0044	0.0020	0.0024
229	0.0043	0.0019	0.0024
230	0.0042	0.0019	0.0023
231	0.0042	0.0019	0.0023
232	0.0041	0.0018	0.0023
233	0.0040	0.0018	0.0022
234	0.0040	0.0018	0.0022
235	0.0039	0.0018	0.0022
236	0.0039	0.0017	0.0021
237	0.0038	0.0017	0.0021
238	0.0038	0.0017	0.0021
239	0.0037	0.0017	0.0021
240	0.0037	0.0016	0.0020
241	0.0036	0.0016	0.0020
242	0.0036	0.0016	0.0020
243	0.0035	0.0016	0.0020
244	0.0035	0.0016	0.0019
245	0.0035	0.0015	0.0019
246	0.0034	0.0015	0.0019
247	0.0034	0.0015	0.0019
248	0.0033	0.0015	0.0018
249	0.0033	0.0015	0.0018
250	0.0033	0.0015	0.0018
251	0.0032	0.0015	0.0018
252	0.0032	0.0014	0.0018
253	0.0032	0.0014	0.0018
254	0.0031	0.0014	0.0017
255	0.0031	0.0014	0.0017
256	0.0031	0.0014	0.0017
257	0.0031	0.0014	0.0017
258	0.0030	0.0014	0.0017
259	0.0030	0.0013	0.0017
260	0.0030	0.0013	0.0016
261	0.0029	0.0013	0.0016
262	0.0029	0.0013	0.0016
263	0.0029	0.0013	0.0016
264	0.0029	0.0013	0.0016
265	0.0028	0.0013	0.0016
266	0.0028	0.0013	0.0016
267	0.0028	0.0013	0.0015
268	0.0028	0.0012	0.0015
269	0.0028	0.0012	0.0015

270	0.0027	0.0012	0.0015
271	0.0027	0.0012	0.0015
272	0.0027	0.0012	0.0015
273	0.0027	0.0012	0.0015
274	0.0027	0.0012	0.0015
275	0.0026	0.0012	0.0015
276	0.0026	0.0012	0.0014
277	0.0026	0.0012	0.0014
278	0.0026	0.0012	0.0014
279	0.0026	0.0011	0.0014
280	0.0025	0.0011	0.0014
281	0.0025	0.0011	0.0014
282	0.0025	0.0011	0.0014
283	0.0025	0.0011	0.0014
284	0.0025	0.0011	0.0014
285	0.0025	0.0011	0.0014
286	0.0024	0.0011	0.0013
287	0.0024	0.0011	0.0013
288	0.0024	0.0011	0.0013

Total soil rain loss = 0.69(In)
Total effective rainfall = 1.03(In)
Peak flow rate in flood hydrograph = 70.30(CFS)

++

24 - 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

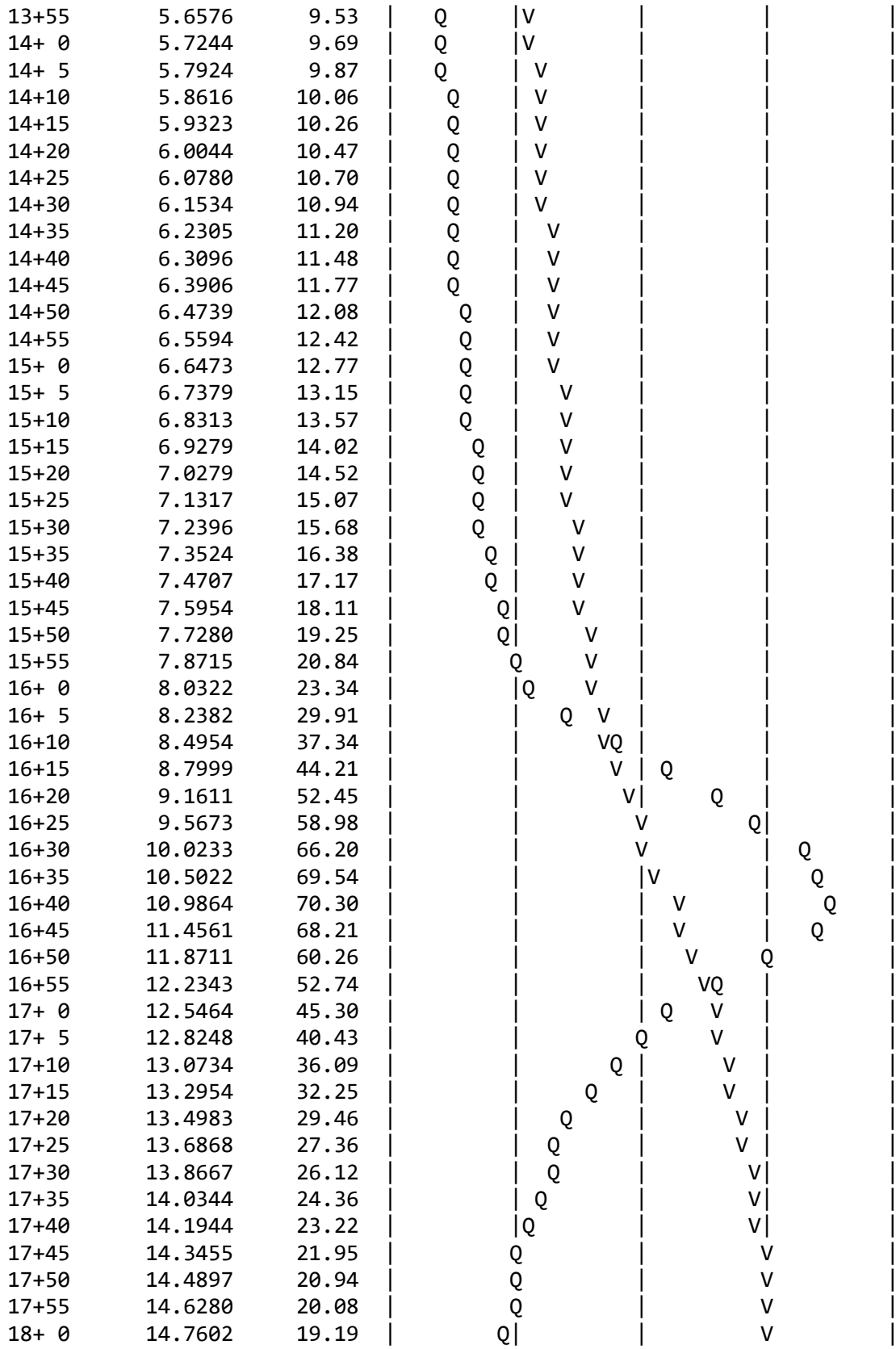
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	20.0	40.0	60.0	80.0
0+ 5	0.0002	0.04	Q	|	|	|	|
0+10	0.0010	0.11	Q	|	|	|	|
0+15	0.0026	0.22	Q	|	|	|	|
0+20	0.0052	0.39	Q	|	|	|	|
0+25	0.0092	0.59	Q	|	|	|	|
0+30	0.0150	0.84	Q	|	|	|	|
0+35	0.0227	1.12	Q	|	|	|	|
0+40	0.0325	1.41	Q	|	|	|	|
0+45	0.0442	1.71	Q	|	|	|	|
0+50	0.0577	1.96	Q	|	|	|	|
0+55	0.0726	2.16	VQ	|	|	|	|
1+ 0	0.0885	2.32	VQ	|	|	|	|
1+ 5	0.1054	2.45	VQ	|	|	|	|
1+10	0.1230	2.56	VQ	|	|	|	|
1+15	0.1413	2.65	VQ	|	|	|	|
1+20	0.1601	2.73	VQ	|	|	|	|

```
1+25      0.1794     2.80  VQ       |          |          |          |
1+30      0.1992     2.87  VQ       |          |          |          |
1+35      0.2193     2.93  VQ       |          |          |          |
1+40      0.2399     2.99  VQ       |          |          |          |
1+45      0.2609     3.04  VQ       |          |          |          |
1+50      0.2822     3.09  VQ       |          |          |          |
1+55      0.3038     3.14  VQ       |          |          |          |
2+ 0      0.3258     3.19  VQ       |          |          |          |
2+ 5      0.3480     3.23  VQ       |          |          |          |
2+10      0.3706     3.27  VQ       |          |          |          |
2+15      0.3934     3.31  VQ       |          |          |          |
2+20      0.4165     3.35  VQ       |          |          |          |
2+25      0.4398     3.39  VQ       |          |          |          |
2+30      0.4633     3.42  VQ       |          |          |          |
2+35      0.4872     3.46  |Q       |          |          |          |
2+40      0.5112     3.49  |Q       |          |          |          |
2+45      0.5354     3.52  |Q       |          |          |          |
2+50      0.5599     3.55  |Q       |          |          |          |
2+55      0.5846     3.58  |Q       |          |          |          |
3+ 0      0.6094     3.61  |Q       |          |          |          |
3+ 5      0.6345     3.64  |Q       |          |          |          |
3+10      0.6597     3.66  |Q       |          |          |          |
3+15      0.6851     3.69  |Q       |          |          |          |
3+20      0.7107     3.72  |Q       |          |          |          |
3+25      0.7365     3.74  |Q       |          |          |          |
3+30      0.7624     3.77  |Q       |          |          |          |
3+35      0.7886     3.79  |Q       |          |          |          |
3+40      0.8149     3.82  |Q       |          |          |          |
3+45      0.8413     3.85  |Q       |          |          |          |
3+50      0.8680     3.87  |Q       |          |          |          |
3+55      0.8948     3.89  |Q       |          |          |          |
4+ 0      0.9218     3.92  |Q       |          |          |          |
4+ 5      0.9489     3.94  |Q       |          |          |          |
4+10      0.9762     3.96  |QV      |          |          |          |
4+15      1.0037     3.99  |QV      |          |          |          |
4+20      1.0313     4.01  | Q      |          |          |          |
4+25      1.0591     4.03  | Q      |          |          |          |
4+30      1.0870     4.05  | Q      |          |          |          |
4+35      1.1151     4.08  | Q      |          |          |          |
4+40      1.1433     4.10  | Q      |          |          |          |
4+45      1.1717     4.12  | Q      |          |          |          |
4+50      1.2002     4.14  | Q      |          |          |          |
4+55      1.2289     4.16  | Q      |          |          |          |
5+ 0      1.2577     4.19  | Q      |          |          |          |
5+ 5      1.2867     4.21  | Q      |          |          |          |
5+10      1.3158     4.23  | Q      |          |          |          |
5+15      1.3451     4.25  | Q      |          |          |          |
5+20      1.3745     4.27  | Q      |          |          |          |
5+25      1.4041     4.30  | Q      |          |          |          |
5+30      1.4338     4.32  | QV     |          |          |          |
```

5+35	1.4637	4.34	QV				
5+40	1.4938	4.36	QV				
5+45	1.5240	4.39	QV				
5+50	1.5544	4.41	QV				
5+55	1.5849	4.43	QV				
6+ 0	1.6155	4.45	QV				
6+ 5	1.6463	4.47	QV				
6+10	1.6773	4.49	QV				
6+15	1.7084	4.51	QV				
6+20	1.7396	4.53	QV				
6+25	1.7710	4.56	QV				
6+30	1.8025	4.58	QV				
6+35	1.8341	4.60	QV				
6+40	1.8660	4.62	QV				
6+45	1.8979	4.64	QV				
6+50	1.9301	4.67	Q V				
6+55	1.9624	4.69	Q V				
7+ 0	1.9948	4.71	Q V				
7+ 5	2.0274	4.73	Q V				
7+10	2.0602	4.76	Q V				
7+15	2.0931	4.78	Q V				
7+20	2.1262	4.81	Q V				
7+25	2.1595	4.83	Q V				
7+30	2.1930	4.86	Q V				
7+35	2.2266	4.88	Q V				
7+40	2.2604	4.91	Q V				
7+45	2.2944	4.93	Q V				
7+50	2.3285	4.96	Q V				
7+55	2.3629	4.99	Q V				
8+ 0	2.3974	5.02	Q V				
8+ 5	2.4322	5.04	Q V				
8+10	2.4671	5.07	Q V				
8+15	2.5022	5.10	Q V				
8+20	2.5376	5.13	Q V				
8+25	2.5731	5.16	Q V				
8+30	2.6088	5.19	Q V				
8+35	2.6448	5.22	Q V				
8+40	2.6809	5.25	Q V				
8+45	2.7173	5.28	Q V				
8+50	2.7539	5.31	Q V				
8+55	2.7907	5.35	Q V				
9+ 0	2.8278	5.38	Q V				
9+ 5	2.8651	5.41	Q V				
9+10	2.9026	5.45	Q V				
9+15	2.9404	5.48	Q V				
9+20	2.9784	5.52	Q V				
9+25	3.0166	5.55	Q V				
9+30	3.0551	5.59	Q V				
9+35	3.0939	5.63	Q V				
9+40	3.1329	5.67	Q V				

9+45	3.1722	5.71	Q V			
9+50	3.2118	5.74	Q V			
9+55	3.2516	5.78	Q V			
10+ 0	3.2917	5.83	Q V			
10+ 5	3.3321	5.87	Q V			
10+10	3.3728	5.91	Q V			
10+15	3.4138	5.95	Q V			
10+20	3.4552	6.00	Q V			
10+25	3.4968	6.04	Q V			
10+30	3.5387	6.09	Q V			
10+35	3.5810	6.14	Q V			
10+40	3.6236	6.18	Q V			
10+45	3.6665	6.23	Q V			
10+50	3.7098	6.28	Q V			
10+55	3.7534	6.34	Q V			
11+ 0	3.7974	6.39	Q V			
11+ 5	3.8418	6.44	Q V			
11+10	3.8865	6.50	Q V			
11+15	3.9317	6.55	Q V			
11+20	3.9772	6.61	Q V			
11+25	4.0231	6.67	Q V			
11+30	4.0695	6.73	Q V			
11+35	4.1163	6.79	Q V			
11+40	4.1635	6.86	Q V			
11+45	4.2112	6.92	Q V			
11+50	4.2593	6.99	Q V			
11+55	4.3079	7.06	Q V			
12+ 0	4.3570	7.13	Q V			
12+ 5	4.4066	7.20	Q V			
12+10	4.4567	7.27	Q V			
12+15	4.5073	7.35	Q V			
12+20	4.5584	7.42	Q V			
12+25	4.6101	7.50	Q V			
12+30	4.6623	7.58	Q V			
12+35	4.7151	7.66	Q V			
12+40	4.7685	7.75	Q V			
12+45	4.8224	7.84	Q V			
12+50	4.8770	7.93	Q V			
12+55	4.9323	8.02	Q V			
13+ 0	4.9882	8.12	Q V			
13+ 5	5.0449	8.23	Q V			
13+10	5.1023	8.33	Q V			
13+15	5.1604	8.44	Q V			
13+20	5.2194	8.56	Q V			
13+25	5.2792	8.68	Q V			
13+30	5.3398	8.81	Q V			
13+35	5.4014	8.94	Q V			
13+40	5.4639	9.08	Q V			
13+45	5.5275	9.22	Q V			
13+50	5.5920	9.37	Q V			



18+ 5	14.8871	18.43	| Q|	|	|	|V |
18+10	15.0071	17.43	| Q |	|	|	|V |
18+15	15.1230	16.83	| Q |	|	|	|V |
18+20	15.2334	16.02	| Q |	|	|	|V |
18+25	15.3407	15.58	| Q |	|	|	| V |
18+30	15.4454	15.20	| Q |	|	|	| V |
18+35	15.5472	14.78	| Q |	|	|	| V |
18+40	15.6436	14.00	| Q |	|	|	| V |
18+45	15.7359	13.40	| Q |	|	|	| V |
18+50	15.8261	13.09	| Q |	|	|	| V |
18+55	15.9141	12.78	| Q |	|	|	| V |
19+ 0	15.9990	12.34	| Q |	|	|	| V |
19+ 5	16.0796	11.70	| Q |	|	|	| V |
19+10	16.1584	11.44	| Q |	|	|	| V |
19+15	16.2356	11.22	| Q |	|	|	| V |
19+20	16.3114	11.00	| Q |	|	|	| V |
19+25	16.3854	10.74	| Q |	|	|	| V |
19+30	16.4579	10.53	| Q |	|	|	| V |
19+35	16.5290	10.33	| Q |	|	|	| V |
19+40	16.5987	10.12	| Q |	|	|	| V |
19+45	16.6660	9.78	| Q |	|	|	| V |
19+50	16.7306	9.37	| Q |	|	|	| V |
19+55	16.7939	9.20	| Q |	|	|	| V |
20+ 0	16.8561	9.03	| Q |	|	|	| V |
20+ 5	16.9170	8.84	| Q |	|	|	| V |
20+10	16.9759	8.55	| Q |	|	|	| V |
20+15	17.0336	8.38	| Q |	|	|	| V |
20+20	17.0903	8.23	| Q |	|	|	| V |
20+25	17.1459	8.08	| Q |	|	|	| V |
20+30	17.2000	7.85	| Q |	|	|	| V |
20+35	17.2525	7.63	| Q |	|	|	| V |
20+40	17.3042	7.50	| Q |	|	|	| V |
20+45	17.3550	7.37	| Q |	|	|	| V |
20+50	17.4046	7.20	| Q |	|	|	| V |
20+55	17.4525	6.96	| Q |	|	|	| V |
21+ 0	17.4996	6.84	| Q |	|	|	| V |
21+ 5	17.5460	6.74	| Q |	|	|	| V |
21+10	17.5918	6.64	| Q |	|	|	| V |
21+15	17.6369	6.55	| Q |	|	|	| V |
21+20	17.6814	6.46	| Q |	|	|	| V |
21+25	17.7253	6.37	| Q |	|	|	| V |
21+30	17.7686	6.28	| Q |	|	|	| V |
21+35	17.8112	6.19	| Q |	|	|	| V |
21+40	17.8531	6.09	| Q |	|	|	| V |
21+45	17.8943	5.98	| Q |	|	|	| V |
21+50	17.9344	5.83	| Q |	|	|	| V |
21+55	17.9721	5.47	| Q |	|	|	| V |
22+ 0	18.0075	5.15	| Q |	|	|	| V |
22+ 5	18.0424	5.06	| Q |	|	|	| V |
22+10	18.0767	4.98	| Q |	|	|	| V |

```
22+15      18.1105      4.91  | Q       |         |         |      V  |
22+20      18.1439      4.85  | Q       |         |         |      V  |
22+25      18.1769      4.79  | Q       |         |         |       V |
22+30      18.2095      4.73  | Q       |         |         |       V |
22+35      18.2417      4.68  | Q       |         |         |       V |
22+40      18.2736      4.63  | Q       |         |         |       V |
22+45      18.3052      4.58  | Q       |         |         |       V |
22+50      18.3364      4.53  | Q       |         |         |       V |
22+55      18.3673      4.49  | Q       |         |         |       V |
23+ 0      18.3979      4.44  | Q       |         |         |       V |
23+ 5      18.4282      4.40  | Q       |         |         |       V |
23+10      18.4582      4.36  | Q       |         |         |       V |
23+15      18.4879      4.32  | Q       |         |         |       V |
23+20      18.5174      4.28  | Q       |         |         |       V |
23+25      18.5466      4.24  | Q       |         |         |       V |
23+30      18.5756      4.20  | Q       |         |         |       V |
23+35      18.6043      4.17  | Q       |         |         |       V |
23+40      18.6328      4.13  | Q       |         |         |        V|
23+45      18.6610      4.10  | Q       |         |         |        V|
23+50      18.6890      4.07  | Q       |         |         |        V|
23+55      18.7168      4.03  | Q       |         |         |        V|
24+ 0      18.7444      4.00  | Q       |         |         |        V|
24+ 5      18.7715      3.94  |Q        |         |         |        V|
24+10      18.7978      3.83  |Q        |         |         |        V|
24+15      18.8233      3.69  |Q        |         |         |        V|
24+20      18.8474      3.50  |Q        |         |         |        V|
24+25      18.8699      3.28  |Q        |         |         |        V|
24+30      18.8906      3.00  |Q        |         |         |        V|
24+35      18.9092      2.70  |Q        |         |         |        V|
24+40      18.9257      2.39  |Q        |         |         |        V|
24+45      18.9400      2.08  |Q        |         |         |        V|
24+50      18.9526      1.83  Q         |         |         |        V|
24+55      18.9637      1.62  Q         |         |         |        V|
25+ 0      18.9737      1.45  Q         |         |         |        V|
25+ 5      18.9828      1.32  Q         |         |         |        V|
25+10      18.9911      1.20  Q         |         |         |        V|
25+15      18.9987      1.11  Q         |         |         |        V|
25+20      19.0058      1.03  Q         |         |         |        V|
25+25      19.0124      0.96  Q         |         |         |        V|
25+30      19.0186      0.90  Q         |         |         |        V|
25+35      19.0244      0.84  Q         |         |         |        V|
25+40      19.0298      0.78  Q         |         |         |        V|
25+45      19.0348      0.73  Q         |         |         |        V|
25+50      19.0396      0.69  Q         |         |         |        V|
25+55      19.0440      0.64  Q         |         |         |        V|
26+ 0      19.0481      0.60  Q         |         |         |        V|
26+ 5      19.0520      0.56  Q         |         |         |        V|
26+10      19.0557      0.53  Q         |         |         |        V|
26+15      19.0591      0.50  Q         |         |         |        V|
26+20      19.0623      0.47  Q         |         |         |        V|
```

```
  26+25      19.0654      0.44  Q          |          |          |         V|
  26+30      19.0682      0.41  Q          |          |          |         V|
  26+35      19.0709      0.39  Q          |          |          |         V|
  26+40      19.0734      0.36  Q          |          |          |         V|
  26+45      19.0757      0.34  Q          |          |          |         V|
  26+50      19.0779      0.32  Q          |          |          |         V|
  26+55      19.0800      0.30  Q          |          |          |         V|
  27+ 0      19.0820      0.28  Q          |          |          |         V|
  27+ 5      19.0838      0.27  Q          |          |          |         V|
  27+10      19.0856      0.25  Q          |          |          |         V|
  27+15      19.0872      0.24  Q          |          |          |         V|
  27+20      19.0887      0.22  Q          |          |          |         V|
  27+25      19.0902      0.21  Q          |          |          |         V|
  27+30      19.0915      0.20  Q          |          |          |         V|
  27+35      19.0928      0.18  Q          |          |          |         V|
  27+40      19.0939      0.17  Q          |          |          |         V|
  27+45      19.0950      0.16  Q          |          |          |         V|
  27+50      19.0960      0.15  Q          |          |          |         V|
  27+55      19.0969      0.14  Q          |          |          |         V|
  28+ 0      19.0978      0.13  Q          |          |          |         V|
  28+ 5      19.0986      0.12  Q          |          |          |         V|
  28+10      19.0994      0.11  Q          |          |          |         V|
  28+15      19.1001      0.10  Q          |          |          |         V|
  28+20      19.1007      0.09  Q          |          |          |         V|
  28+25      19.1013      0.08  Q          |          |          |         V|
  28+30      19.1018      0.08  Q          |          |          |         V|
  28+35      19.1023      0.07  Q          |          |          |         V|
  28+40      19.1027      0.06  Q          |          |          |         V|
  28+45      19.1031      0.06  Q          |          |          |         V|
  28+50      19.1035      0.05  Q          |          |          |         V|
  28+55      19.1038      0.05  Q          |          |          |         V|
  29+ 0      19.1041      0.04  Q          |          |          |         V|
  29+ 5      19.1044      0.04  Q          |          |          |         V|
  29+10      19.1047      0.04  Q          |          |          |         V|
  29+15      19.1049      0.03  Q          |          |          |         V|
  29+20      19.1051      0.03  Q          |          |          |         V|
  29+25      19.1052      0.02  Q          |          |          |         V|
  29+30      19.1054      0.02  Q          |          |          |         V|
  29+35      19.1055      0.01  Q          |          |          |         V|
  29+40      19.1055      0.01  Q          |          |          |         V|
  29+45      19.1056      0.01  Q          |          |          |         V|
  29+50      19.1056      0.00  Q          |          |          |          V
-------------------------------------------------------------------------
```

UHEX03CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/18/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 3
EXISTING CONDITION, 5-YEAR 24-HOUR
FN: UHEX03CUL5.OUT - ABE

Storm Event Year = 5

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
40.00	1	0.60
Rainfall data for year 2		
40.00	6	0.70
Rainfall data for year 2		
40.00	24	1.20
Rainfall data for year 100		

```
            40.00            1           1.00
------------------------------------------------------------------------
Rainfall data for year 100
            40.00            6           1.90
------------------------------------------------------------------------
Rainfall data for year 100
            40.00           24           3.40
------------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  SCS curve     Area     Area     Fp(Fig C6)    Ap      Fm
No.(AMCII) NO.(AMC 2)    (Ac.)    Fraction     (In/Hr)  (dec.)   (In/Hr)
 86.0      86.0         40.00      1.000     0.265    1.000    0.265

Area-averaged adjusted loss rate Fm (In/Hr) =  0.265

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    40.00   1.000         86.0      86.0       1.63     0.373

Area-averaged catchment yield fraction, Y =  0.373
Area-averaged low loss fraction, Yb =  0.627
User entry of time of concentration  =   0.530 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      40.00(Ac.)
Catchment Lag time =   0.424 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 19.6541
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.265(In/Hr)
Average low loss rate fraction (Yb) = 0.627 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.177(In)
Computed peak 30-minute rainfall =  0.363(In)
Specified peak 1-hour rainfall =  0.480(In)
Computed peak 3-hour rainfall =  0.744(In)
Specified peak 6-hour rainfall =  0.981(In)
Specified peak 24-hour rainfall =  1.715(In)


Rainfall depth area reduction factors:
Using a total area of      40.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998     Adjusted rainfall =  0.177(In)
30-minute factor = 0.998    Adjusted rainfall =  0.363(In)
```

1-hour factor = 0.998 Adjusted rainfall = 0.479(In)
3-hour factor = 1.000 Adjusted rainfall = 0.744(In)
6-hour factor = 1.000 Adjusted rainfall = 0.981(In)
24-hour factor = 1.000 Adjusted rainfall = 1.715(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 483.75 (CFS))	
1	1.740	8.418
2	6.748	24.224
3	15.456	42.128
4	27.721	59.330
5	41.679	67.523
6	54.225	60.688
7	62.766	41.319
8	68.708	28.744
9	72.892	20.241
10	76.034	15.198
11	78.756	13.168
12	81.063	11.161
13	83.058	9.654
14	84.849	8.662
15	86.419	7.594
16	87.770	6.537
17	88.958	5.744
18	90.131	5.677
19	91.098	4.680
20	91.963	4.183
21	92.778	3.944
22	93.422	3.113
23	94.051	3.041
24	94.656	2.929
25	95.246	2.852
26	95.811	2.733
27	96.258	2.165
28	96.691	2.092
29	97.083	1.895
30	97.436	1.711
31	97.781	1.669
32	98.067	1.384
33	98.343	1.331
34	98.584	1.167
35	98.781	0.952
36	98.977	0.951
37	99.174	0.951

38	99.370	0.951
39	99.567	0.951
40	99.763	0.951
41	100.000	0.475

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1772	0.1772
2	0.2338	0.0566
3	0.2749	0.0412
4	0.3085	0.0335
5	0.3373	0.0288
6	0.3628	0.0255
7	0.3859	0.0231
8	0.4070	0.0212
9	0.4267	0.0196
10	0.4450	0.0184
11	0.4623	0.0173
12	0.4787	0.0164
13	0.4943	0.0156
14	0.5092	0.0149
15	0.5235	0.0143
16	0.5372	0.0137
17	0.5504	0.0132
18	0.5632	0.0128
19	0.5755	0.0123
20	0.5875	0.0120
21	0.5991	0.0116
22	0.6104	0.0113
23	0.6214	0.0110
24	0.6320	0.0107
25	0.6425	0.0104
26	0.6527	0.0102
27	0.6626	0.0100
28	0.6723	0.0097
29	0.6819	0.0095
30	0.6912	0.0093
31	0.7003	0.0091
32	0.7093	0.0090
33	0.7181	0.0088
34	0.7268	0.0086
35	0.7353	0.0085
36	0.7436	0.0084
37	0.7518	0.0082
38	0.7599	0.0081
39	0.7678	0.0079
40	0.7756	0.0078
41	0.7833	0.0077
42	0.7909	0.0076
43	0.7983	0.0075

44	0.8057	0.0074
45	0.8130	0.0073
46	0.8201	0.0072
47	0.8272	0.0071
48	0.8342	0.0070
49	0.8411	0.0069
50	0.8479	0.0068
51	0.8547	0.0067
52	0.8613	0.0067
53	0.8679	0.0066
54	0.8744	0.0065
55	0.8809	0.0064
56	0.8872	0.0064
57	0.8935	0.0063
58	0.8997	0.0062
59	0.9059	0.0062
60	0.9120	0.0061
61	0.9181	0.0060
62	0.9240	0.0060
63	0.9300	0.0059
64	0.9358	0.0059
65	0.9417	0.0058
66	0.9474	0.0058
67	0.9531	0.0057
68	0.9588	0.0057
69	0.9644	0.0056
70	0.9700	0.0056
71	0.9755	0.0055
72	0.9809	0.0055
73	0.9864	0.0055
74	0.9918	0.0054
75	0.9972	0.0054
76	1.0026	0.0053
77	1.0079	0.0053
78	1.0131	0.0053
79	1.0183	0.0052
80	1.0235	0.0052
81	1.0286	0.0051
82	1.0337	0.0051
83	1.0388	0.0051
84	1.0438	0.0050
85	1.0488	0.0050
86	1.0538	0.0050
87	1.0587	0.0049
88	1.0636	0.0049
89	1.0684	0.0049
90	1.0733	0.0048
91	1.0781	0.0048
92	1.0828	0.0048
93	1.0875	0.0047

94	1.0922	0.0047
95	1.0969	0.0047
96	1.1015	0.0046
97	1.1062	0.0046
98	1.1107	0.0046
99	1.1153	0.0046
100	1.1198	0.0045
101	1.1243	0.0045
102	1.1288	0.0045
103	1.1332	0.0044
104	1.1377	0.0044
105	1.1421	0.0044
106	1.1464	0.0044
107	1.1508	0.0043
108	1.1551	0.0043
109	1.1594	0.0043
110	1.1637	0.0043
111	1.1679	0.0043
112	1.1722	0.0042
113	1.1764	0.0042
114	1.1806	0.0042
115	1.1847	0.0042
116	1.1889	0.0041
117	1.1930	0.0041
118	1.1971	0.0041
119	1.2012	0.0041
120	1.2052	0.0041
121	1.2093	0.0040
122	1.2133	0.0040
123	1.2173	0.0040
124	1.2213	0.0040
125	1.2252	0.0040
126	1.2292	0.0039
127	1.2331	0.0039
128	1.2370	0.0039
129	1.2409	0.0039
130	1.2447	0.0039
131	1.2486	0.0039
132	1.2524	0.0038
133	1.2562	0.0038
134	1.2600	0.0038
135	1.2638	0.0038
136	1.2676	0.0038
137	1.2713	0.0037
138	1.2751	0.0037
139	1.2788	0.0037
140	1.2825	0.0037
141	1.2862	0.0037
142	1.2898	0.0037
143	1.2935	0.0037

144	1.2971	0.0036
145	1.3007	0.0036
146	1.3044	0.0036
147	1.3079	0.0036
148	1.3115	0.0036
149	1.3151	0.0036
150	1.3186	0.0036
151	1.3222	0.0035
152	1.3257	0.0035
153	1.3292	0.0035
154	1.3327	0.0035
155	1.3362	0.0035
156	1.3397	0.0035
157	1.3431	0.0035
158	1.3466	0.0034
159	1.3500	0.0034
160	1.3534	0.0034
161	1.3568	0.0034
162	1.3602	0.0034
163	1.3636	0.0034
164	1.3669	0.0034
165	1.3703	0.0034
166	1.3736	0.0033
167	1.3770	0.0033
168	1.3803	0.0033
169	1.3836	0.0033
170	1.3869	0.0033
171	1.3902	0.0033
172	1.3934	0.0033
173	1.3967	0.0033
174	1.3999	0.0032
175	1.4032	0.0032
176	1.4064	0.0032
177	1.4096	0.0032
178	1.4128	0.0032
179	1.4160	0.0032
180	1.4192	0.0032
181	1.4224	0.0032
182	1.4255	0.0032
183	1.4287	0.0032
184	1.4318	0.0031
185	1.4350	0.0031
186	1.4381	0.0031
187	1.4412	0.0031
188	1.4443	0.0031
189	1.4474	0.0031
190	1.4505	0.0031
191	1.4535	0.0031
192	1.4566	0.0031
193	1.4597	0.0031

194	1.4627	0.0030
195	1.4657	0.0030
196	1.4688	0.0030
197	1.4718	0.0030
198	1.4748	0.0030
199	1.4778	0.0030
200	1.4808	0.0030
201	1.4837	0.0030
202	1.4867	0.0030
203	1.4897	0.0030
204	1.4926	0.0030
205	1.4956	0.0029
206	1.4985	0.0029
207	1.5014	0.0029
208	1.5044	0.0029
209	1.5073	0.0029
210	1.5102	0.0029
211	1.5131	0.0029
212	1.5160	0.0029
213	1.5188	0.0029
214	1.5217	0.0029
215	1.5246	0.0029
216	1.5274	0.0029
217	1.5303	0.0028
218	1.5331	0.0028
219	1.5359	0.0028
220	1.5388	0.0028
221	1.5416	0.0028
222	1.5444	0.0028
223	1.5472	0.0028
224	1.5500	0.0028
225	1.5528	0.0028
226	1.5555	0.0028
227	1.5583	0.0028
228	1.5611	0.0028
229	1.5638	0.0028
230	1.5666	0.0027
231	1.5693	0.0027
232	1.5721	0.0027
233	1.5748	0.0027
234	1.5775	0.0027
235	1.5802	0.0027
236	1.5829	0.0027
237	1.5856	0.0027
238	1.5883	0.0027
239	1.5910	0.0027
240	1.5937	0.0027
241	1.5964	0.0027
242	1.5990	0.0027
243	1.6017	0.0027

244	1.6043	0.0027	
245	1.6070	0.0026	
246	1.6096	0.0026	
247	1.6123	0.0026	
248	1.6149	0.0026	
249	1.6175	0.0026	
250	1.6201	0.0026	
251	1.6227	0.0026	
252	1.6253	0.0026	
253	1.6279	0.0026	
254	1.6305	0.0026	
255	1.6331	0.0026	
256	1.6357	0.0026	
257	1.6383	0.0026	
258	1.6408	0.0026	
259	1.6434	0.0026	
260	1.6459	0.0026	
261	1.6485	0.0025	
262	1.6510	0.0025	
263	1.6536	0.0025	
264	1.6561	0.0025	
265	1.6586	0.0025	
266	1.6611	0.0025	
267	1.6637	0.0025	
268	1.6662	0.0025	
269	1.6687	0.0025	
270	1.6712	0.0025	
271	1.6737	0.0025	
272	1.6761	0.0025	
273	1.6786	0.0025	
274	1.6811	0.0025	
275	1.6836	0.0025	
276	1.6860	0.0025	
277	1.6885	0.0025	
278	1.6909	0.0025	
279	1.6934	0.0024	
280	1.6958	0.0024	
281	1.6983	0.0024	
282	1.7007	0.0024	
283	1.7031	0.0024	
284	1.7056	0.0024	
285	1.7080	0.0024	
286	1.7104	0.0024	
287	1.7128	0.0024	
288	1.7152	0.0024	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)

1	0.0024	0.0015	0.0009
2	0.0024	0.0015	0.0009
3	0.0024	0.0015	0.0009
4	0.0024	0.0015	0.0009
5	0.0024	0.0015	0.0009
6	0.0024	0.0015	0.0009
7	0.0024	0.0015	0.0009
8	0.0025	0.0015	0.0009
9	0.0025	0.0015	0.0009
10	0.0025	0.0015	0.0009
11	0.0025	0.0016	0.0009
12	0.0025	0.0016	0.0009
13	0.0025	0.0016	0.0009
14	0.0025	0.0016	0.0009
15	0.0025	0.0016	0.0009
16	0.0025	0.0016	0.0009
17	0.0025	0.0016	0.0009
18	0.0025	0.0016	0.0009
19	0.0025	0.0016	0.0010
20	0.0026	0.0016	0.0010
21	0.0026	0.0016	0.0010
22	0.0026	0.0016	0.0010
23	0.0026	0.0016	0.0010
24	0.0026	0.0016	0.0010
25	0.0026	0.0016	0.0010
26	0.0026	0.0016	0.0010
27	0.0026	0.0016	0.0010
28	0.0026	0.0016	0.0010
29	0.0026	0.0017	0.0010
30	0.0026	0.0017	0.0010
31	0.0027	0.0017	0.0010
32	0.0027	0.0017	0.0010
33	0.0027	0.0017	0.0010
34	0.0027	0.0017	0.0010
35	0.0027	0.0017	0.0010
36	0.0027	0.0017	0.0010
37	0.0027	0.0017	0.0010
38	0.0027	0.0017	0.0010
39	0.0027	0.0017	0.0010
40	0.0027	0.0017	0.0010
41	0.0028	0.0017	0.0010
42	0.0028	0.0017	0.0010
43	0.0028	0.0017	0.0010
44	0.0028	0.0018	0.0010
45	0.0028	0.0018	0.0010
46	0.0028	0.0018	0.0011
47	0.0028	0.0018	0.0011
48	0.0028	0.0018	0.0011
49	0.0029	0.0018	0.0011
50	0.0029	0.0018	0.0011

51	0.0029	0.0018	0.0011
52	0.0029	0.0018	0.0011
53	0.0029	0.0018	0.0011
54	0.0029	0.0018	0.0011
55	0.0029	0.0018	0.0011
56	0.0029	0.0018	0.0011
57	0.0030	0.0019	0.0011
58	0.0030	0.0019	0.0011
59	0.0030	0.0019	0.0011
60	0.0030	0.0019	0.0011
61	0.0030	0.0019	0.0011
62	0.0030	0.0019	0.0011
63	0.0030	0.0019	0.0011
64	0.0030	0.0019	0.0011
65	0.0031	0.0019	0.0011
66	0.0031	0.0019	0.0011
67	0.0031	0.0019	0.0012
68	0.0031	0.0019	0.0012
69	0.0031	0.0020	0.0012
70	0.0031	0.0020	0.0012
71	0.0032	0.0020	0.0012
72	0.0032	0.0020	0.0012
73	0.0032	0.0020	0.0012
74	0.0032	0.0020	0.0012
75	0.0032	0.0020	0.0012
76	0.0032	0.0020	0.0012
77	0.0032	0.0020	0.0012
78	0.0033	0.0020	0.0012
79	0.0033	0.0021	0.0012
80	0.0033	0.0021	0.0012
81	0.0033	0.0021	0.0012
82	0.0033	0.0021	0.0012
83	0.0034	0.0021	0.0013
84	0.0034	0.0021	0.0013
85	0.0034	0.0021	0.0013
86	0.0034	0.0021	0.0013
87	0.0034	0.0021	0.0013
88	0.0034	0.0022	0.0013
89	0.0035	0.0022	0.0013
90	0.0035	0.0022	0.0013
91	0.0035	0.0022	0.0013
92	0.0035	0.0022	0.0013
93	0.0036	0.0022	0.0013
94	0.0036	0.0022	0.0013
95	0.0036	0.0023	0.0013
96	0.0036	0.0023	0.0013
97	0.0036	0.0023	0.0014
98	0.0037	0.0023	0.0014
99	0.0037	0.0023	0.0014
100	0.0037	0.0023	0.0014

101	0.0037	0.0023	0.0014
102	0.0037	0.0023	0.0014
103	0.0038	0.0024	0.0014
104	0.0038	0.0024	0.0014
105	0.0038	0.0024	0.0014
106	0.0039	0.0024	0.0014
107	0.0039	0.0024	0.0015
108	0.0039	0.0024	0.0015
109	0.0039	0.0025	0.0015
110	0.0040	0.0025	0.0015
111	0.0040	0.0025	0.0015
112	0.0040	0.0025	0.0015
113	0.0041	0.0025	0.0015
114	0.0041	0.0026	0.0015
115	0.0041	0.0026	0.0015
116	0.0041	0.0026	0.0015
117	0.0042	0.0026	0.0016
118	0.0042	0.0026	0.0016
119	0.0043	0.0027	0.0016
120	0.0043	0.0027	0.0016
121	0.0043	0.0027	0.0016
122	0.0043	0.0027	0.0016
123	0.0044	0.0028	0.0016
124	0.0044	0.0028	0.0016
125	0.0045	0.0028	0.0017
126	0.0045	0.0028	0.0017
127	0.0046	0.0029	0.0017
128	0.0046	0.0029	0.0017
129	0.0046	0.0029	0.0017
130	0.0047	0.0029	0.0017
131	0.0047	0.0030	0.0018
132	0.0048	0.0030	0.0018
133	0.0048	0.0030	0.0018
134	0.0049	0.0030	0.0018
135	0.0049	0.0031	0.0018
136	0.0050	0.0031	0.0018
137	0.0050	0.0032	0.0019
138	0.0051	0.0032	0.0019
139	0.0051	0.0032	0.0019
140	0.0052	0.0032	0.0019
141	0.0053	0.0033	0.0020
142	0.0053	0.0033	0.0020
143	0.0054	0.0034	0.0020
144	0.0054	0.0034	0.0020
145	0.0055	0.0034	0.0020
146	0.0055	0.0035	0.0021
147	0.0056	0.0035	0.0021
148	0.0057	0.0035	0.0021
149	0.0058	0.0036	0.0022
150	0.0058	0.0036	0.0022

151	0.0059	0.0037	0.0022
152	0.0060	0.0038	0.0022
153	0.0061	0.0038	0.0023
154	0.0062	0.0039	0.0023
155	0.0063	0.0039	0.0023
156	0.0064	0.0040	0.0024
157	0.0065	0.0041	0.0024
158	0.0066	0.0041	0.0025
159	0.0067	0.0042	0.0025
160	0.0068	0.0043	0.0025
161	0.0070	0.0044	0.0026
162	0.0071	0.0044	0.0026
163	0.0073	0.0046	0.0027
164	0.0074	0.0046	0.0027
165	0.0076	0.0048	0.0028
166	0.0077	0.0048	0.0029
167	0.0079	0.0050	0.0030
168	0.0081	0.0050	0.0030
169	0.0084	0.0052	0.0031
170	0.0085	0.0053	0.0032
171	0.0088	0.0055	0.0033
172	0.0090	0.0056	0.0033
173	0.0093	0.0058	0.0035
174	0.0095	0.0060	0.0036
175	0.0100	0.0062	0.0037
176	0.0102	0.0064	0.0038
177	0.0107	0.0067	0.0040
178	0.0110	0.0069	0.0041
179	0.0116	0.0073	0.0043
180	0.0120	0.0075	0.0045
181	0.0128	0.0080	0.0048
182	0.0132	0.0083	0.0049
183	0.0143	0.0090	0.0053
184	0.0149	0.0093	0.0056
185	0.0164	0.0103	0.0061
186	0.0173	0.0108	0.0065
187	0.0196	0.0123	0.0073
188	0.0212	0.0133	0.0079
189	0.0255	0.0160	0.0095
190	0.0288	0.0181	0.0107
191	0.0412	0.0221	0.0191
192	0.0566	0.0221	0.0345
193	0.1772	0.0221	0.1551
194	0.0335	0.0210	0.0125
195	0.0231	0.0145	0.0086
196	0.0184	0.0115	0.0069
197	0.0156	0.0098	0.0058
198	0.0137	0.0086	0.0051
199	0.0123	0.0077	0.0046
200	0.0113	0.0071	0.0042

201	0.0104	0.0065	0.0039
202	0.0097	0.0061	0.0036
203	0.0091	0.0057	0.0034
204	0.0086	0.0054	0.0032
205	0.0082	0.0051	0.0031
206	0.0078	0.0049	0.0029
207	0.0075	0.0047	0.0028
208	0.0072	0.0045	0.0027
209	0.0069	0.0043	0.0026
210	0.0067	0.0042	0.0025
211	0.0064	0.0040	0.0024
212	0.0062	0.0039	0.0023
213	0.0060	0.0038	0.0023
214	0.0059	0.0037	0.0022
215	0.0057	0.0036	0.0021
216	0.0056	0.0035	0.0021
217	0.0055	0.0034	0.0020
218	0.0053	0.0033	0.0020
219	0.0052	0.0033	0.0019
220	0.0051	0.0032	0.0019
221	0.0050	0.0031	0.0019
222	0.0049	0.0031	0.0018
223	0.0048	0.0030	0.0018
224	0.0047	0.0029	0.0018
225	0.0046	0.0029	0.0017
226	0.0045	0.0028	0.0017
227	0.0044	0.0028	0.0017
228	0.0044	0.0027	0.0016
229	0.0043	0.0027	0.0016
230	0.0042	0.0027	0.0016
231	0.0042	0.0026	0.0016
232	0.0041	0.0026	0.0015
233	0.0040	0.0025	0.0015
234	0.0040	0.0025	0.0015
235	0.0039	0.0025	0.0015
236	0.0039	0.0024	0.0014
237	0.0038	0.0024	0.0014
238	0.0038	0.0024	0.0014
239	0.0037	0.0023	0.0014
240	0.0037	0.0023	0.0014
241	0.0036	0.0023	0.0014
242	0.0036	0.0022	0.0013
243	0.0035	0.0022	0.0013
244	0.0035	0.0022	0.0013
245	0.0035	0.0022	0.0013
246	0.0034	0.0021	0.0013
247	0.0034	0.0021	0.0013
248	0.0033	0.0021	0.0012
249	0.0033	0.0021	0.0012
250	0.0033	0.0021	0.0012

251	0.0032	0.0020	0.0012
252	0.0032	0.0020	0.0012
253	0.0032	0.0020	0.0012
254	0.0031	0.0020	0.0012
255	0.0031	0.0020	0.0012
256	0.0031	0.0019	0.0011
257	0.0031	0.0019	0.0011
258	0.0030	0.0019	0.0011
259	0.0030	0.0019	0.0011
260	0.0030	0.0019	0.0011
261	0.0029	0.0018	0.0011
262	0.0029	0.0018	0.0011
263	0.0029	0.0018	0.0011
264	0.0029	0.0018	0.0011
265	0.0028	0.0018	0.0011
266	0.0028	0.0018	0.0011
267	0.0028	0.0018	0.0010
268	0.0028	0.0017	0.0010
269	0.0028	0.0017	0.0010
270	0.0027	0.0017	0.0010
271	0.0027	0.0017	0.0010
272	0.0027	0.0017	0.0010
273	0.0027	0.0017	0.0010
274	0.0027	0.0017	0.0010
275	0.0026	0.0017	0.0010
276	0.0026	0.0016	0.0010
277	0.0026	0.0016	0.0010
278	0.0026	0.0016	0.0010
279	0.0026	0.0016	0.0010
280	0.0025	0.0016	0.0009
281	0.0025	0.0016	0.0009
282	0.0025	0.0016	0.0009
283	0.0025	0.0016	0.0009
284	0.0025	0.0016	0.0009
285	0.0025	0.0015	0.0009
286	0.0024	0.0015	0.0009
287	0.0024	0.0015	0.0009
288	0.0024	0.0015	0.0009

Total soil rain loss = 0.97(In)
Total effective rainfall = 0.75(In)
Peak flow rate in flood hydrograph = 15.86(CFS)

++

24 - 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

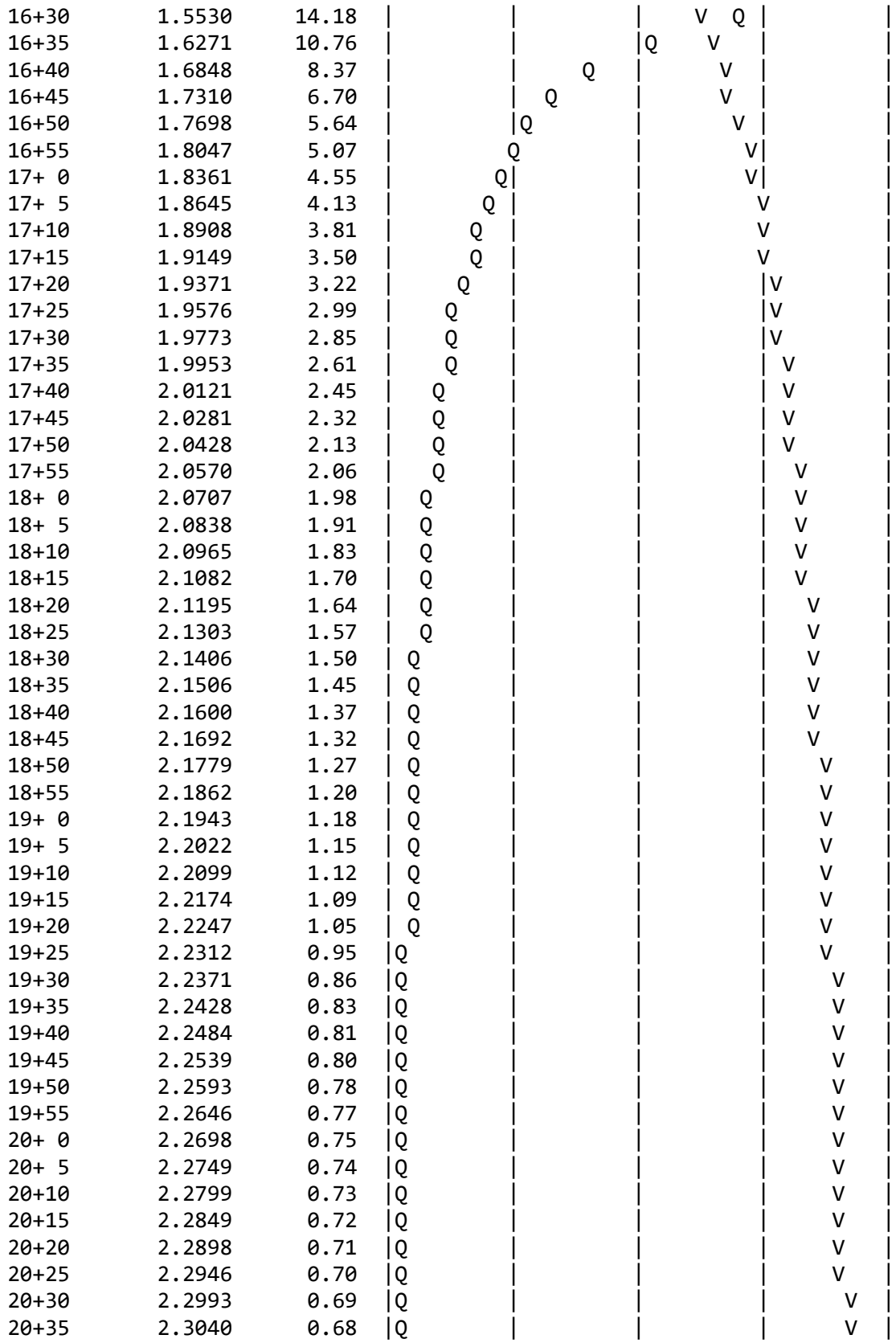
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0001	0.01	Q				
0+10	0.0003	0.03	Q				
0+15	0.0007	0.07	Q				
0+20	0.0015	0.12	Q				
0+25	0.0028	0.18	Q				
0+30	0.0044	0.24	Q				
0+35	0.0063	0.27	Q				
0+40	0.0084	0.30	Q				
0+45	0.0106	0.32	Q				
0+50	0.0129	0.33	Q				
0+55	0.0153	0.35	Q				
1+ 0	0.0177	0.36	Q				
1+ 5	0.0203	0.37	Q				
1+10	0.0229	0.38	Q				
1+15	0.0255	0.39	Q				
1+20	0.0282	0.39	Q				
1+25	0.0310	0.40	Q				
1+30	0.0338	0.41	Q				
1+35	0.0366	0.41	Q				
1+40	0.0395	0.42	Q				
1+45	0.0424	0.42	Q				
1+50	0.0453	0.43	Q				
1+55	0.0483	0.43	Q				
2+ 0	0.0512	0.43	Q				
2+ 5	0.0542	0.44	Q				
2+10	0.0573	0.44	Q				
2+15	0.0604	0.44	Q				
2+20	0.0634	0.45	QV				
2+25	0.0665	0.45	QV				
2+30	0.0697	0.45	QV				
2+35	0.0728	0.46	QV				
2+40	0.0760	0.46	QV				
2+45	0.0792	0.46	QV				
2+50	0.0824	0.47	QV				
2+55	0.0856	0.47	QV				
3+ 0	0.0889	0.47	QV				
3+ 5	0.0921	0.47	QV				
3+10	0.0954	0.48	QV				
3+15	0.0987	0.48	QV				
3+20	0.1020	0.48	QV				
3+25	0.1054	0.48	QV				
3+30	0.1087	0.49	QV				
3+35	0.1121	0.49	QV				
3+40	0.1154	0.49	QV				
3+45	0.1188	0.49	QV				
3+50	0.1222	0.49	QV				
3+55	0.1256	0.50	Q V				

```
4+ 0       0.1291      0.50  Q V       |          |          |          |
4+ 5       0.1325      0.50  Q V       |          |          |          |
4+10       0.1359      0.50  |QV       |          |          |          |
4+15       0.1394      0.50  |QV       |          |          |          |
4+20       0.1429      0.51  |QV       |          |          |          |
4+25       0.1464      0.51  |QV       |          |          |          |
4+30       0.1499      0.51  |QV       |          |          |          |
4+35       0.1534      0.51  |QV       |          |          |          |
4+40       0.1569      0.51  |QV       |          |          |          |
4+45       0.1605      0.52  |QV       |          |          |          |
4+50       0.1641      0.52  |QV       |          |          |          |
4+55       0.1676      0.52  |QV       |          |          |          |
5+ 0       0.1712      0.52  |QV       |          |          |          |
5+ 5       0.1748      0.52  |QV       |          |          |          |
5+10       0.1785      0.53  |QV       |          |          |          |
5+15       0.1821      0.53  |QV       |          |          |          |
5+20       0.1858      0.53  |QV       |          |          |          |
5+25       0.1894      0.53  |Q V      |          |          |          |
5+30       0.1931      0.54  |Q V      |          |          |          |
5+35       0.1968      0.54  |Q V      |          |          |          |
5+40       0.2006      0.54  |Q V      |          |          |          |
5+45       0.2043      0.54  |Q V      |          |          |          |
5+50       0.2081      0.55  |Q V      |          |          |          |
5+55       0.2118      0.55  |Q V      |          |          |          |
6+ 0       0.2156      0.55  |Q V      |          |          |          |
6+ 5       0.2194      0.55  |Q V      |          |          |          |
6+10       0.2233      0.56  |Q V      |          |          |          |
6+15       0.2271      0.56  |Q V      |          |          |          |
6+20       0.2310      0.56  |Q V      |          |          |          |
6+25       0.2349      0.56  |Q V      |          |          |          |
6+30       0.2388      0.57  |Q V      |          |          |          |
6+35       0.2427      0.57  |Q V      |          |          |          |
6+40       0.2466      0.57  |Q V      |          |          |          |
6+45       0.2506      0.58  |Q  V     |          |          |          |
6+50       0.2546      0.58  |Q  V     |          |          |          |
6+55       0.2586      0.58  |Q  V     |          |          |          |
7+ 0       0.2626      0.58  |Q  V     |          |          |          |
7+ 5       0.2666      0.59  |Q  V     |          |          |          |
7+10       0.2707      0.59  |Q  V     |          |          |          |
7+15       0.2748      0.59  |Q  V     |          |          |          |
7+20       0.2789      0.60  |Q  V     |          |          |          |
7+25       0.2830      0.60  |Q  V     |          |          |          |
7+30       0.2872      0.60  |Q  V     |          |          |          |
7+35       0.2914      0.61  |Q  V     |          |          |          |
7+40       0.2956      0.61  |Q  V     |          |          |          |
7+45       0.2998      0.61  |Q  V     |          |          |          |
7+50       0.3040      0.62  |Q  V     |          |          |          |
7+55       0.3083      0.62  |Q  V     |          |          |          |
8+ 0       0.3126      0.62  |Q   V    |          |          |          |
8+ 5       0.3169      0.63  |Q   V    |          |          |          |
```

8+10	0.3213	0.63	Q V				
8+15	0.3256	0.63	Q V				
8+20	0.3300	0.64	Q V				
8+25	0.3344	0.64	Q V				
8+30	0.3389	0.65	Q V				
8+35	0.3434	0.65	Q V				
8+40	0.3479	0.65	Q V				
8+45	0.3524	0.66	Q V				
8+50	0.3570	0.66	Q V				
8+55	0.3616	0.67	Q V				
9+ 0	0.3662	0.67	Q V				
9+ 5	0.3708	0.68	Q V				
9+10	0.3755	0.68	Q V				
9+15	0.3802	0.68	Q V				
9+20	0.3850	0.69	Q V				
9+25	0.3898	0.69	Q V				
9+30	0.3946	0.70	Q V				
9+35	0.3994	0.70	Q V				
9+40	0.4043	0.71	Q V				
9+45	0.4092	0.71	Q V				
9+50	0.4142	0.72	Q V				
9+55	0.4191	0.72	Q V				
10+ 0	0.4242	0.73	Q V				
10+ 5	0.4292	0.74	Q V				
10+10	0.4343	0.74	Q V				
10+15	0.4395	0.75	Q V				
10+20	0.4447	0.75	Q V				
10+25	0.4499	0.76	Q V				
10+30	0.4552	0.76	Q V				
10+35	0.4605	0.77	Q V				
10+40	0.4658	0.78	Q V				
10+45	0.4712	0.78	Q V				
10+50	0.4767	0.79	Q V				
10+55	0.4821	0.80	Q V				
11+ 0	0.4877	0.80	Q V				
11+ 5	0.4933	0.81	Q V				
11+10	0.4989	0.82	Q V				
11+15	0.5046	0.83	Q V				
11+20	0.5104	0.83	Q V				
11+25	0.5162	0.84	Q V				
11+30	0.5220	0.85	Q V				
11+35	0.5279	0.86	Q V				
11+40	0.5339	0.87	Q V				
11+45	0.5399	0.88	Q V				
11+50	0.5460	0.89	Q V				
11+55	0.5522	0.89	Q V				
12+ 0	0.5584	0.90	Q V				
12+ 5	0.5647	0.91	Q V				
12+10	0.5711	0.92	Q V				
12+15	0.5775	0.93	Q V				

```
12+20       0.5840      0.94  |Q       V|          |          |          |
12+25       0.5906      0.95  |Q       V|          |          |          |
12+30       0.5972      0.96  |Q       V|          |          |          |
12+35       0.6039      0.97  |Q       V|          |          |          |
12+40       0.6107      0.99  |Q       V|          |          |          |
12+45       0.6176      1.00  |Q       V|          |          |          |
12+50       0.6246      1.01  | Q       V          |          |          |
12+55       0.6316      1.03  | Q       V          |          |          |
13+ 0       0.6388      1.04  | Q       V          |          |          |
13+ 5       0.6461      1.05  | Q       V          |          |          |
13+10       0.6534      1.07  | Q       V          |          |          |
13+15       0.6609      1.09  | Q       V          |          |          |
13+20       0.6685      1.10  | Q       V          |          |          |
13+25       0.6762      1.12  | Q       V          |          |          |
13+30       0.6840      1.14  | Q       |V         |          |          |
13+35       0.6920      1.16  | Q       |V         |          |          |
13+40       0.7001      1.18  | Q       |V         |          |          |
13+45       0.7083      1.20  | Q       |V         |          |          |
13+50       0.7167      1.22  | Q       |V         |          |          |
13+55       0.7252      1.24  | Q       |V         |          |          |
14+ 0       0.7339      1.26  | Q       |V         |          |          |
14+ 5       0.7428      1.29  | Q       |V         |          |          |
14+10       0.7519      1.32  | Q       | V        |          |          |
14+15       0.7611      1.35  | Q       | V        |          |          |
14+20       0.7706      1.38  | Q       | V        |          |          |
14+25       0.7803      1.41  | Q       | V        |          |          |
14+30       0.7903      1.44  | Q       | V        |          |          |
14+35       0.8005      1.48  | Q       | V        |          |          |
14+40       0.8109      1.52  |  Q      |  V       |          |          |
14+45       0.8217      1.56  |  Q      |  V       |          |          |
14+50       0.8328      1.61  |  Q      |  V       |          |          |
14+55       0.8442      1.66  |  Q      |  V       |          |          |
15+ 0       0.8560      1.71  |  Q      |  V       |          |          |
15+ 5       0.8682      1.77  |  Q      |  V       |          |          |
15+10       0.8808      1.84  |  Q      |   V      |          |          |
15+15       0.8940      1.91  |  Q      |   V      |          |          |
15+20       0.9077      1.99  |  Q      |   V      |          |          |
15+25       0.9220      2.08  |   Q     |   V      |          |          |
15+30       0.9371      2.19  |   Q     |    V     |          |          |
15+35       0.9530      2.31  |   Q     |    V     |          |          |
15+40       0.9699      2.46  |   Q     |    V     |          |          |
15+45       0.9881      2.64  |    Q    |    V     |          |          |
15+50       1.0078      2.86  |    Q    |     V    |          |          |
15+55       1.0298      3.20  |     Q   |     V    |          |          |
16+ 0       1.0561      3.82  |      Q  |      V   |          |          |
16+ 5       1.0965      5.86  |         |Q     V   |          |          |
16+10       1.1584      8.99  |         |      QV  |          |          |
16+15       1.2429     12.27  |         |         V   Q      |          |
16+20       1.3462     15.00  |         |         |V       Q|          |
16+25       1.4554     15.86  |         |         |  V      |Q         |
```



```
20+40       2.3086      0.67  |Q        |         |         |      V  |
20+45       2.3131      0.66  |Q        |         |         |      V  |
20+50       2.3176      0.65  |Q        |         |         |      V  |
20+55       2.3220      0.64  |Q        |         |         |      V  |
21+ 0       2.3264      0.64  |Q        |         |         |      V  |
21+ 5       2.3307      0.63  |Q        |         |         |      V  |
21+10       2.3350      0.62  |Q        |         |         |      V  |
21+15       2.3392      0.61  |Q        |         |         |      V  |
21+20       2.3434      0.61  |Q        |         |         |      V  |
21+25       2.3475      0.60  |Q        |         |         |      V  |
21+30       2.3516      0.59  |Q        |         |         |      V  |
21+35       2.3557      0.59  |Q        |         |         |      V  |
21+40       2.3597      0.58  |Q        |         |         |       V |
21+45       2.3636      0.57  |Q        |         |         |       V |
21+50       2.3675      0.57  |Q        |         |         |       V |
21+55       2.3714      0.56  |Q        |         |         |       V |
22+ 0       2.3753      0.56  |Q        |         |         |       V |
22+ 5       2.3791      0.55  |Q        |         |         |       V |
22+10       2.3828      0.55  |Q        |         |         |       V |
22+15       2.3866      0.54  |Q        |         |         |       V |
22+20       2.3903      0.54  |Q        |         |         |       V |
22+25       2.3939      0.53  |Q        |         |         |       V |
22+30       2.3976      0.53  |Q        |         |         |       V |
22+35       2.4012      0.52  |Q        |         |         |       V |
22+40       2.4047      0.52  |Q        |         |         |       V |
22+45       2.4083      0.51  |Q        |         |         |       V |
22+50       2.4118      0.51  |Q        |         |         |       V |
22+55       2.4153      0.51  |Q        |         |         |       V |
23+ 0       2.4187      0.50  |Q        |         |         |       V |
23+ 5       2.4222      0.50  Q         |         |         |        V|
23+10       2.4256      0.49  Q         |         |         |        V|
23+15       2.4289      0.49  Q         |         |         |        V|
23+20       2.4323      0.49  Q         |         |         |        V|
23+25       2.4356      0.48  Q         |         |         |        V|
23+30       2.4389      0.48  Q         |         |         |        V|
23+35       2.4422      0.48  Q         |         |         |        V|
23+40       2.4454      0.47  Q         |         |         |        V|
23+45       2.4487      0.47  Q         |         |         |        V|
23+50       2.4519      0.47  Q         |         |         |        V|
23+55       2.4551      0.46  Q         |         |         |        V|
24+ 0       2.4582      0.46  Q         |         |         |        V|
24+ 5       2.4613      0.45  Q         |         |         |        V|
24+10       2.4642      0.42  Q         |         |         |        V|
24+15       2.4669      0.38  Q         |         |         |        V|
24+20       2.4691      0.33  Q         |         |         |        V|
24+25       2.4709      0.26  Q         |         |         |        V|
24+30       2.4724      0.21  Q         |         |         |        V|
24+35       2.4735      0.17  Q         |         |         |        V|
24+40       2.4745      0.14  Q         |         |         |        V|
24+45       2.4754      0.12  Q         |         |         |        V|
```

```
   24+50       2.4761      0.11  Q          |          |          |         V|
   24+55       2.4768      0.10  Q          |          |          |         V|
   25+ 0       2.4774      0.09  Q          |          |          |         V|
   25+ 5       2.4779      0.08  Q          |          |          |         V|
   25+10       2.4784      0.07  Q          |          |          |         V|
   25+15       2.4788      0.06  Q          |          |          |         V|
   25+20       2.4792      0.06  Q          |          |          |         V|
   25+25       2.4796      0.05  Q          |          |          |         V|
   25+30       2.4799      0.04  Q          |          |          |         V|
   25+35       2.4802      0.04  Q          |          |          |         V|
   25+40       2.4804      0.04  Q          |          |          |         V|
   25+45       2.4806      0.03  Q          |          |          |         V|
   25+50       2.4808      0.03  Q          |          |          |         V|
   25+55       2.4810      0.03  Q          |          |          |         V|
   26+ 0       2.4812      0.02  Q          |          |          |         V|
   26+ 5       2.4813      0.02  Q          |          |          |         V|
   26+10       2.4814      0.02  Q          |          |          |         V|
   26+15       2.4815      0.02  Q          |          |          |         V|
   26+20       2.4816      0.01  Q          |          |          |         V|
   26+25       2.4817      0.01  Q          |          |          |         V|
   26+30       2.4818      0.01  Q          |          |          |         V|
   26+35       2.4819      0.01  Q          |          |          |         V|
   26+40       2.4819      0.01  Q          |          |          |         V|
   26+45       2.4820      0.01  Q          |          |          |         V|
   26+50       2.4820      0.01  Q          |          |          |         V|
   26+55       2.4820      0.00  Q          |          |          |         V|
   27+ 0       2.4821      0.00  Q          |          |          |         V|
   27+ 5       2.4821      0.00  Q          |          |          |         V|
   27+10       2.4821      0.00  Q          |          |          |         V|
   27+15       2.4821      0.00  Q          |          |          |         V|
   27+20       2.4821      0.00  Q          |          |          |          V
-------------------------------------------------------------------------------
```

UHEX04CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/18/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 4
EXISTING CONDITION, 5-YEAR 24-HOUR
FN: UHEX04CUL5.OUT - ABE

Storm Event Year = 5

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
25.00	1	0.60
Rainfall data for year 2		
25.00	6	0.70
Rainfall data for year 2		
25.00	24	1.20
Rainfall data for year 100		

```
            25.00            1           1.00
------------------------------------------------------------------------
Rainfall data for year 100
            25.00            6           1.90
------------------------------------------------------------------------
Rainfall data for year 100
            25.00           24           3.40
------------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  SCS curve     Area     Area     Fp(Fig C6)    Ap      Fm
No.(AMCII) NO.(AMC 2)    (Ac.)    Fraction     (In/Hr)  (dec.)   (In/Hr)
 84.6      84.6         25.00      1.000     0.290    0.930    0.270

Area-averaged adjusted loss rate Fm (In/Hr) =  0.270

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    23.25   0.930         84.6      84.6       1.82     0.336
     1.75   0.070         98.0      98.0       0.20     0.870

Area-averaged catchment yield fraction, Y =  0.373
Area-averaged low loss fraction, Yb =  0.627
User entry of time of concentration  =   0.530 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      25.00(Ac.)
Catchment Lag time =   0.424 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 19.6541
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.270(In/Hr)
Average low loss rate fraction (Yb) = 0.627 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.177(In)
Computed peak 30-minute rainfall =  0.363(In)
Specified peak 1-hour rainfall =  0.480(In)
Computed peak 3-hour rainfall =  0.744(In)
Specified peak 6-hour rainfall =  0.981(In)
Specified peak 24-hour rainfall =  1.715(In)


Rainfall depth area reduction factors:
Using a total area of      25.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.177(In)
```

30-minute factor = 0.999 Adjusted rainfall = 0.363(In)
1-hour factor = 0.999 Adjusted rainfall = 0.479(In)
3-hour factor = 1.000 Adjusted rainfall = 0.744(In)
6-hour factor = 1.000 Adjusted rainfall = 0.981(In)
24-hour factor = 1.000 Adjusted rainfall = 1.715(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 302.34 (CFS))	
1	1.740	5.261
2	6.748	15.140
3	15.456	26.330
4	27.721	37.081
5	41.679	42.202
6	54.225	37.930
7	62.766	25.824
8	68.708	17.965
9	72.892	12.650
10	76.034	9.499
11	78.756	8.230
12	81.063	6.975
13	83.058	6.034
14	84.849	5.414
15	86.419	4.746
16	87.770	4.085
17	88.958	3.590
18	90.131	3.548
19	91.098	2.925
20	91.963	2.615
21	92.778	2.465
22	93.422	1.946
23	94.051	1.901
24	94.656	1.830
25	95.246	1.783
26	95.811	1.708
27	96.258	1.353
28	96.691	1.307
29	97.083	1.185
30	97.436	1.070
31	97.781	1.043
32	98.067	0.865
33	98.343	0.832
34	98.584	0.730
35	98.781	0.595
36	98.977	0.594

37	99.174	0.594
38	99.370	0.594
39	99.567	0.594
40	99.763	0.594
41	100.000	0.297

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1773	0.1773
2	0.2339	0.0566
3	0.2751	0.0412
4	0.3087	0.0336
5	0.3375	0.0288
6	0.3630	0.0255
7	0.3861	0.0231
8	0.4073	0.0212
9	0.4270	0.0196
10	0.4453	0.0184
11	0.4626	0.0173
12	0.4790	0.0164
13	0.4946	0.0156
14	0.5095	0.0149
15	0.5238	0.0143
16	0.5375	0.0137
17	0.5507	0.0132
18	0.5635	0.0127
19	0.5758	0.0123
20	0.5877	0.0119
21	0.5993	0.0116
22	0.6106	0.0113
23	0.6216	0.0110
24	0.6322	0.0107
25	0.6427	0.0104
26	0.6528	0.0102
27	0.6628	0.0099
28	0.6725	0.0097
29	0.6820	0.0095
30	0.6913	0.0093
31	0.7005	0.0091
32	0.7094	0.0090
33	0.7182	0.0088
34	0.7269	0.0086
35	0.7353	0.0085
36	0.7437	0.0083
37	0.7519	0.0082
38	0.7599	0.0081
39	0.7679	0.0079
40	0.7757	0.0078
41	0.7834	0.0077
42	0.7909	0.0076

43	0.7984	0.0075
44	0.8058	0.0074
45	0.8130	0.0073
46	0.8202	0.0072
47	0.8273	0.0071
48	0.8343	0.0070
49	0.8412	0.0069
50	0.8480	0.0068
51	0.8547	0.0067
52	0.8614	0.0067
53	0.8680	0.0066
54	0.8745	0.0065
55	0.8809	0.0064
56	0.8873	0.0064
57	0.8936	0.0063
58	0.8998	0.0062
59	0.9060	0.0062
60	0.9121	0.0061
61	0.9181	0.0060
62	0.9241	0.0060
63	0.9300	0.0059
64	0.9359	0.0059
65	0.9417	0.0058
66	0.9475	0.0058
67	0.9532	0.0057
68	0.9588	0.0057
69	0.9645	0.0056
70	0.9700	0.0056
71	0.9755	0.0055
72	0.9810	0.0055
73	0.9865	0.0055
74	0.9919	0.0054
75	0.9973	0.0054
76	1.0026	0.0053
77	1.0079	0.0053
78	1.0132	0.0053
79	1.0184	0.0052
80	1.0235	0.0052
81	1.0287	0.0051
82	1.0338	0.0051
83	1.0388	0.0051
84	1.0439	0.0050
85	1.0489	0.0050
86	1.0538	0.0050
87	1.0587	0.0049
88	1.0636	0.0049
89	1.0685	0.0049
90	1.0733	0.0048
91	1.0781	0.0048
92	1.0829	0.0048

93	1.0876	0.0047
94	1.0923	0.0047
95	1.0970	0.0047
96	1.1016	0.0046
97	1.1062	0.0046
98	1.1108	0.0046
99	1.1153	0.0046
100	1.1199	0.0045
101	1.1244	0.0045
102	1.1288	0.0045
103	1.1333	0.0044
104	1.1377	0.0044
105	1.1421	0.0044
106	1.1465	0.0044
107	1.1508	0.0043
108	1.1552	0.0043
109	1.1595	0.0043
110	1.1637	0.0043
111	1.1680	0.0043
112	1.1722	0.0042
113	1.1764	0.0042
114	1.1806	0.0042
115	1.1848	0.0042
116	1.1889	0.0041
117	1.1930	0.0041
118	1.1971	0.0041
119	1.2012	0.0041
120	1.2053	0.0041
121	1.2093	0.0040
122	1.2133	0.0040
123	1.2173	0.0040
124	1.2213	0.0040
125	1.2253	0.0040
126	1.2292	0.0039
127	1.2331	0.0039
128	1.2370	0.0039
129	1.2409	0.0039
130	1.2448	0.0039
131	1.2486	0.0039
132	1.2525	0.0038
133	1.2563	0.0038
134	1.2601	0.0038
135	1.2639	0.0038
136	1.2676	0.0038
137	1.2714	0.0037
138	1.2751	0.0037
139	1.2788	0.0037
140	1.2825	0.0037
141	1.2862	0.0037
142	1.2899	0.0037

143	1.2935	0.0037
144	1.2972	0.0036
145	1.3008	0.0036
146	1.3044	0.0036
147	1.3080	0.0036
148	1.3116	0.0036
149	1.3151	0.0036
150	1.3187	0.0036
151	1.3222	0.0035
152	1.3257	0.0035
153	1.3293	0.0035
154	1.3327	0.0035
155	1.3362	0.0035
156	1.3397	0.0035
157	1.3432	0.0035
158	1.3466	0.0034
159	1.3500	0.0034
160	1.3534	0.0034
161	1.3568	0.0034
162	1.3602	0.0034
163	1.3636	0.0034
164	1.3670	0.0034
165	1.3703	0.0034
166	1.3737	0.0033
167	1.3770	0.0033
168	1.3803	0.0033
169	1.3836	0.0033
170	1.3869	0.0033
171	1.3902	0.0033
172	1.3935	0.0033
173	1.3967	0.0033
174	1.4000	0.0032
175	1.4032	0.0032
176	1.4064	0.0032
177	1.4097	0.0032
178	1.4129	0.0032
179	1.4161	0.0032
180	1.4192	0.0032
181	1.4224	0.0032
182	1.4256	0.0032
183	1.4287	0.0032
184	1.4319	0.0031
185	1.4350	0.0031
186	1.4381	0.0031
187	1.4412	0.0031
188	1.4443	0.0031
189	1.4474	0.0031
190	1.4505	0.0031
191	1.4536	0.0031
192	1.4566	0.0031

193	1.4597	0.0031
194	1.4627	0.0030
195	1.4658	0.0030
196	1.4688	0.0030
197	1.4718	0.0030
198	1.4748	0.0030
199	1.4778	0.0030
200	1.4808	0.0030
201	1.4838	0.0030
202	1.4868	0.0030
203	1.4897	0.0030
204	1.4927	0.0030
205	1.4956	0.0029
206	1.4985	0.0029
207	1.5015	0.0029
208	1.5044	0.0029
209	1.5073	0.0029
210	1.5102	0.0029
211	1.5131	0.0029
212	1.5160	0.0029
213	1.5189	0.0029
214	1.5217	0.0029
215	1.5246	0.0029
216	1.5275	0.0029
217	1.5303	0.0028
218	1.5331	0.0028
219	1.5360	0.0028
220	1.5388	0.0028
221	1.5416	0.0028
222	1.5444	0.0028
223	1.5472	0.0028
224	1.5500	0.0028
225	1.5528	0.0028
226	1.5556	0.0028
227	1.5583	0.0028
228	1.5611	0.0028
229	1.5639	0.0028
230	1.5666	0.0027
231	1.5694	0.0027
232	1.5721	0.0027
233	1.5748	0.0027
234	1.5775	0.0027
235	1.5802	0.0027
236	1.5830	0.0027
237	1.5857	0.0027
238	1.5883	0.0027
239	1.5910	0.0027
240	1.5937	0.0027
241	1.5964	0.0027
242	1.5991	0.0027

243	1.6017	0.0027	
244	1.6044	0.0027	
245	1.6070	0.0026	
246	1.6097	0.0026	
247	1.6123	0.0026	
248	1.6149	0.0026	
249	1.6175	0.0026	
250	1.6202	0.0026	
251	1.6228	0.0026	
252	1.6254	0.0026	
253	1.6280	0.0026	
254	1.6306	0.0026	
255	1.6331	0.0026	
256	1.6357	0.0026	
257	1.6383	0.0026	
258	1.6409	0.0026	
259	1.6434	0.0026	
260	1.6460	0.0026	
261	1.6485	0.0025	
262	1.6511	0.0025	
263	1.6536	0.0025	
264	1.6561	0.0025	
265	1.6587	0.0025	
266	1.6612	0.0025	
267	1.6637	0.0025	
268	1.6662	0.0025	
269	1.6687	0.0025	
270	1.6712	0.0025	
271	1.6737	0.0025	
272	1.6762	0.0025	
273	1.6787	0.0025	
274	1.6811	0.0025	
275	1.6836	0.0025	
276	1.6861	0.0025	
277	1.6885	0.0025	
278	1.6910	0.0025	
279	1.6934	0.0024	
280	1.6959	0.0024	
281	1.6983	0.0024	
282	1.7007	0.0024	
283	1.7032	0.0024	
284	1.7056	0.0024	
285	1.7080	0.0024	
286	1.7104	0.0024	
287	1.7128	0.0024	
288	1.7152	0.0024	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)

1	0.0024	0.0015	0.0009
2	0.0024	0.0015	0.0009
3	0.0024	0.0015	0.0009
4	0.0024	0.0015	0.0009
5	0.0024	0.0015	0.0009
6	0.0024	0.0015	0.0009
7	0.0024	0.0015	0.0009
8	0.0025	0.0015	0.0009
9	0.0025	0.0015	0.0009
10	0.0025	0.0015	0.0009
11	0.0025	0.0016	0.0009
12	0.0025	0.0016	0.0009
13	0.0025	0.0016	0.0009
14	0.0025	0.0016	0.0009
15	0.0025	0.0016	0.0009
16	0.0025	0.0016	0.0009
17	0.0025	0.0016	0.0009
18	0.0025	0.0016	0.0009
19	0.0025	0.0016	0.0010
20	0.0026	0.0016	0.0010
21	0.0026	0.0016	0.0010
22	0.0026	0.0016	0.0010
23	0.0026	0.0016	0.0010
24	0.0026	0.0016	0.0010
25	0.0026	0.0016	0.0010
26	0.0026	0.0016	0.0010
27	0.0026	0.0016	0.0010
28	0.0026	0.0016	0.0010
29	0.0026	0.0017	0.0010
30	0.0026	0.0017	0.0010
31	0.0027	0.0017	0.0010
32	0.0027	0.0017	0.0010
33	0.0027	0.0017	0.0010
34	0.0027	0.0017	0.0010
35	0.0027	0.0017	0.0010
36	0.0027	0.0017	0.0010
37	0.0027	0.0017	0.0010
38	0.0027	0.0017	0.0010
39	0.0027	0.0017	0.0010
40	0.0027	0.0017	0.0010
41	0.0028	0.0017	0.0010
42	0.0028	0.0017	0.0010
43	0.0028	0.0017	0.0010
44	0.0028	0.0018	0.0010
45	0.0028	0.0018	0.0010
46	0.0028	0.0018	0.0011
47	0.0028	0.0018	0.0011
48	0.0028	0.0018	0.0011
49	0.0029	0.0018	0.0011

50	0.0029	0.0018	0.0011
51	0.0029	0.0018	0.0011
52	0.0029	0.0018	0.0011
53	0.0029	0.0018	0.0011
54	0.0029	0.0018	0.0011
55	0.0029	0.0018	0.0011
56	0.0029	0.0018	0.0011
57	0.0030	0.0019	0.0011
58	0.0030	0.0019	0.0011
59	0.0030	0.0019	0.0011
60	0.0030	0.0019	0.0011
61	0.0030	0.0019	0.0011
62	0.0030	0.0019	0.0011
63	0.0030	0.0019	0.0011
64	0.0030	0.0019	0.0011
65	0.0031	0.0019	0.0011
66	0.0031	0.0019	0.0011
67	0.0031	0.0019	0.0012
68	0.0031	0.0019	0.0012
69	0.0031	0.0020	0.0012
70	0.0031	0.0020	0.0012
71	0.0032	0.0020	0.0012
72	0.0032	0.0020	0.0012
73	0.0032	0.0020	0.0012
74	0.0032	0.0020	0.0012
75	0.0032	0.0020	0.0012
76	0.0032	0.0020	0.0012
77	0.0032	0.0020	0.0012
78	0.0033	0.0020	0.0012
79	0.0033	0.0021	0.0012
80	0.0033	0.0021	0.0012
81	0.0033	0.0021	0.0012
82	0.0033	0.0021	0.0012
83	0.0034	0.0021	0.0013
84	0.0034	0.0021	0.0013
85	0.0034	0.0021	0.0013
86	0.0034	0.0021	0.0013
87	0.0034	0.0021	0.0013
88	0.0034	0.0022	0.0013
89	0.0035	0.0022	0.0013
90	0.0035	0.0022	0.0013
91	0.0035	0.0022	0.0013
92	0.0035	0.0022	0.0013
93	0.0036	0.0022	0.0013
94	0.0036	0.0022	0.0013
95	0.0036	0.0023	0.0013
96	0.0036	0.0023	0.0013
97	0.0036	0.0023	0.0014
98	0.0037	0.0023	0.0014
99	0.0037	0.0023	0.0014

100	0.0037	0.0023	0.0014
101	0.0037	0.0023	0.0014
102	0.0037	0.0024	0.0014
103	0.0038	0.0024	0.0014
104	0.0038	0.0024	0.0014
105	0.0038	0.0024	0.0014
106	0.0039	0.0024	0.0014
107	0.0039	0.0024	0.0014
108	0.0039	0.0024	0.0015
109	0.0039	0.0025	0.0015
110	0.0040	0.0025	0.0015
111	0.0040	0.0025	0.0015
112	0.0040	0.0025	0.0015
113	0.0041	0.0025	0.0015
114	0.0041	0.0026	0.0015
115	0.0041	0.0026	0.0015
116	0.0041	0.0026	0.0015
117	0.0042	0.0026	0.0016
118	0.0042	0.0026	0.0016
119	0.0043	0.0027	0.0016
120	0.0043	0.0027	0.0016
121	0.0043	0.0027	0.0016
122	0.0043	0.0027	0.0016
123	0.0044	0.0028	0.0016
124	0.0044	0.0028	0.0016
125	0.0045	0.0028	0.0017
126	0.0045	0.0028	0.0017
127	0.0046	0.0029	0.0017
128	0.0046	0.0029	0.0017
129	0.0046	0.0029	0.0017
130	0.0047	0.0029	0.0017
131	0.0047	0.0030	0.0018
132	0.0048	0.0030	0.0018
133	0.0048	0.0030	0.0018
134	0.0049	0.0030	0.0018
135	0.0049	0.0031	0.0018
136	0.0050	0.0031	0.0018
137	0.0050	0.0032	0.0019
138	0.0051	0.0032	0.0019
139	0.0051	0.0032	0.0019
140	0.0052	0.0032	0.0019
141	0.0053	0.0033	0.0020
142	0.0053	0.0033	0.0020
143	0.0054	0.0034	0.0020
144	0.0054	0.0034	0.0020
145	0.0055	0.0034	0.0020
146	0.0055	0.0035	0.0021
147	0.0056	0.0035	0.0021
148	0.0057	0.0035	0.0021
149	0.0058	0.0036	0.0021

150	0.0058	0.0036	0.0022
151	0.0059	0.0037	0.0022
152	0.0060	0.0038	0.0022
153	0.0061	0.0038	0.0023
154	0.0062	0.0039	0.0023
155	0.0063	0.0039	0.0023
156	0.0064	0.0040	0.0024
157	0.0065	0.0041	0.0024
158	0.0066	0.0041	0.0025
159	0.0067	0.0042	0.0025
160	0.0068	0.0043	0.0025
161	0.0070	0.0044	0.0026
162	0.0071	0.0044	0.0026
163	0.0073	0.0046	0.0027
164	0.0074	0.0046	0.0027
165	0.0076	0.0048	0.0028
166	0.0077	0.0048	0.0029
167	0.0079	0.0050	0.0030
168	0.0081	0.0050	0.0030
169	0.0083	0.0052	0.0031
170	0.0085	0.0053	0.0032
171	0.0088	0.0055	0.0033
172	0.0090	0.0056	0.0033
173	0.0093	0.0058	0.0035
174	0.0095	0.0060	0.0035
175	0.0099	0.0062	0.0037
176	0.0102	0.0064	0.0038
177	0.0107	0.0067	0.0040
178	0.0110	0.0069	0.0041
179	0.0116	0.0073	0.0043
180	0.0119	0.0075	0.0045
181	0.0127	0.0080	0.0048
182	0.0132	0.0083	0.0049
183	0.0143	0.0089	0.0053
184	0.0149	0.0093	0.0056
185	0.0164	0.0103	0.0061
186	0.0173	0.0109	0.0065
187	0.0196	0.0123	0.0073
188	0.0212	0.0133	0.0079
189	0.0255	0.0160	0.0095
190	0.0288	0.0181	0.0108
191	0.0412	0.0225	0.0187
192	0.0566	0.0225	0.0342
193	0.1773	0.0225	0.1548
194	0.0336	0.0210	0.0125
195	0.0231	0.0145	0.0086
196	0.0184	0.0115	0.0069
197	0.0156	0.0098	0.0058
198	0.0137	0.0086	0.0051
199	0.0123	0.0077	0.0046

200	0.0113	0.0071	0.0042
201	0.0104	0.0065	0.0039
202	0.0097	0.0061	0.0036
203	0.0091	0.0057	0.0034
204	0.0086	0.0054	0.0032
205	0.0082	0.0051	0.0031
206	0.0078	0.0049	0.0029
207	0.0075	0.0047	0.0028
208	0.0072	0.0045	0.0027
209	0.0069	0.0043	0.0026
210	0.0067	0.0042	0.0025
211	0.0064	0.0040	0.0024
212	0.0062	0.0039	0.0023
213	0.0060	0.0038	0.0023
214	0.0059	0.0037	0.0022
215	0.0057	0.0036	0.0021
216	0.0056	0.0035	0.0021
217	0.0055	0.0034	0.0020
218	0.0053	0.0033	0.0020
219	0.0052	0.0033	0.0019
220	0.0051	0.0032	0.0019
221	0.0050	0.0031	0.0019
222	0.0049	0.0031	0.0018
223	0.0048	0.0030	0.0018
224	0.0047	0.0029	0.0018
225	0.0046	0.0029	0.0017
226	0.0045	0.0028	0.0017
227	0.0044	0.0028	0.0017
228	0.0044	0.0027	0.0016
229	0.0043	0.0027	0.0016
230	0.0042	0.0027	0.0016
231	0.0042	0.0026	0.0016
232	0.0041	0.0026	0.0015
233	0.0040	0.0025	0.0015
234	0.0040	0.0025	0.0015
235	0.0039	0.0025	0.0015
236	0.0039	0.0024	0.0014
237	0.0038	0.0024	0.0014
238	0.0038	0.0024	0.0014
239	0.0037	0.0023	0.0014
240	0.0037	0.0023	0.0014
241	0.0036	0.0023	0.0014
242	0.0036	0.0022	0.0013
243	0.0035	0.0022	0.0013
244	0.0035	0.0022	0.0013
245	0.0035	0.0022	0.0013
246	0.0034	0.0021	0.0013
247	0.0034	0.0021	0.0013
248	0.0033	0.0021	0.0012
249	0.0033	0.0021	0.0012

250	0.0033	0.0021	0.0012
251	0.0032	0.0020	0.0012
252	0.0032	0.0020	0.0012
253	0.0032	0.0020	0.0012
254	0.0031	0.0020	0.0012
255	0.0031	0.0020	0.0012
256	0.0031	0.0019	0.0011
257	0.0031	0.0019	0.0011
258	0.0030	0.0019	0.0011
259	0.0030	0.0019	0.0011
260	0.0030	0.0019	0.0011
261	0.0029	0.0018	0.0011
262	0.0029	0.0018	0.0011
263	0.0029	0.0018	0.0011
264	0.0029	0.0018	0.0011
265	0.0028	0.0018	0.0011
266	0.0028	0.0018	0.0011
267	0.0028	0.0018	0.0010
268	0.0028	0.0017	0.0010
269	0.0028	0.0017	0.0010
270	0.0027	0.0017	0.0010
271	0.0027	0.0017	0.0010
272	0.0027	0.0017	0.0010
273	0.0027	0.0017	0.0010
274	0.0027	0.0017	0.0010
275	0.0026	0.0017	0.0010
276	0.0026	0.0016	0.0010
277	0.0026	0.0016	0.0010
278	0.0026	0.0016	0.0010
279	0.0026	0.0016	0.0010
280	0.0025	0.0016	0.0009
281	0.0025	0.0016	0.0009
282	0.0025	0.0016	0.0009
283	0.0025	0.0016	0.0009
284	0.0025	0.0016	0.0009
285	0.0025	0.0015	0.0009
286	0.0024	0.0015	0.0009
287	0.0024	0.0015	0.0009
288	0.0024	0.0015	0.0009

Total soil rain loss = 0.97(In)
Total effective rainfall = 0.74(In)
Peak flow rate in flood hydrograph = 9.88(CFS)

++

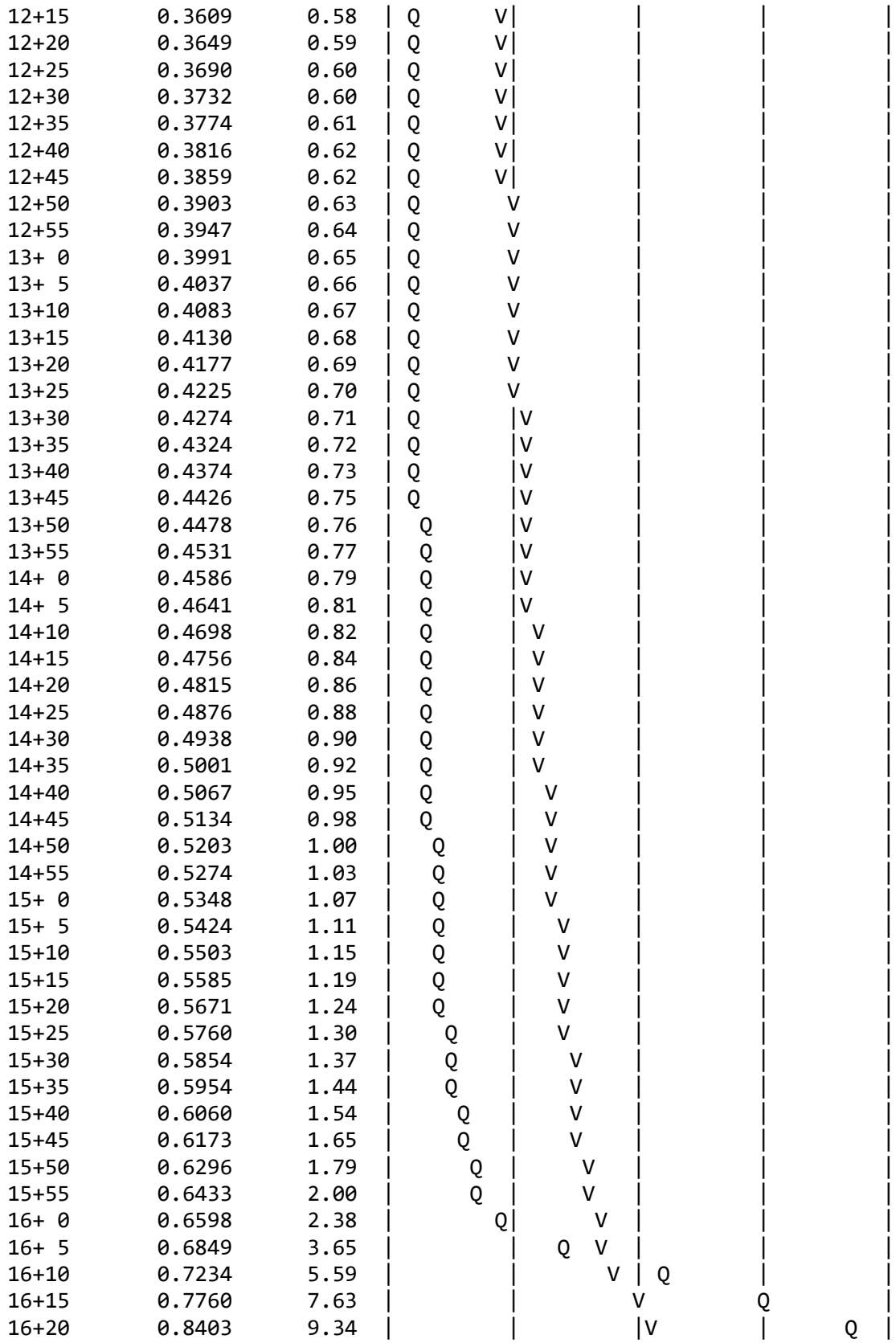
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

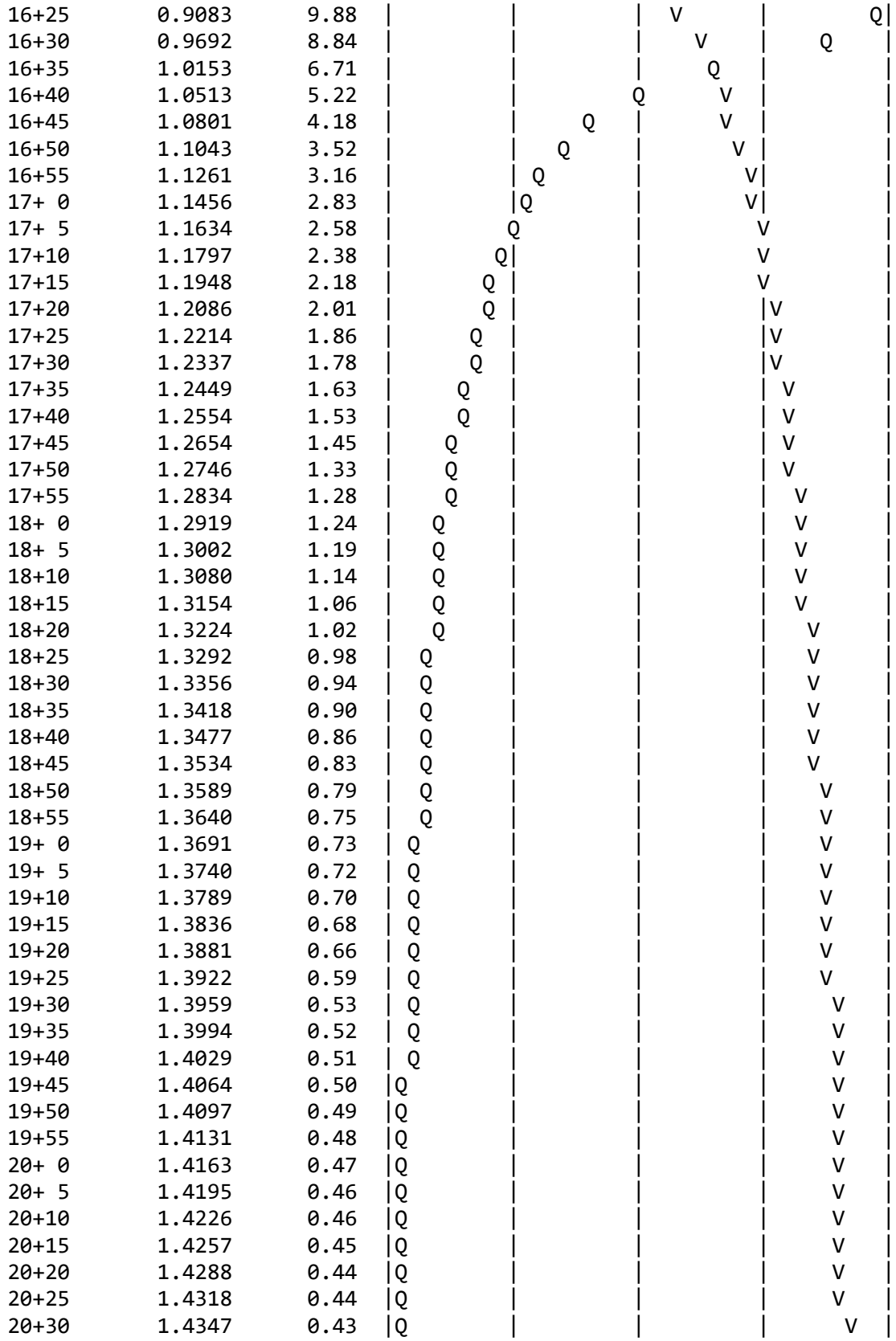
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0002	0.02	Q				
0+15	0.0004	0.04	Q				
0+20	0.0010	0.08	Q				
0+25	0.0017	0.11	Q				
0+30	0.0028	0.15	Q				
0+35	0.0039	0.17	Q				
0+40	0.0052	0.19	Q				
0+45	0.0066	0.20	Q				
0+50	0.0081	0.21	Q				
0+55	0.0095	0.22	Q				
1+ 0	0.0111	0.22	Q				
1+ 5	0.0127	0.23	Q				
1+10	0.0143	0.24	Q				
1+15	0.0160	0.24	Q				
1+20	0.0176	0.25	Q				
1+25	0.0194	0.25	Q				
1+30	0.0211	0.25	VQ				
1+35	0.0229	0.26	VQ				
1+40	0.0247	0.26	VQ				
1+45	0.0265	0.26	VQ				
1+50	0.0283	0.27	VQ				
1+55	0.0301	0.27	VQ				
2+ 0	0.0320	0.27	VQ				
2+ 5	0.0339	0.27	VQ				
2+10	0.0358	0.28	VQ				
2+15	0.0377	0.28	VQ				
2+20	0.0396	0.28	|Q				
2+25	0.0416	0.28	|Q				
2+30	0.0435	0.28	|Q				
2+35	0.0455	0.29	|Q				
2+40	0.0475	0.29	|Q				
2+45	0.0495	0.29	|Q				
2+50	0.0515	0.29	|Q				
2+55	0.0535	0.29	|Q				
3+ 0	0.0555	0.29	|Q				
3+ 5	0.0576	0.30	|Q				
3+10	0.0596	0.30	|Q				
3+15	0.0617	0.30	|Q				
3+20	0.0638	0.30	|Q				
3+25	0.0658	0.30	|Q				
3+30	0.0679	0.30	|Q				
3+35	0.0700	0.30	|Q				
3+40	0.0721	0.31	|Q				
3+45	0.0742	0.31	|Q				
3+50	0.0764	0.31	|Q				

3+55	0.0785	0.31	|QV	|	|	|	|
4+ 0	0.0806	0.31	|QV	|	|	|	|
4+ 5	0.0828	0.31	|QV	|	|	|	|
4+10	0.0849	0.31	|QV	|	|	|	|
4+15	0.0871	0.31	|QV	|	|	|	|
4+20	0.0893	0.32	|QV	|	|	|	|
4+25	0.0915	0.32	|QV	|	|	|	|
4+30	0.0937	0.32	|QV	|	|	|	|
4+35	0.0959	0.32	|QV	|	|	|	|
4+40	0.0981	0.32	|QV	|	|	|	|
4+45	0.1003	0.32	|QV	|	|	|	|
4+50	0.1025	0.32	|QV	|	|	|	|
4+55	0.1047	0.32	|QV	|	|	|	|
5+ 0	0.1070	0.33	|QV	|	|	|	|
5+ 5	0.1092	0.33	|QV	|	|	|	|
5+10	0.1115	0.33	|QV	|	|	|	|
5+15	0.1138	0.33	|QV	|	|	|	|
5+20	0.1161	0.33	|QV	|	|	|	|
5+25	0.1184	0.33	|Q V	|	|	|	|
5+30	0.1207	0.33	|Q V	|	|	|	|
5+35	0.1230	0.34	|Q V	|	|	|	|
5+40	0.1253	0.34	|Q V	|	|	|	|
5+45	0.1277	0.34	|Q V	|	|	|	|
5+50	0.1300	0.34	|Q V	|	|	|	|
5+55	0.1324	0.34	|Q V	|	|	|	|
6+ 0	0.1347	0.34	|Q V	|	|	|	|
6+ 5	0.1371	0.35	|Q V	|	|	|	|
6+10	0.1395	0.35	|Q V	|	|	|	|
6+15	0.1419	0.35	|Q V	|	|	|	|
6+20	0.1443	0.35	|Q V	|	|	|	|
6+25	0.1468	0.35	|Q V	|	|	|	|
6+30	0.1492	0.35	|Q V	|	|	|	|
6+35	0.1516	0.36	|Q V	|	|	|	|
6+40	0.1541	0.36	|Q V	|	|	|	|
6+45	0.1566	0.36	|Q V	|	|	|	|
6+50	0.1591	0.36	|Q V	|	|	|	|
6+55	0.1616	0.36	|Q V	|	|	|	|
7+ 0	0.1641	0.36	|Q V	|	|	|	|
7+ 5	0.1666	0.37	|Q V	|	|	|	|
7+10	0.1692	0.37	|Q V	|	|	|	|
7+15	0.1717	0.37	|Q V	|	|	|	|
7+20	0.1743	0.37	|Q V	|	|	|	|
7+25	0.1769	0.37	|Q V	|	|	|	|
7+30	0.1794	0.38	|Q V	|	|	|	|
7+35	0.1821	0.38	|Q V	|	|	|	|
7+40	0.1847	0.38	|Q V	|	|	|	|
7+45	0.1873	0.38	|Q V	|	|	|	|
7+50	0.1900	0.39	|Q V	|	|	|	|
7+55	0.1926	0.39	|Q V	|	|	|	|
8+ 0	0.1953	0.39	|Q V	|	|	|	|

8+ 5	0.1980	0.39	|Q V |	|	|	|
8+10	0.2007	0.39	|Q V |	|	|	|
8+15	0.2035	0.40	|Q V |	|	|	|
8+20	0.2062	0.40	|Q V |	|	|	|
8+25	0.2090	0.40	|Q V |	|	|	|
8+30	0.2118	0.40	|Q V |	|	|	|
8+35	0.2146	0.41	|Q V |	|	|	|
8+40	0.2174	0.41	|Q V |	|	|	|
8+45	0.2202	0.41	|Q V |	|	|	|
8+50	0.2231	0.41	|Q V |	|	|	|
8+55	0.2259	0.42	|Q V |	|	|	|
9+ 0	0.2288	0.42	|Q V |	|	|	|
9+ 5	0.2317	0.42	|Q V |	|	|	|
9+10	0.2346	0.42	|Q V |	|	|	|
9+15	0.2376	0.43	|Q V |	|	|	|
9+20	0.2406	0.43	|Q V |	|	|	|
9+25	0.2435	0.43	|Q V |	|	|	|
9+30	0.2465	0.44	|Q V |	|	|	|
9+35	0.2496	0.44	|Q V |	|	|	|
9+40	0.2526	0.44	|Q V |	|	|	|
9+45	0.2557	0.45	|Q V |	|	|	|
9+50	0.2588	0.45	|Q V |	|	|	|
9+55	0.2619	0.45	|Q V |	|	|	|
10+ 0	0.2650	0.46	|Q V |	|	|	|
10+ 5	0.2682	0.46	|Q V |	|	|	|
10+10	0.2714	0.46	|Q V |	|	|	|
10+15	0.2746	0.47	|Q V |	|	|	|
10+20	0.2778	0.47	|Q V |	|	|	|
10+25	0.2811	0.47	|Q V |	|	|	|
10+30	0.2844	0.48	|Q V |	|	|	|
10+35	0.2877	0.48	|Q V |	|	|	|
10+40	0.2911	0.49	|Q V |	|	|	|
10+45	0.2944	0.49	|Q V |	|	|	|
10+50	0.2978	0.49	|Q V |	|	|	|
10+55	0.3013	0.50	|Q V |	|	|	|
11+ 0	0.3047	0.50	| Q V |	|	|	|
11+ 5	0.3082	0.51	| Q V |	|	|	|
11+10	0.3117	0.51	| Q V |	|	|	|
11+15	0.3153	0.52	| Q V |	|	|	|
11+20	0.3189	0.52	| Q V |	|	|	|
11+25	0.3225	0.53	| Q V |	|	|	|
11+30	0.3262	0.53	| Q V |	|	|	|
11+35	0.3299	0.54	| Q V |	|	|	|
11+40	0.3336	0.54	| Q V |	|	|	|
11+45	0.3374	0.55	| Q V |	|	|	|
11+50	0.3412	0.55	| Q V |	|	|	|
11+55	0.3450	0.56	| Q V |	|	|	|
12+ 0	0.3489	0.57	| Q V|	|	|	|
12+ 5	0.3529	0.57	| Q V|	|	|	|
12+10	0.3568	0.58	| Q V|	|	|	|





```
20+35       1.4376      0.42  |Q        |         |         |      V  |
20+40       1.4405      0.42  |Q        |         |         |      V  |
20+45       1.4434      0.41  |Q        |         |         |      V  |
20+50       1.4462      0.41  |Q        |         |         |      V  |
20+55       1.4489      0.40  |Q        |         |         |      V  |
21+ 0       1.4517      0.40  |Q        |         |         |      V  |
21+ 5       1.4544      0.39  |Q        |         |         |      V  |
21+10       1.4570      0.39  |Q        |         |         |      V  |
21+15       1.4597      0.38  |Q        |         |         |      V  |
21+20       1.4623      0.38  |Q        |         |         |      V  |
21+25       1.4649      0.37  |Q        |         |         |      V  |
21+30       1.4674      0.37  |Q        |         |         |      V  |
21+35       1.4699      0.37  |Q        |         |         |      V  |
21+40       1.4724      0.36  |Q        |         |         |       V |
21+45       1.4749      0.36  |Q        |         |         |       V |
21+50       1.4774      0.36  |Q        |         |         |       V |
21+55       1.4798      0.35  |Q        |         |         |       V |
22+ 0       1.4822      0.35  |Q        |         |         |       V |
22+ 5       1.4846      0.35  |Q        |         |         |       V |
22+10       1.4869      0.34  |Q        |         |         |       V |
22+15       1.4893      0.34  |Q        |         |         |       V |
22+20       1.4916      0.34  |Q        |         |         |       V |
22+25       1.4939      0.33  |Q        |         |         |       V |
22+30       1.4961      0.33  |Q        |         |         |       V |
22+35       1.4984      0.33  |Q        |         |         |       V |
22+40       1.5006      0.32  |Q        |         |         |       V |
22+45       1.5028      0.32  |Q        |         |         |       V |
22+50       1.5050      0.32  |Q        |         |         |       V |
22+55       1.5072      0.32  |Q        |         |         |       V |
23+ 0       1.5094      0.31  |Q        |         |         |       V |
23+ 5       1.5115      0.31  |Q        |         |         |        V|
23+10       1.5136      0.31  |Q        |         |         |        V|
23+15       1.5157      0.31  |Q        |         |         |        V|
23+20       1.5178      0.30  |Q        |         |         |        V|
23+25       1.5199      0.30  |Q        |         |         |        V|
23+30       1.5220      0.30  |Q        |         |         |        V|
23+35       1.5240      0.30  |Q        |         |         |        V|
23+40       1.5260      0.29  |Q        |         |         |        V|
23+45       1.5281      0.29  |Q        |         |         |        V|
23+50       1.5301      0.29  |Q        |         |         |        V|
23+55       1.5321      0.29  |Q        |         |         |        V|
24+ 0       1.5340      0.29  |Q        |         |         |        V|
24+ 5       1.5360      0.28  |Q        |         |         |        V|
24+10       1.5378      0.26  |Q        |         |         |        V|
24+15       1.5394      0.24  Q        |         |         |        V|
24+20       1.5408      0.20  Q        |         |         |        V|
24+25       1.5420      0.17  Q        |         |         |        V|
24+30       1.5429      0.13  Q        |         |         |        V|
24+35       1.5436      0.11  Q        |         |         |        V|
24+40       1.5442      0.09  Q        |         |         |        V|
```

```
  24+45       1.5448      0.08  Q          |          |          |         V|
  24+50       1.5452      0.07  Q          |          |          |         V|
  24+55       1.5456      0.06  Q          |          |          |         V|
  25+ 0       1.5460      0.05  Q          |          |          |         V|
  25+ 5       1.5463      0.05  Q          |          |          |         V|
  25+10       1.5466      0.04  Q          |          |          |         V|
  25+15       1.5469      0.04  Q          |          |          |         V|
  25+20       1.5472      0.03  Q          |          |          |         V|
  25+25       1.5474      0.03  Q          |          |          |         V|
  25+30       1.5476      0.03  Q          |          |          |         V|
  25+35       1.5477      0.03  Q          |          |          |         V|
  25+40       1.5479      0.02  Q          |          |          |         V|
  25+45       1.5480      0.02  Q          |          |          |         V|
  25+50       1.5482      0.02  Q          |          |          |         V|
  25+55       1.5483      0.02  Q          |          |          |         V|
  26+ 0       1.5484      0.01  Q          |          |          |         V|
  26+ 5       1.5485      0.01  Q          |          |          |         V|
  26+10       1.5485      0.01  Q          |          |          |         V|
  26+15       1.5486      0.01  Q          |          |          |         V|
  26+20       1.5487      0.01  Q          |          |          |         V|
  26+25       1.5487      0.01  Q          |          |          |         V|
  26+30       1.5488      0.01  Q          |          |          |         V|
  26+35       1.5488      0.01  Q          |          |          |         V|
  26+40       1.5488      0.00  Q          |          |          |         V|
  26+45       1.5489      0.00  Q          |          |          |         V|
  26+50       1.5489      0.00  Q          |          |          |         V|
  26+55       1.5489      0.00  Q          |          |          |         V|
  27+ 0       1.5489      0.00  Q          |          |          |         V|
  27+ 5       1.5489      0.00  Q          |          |          |         V|
  27+10       1.5490      0.00  Q          |          |          |         V|
  27+15       1.5490      0.00  Q          |          |          |         V|
  27+20       1.5490      0.00  Q          |          |          |          V
-------------------------------------------------------------------------
```

UHEX05CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/18/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 5
EXISTING CONDITION, 5-YEAR 24-HOUR
FN: UHEX05CUL5.OUT - ABE

Storm Event Year = 5

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
96.30	1	0.60
Rainfall data for year 2		
96.30	6	0.70
Rainfall data for year 2		
96.30	24	1.20
Rainfall data for year 100		

```
            96.30            1           1.00
------------------------------------------------------------------------
Rainfall data for year 100
            96.30            6           1.90
------------------------------------------------------------------------
Rainfall data for year 100
            96.30           24           3.40
------------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  SCS curve     Area     Area     Fp(Fig C6)    Ap      Fm
No.(AMCII) NO.(AMC 2)    (Ac.)    Fraction     (In/Hr)  (dec.)   (In/Hr)
 86.0      86.0         96.30      1.000     0.265    0.870    0.231

Area-averaged adjusted loss rate Fm (In/Hr) =  0.231

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    83.78   0.870         86.0      86.0       1.63     0.373
    12.52   0.130         98.0      98.0       0.20     0.870

Area-averaged catchment yield fraction, Y =  0.438
Area-averaged low loss fraction, Yb =  0.562
User entry of time of concentration  =   1.080 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      96.30(Ac.)
Catchment Lag time =   0.864 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time =  9.6451
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.231(In/Hr)
Average low loss rate fraction (Yb) = 0.562 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.177(In)
Computed peak 30-minute rainfall =  0.363(In)
Specified peak 1-hour rainfall =  0.480(In)
Computed peak 3-hour rainfall =  0.744(In)
Specified peak 6-hour rainfall =  0.981(In)
Specified peak 24-hour rainfall =  1.715(In)


Rainfall depth area reduction factors:
Using a total area of      96.30(Ac.) (Ref: fig. E-4)

5-minute factor = 0.995     Adjusted rainfall =  0.177(In)
```

30-minute factor = 0.995 Adjusted rainfall = 0.362(In)
1-hour factor = 0.995 Adjusted rainfall = 0.477(In)
3-hour factor = 0.999 Adjusted rainfall = 0.743(In)
6-hour factor = 1.000 Adjusted rainfall = 0.981(In)
24-hour factor = 1.000 Adjusted rainfall = 1.715(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1164.63 (CFS))	
1	0.836	9.735
2	2.571	20.211
3	4.883	26.927
4	8.219	38.850
5	12.465	49.451
6	17.459	58.154
7	23.561	71.067
8	30.141	76.641
9	37.028	80.201
10	43.972	80.877
11	50.544	76.540
12	55.747	60.592
13	60.180	51.632
14	63.667	40.604
15	66.696	35.285
16	69.303	30.360
17	71.390	24.299
18	73.242	21.573
19	74.806	18.214
20	76.236	16.650
21	77.654	16.515
22	78.884	14.331
23	80.042	13.479
24	81.156	12.972
25	82.130	11.354
26	83.095	11.229
27	83.992	10.455
28	84.841	9.885
29	85.671	9.671
30	86.386	8.323
31	87.081	8.088
32	87.729	7.547
33	88.308	6.747
34	88.887	6.740
35	89.465	6.740
36	90.044	6.740

37	90.584	6.284
38	91.014	5.017
39	91.439	4.942
40	91.863	4.942
41	92.287	4.942
42	92.696	4.755
43	93.017	3.745
44	93.326	3.595
45	93.635	3.595
46	93.943	3.595
47	94.251	3.581
48	94.544	3.418
49	94.834	3.370
50	95.123	3.370
51	95.412	3.370
52	95.701	3.358
53	95.940	2.788
54	96.152	2.471
55	96.364	2.471
56	96.577	2.471
57	96.789	2.471
58	96.983	2.257
59	97.156	2.022
60	97.330	2.022
61	97.503	2.022
62	97.677	2.022
63	97.839	1.881
64	97.974	1.582
65	98.109	1.573
66	98.245	1.573
67	98.380	1.573
68	98.507	1.490
69	98.607	1.158
70	98.703	1.123
71	98.800	1.123
72	98.896	1.123
73	98.993	1.123
74	99.089	1.123
75	99.186	1.123
76	99.282	1.123
77	99.378	1.123
78	99.475	1.123
79	99.571	1.123
80	99.668	1.123
81	99.764	1.123
82	99.861	1.123
83	100.000	0.562

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)

1	0.1767	0.1767
2	0.2332	0.0565
3	0.2742	0.0411
4	0.3076	0.0334
5	0.3364	0.0287
6	0.3618	0.0254
7	0.3848	0.0230
8	0.4059	0.0211
9	0.4255	0.0196
10	0.4438	0.0183
11	0.4611	0.0172
12	0.4774	0.0163
13	0.4931	0.0157
14	0.5080	0.0149
15	0.5224	0.0143
16	0.5361	0.0138
17	0.5494	0.0133
18	0.5622	0.0128
19	0.5746	0.0124
20	0.5866	0.0120
21	0.5982	0.0116
22	0.6095	0.0113
23	0.6206	0.0110
24	0.6313	0.0107
25	0.6418	0.0105
26	0.6520	0.0102
27	0.6620	0.0100
28	0.6718	0.0098
29	0.6813	0.0096
30	0.6907	0.0094
31	0.6999	0.0092
32	0.7089	0.0090
33	0.7178	0.0088
34	0.7264	0.0087
35	0.7350	0.0085
36	0.7434	0.0084
37	0.7516	0.0082
38	0.7596	0.0081
39	0.7675	0.0079
40	0.7754	0.0078
41	0.7830	0.0077
42	0.7906	0.0076
43	0.7981	0.0075
44	0.8055	0.0074
45	0.8127	0.0073
46	0.8199	0.0072
47	0.8270	0.0071
48	0.8340	0.0070
49	0.8409	0.0069
50	0.8477	0.0068

51	0.8545	0.0067
52	0.8611	0.0067
53	0.8677	0.0066
54	0.8742	0.0065
55	0.8806	0.0064
56	0.8870	0.0064
57	0.8933	0.0063
58	0.8995	0.0062
59	0.9057	0.0062
60	0.9118	0.0061
61	0.9179	0.0060
62	0.9239	0.0060
63	0.9298	0.0059
64	0.9357	0.0059
65	0.9415	0.0058
66	0.9472	0.0058
67	0.9530	0.0057
68	0.9586	0.0057
69	0.9642	0.0056
70	0.9698	0.0056
71	0.9753	0.0055
72	0.9808	0.0055
73	0.9862	0.0055
74	0.9917	0.0054
75	0.9970	0.0054
76	1.0024	0.0053
77	1.0077	0.0053
78	1.0129	0.0053
79	1.0182	0.0052
80	1.0233	0.0052
81	1.0285	0.0051
82	1.0336	0.0051
83	1.0386	0.0051
84	1.0437	0.0050
85	1.0486	0.0050
86	1.0536	0.0050
87	1.0585	0.0049
88	1.0634	0.0049
89	1.0683	0.0049
90	1.0731	0.0048
91	1.0779	0.0048
92	1.0826	0.0048
93	1.0874	0.0047
94	1.0921	0.0047
95	1.0967	0.0047
96	1.1014	0.0046
97	1.1060	0.0046
98	1.1106	0.0046
99	1.1151	0.0046
100	1.1197	0.0045

101	1.1242	0.0045
102	1.1286	0.0045
103	1.1331	0.0044
104	1.1375	0.0044
105	1.1419	0.0044
106	1.1463	0.0044
107	1.1506	0.0043
108	1.1549	0.0043
109	1.1592	0.0043
110	1.1635	0.0043
111	1.1678	0.0043
112	1.1720	0.0042
113	1.1762	0.0042
114	1.1804	0.0042
115	1.1846	0.0042
116	1.1887	0.0041
117	1.1928	0.0041
118	1.1969	0.0041
119	1.2010	0.0041
120	1.2051	0.0041
121	1.2091	0.0040
122	1.2131	0.0040
123	1.2171	0.0040
124	1.2211	0.0040
125	1.2250	0.0040
126	1.2290	0.0039
127	1.2329	0.0039
128	1.2368	0.0039
129	1.2407	0.0039
130	1.2446	0.0039
131	1.2484	0.0039
132	1.2523	0.0038
133	1.2561	0.0038
134	1.2599	0.0038
135	1.2637	0.0038
136	1.2674	0.0038
137	1.2712	0.0037
138	1.2749	0.0037
139	1.2786	0.0037
140	1.2823	0.0037
141	1.2860	0.0037
142	1.2897	0.0037
143	1.2933	0.0037
144	1.2970	0.0036
145	1.3006	0.0036
146	1.3042	0.0036
147	1.3078	0.0036
148	1.3114	0.0036
149	1.3149	0.0036
150	1.3185	0.0036

151	1.3220	0.0035
152	1.3255	0.0035
153	1.3291	0.0035
154	1.3325	0.0035
155	1.3360	0.0035
156	1.3395	0.0035
157	1.3430	0.0035
158	1.3464	0.0034
159	1.3498	0.0034
160	1.3532	0.0034
161	1.3566	0.0034
162	1.3600	0.0034
163	1.3634	0.0034
164	1.3668	0.0034
165	1.3701	0.0034
166	1.3735	0.0033
167	1.3768	0.0033
168	1.3801	0.0033
169	1.3834	0.0033
170	1.3867	0.0033
171	1.3900	0.0033
172	1.3933	0.0033
173	1.3965	0.0033
174	1.3998	0.0032
175	1.4030	0.0032
176	1.4062	0.0032
177	1.4095	0.0032
178	1.4127	0.0032
179	1.4159	0.0032
180	1.4190	0.0032
181	1.4222	0.0032
182	1.4254	0.0032
183	1.4285	0.0032
184	1.4317	0.0031
185	1.4348	0.0031
186	1.4379	0.0031
187	1.4410	0.0031
188	1.4441	0.0031
189	1.4472	0.0031
190	1.4503	0.0031
191	1.4534	0.0031
192	1.4565	0.0031
193	1.4595	0.0031
194	1.4625	0.0030
195	1.4656	0.0030
196	1.4686	0.0030
197	1.4716	0.0030
198	1.4746	0.0030
199	1.4776	0.0030
200	1.4806	0.0030

201	1.4836	0.0030
202	1.4866	0.0030
203	1.4895	0.0030
204	1.4925	0.0030
205	1.4954	0.0029
206	1.4984	0.0029
207	1.5013	0.0029
208	1.5042	0.0029
209	1.5071	0.0029
210	1.5100	0.0029
211	1.5129	0.0029
212	1.5158	0.0029
213	1.5187	0.0029
214	1.5216	0.0029
215	1.5244	0.0029
216	1.5273	0.0029
217	1.5301	0.0028
218	1.5330	0.0028
219	1.5358	0.0028
220	1.5386	0.0028
221	1.5414	0.0028
222	1.5442	0.0028
223	1.5470	0.0028
224	1.5498	0.0028
225	1.5526	0.0028
226	1.5554	0.0028
227	1.5582	0.0028
228	1.5609	0.0028
229	1.5637	0.0028
230	1.5664	0.0027
231	1.5692	0.0027
232	1.5719	0.0027
233	1.5746	0.0027
234	1.5774	0.0027
235	1.5801	0.0027
236	1.5828	0.0027
237	1.5855	0.0027
238	1.5882	0.0027
239	1.5909	0.0027
240	1.5935	0.0027
241	1.5962	0.0027
242	1.5989	0.0027
243	1.6015	0.0027
244	1.6042	0.0027
245	1.6068	0.0026
246	1.6095	0.0026
247	1.6121	0.0026
248	1.6148	0.0026
249	1.6174	0.0026
250	1.6200	0.0026

251	1.6226	0.0026
252	1.6252	0.0026
253	1.6278	0.0026
254	1.6304	0.0026
255	1.6330	0.0026
256	1.6356	0.0026
257	1.6381	0.0026
258	1.6407	0.0026
259	1.6433	0.0026
260	1.6458	0.0026
261	1.6484	0.0025
262	1.6509	0.0025
263	1.6534	0.0025
264	1.6560	0.0025
265	1.6585	0.0025
266	1.6610	0.0025
267	1.6635	0.0025
268	1.6660	0.0025
269	1.6685	0.0025
270	1.6710	0.0025
271	1.6735	0.0025
272	1.6760	0.0025
273	1.6785	0.0025
274	1.6810	0.0025
275	1.6834	0.0025
276	1.6859	0.0025
277	1.6884	0.0025
278	1.6908	0.0025
279	1.6933	0.0024
280	1.6957	0.0024
281	1.6982	0.0024
282	1.7006	0.0024
283	1.7030	0.0024
284	1.7054	0.0024
285	1.7079	0.0024
286	1.7103	0.0024
287	1.7127	0.0024
288	1.7151	0.0024

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0024	0.0014	0.0011
2	0.0024	0.0014	0.0011
3	0.0024	0.0014	0.0011
4	0.0024	0.0014	0.0011
5	0.0024	0.0014	0.0011
6	0.0024	0.0014	0.0011
7	0.0024	0.0014	0.0011

8	0.0025	0.0014	0.0011
9	0.0025	0.0014	0.0011
10	0.0025	0.0014	0.0011
11	0.0025	0.0014	0.0011
12	0.0025	0.0014	0.0011
13	0.0025	0.0014	0.0011
14	0.0025	0.0014	0.0011
15	0.0025	0.0014	0.0011
16	0.0025	0.0014	0.0011
17	0.0025	0.0014	0.0011
18	0.0025	0.0014	0.0011
19	0.0025	0.0014	0.0011
20	0.0026	0.0014	0.0011
21	0.0026	0.0014	0.0011
22	0.0026	0.0014	0.0011
23	0.0026	0.0015	0.0011
24	0.0026	0.0015	0.0011
25	0.0026	0.0015	0.0011
26	0.0026	0.0015	0.0011
27	0.0026	0.0015	0.0011
28	0.0026	0.0015	0.0012
29	0.0026	0.0015	0.0012
30	0.0026	0.0015	0.0012
31	0.0027	0.0015	0.0012
32	0.0027	0.0015	0.0012
33	0.0027	0.0015	0.0012
34	0.0027	0.0015	0.0012
35	0.0027	0.0015	0.0012
36	0.0027	0.0015	0.0012
37	0.0027	0.0015	0.0012
38	0.0027	0.0015	0.0012
39	0.0027	0.0015	0.0012
40	0.0027	0.0015	0.0012
41	0.0028	0.0016	0.0012
42	0.0028	0.0016	0.0012
43	0.0028	0.0016	0.0012
44	0.0028	0.0016	0.0012
45	0.0028	0.0016	0.0012
46	0.0028	0.0016	0.0012
47	0.0028	0.0016	0.0012
48	0.0028	0.0016	0.0012
49	0.0029	0.0016	0.0012
50	0.0029	0.0016	0.0013
51	0.0029	0.0016	0.0013
52	0.0029	0.0016	0.0013
53	0.0029	0.0016	0.0013
54	0.0029	0.0016	0.0013
55	0.0029	0.0016	0.0013
56	0.0029	0.0017	0.0013
57	0.0030	0.0017	0.0013

58	0.0030	0.0017	0.0013
59	0.0030	0.0017	0.0013
60	0.0030	0.0017	0.0013
61	0.0030	0.0017	0.0013
62	0.0030	0.0017	0.0013
63	0.0030	0.0017	0.0013
64	0.0030	0.0017	0.0013
65	0.0031	0.0017	0.0013
66	0.0031	0.0017	0.0013
67	0.0031	0.0017	0.0014
68	0.0031	0.0017	0.0014
69	0.0031	0.0018	0.0014
70	0.0031	0.0018	0.0014
71	0.0032	0.0018	0.0014
72	0.0032	0.0018	0.0014
73	0.0032	0.0018	0.0014
74	0.0032	0.0018	0.0014
75	0.0032	0.0018	0.0014
76	0.0032	0.0018	0.0014
77	0.0032	0.0018	0.0014
78	0.0033	0.0018	0.0014
79	0.0033	0.0018	0.0014
80	0.0033	0.0019	0.0014
81	0.0033	0.0019	0.0015
82	0.0033	0.0019	0.0015
83	0.0034	0.0019	0.0015
84	0.0034	0.0019	0.0015
85	0.0034	0.0019	0.0015
86	0.0034	0.0019	0.0015
87	0.0034	0.0019	0.0015
88	0.0034	0.0019	0.0015
89	0.0035	0.0020	0.0015
90	0.0035	0.0020	0.0015
91	0.0035	0.0020	0.0015
92	0.0035	0.0020	0.0015
93	0.0036	0.0020	0.0016
94	0.0036	0.0020	0.0016
95	0.0036	0.0020	0.0016
96	0.0036	0.0020	0.0016
97	0.0036	0.0020	0.0016
98	0.0037	0.0021	0.0016
99	0.0037	0.0021	0.0016
100	0.0037	0.0021	0.0016
101	0.0037	0.0021	0.0016
102	0.0037	0.0021	0.0016
103	0.0038	0.0021	0.0017
104	0.0038	0.0021	0.0017
105	0.0038	0.0022	0.0017
106	0.0039	0.0022	0.0017
107	0.0039	0.0022	0.0017

108	0.0039	0.0022	0.0017
109	0.0039	0.0022	0.0017
110	0.0040	0.0022	0.0017
111	0.0040	0.0022	0.0018
112	0.0040	0.0023	0.0018
113	0.0041	0.0023	0.0018
114	0.0041	0.0023	0.0018
115	0.0041	0.0023	0.0018
116	0.0041	0.0023	0.0018
117	0.0042	0.0024	0.0018
118	0.0042	0.0024	0.0018
119	0.0043	0.0024	0.0019
120	0.0043	0.0024	0.0019
121	0.0043	0.0024	0.0019
122	0.0043	0.0024	0.0019
123	0.0044	0.0025	0.0019
124	0.0044	0.0025	0.0019
125	0.0045	0.0025	0.0020
126	0.0045	0.0025	0.0020
127	0.0046	0.0026	0.0020
128	0.0046	0.0026	0.0020
129	0.0046	0.0026	0.0020
130	0.0047	0.0026	0.0020
131	0.0047	0.0027	0.0021
132	0.0048	0.0027	0.0021
133	0.0048	0.0027	0.0021
134	0.0049	0.0027	0.0021
135	0.0049	0.0028	0.0022
136	0.0050	0.0028	0.0022
137	0.0050	0.0028	0.0022
138	0.0051	0.0028	0.0022
139	0.0051	0.0029	0.0022
140	0.0052	0.0029	0.0023
141	0.0053	0.0030	0.0023
142	0.0053	0.0030	0.0023
143	0.0054	0.0030	0.0024
144	0.0054	0.0030	0.0024
145	0.0055	0.0031	0.0024
146	0.0055	0.0031	0.0024
147	0.0056	0.0032	0.0025
148	0.0057	0.0032	0.0025
149	0.0058	0.0032	0.0025
150	0.0058	0.0033	0.0025
151	0.0059	0.0033	0.0026
152	0.0060	0.0034	0.0026
153	0.0061	0.0034	0.0027
154	0.0062	0.0035	0.0027
155	0.0063	0.0035	0.0028
156	0.0064	0.0036	0.0028
157	0.0065	0.0037	0.0028

158	0.0066	0.0037	0.0029
159	0.0067	0.0038	0.0029
160	0.0068	0.0038	0.0030
161	0.0070	0.0039	0.0031
162	0.0071	0.0040	0.0031
163	0.0073	0.0041	0.0032
164	0.0074	0.0041	0.0032
165	0.0076	0.0043	0.0033
166	0.0077	0.0043	0.0034
167	0.0079	0.0045	0.0035
168	0.0081	0.0045	0.0035
169	0.0084	0.0047	0.0037
170	0.0085	0.0048	0.0037
171	0.0088	0.0050	0.0039
172	0.0090	0.0051	0.0039
173	0.0094	0.0053	0.0041
174	0.0096	0.0054	0.0042
175	0.0100	0.0056	0.0044
176	0.0102	0.0057	0.0045
177	0.0107	0.0060	0.0047
178	0.0110	0.0062	0.0048
179	0.0116	0.0065	0.0051
180	0.0120	0.0067	0.0053
181	0.0128	0.0072	0.0056
182	0.0133	0.0075	0.0058
183	0.0143	0.0081	0.0063
184	0.0149	0.0084	0.0065
185	0.0163	0.0092	0.0071
186	0.0172	0.0097	0.0075
187	0.0196	0.0110	0.0086
188	0.0211	0.0119	0.0092
189	0.0254	0.0143	0.0111
190	0.0287	0.0161	0.0126
191	0.0411	0.0192	0.0218
192	0.0565	0.0192	0.0372
193	0.1767	0.0192	0.1575
194	0.0334	0.0188	0.0146
195	0.0230	0.0129	0.0101
196	0.0183	0.0103	0.0080
197	0.0157	0.0088	0.0069
198	0.0138	0.0077	0.0060
199	0.0124	0.0070	0.0054
200	0.0113	0.0064	0.0050
201	0.0105	0.0059	0.0046
202	0.0098	0.0055	0.0043
203	0.0092	0.0052	0.0040
204	0.0087	0.0049	0.0038
205	0.0082	0.0046	0.0036
206	0.0078	0.0044	0.0034
207	0.0075	0.0042	0.0033

208	0.0072	0.0040	0.0031
209	0.0069	0.0039	0.0030
210	0.0067	0.0037	0.0029
211	0.0064	0.0036	0.0028
212	0.0062	0.0035	0.0027
213	0.0060	0.0034	0.0026
214	0.0059	0.0033	0.0026
215	0.0057	0.0032	0.0025
216	0.0056	0.0031	0.0024
217	0.0055	0.0031	0.0024
218	0.0053	0.0030	0.0023
219	0.0052	0.0029	0.0023
220	0.0051	0.0029	0.0022
221	0.0050	0.0028	0.0022
222	0.0049	0.0027	0.0021
223	0.0048	0.0027	0.0021
224	0.0047	0.0026	0.0021
225	0.0046	0.0026	0.0020
226	0.0045	0.0025	0.0020
227	0.0044	0.0025	0.0019
228	0.0044	0.0025	0.0019
229	0.0043	0.0024	0.0019
230	0.0042	0.0024	0.0019
231	0.0042	0.0023	0.0018
232	0.0041	0.0023	0.0018
233	0.0040	0.0023	0.0018
234	0.0040	0.0022	0.0017
235	0.0039	0.0022	0.0017
236	0.0039	0.0022	0.0017
237	0.0038	0.0021	0.0017
238	0.0038	0.0021	0.0016
239	0.0037	0.0021	0.0016
240	0.0037	0.0021	0.0016
241	0.0036	0.0020	0.0016
242	0.0036	0.0020	0.0016
243	0.0035	0.0020	0.0015
244	0.0035	0.0020	0.0015
245	0.0035	0.0019	0.0015
246	0.0034	0.0019	0.0015
247	0.0034	0.0019	0.0015
248	0.0033	0.0019	0.0015
249	0.0033	0.0019	0.0014
250	0.0033	0.0018	0.0014
251	0.0032	0.0018	0.0014
252	0.0032	0.0018	0.0014
253	0.0032	0.0018	0.0014
254	0.0031	0.0018	0.0014
255	0.0031	0.0017	0.0014
256	0.0031	0.0017	0.0013
257	0.0031	0.0017	0.0013

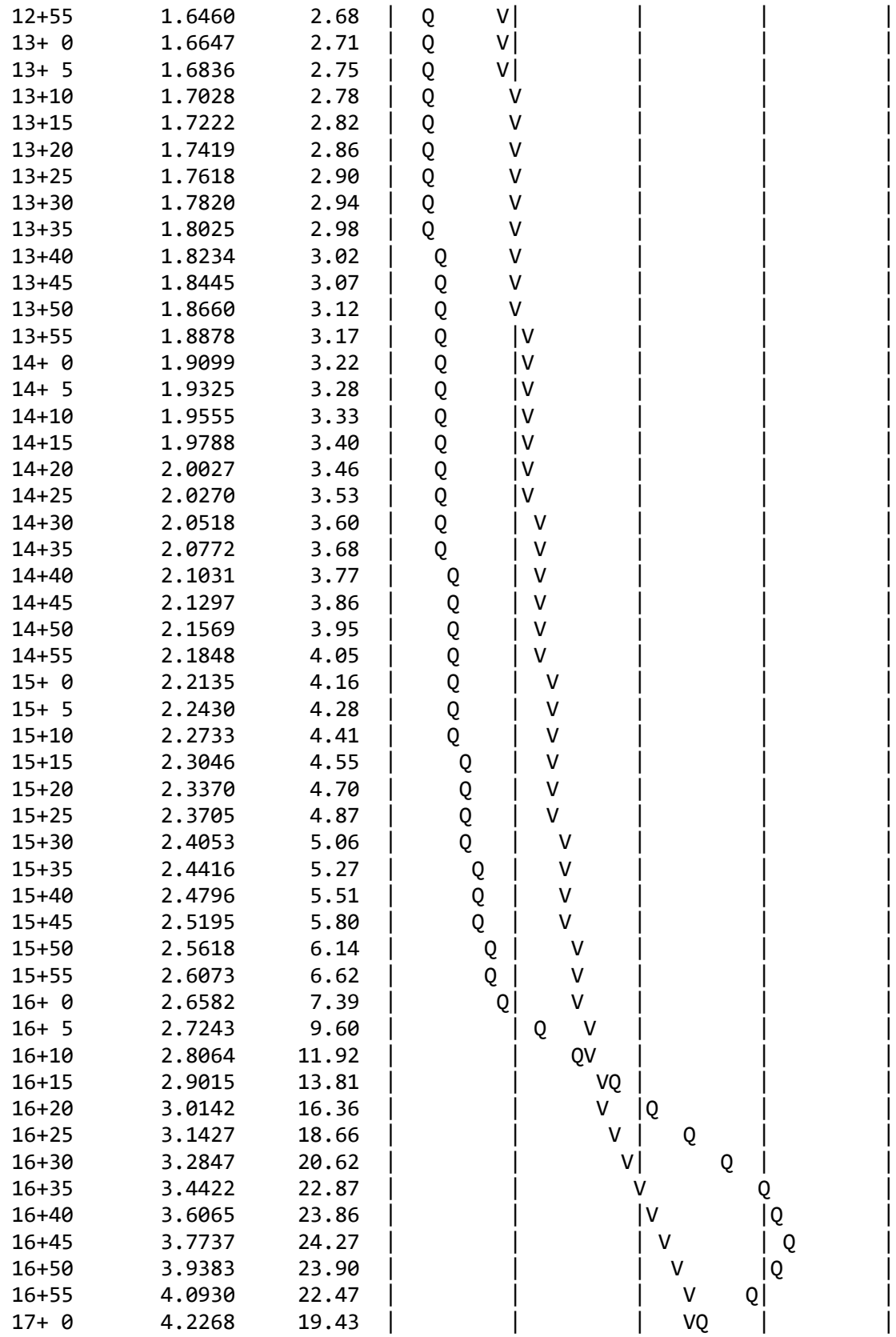
```
      258              0.0030          0.0017              0.0013
      259              0.0030          0.0017              0.0013
      260              0.0030          0.0017              0.0013
      261              0.0029          0.0017              0.0013
      262              0.0029          0.0016              0.0013
      263              0.0029          0.0016              0.0013
      264              0.0029          0.0016              0.0013
      265              0.0028          0.0016              0.0012
      266              0.0028          0.0016              0.0012
      267              0.0028          0.0016              0.0012
      268              0.0028          0.0016              0.0012
      269              0.0028          0.0015              0.0012
      270              0.0027          0.0015              0.0012
      271              0.0027          0.0015              0.0012
      272              0.0027          0.0015              0.0012
      273              0.0027          0.0015              0.0012
      274              0.0027          0.0015              0.0012
      275              0.0026          0.0015              0.0012
      276              0.0026          0.0015              0.0011
      277              0.0026          0.0015              0.0011
      278              0.0026          0.0014              0.0011
      279              0.0026          0.0014              0.0011
      280              0.0025          0.0014              0.0011
      281              0.0025          0.0014              0.0011
      282              0.0025          0.0014              0.0011
      283              0.0025          0.0014              0.0011
      284              0.0025          0.0014              0.0011
      285              0.0025          0.0014              0.0011
      286              0.0024          0.0014              0.0011
      287              0.0024          0.0014              0.0011
      288              0.0024          0.0014              0.0011
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.87(In)
      Total effective rainfall =      0.85(In)
      Peak flow rate in flood hydrograph =     24.27(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - 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   5   Minute intervals ((CFS))

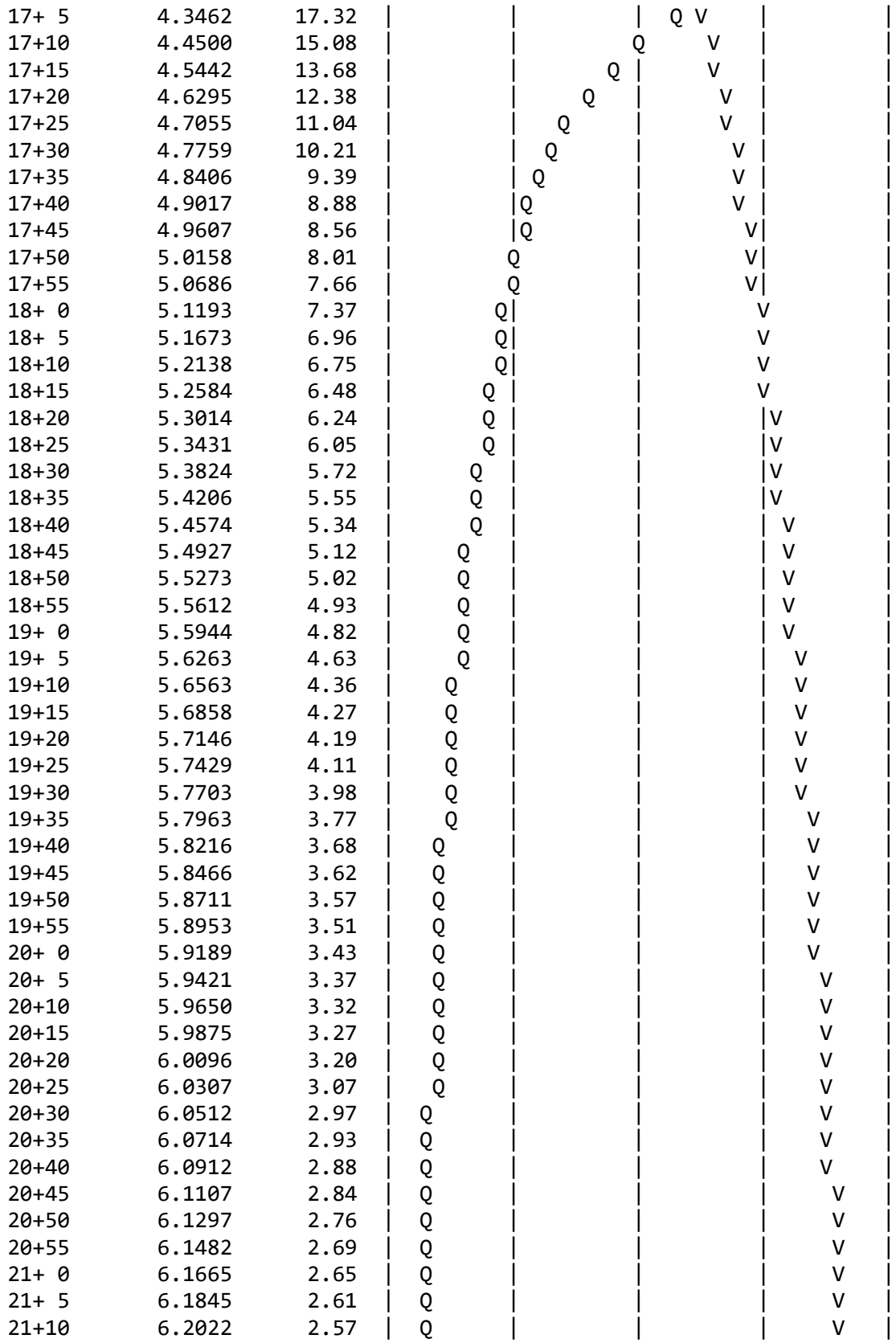
      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
------------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0003      0.03  Q         |         |         |         |
  0+15       0.0007      0.06  Q         |         |         |         |
  0+20       0.0014      0.10  Q         |         |         |         |
```

0+25	0.0025	0.15	Q	|	|	|	|
0+30	0.0039	0.21	Q	|	|	|	|
0+35	0.0059	0.29	Q	|	|	|	|
0+40	0.0085	0.37	Q	|	|	|	|
0+45	0.0116	0.46	Q	|	|	|	|
0+50	0.0154	0.54	Q	|	|	|	|
0+55	0.0197	0.63	Q	|	|	|	|
1+ 0	0.0245	0.69	Q	|	|	|	|
1+ 5	0.0296	0.75	Q	|	|	|	|
1+10	0.0351	0.79	VQ	|	|	|	|
1+15	0.0408	0.83	VQ	|	|	|	|
1+20	0.0468	0.87	VQ	|	|	|	|
1+25	0.0530	0.90	VQ	|	|	|	|
1+30	0.0593	0.92	VQ	|	|	|	|
1+35	0.0658	0.94	VQ	|	|	|	|
1+40	0.0724	0.96	VQ	|	|	|	|
1+45	0.0792	0.98	VQ	|	|	|	|
1+50	0.0861	1.00	VQ	|	|	|	|
1+55	0.0932	1.02	VQ	|	|	|	|
2+ 0	0.1003	1.04	VQ	|	|	|	|
2+ 5	0.1076	1.05	VQ	|	|	|	|
2+10	0.1149	1.07	VQ	|	|	|	|
2+15	0.1224	1.08	VQ	|	|	|	|
2+20	0.1299	1.10	VQ	|	|	|	|
2+25	0.1376	1.11	VQ	|	|	|	|
2+30	0.1453	1.12	VQ	|	|	|	|
2+35	0.1532	1.14	VQ	|	|	|	|
2+40	0.1611	1.15	VQ	|	|	|	|
2+45	0.1691	1.16	VQ	|	|	|	|
2+50	0.1771	1.17	|Q	|	|	|	|
2+55	0.1853	1.18	|Q	|	|	|	|
3+ 0	0.1935	1.19	|Q	|	|	|	|
3+ 5	0.2018	1.20	|Q	|	|	|	|
3+10	0.2101	1.21	|Q	|	|	|	|
3+15	0.2185	1.22	|Q	|	|	|	|
3+20	0.2270	1.23	|Q	|	|	|	|
3+25	0.2356	1.24	|Q	|	|	|	|
3+30	0.2442	1.25	|Q	|	|	|	|
3+35	0.2529	1.26	|Q	|	|	|	|
3+40	0.2616	1.27	|Q	|	|	|	|
3+45	0.2704	1.28	|Q	|	|	|	|
3+50	0.2793	1.29	|Q	|	|	|	|
3+55	0.2882	1.29	|Q	|	|	|	|
4+ 0	0.2972	1.30	|Q	|	|	|	|
4+ 5	0.3062	1.31	|Q	|	|	|	|
4+10	0.3153	1.32	|Q	|	|	|	|
4+15	0.3244	1.33	|Q	|	|	|	|
4+20	0.3336	1.34	|Q	|	|	|	|
4+25	0.3429	1.35	|QV	|	|	|	|
4+30	0.3522	1.35	|QV	|	|	|	|

4+35	0.3616	1.36	QV				
4+40	0.3710	1.37	QV				
4+45	0.3805	1.38	QV				
4+50	0.3901	1.39	QV				
4+55	0.3997	1.39	QV				
5+ 0	0.4093	1.40	QV				
5+ 5	0.4190	1.41	QV				
5+10	0.4288	1.42	QV				
5+15	0.4386	1.42	QV				
5+20	0.4485	1.43	QV				
5+25	0.4584	1.44	QV				
5+30	0.4684	1.45	QV				
5+35	0.4784	1.46	QV				
5+40	0.4885	1.46	QV				
5+45	0.4986	1.47	QV				
5+50	0.5088	1.48	QV				
5+55	0.5190	1.49	Q V				
6+ 0	0.5293	1.49	Q V				
6+ 5	0.5397	1.50	QV				
6+10	0.5501	1.51	QV				
6+15	0.5605	1.52	QV				
6+20	0.5710	1.53	QV				
6+25	0.5816	1.53	QV				
6+30	0.5922	1.54	QV				
6+35	0.6029	1.55	QV				
6+40	0.6137	1.56	QV				
6+45	0.6245	1.57	QV				
6+50	0.6353	1.58	QV				
6+55	0.6462	1.59	QV				
7+ 0	0.6572	1.59	QV				
7+ 5	0.6682	1.60	QV				
7+10	0.6793	1.61	Q V				
7+15	0.6905	1.62	Q V				
7+20	0.7017	1.63	Q V				
7+25	0.7129	1.63	Q V				
7+30	0.7242	1.64	Q V				
7+35	0.7356	1.65	Q V				
7+40	0.7470	1.66	Q V				
7+45	0.7585	1.67	Q V				
7+50	0.7700	1.68	Q V				
7+55	0.7816	1.69	Q V				
8+ 0	0.7933	1.69	Q V				
8+ 5	0.8051	1.70	Q V				
8+10	0.8169	1.71	Q V				
8+15	0.8287	1.72	Q V				
8+20	0.8406	1.73	Q V				
8+25	0.8526	1.74	Q V				
8+30	0.8647	1.75	Q V				
8+35	0.8769	1.76	Q V				
8+40	0.8891	1.77	Q V				

8+45	0.9013	1.78	Q V			
8+50	0.9137	1.79	Q V			
8+55	0.9261	1.80	Q V			
9+ 0	0.9386	1.82	Q V			
9+ 5	0.9512	1.83	Q V			
9+10	0.9639	1.84	Q V			
9+15	0.9766	1.85	Q V			
9+20	0.9894	1.86	Q V			
9+25	1.0023	1.87	Q V			
9+30	1.0153	1.89	Q V			
9+35	1.0284	1.90	Q V			
9+40	1.0415	1.91	Q V			
9+45	1.0548	1.92	Q V			
9+50	1.0681	1.94	Q V			
9+55	1.0816	1.95	Q V			
10+ 0	1.0951	1.96	Q V			
10+ 5	1.1087	1.98	Q V			
10+10	1.1224	1.99	Q V			
10+15	1.1362	2.01	Q V			
10+20	1.1501	2.02	Q V			
10+25	1.1641	2.04	Q V			
10+30	1.1783	2.05	Q V			
10+35	1.1925	2.07	Q V			
10+40	1.2068	2.08	Q V			
10+45	1.2213	2.10	Q V			
10+50	1.2358	2.11	Q V			
10+55	1.2505	2.13	Q V			
11+ 0	1.2653	2.15	Q V			
11+ 5	1.2802	2.17	Q V			
11+10	1.2953	2.18	Q V			
11+15	1.3105	2.20	Q V			
11+20	1.3258	2.22	Q V			
11+25	1.3412	2.24	Q V			
11+30	1.3568	2.26	Q V			
11+35	1.3725	2.28	Q V			
11+40	1.3883	2.30	Q V			
11+45	1.4044	2.32	Q V			
11+50	1.4205	2.35	Q V			
11+55	1.4368	2.37	Q V			
12+ 0	1.4533	2.39	Q V			
12+ 5	1.4699	2.42	Q V			
12+10	1.4867	2.44	Q V			
12+15	1.5037	2.46	Q V			
12+20	1.5208	2.49	Q V			
12+25	1.5381	2.51	Q V			
12+30	1.5556	2.54	Q V			
12+35	1.5733	2.57	Q V			
12+40	1.5912	2.59	Q V			
12+45	1.6093	2.62	Q V			
12+50	1.6275	2.65	Q V			





```
21+15       6.2194      2.51  |  Q      |         |         |     V   |
21+20       6.2362      2.43  |  Q      |         |         |     V   |
21+25       6.2526      2.39  |  Q      |         |         |     V   |
21+30       6.2689      2.36  |  Q      |         |         |     V   |
21+35       6.2849      2.32  |  Q      |         |         |      V  |
21+40       6.3006      2.27  |  Q      |         |         |      V  |
21+45       6.3157      2.20  | Q       |         |         |      V  |
21+50       6.3306      2.16  | Q       |         |         |      V  |
21+55       6.3453      2.14  | Q       |         |         |      V  |
22+ 0       6.3598      2.11  | Q       |         |         |      V  |
22+ 5       6.3742      2.09  | Q       |         |         |      V  |
22+10       6.3884      2.06  | Q       |         |         |      V  |
22+15       6.4024      2.04  | Q       |         |         |      V  |
22+20       6.4163      2.01  | Q       |         |         |      V  |
22+25       6.4300      1.99  | Q       |         |         |      V  |
22+30       6.4435      1.96  | Q       |         |         |      V  |
22+35       6.4569      1.94  | Q       |         |         |       V |
22+40       6.4700      1.91  | Q       |         |         |       V |
22+45       6.4830      1.88  | Q       |         |         |       V |
22+50       6.4956      1.83  | Q       |         |         |       V |
22+55       6.5074      1.71  | Q       |         |         |       V |
23+ 0       6.5185      1.61  | Q       |         |         |       V |
23+ 5       6.5294      1.58  | Q       |         |         |       V |
23+10       6.5401      1.56  | Q       |         |         |       V |
23+15       6.5507      1.54  | Q       |         |         |       V |
23+20       6.5612      1.52  | Q       |         |         |       V |
23+25       6.5716      1.51  | Q       |         |         |       V |
23+30       6.5818      1.49  |Q        |         |         |       V |
23+35       6.5920      1.47  |Q        |         |         |       V |
23+40       6.6020      1.46  |Q        |         |         |       V |
23+45       6.6120      1.45  |Q        |         |         |       V |
23+50       6.6219      1.43  |Q        |         |         |        V|
23+55       6.6316      1.42  |Q        |         |         |        V|
24+ 0       6.6413      1.41  |Q        |         |         |        V|
24+ 5       6.6509      1.39  |Q        |         |         |        V|
24+10       6.6602      1.35  |Q        |         |         |        V|
24+15       6.6692      1.31  |Q        |         |         |        V|
24+20       6.6779      1.26  |Q        |         |         |        V|
24+25       6.6862      1.20  |Q        |         |         |        V|
24+30       6.6939      1.13  |Q        |         |         |        V|
24+35       6.7011      1.04  |Q        |         |         |        V|
24+40       6.7077      0.96  |Q        |         |         |        V|
24+45       6.7137      0.86  |Q        |         |         |        V|
24+50       6.7190      0.77  |Q        |         |         |        V|
24+55       6.7237      0.69  Q        |         |         |        V|
25+ 0       6.7280      0.62  Q        |         |         |        V|
25+ 5       6.7318      0.56  Q        |         |         |        V|
25+10       6.7353      0.51  Q        |         |         |        V|
25+15       6.7385      0.47  Q        |         |         |        V|
25+20       6.7415      0.43  Q        |         |         |        V|
```

25+25	6.7443	0.40	Q	|	|	|	V|
25+30	6.7469	0.38	Q	|	|	|	V|
25+35	6.7494	0.36	Q	|	|	|	V|
25+40	6.7517	0.34	Q	|	|	|	V|
25+45	6.7538	0.32	Q	|	|	|	V|
25+50	6.7559	0.30	Q	|	|	|	V|
25+55	6.7578	0.28	Q	|	|	|	V|
26+ 0	6.7596	0.26	Q	|	|	|	V|
26+ 5	6.7614	0.25	Q	|	|	|	V|
26+10	6.7630	0.24	Q	|	|	|	V|
26+15	6.7645	0.22	Q	|	|	|	V|
26+20	6.7660	0.21	Q	|	|	|	V|
26+25	6.7674	0.20	Q	|	|	|	V|
26+30	6.7687	0.19	Q	|	|	|	V|
26+35	6.7699	0.18	Q	|	|	|	V|
26+40	6.7711	0.17	Q	|	|	|	V|
26+45	6.7722	0.16	Q	|	|	|	V|
26+50	6.7733	0.15	Q	|	|	|	V|
26+55	6.7743	0.15	Q	|	|	|	V|
27+ 0	6.7752	0.14	Q	|	|	|	V|
27+ 5	6.7761	0.13	Q	|	|	|	V|
27+10	6.7770	0.12	Q	|	|	|	V|
27+15	6.7778	0.12	Q	|	|	|	V|
27+20	6.7785	0.11	Q	|	|	|	V|
27+25	6.7792	0.10	Q	|	|	|	V|
27+30	6.7799	0.10	Q	|	|	|	V|
27+35	6.7806	0.09	Q	|	|	|	V|
27+40	6.7812	0.09	Q	|	|	|	V|
27+45	6.7818	0.09	Q	|	|	|	V|
27+50	6.7823	0.08	Q	|	|	|	V|
27+55	6.7829	0.08	Q	|	|	|	V|
28+ 0	6.7834	0.07	Q	|	|	|	V|
28+ 5	6.7838	0.07	Q	|	|	|	V|
28+10	6.7843	0.06	Q	|	|	|	V|
28+15	6.7847	0.06	Q	|	|	|	V|
28+20	6.7851	0.06	Q	|	|	|	V|
28+25	6.7855	0.05	Q	|	|	|	V|
28+30	6.7858	0.05	Q	|	|	|	V|
28+35	6.7861	0.05	Q	|	|	|	V|
28+40	6.7864	0.04	Q	|	|	|	V|
28+45	6.7867	0.04	Q	|	|	|	V|
28+50	6.7870	0.04	Q	|	|	|	V|
28+55	6.7872	0.04	Q	|	|	|	V|
29+ 0	6.7875	0.03	Q	|	|	|	V|
29+ 5	6.7877	0.03	Q	|	|	|	V|
29+10	6.7879	0.03	Q	|	|	|	V|
29+15	6.7881	0.03	Q	|	|	|	V|
29+20	6.7882	0.03	Q	|	|	|	V|
29+25	6.7884	0.02	Q	|	|	|	V|
29+30	6.7886	0.02	Q	|	|	|	V|

29+35	6.7887	0.02	Q	|	|	|	V|
29+40	6.7888	0.02	Q	|	|	|	V|
29+45	6.7889	0.02	Q	|	|	|	V|
29+50	6.7890	0.02	Q	|	|	|	V|
29+55	6.7891	0.01	Q	|	|	|	V|
30+ 0	6.7892	0.01	Q	|	|	|	V|
30+ 5	6.7893	0.01	Q	|	|	|	V|
30+10	6.7894	0.01	Q	|	|	|	V|
30+15	6.7894	0.01	Q	|	|	|	V|
30+20	6.7895	0.01	Q	|	|	|	V|
30+25	6.7895	0.01	Q	|	|	|	V|
30+30	6.7896	0.01	Q	|	|	|	V|
30+35	6.7896	0.00	Q	|	|	|	V|
30+40	6.7896	0.00	Q	|	|	|	V|
30+45	6.7896	0.00	Q	|	|	|	V|
30+50	6.7896	0.00	Q	|	|	|	V|

UHEX06CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/18/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 6
EXISTING CONDITION, 5-YEAR 24-HOUR
FN: UHEX06CUL5.OUT - ABE

Storm Event Year = 5

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
40.10	1	0.60
Rainfall data for year 2		
40.10	6	0.70
Rainfall data for year 2		
40.10	24	1.20
Rainfall data for year 100		

```
            40.10            1           1.00
------------------------------------------------------------------------
Rainfall data for year 100
            40.10            6           1.90
------------------------------------------------------------------------
Rainfall data for year 100
            40.10           24           3.40
------------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  SCS curve     Area     Area     Fp(Fig C6)    Ap      Fm
No.(AMCII) NO.(AMC 2)    (Ac.)    Fraction     (In/Hr)  (dec.)   (In/Hr)
 86.0      86.0         40.10      1.000     0.265    1.000    0.265

Area-averaged adjusted loss rate Fm (In/Hr) =  0.265

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    40.10   1.000         86.0      86.0       1.63     0.373

Area-averaged catchment yield fraction, Y =  0.373
Area-averaged low loss fraction, Yb =  0.627
User entry of time of concentration  =   0.620 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      40.10(Ac.)
Catchment Lag time =   0.496 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 16.8011
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.265(In/Hr)
Average low loss rate fraction (Yb) = 0.627 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.177(In)
Computed peak 30-minute rainfall =  0.363(In)
Specified peak 1-hour rainfall =  0.480(In)
Computed peak 3-hour rainfall =  0.744(In)
Specified peak 6-hour rainfall =  0.981(In)
Specified peak 24-hour rainfall =  1.715(In)


Rainfall depth area reduction factors:
Using a total area of      40.10(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998     Adjusted rainfall =  0.177(In)
30-minute factor = 0.998    Adjusted rainfall =  0.363(In)
```

1-hour factor = 0.998 Adjusted rainfall = 0.479(In)
3-hour factor = 1.000 Adjusted rainfall = 0.744(In)
6-hour factor = 1.000 Adjusted rainfall = 0.981(In)
24-hour factor = 1.000 Adjusted rainfall = 1.715(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 484.96 (CFS))	
1	1.463	7.093
2	5.313	18.671
3	11.828	31.596
4	21.085	44.895
5	32.472	55.219
6	44.529	58.471
7	54.825	49.936
8	62.176	35.648
9	67.509	25.863
10	71.476	19.238
11	74.477	14.552
12	76.993	12.203
13	79.202	10.710
14	81.156	9.476
15	82.860	8.266
16	84.417	7.549
17	85.841	6.910
18	87.067	5.945
19	88.149	5.247
20	89.157	4.889
21	90.162	4.870
22	90.994	4.036
23	91.733	3.585
24	92.469	3.567
25	93.072	2.926
26	93.610	2.607
27	94.147	2.604
28	94.661	2.494
29	95.165	2.444
30	95.665	2.426
31	96.074	1.981
32	96.443	1.793
33	96.810	1.781
34	97.131	1.555
35	97.433	1.467
36	97.733	1.453
37	97.985	1.223

38	98.221	1.141
39	98.453	1.125
40	98.636	0.892
41	98.804	0.815
42	98.972	0.815
43	99.140	0.815
44	99.308	0.815
45	99.476	0.815
46	99.644	0.815
47	99.812	0.815
48	100.000	0.407

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1772	0.1772
2	0.2338	0.0566
3	0.2749	0.0412
4	0.3085	0.0335
5	0.3373	0.0288
6	0.3628	0.0255
7	0.3858	0.0231
8	0.4070	0.0212
9	0.4267	0.0196
10	0.4450	0.0184
11	0.4623	0.0173
12	0.4787	0.0164
13	0.4943	0.0156
14	0.5092	0.0149
15	0.5235	0.0143
16	0.5372	0.0137
17	0.5504	0.0132
18	0.5632	0.0128
19	0.5755	0.0123
20	0.5875	0.0120
21	0.5991	0.0116
22	0.6104	0.0113
23	0.6214	0.0110
24	0.6320	0.0107
25	0.6425	0.0104
26	0.6527	0.0102
27	0.6626	0.0100
28	0.6723	0.0097
29	0.6819	0.0095
30	0.6912	0.0093
31	0.7003	0.0091
32	0.7093	0.0090
33	0.7181	0.0088
34	0.7268	0.0086
35	0.7353	0.0085
36	0.7436	0.0084

37	0.7518	0.0082
38	0.7599	0.0081
39	0.7678	0.0079
40	0.7756	0.0078
41	0.7833	0.0077
42	0.7909	0.0076
43	0.7983	0.0075
44	0.8057	0.0074
45	0.8130	0.0073
46	0.8201	0.0072
47	0.8272	0.0071
48	0.8342	0.0070
49	0.8411	0.0069
50	0.8479	0.0068
51	0.8547	0.0067
52	0.8613	0.0067
53	0.8679	0.0066
54	0.8744	0.0065
55	0.8809	0.0064
56	0.8872	0.0064
57	0.8935	0.0063
58	0.8997	0.0062
59	0.9059	0.0062
60	0.9120	0.0061
61	0.9181	0.0060
62	0.9240	0.0060
63	0.9300	0.0059
64	0.9358	0.0059
65	0.9417	0.0058
66	0.9474	0.0058
67	0.9531	0.0057
68	0.9588	0.0057
69	0.9644	0.0056
70	0.9700	0.0056
71	0.9755	0.0055
72	0.9809	0.0055
73	0.9864	0.0055
74	0.9918	0.0054
75	0.9972	0.0054
76	1.0026	0.0053
77	1.0079	0.0053
78	1.0131	0.0053
79	1.0183	0.0052
80	1.0235	0.0052
81	1.0286	0.0051
82	1.0337	0.0051
83	1.0388	0.0051
84	1.0438	0.0050
85	1.0488	0.0050
86	1.0538	0.0050

87	1.0587	0.0049
88	1.0636	0.0049
89	1.0684	0.0049
90	1.0733	0.0048
91	1.0781	0.0048
92	1.0828	0.0048
93	1.0875	0.0047
94	1.0922	0.0047
95	1.0969	0.0047
96	1.1015	0.0046
97	1.1062	0.0046
98	1.1107	0.0046
99	1.1153	0.0046
100	1.1198	0.0045
101	1.1243	0.0045
102	1.1288	0.0045
103	1.1332	0.0044
104	1.1377	0.0044
105	1.1421	0.0044
106	1.1464	0.0044
107	1.1508	0.0043
108	1.1551	0.0043
109	1.1594	0.0043
110	1.1637	0.0043
111	1.1679	0.0043
112	1.1722	0.0042
113	1.1764	0.0042
114	1.1806	0.0042
115	1.1847	0.0042
116	1.1889	0.0041
117	1.1930	0.0041
118	1.1971	0.0041
119	1.2012	0.0041
120	1.2052	0.0041
121	1.2093	0.0040
122	1.2133	0.0040
123	1.2173	0.0040
124	1.2213	0.0040
125	1.2252	0.0040
126	1.2292	0.0039
127	1.2331	0.0039
128	1.2370	0.0039
129	1.2409	0.0039
130	1.2447	0.0039
131	1.2486	0.0039
132	1.2524	0.0038
133	1.2562	0.0038
134	1.2600	0.0038
135	1.2638	0.0038
136	1.2676	0.0038

137	1.2713	0.0037
138	1.2751	0.0037
139	1.2788	0.0037
140	1.2825	0.0037
141	1.2862	0.0037
142	1.2898	0.0037
143	1.2935	0.0037
144	1.2971	0.0036
145	1.3007	0.0036
146	1.3044	0.0036
147	1.3079	0.0036
148	1.3115	0.0036
149	1.3151	0.0036
150	1.3186	0.0036
151	1.3222	0.0035
152	1.3257	0.0035
153	1.3292	0.0035
154	1.3327	0.0035
155	1.3362	0.0035
156	1.3397	0.0035
157	1.3431	0.0035
158	1.3465	0.0034
159	1.3500	0.0034
160	1.3534	0.0034
161	1.3568	0.0034
162	1.3602	0.0034
163	1.3636	0.0034
164	1.3669	0.0034
165	1.3703	0.0034
166	1.3736	0.0033
167	1.3770	0.0033
168	1.3803	0.0033
169	1.3836	0.0033
170	1.3869	0.0033
171	1.3902	0.0033
172	1.3934	0.0033
173	1.3967	0.0033
174	1.3999	0.0032
175	1.4032	0.0032
176	1.4064	0.0032
177	1.4096	0.0032
178	1.4128	0.0032
179	1.4160	0.0032
180	1.4192	0.0032
181	1.4224	0.0032
182	1.4255	0.0032
183	1.4287	0.0032
184	1.4318	0.0031
185	1.4350	0.0031
186	1.4381	0.0031

187	1.4412	0.0031
188	1.4443	0.0031
189	1.4474	0.0031
190	1.4505	0.0031
191	1.4535	0.0031
192	1.4566	0.0031
193	1.4597	0.0031
194	1.4627	0.0030
195	1.4657	0.0030
196	1.4688	0.0030
197	1.4718	0.0030
198	1.4748	0.0030
199	1.4778	0.0030
200	1.4808	0.0030
201	1.4837	0.0030
202	1.4867	0.0030
203	1.4897	0.0030
204	1.4926	0.0030
205	1.4956	0.0029
206	1.4985	0.0029
207	1.5014	0.0029
208	1.5044	0.0029
209	1.5073	0.0029
210	1.5102	0.0029
211	1.5131	0.0029
212	1.5160	0.0029
213	1.5188	0.0029
214	1.5217	0.0029
215	1.5246	0.0029
216	1.5274	0.0029
217	1.5303	0.0028
218	1.5331	0.0028
219	1.5359	0.0028
220	1.5388	0.0028
221	1.5416	0.0028
222	1.5444	0.0028
223	1.5472	0.0028
224	1.5500	0.0028
225	1.5528	0.0028
226	1.5555	0.0028
227	1.5583	0.0028
228	1.5611	0.0028
229	1.5638	0.0028
230	1.5666	0.0027
231	1.5693	0.0027
232	1.5721	0.0027
233	1.5748	0.0027
234	1.5775	0.0027
235	1.5802	0.0027
236	1.5829	0.0027

237	1.5856	0.0027
238	1.5883	0.0027
239	1.5910	0.0027
240	1.5937	0.0027
241	1.5964	0.0027
242	1.5990	0.0027
243	1.6017	0.0027
244	1.6043	0.0027
245	1.6070	0.0026
246	1.6096	0.0026
247	1.6123	0.0026
248	1.6149	0.0026
249	1.6175	0.0026
250	1.6201	0.0026
251	1.6227	0.0026
252	1.6253	0.0026
253	1.6279	0.0026
254	1.6305	0.0026
255	1.6331	0.0026
256	1.6357	0.0026
257	1.6383	0.0026
258	1.6408	0.0026
259	1.6434	0.0026
260	1.6459	0.0026
261	1.6485	0.0025
262	1.6510	0.0025
263	1.6536	0.0025
264	1.6561	0.0025
265	1.6586	0.0025
266	1.6611	0.0025
267	1.6637	0.0025
268	1.6662	0.0025
269	1.6687	0.0025
270	1.6712	0.0025
271	1.6737	0.0025
272	1.6761	0.0025
273	1.6786	0.0025
274	1.6811	0.0025
275	1.6836	0.0025
276	1.6860	0.0025
277	1.6885	0.0025
278	1.6909	0.0025
279	1.6934	0.0024
280	1.6958	0.0024
281	1.6983	0.0024
282	1.7007	0.0024
283	1.7031	0.0024
284	1.7056	0.0024
285	1.7080	0.0024
286	1.7104	0.0024

287	1.7128	0.0024	
288	1.7152	0.0024	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0024	0.0015	0.0009
2	0.0024	0.0015	0.0009
3	0.0024	0.0015	0.0009
4	0.0024	0.0015	0.0009
5	0.0024	0.0015	0.0009
6	0.0024	0.0015	0.0009
7	0.0024	0.0015	0.0009
8	0.0025	0.0015	0.0009
9	0.0025	0.0015	0.0009
10	0.0025	0.0015	0.0009
11	0.0025	0.0016	0.0009
12	0.0025	0.0016	0.0009
13	0.0025	0.0016	0.0009
14	0.0025	0.0016	0.0009
15	0.0025	0.0016	0.0009
16	0.0025	0.0016	0.0009
17	0.0025	0.0016	0.0009
18	0.0025	0.0016	0.0009
19	0.0025	0.0016	0.0010
20	0.0026	0.0016	0.0010
21	0.0026	0.0016	0.0010
22	0.0026	0.0016	0.0010
23	0.0026	0.0016	0.0010
24	0.0026	0.0016	0.0010
25	0.0026	0.0016	0.0010
26	0.0026	0.0016	0.0010
27	0.0026	0.0016	0.0010
28	0.0026	0.0016	0.0010
29	0.0026	0.0017	0.0010
30	0.0026	0.0017	0.0010
31	0.0027	0.0017	0.0010
32	0.0027	0.0017	0.0010
33	0.0027	0.0017	0.0010
34	0.0027	0.0017	0.0010
35	0.0027	0.0017	0.0010
36	0.0027	0.0017	0.0010
37	0.0027	0.0017	0.0010
38	0.0027	0.0017	0.0010
39	0.0027	0.0017	0.0010
40	0.0027	0.0017	0.0010
41	0.0028	0.0017	0.0010
42	0.0028	0.0017	0.0010
43	0.0028	0.0017	0.0010

44	0.0028	0.0018	0.0010
45	0.0028	0.0018	0.0010
46	0.0028	0.0018	0.0011
47	0.0028	0.0018	0.0011
48	0.0028	0.0018	0.0011
49	0.0029	0.0018	0.0011
50	0.0029	0.0018	0.0011
51	0.0029	0.0018	0.0011
52	0.0029	0.0018	0.0011
53	0.0029	0.0018	0.0011
54	0.0029	0.0018	0.0011
55	0.0029	0.0018	0.0011
56	0.0029	0.0018	0.0011
57	0.0030	0.0019	0.0011
58	0.0030	0.0019	0.0011
59	0.0030	0.0019	0.0011
60	0.0030	0.0019	0.0011
61	0.0030	0.0019	0.0011
62	0.0030	0.0019	0.0011
63	0.0030	0.0019	0.0011
64	0.0030	0.0019	0.0011
65	0.0031	0.0019	0.0011
66	0.0031	0.0019	0.0011
67	0.0031	0.0019	0.0012
68	0.0031	0.0019	0.0012
69	0.0031	0.0020	0.0012
70	0.0031	0.0020	0.0012
71	0.0032	0.0020	0.0012
72	0.0032	0.0020	0.0012
73	0.0032	0.0020	0.0012
74	0.0032	0.0020	0.0012
75	0.0032	0.0020	0.0012
76	0.0032	0.0020	0.0012
77	0.0032	0.0020	0.0012
78	0.0033	0.0020	0.0012
79	0.0033	0.0021	0.0012
80	0.0033	0.0021	0.0012
81	0.0033	0.0021	0.0012
82	0.0033	0.0021	0.0012
83	0.0034	0.0021	0.0013
84	0.0034	0.0021	0.0013
85	0.0034	0.0021	0.0013
86	0.0034	0.0021	0.0013
87	0.0034	0.0021	0.0013
88	0.0034	0.0022	0.0013
89	0.0035	0.0022	0.0013
90	0.0035	0.0022	0.0013
91	0.0035	0.0022	0.0013
92	0.0035	0.0022	0.0013
93	0.0036	0.0022	0.0013

94	0.0036	0.0022	0.0013
95	0.0036	0.0023	0.0013
96	0.0036	0.0023	0.0013
97	0.0036	0.0023	0.0014
98	0.0037	0.0023	0.0014
99	0.0037	0.0023	0.0014
100	0.0037	0.0023	0.0014
101	0.0037	0.0023	0.0014
102	0.0037	0.0023	0.0014
103	0.0038	0.0024	0.0014
104	0.0038	0.0024	0.0014
105	0.0038	0.0024	0.0014
106	0.0039	0.0024	0.0014
107	0.0039	0.0024	0.0015
108	0.0039	0.0024	0.0015
109	0.0039	0.0025	0.0015
110	0.0040	0.0025	0.0015
111	0.0040	0.0025	0.0015
112	0.0040	0.0025	0.0015
113	0.0041	0.0025	0.0015
114	0.0041	0.0026	0.0015
115	0.0041	0.0026	0.0015
116	0.0041	0.0026	0.0015
117	0.0042	0.0026	0.0016
118	0.0042	0.0026	0.0016
119	0.0043	0.0027	0.0016
120	0.0043	0.0027	0.0016
121	0.0043	0.0027	0.0016
122	0.0043	0.0027	0.0016
123	0.0044	0.0028	0.0016
124	0.0044	0.0028	0.0016
125	0.0045	0.0028	0.0017
126	0.0045	0.0028	0.0017
127	0.0046	0.0029	0.0017
128	0.0046	0.0029	0.0017
129	0.0046	0.0029	0.0017
130	0.0047	0.0029	0.0017
131	0.0047	0.0030	0.0018
132	0.0048	0.0030	0.0018
133	0.0048	0.0030	0.0018
134	0.0049	0.0030	0.0018
135	0.0049	0.0031	0.0018
136	0.0050	0.0031	0.0018
137	0.0050	0.0032	0.0019
138	0.0051	0.0032	0.0019
139	0.0051	0.0032	0.0019
140	0.0052	0.0032	0.0019
141	0.0053	0.0033	0.0020
142	0.0053	0.0033	0.0020
143	0.0054	0.0034	0.0020

144	0.0054	0.0034	0.0020
145	0.0055	0.0034	0.0020
146	0.0055	0.0035	0.0021
147	0.0056	0.0035	0.0021
148	0.0057	0.0035	0.0021
149	0.0058	0.0036	0.0022
150	0.0058	0.0036	0.0022
151	0.0059	0.0037	0.0022
152	0.0060	0.0038	0.0022
153	0.0061	0.0038	0.0023
154	0.0062	0.0039	0.0023
155	0.0063	0.0039	0.0023
156	0.0064	0.0040	0.0024
157	0.0065	0.0041	0.0024
158	0.0066	0.0041	0.0025
159	0.0067	0.0042	0.0025
160	0.0068	0.0043	0.0025
161	0.0070	0.0044	0.0026
162	0.0071	0.0044	0.0026
163	0.0073	0.0046	0.0027
164	0.0074	0.0046	0.0027
165	0.0076	0.0048	0.0028
166	0.0077	0.0048	0.0029
167	0.0079	0.0050	0.0030
168	0.0081	0.0050	0.0030
169	0.0084	0.0052	0.0031
170	0.0085	0.0053	0.0032
171	0.0088	0.0055	0.0033
172	0.0090	0.0056	0.0033
173	0.0093	0.0058	0.0035
174	0.0095	0.0060	0.0036
175	0.0100	0.0062	0.0037
176	0.0102	0.0064	0.0038
177	0.0107	0.0067	0.0040
178	0.0110	0.0069	0.0041
179	0.0116	0.0073	0.0043
180	0.0120	0.0075	0.0045
181	0.0128	0.0080	0.0048
182	0.0132	0.0083	0.0049
183	0.0143	0.0090	0.0053
184	0.0149	0.0093	0.0056
185	0.0164	0.0103	0.0061
186	0.0173	0.0108	0.0065
187	0.0196	0.0123	0.0073
188	0.0212	0.0133	0.0079
189	0.0255	0.0160	0.0095
190	0.0288	0.0181	0.0107
191	0.0412	0.0221	0.0191
192	0.0566	0.0221	0.0345
193	0.1772	0.0221	0.1551

194	0.0335	0.0210	0.0125
195	0.0231	0.0145	0.0086
196	0.0184	0.0115	0.0069
197	0.0156	0.0098	0.0058
198	0.0137	0.0086	0.0051
199	0.0123	0.0077	0.0046
200	0.0113	0.0071	0.0042
201	0.0104	0.0065	0.0039
202	0.0097	0.0061	0.0036
203	0.0091	0.0057	0.0034
204	0.0086	0.0054	0.0032
205	0.0082	0.0051	0.0031
206	0.0078	0.0049	0.0029
207	0.0075	0.0047	0.0028
208	0.0072	0.0045	0.0027
209	0.0069	0.0043	0.0026
210	0.0067	0.0042	0.0025
211	0.0064	0.0040	0.0024
212	0.0062	0.0039	0.0023
213	0.0060	0.0038	0.0023
214	0.0059	0.0037	0.0022
215	0.0057	0.0036	0.0021
216	0.0056	0.0035	0.0021
217	0.0055	0.0034	0.0020
218	0.0053	0.0033	0.0020
219	0.0052	0.0033	0.0019
220	0.0051	0.0032	0.0019
221	0.0050	0.0031	0.0019
222	0.0049	0.0031	0.0018
223	0.0048	0.0030	0.0018
224	0.0047	0.0029	0.0018
225	0.0046	0.0029	0.0017
226	0.0045	0.0028	0.0017
227	0.0044	0.0028	0.0017
228	0.0044	0.0027	0.0016
229	0.0043	0.0027	0.0016
230	0.0042	0.0027	0.0016
231	0.0042	0.0026	0.0016
232	0.0041	0.0026	0.0015
233	0.0040	0.0025	0.0015
234	0.0040	0.0025	0.0015
235	0.0039	0.0025	0.0015
236	0.0039	0.0024	0.0014
237	0.0038	0.0024	0.0014
238	0.0038	0.0024	0.0014
239	0.0037	0.0023	0.0014
240	0.0037	0.0023	0.0014
241	0.0036	0.0023	0.0014
242	0.0036	0.0022	0.0013
243	0.0035	0.0022	0.0013

244	0.0035	0.0022	0.0013
245	0.0035	0.0022	0.0013
246	0.0034	0.0021	0.0013
247	0.0034	0.0021	0.0013
248	0.0033	0.0021	0.0012
249	0.0033	0.0021	0.0012
250	0.0033	0.0021	0.0012
251	0.0032	0.0020	0.0012
252	0.0032	0.0020	0.0012
253	0.0032	0.0020	0.0012
254	0.0031	0.0020	0.0012
255	0.0031	0.0020	0.0012
256	0.0031	0.0019	0.0011
257	0.0031	0.0019	0.0011
258	0.0030	0.0019	0.0011
259	0.0030	0.0019	0.0011
260	0.0030	0.0019	0.0011
261	0.0029	0.0018	0.0011
262	0.0029	0.0018	0.0011
263	0.0029	0.0018	0.0011
264	0.0029	0.0018	0.0011
265	0.0028	0.0018	0.0011
266	0.0028	0.0018	0.0011
267	0.0028	0.0018	0.0010
268	0.0028	0.0017	0.0010
269	0.0028	0.0017	0.0010
270	0.0027	0.0017	0.0010
271	0.0027	0.0017	0.0010
272	0.0027	0.0017	0.0010
273	0.0027	0.0017	0.0010
274	0.0027	0.0017	0.0010
275	0.0026	0.0017	0.0010
276	0.0026	0.0016	0.0010
277	0.0026	0.0016	0.0010
278	0.0026	0.0016	0.0010
279	0.0026	0.0016	0.0010
280	0.0025	0.0016	0.0009
281	0.0025	0.0016	0.0009
282	0.0025	0.0016	0.0009
283	0.0025	0.0016	0.0009
284	0.0025	0.0016	0.0009
285	0.0025	0.0015	0.0009
286	0.0024	0.0015	0.0009
287	0.0024	0.0015	0.0009
288	0.0024	0.0015	0.0009

Total soil rain loss = 0.97(In)
Total effective rainfall = 0.75(In)
Peak flow rate in flood hydrograph = 14.06(CFS)

24 - 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 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0000	0.01	Q				
0+10	0.0002	0.02	Q				
0+15	0.0006	0.05	Q				
0+20	0.0012	0.09	Q				
0+25	0.0022	0.14	Q				
0+30	0.0035	0.19	Q				
0+35	0.0052	0.24	Q				
0+40	0.0070	0.27	Q				
0+45	0.0091	0.30	Q				
0+50	0.0112	0.31	Q				
0+55	0.0135	0.33	Q				
1+ 0	0.0159	0.34	Q				
1+ 5	0.0183	0.35	Q				
1+10	0.0208	0.36	Q				
1+15	0.0233	0.37	Q				
1+20	0.0259	0.38	Q				
1+25	0.0286	0.39	Q				
1+30	0.0313	0.39	Q				
1+35	0.0340	0.40	Q				
1+40	0.0368	0.40	Q				
1+45	0.0396	0.41	Q				
1+50	0.0425	0.41	Q				
1+55	0.0453	0.42	Q				
2+ 0	0.0483	0.42	Q				
2+ 5	0.0512	0.43	Q				
2+10	0.0542	0.43	Q				
2+15	0.0572	0.44	Q				
2+20	0.0602	0.44	Q				
2+25	0.0632	0.44	QV				
2+30	0.0663	0.45	QV				
2+35	0.0694	0.45	QV				
2+40	0.0725	0.45	QV				
2+45	0.0757	0.46	QV				
2+50	0.0788	0.46	QV				
2+55	0.0820	0.46	QV				
3+ 0	0.0852	0.46	QV				
3+ 5	0.0884	0.47	QV				
3+10	0.0917	0.47	QV				
3+15	0.0949	0.47	QV				
3+20	0.0982	0.48	QV				

3+25	0.1015	0.48	QV	|	|	|	|
3+30	0.1048	0.48	QV	|	|	|	|
3+35	0.1081	0.48	QV	|	|	|	|
3+40	0.1115	0.49	QV	|	|	|	|
3+45	0.1149	0.49	QV	|	|	|	|
3+50	0.1182	0.49	QV	|	|	|	|
3+55	0.1216	0.49	QV	|	|	|	|
4+ 0	0.1251	0.50	Q V	|	|	|	|
4+ 5	0.1285	0.50	Q V	|	|	|	|
4+10	0.1319	0.50	Q V	|	|	|	|
4+15	0.1354	0.50	|QV	|	|	|	|
4+20	0.1389	0.50	|QV	|	|	|	|
4+25	0.1423	0.51	|QV	|	|	|	|
4+30	0.1458	0.51	|QV	|	|	|	|
4+35	0.1494	0.51	|QV	|	|	|	|
4+40	0.1529	0.51	|QV	|	|	|	|
4+45	0.1564	0.51	|QV	|	|	|	|
4+50	0.1600	0.52	|QV	|	|	|	|
4+55	0.1636	0.52	|QV	|	|	|	|
5+ 0	0.1671	0.52	|QV	|	|	|	|
5+ 5	0.1707	0.52	|QV	|	|	|	|
5+10	0.1744	0.53	|QV	|	|	|	|
5+15	0.1780	0.53	|QV	|	|	|	|
5+20	0.1816	0.53	|QV	|	|	|	|
5+25	0.1853	0.53	|QV	|	|	|	|
5+30	0.1890	0.53	|Q V	|	|	|	|
5+35	0.1927	0.54	|Q V	|	|	|	|
5+40	0.1964	0.54	|Q V	|	|	|	|
5+45	0.2001	0.54	|Q V	|	|	|	|
5+50	0.2039	0.54	|Q V	|	|	|	|
5+55	0.2076	0.55	|Q V	|	|	|	|
6+ 0	0.2114	0.55	|Q V	|	|	|	|
6+ 5	0.2152	0.55	|Q V	|	|	|	|
6+10	0.2190	0.55	|Q V	|	|	|	|
6+15	0.2229	0.56	|Q V	|	|	|	|
6+20	0.2267	0.56	|Q V	|	|	|	|
6+25	0.2306	0.56	|Q V	|	|	|	|
6+30	0.2345	0.57	|Q V	|	|	|	|
6+35	0.2384	0.57	|Q V	|	|	|	|
6+40	0.2423	0.57	|Q V	|	|	|	|
6+45	0.2463	0.57	|Q V	|	|	|	|
6+50	0.2503	0.58	|Q V	|	|	|	|
6+55	0.2543	0.58	|Q V	|	|	|	|
7+ 0	0.2583	0.58	|Q V	|	|	|	|
7+ 5	0.2623	0.59	|Q V	|	|	|	|
7+10	0.2663	0.59	|Q V	|	|	|	|
7+15	0.2704	0.59	|Q V	|	|	|	|
7+20	0.2745	0.59	|Q V	|	|	|	|
7+25	0.2786	0.60	|Q V	|	|	|	|
7+30	0.2828	0.60	|Q V	|	|	|	|

7+35	0.2869	0.60	|Q V |	|	|	|
7+40	0.2911	0.61	|Q V |	|	|	|
7+45	0.2953	0.61	|Q V |	|	|	|
7+50	0.2995	0.61	|Q V |	|	|	|
7+55	0.3038	0.62	|Q V |	|	|	|
8+ 0	0.3081	0.62	|Q V |	|	|	|
8+ 5	0.3124	0.62	|Q V |	|	|	|
8+10	0.3167	0.63	|Q V |	|	|	|
8+15	0.3211	0.63	|Q V |	|	|	|
8+20	0.3254	0.64	|Q V |	|	|	|
8+25	0.3298	0.64	|Q V |	|	|	|
8+30	0.3343	0.64	|Q V |	|	|	|
8+35	0.3387	0.65	|Q V |	|	|	|
8+40	0.3432	0.65	|Q V |	|	|	|
8+45	0.3477	0.66	|Q V |	|	|	|
8+50	0.3523	0.66	|Q V |	|	|	|
8+55	0.3568	0.66	|Q V |	|	|	|
9+ 0	0.3614	0.67	|Q V |	|	|	|
9+ 5	0.3661	0.67	|Q V |	|	|	|
9+10	0.3707	0.68	|Q V |	|	|	|
9+15	0.3754	0.68	|Q V |	|	|	|
9+20	0.3801	0.69	|Q V |	|	|	|
9+25	0.3849	0.69	|Q V |	|	|	|
9+30	0.3897	0.70	|Q V |	|	|	|
9+35	0.3945	0.70	|Q V |	|	|	|
9+40	0.3993	0.70	|Q V |	|	|	|
9+45	0.4042	0.71	|Q V |	|	|	|
9+50	0.4092	0.71	|Q V |	|	|	|
9+55	0.4141	0.72	|Q V |	|	|	|
10+ 0	0.4191	0.73	|Q V |	|	|	|
10+ 5	0.4241	0.73	|Q V |	|	|	|
10+10	0.4292	0.74	|Q V |	|	|	|
10+15	0.4343	0.74	|Q V |	|	|	|
10+20	0.4395	0.75	|Q V |	|	|	|
10+25	0.4447	0.75	|Q V |	|	|	|
10+30	0.4499	0.76	|Q V |	|	|	|
10+35	0.4552	0.77	|Q V |	|	|	|
10+40	0.4605	0.77	|Q V |	|	|	|
10+45	0.4659	0.78	|Q V |	|	|	|
10+50	0.4713	0.79	|Q V |	|	|	|
10+55	0.4767	0.79	|Q V |	|	|	|
11+ 0	0.4822	0.80	|Q V |	|	|	|
11+ 5	0.4878	0.81	|Q V |	|	|	|
11+10	0.4934	0.81	|Q V |	|	|	|
11+15	0.4990	0.82	|Q V |	|	|	|
11+20	0.5047	0.83	|Q V |	|	|	|
11+25	0.5105	0.84	|Q V |	|	|	|
11+30	0.5163	0.84	|Q V |	|	|	|
11+35	0.5222	0.85	|Q V |	|	|	|
11+40	0.5281	0.86	|Q V |	|	|	|

```
11+45       0.5341      0.87  |Q      V |          |          |          |
11+50       0.5401      0.88  |Q      V |          |          |          |
11+55       0.5462      0.89  |Q      V |          |          |          |
12+ 0       0.5524      0.90  |Q      V |          |          |          |
12+ 5       0.5586      0.91  |Q      V |          |          |          |
12+10       0.5649      0.92  |Q       V|          |          |          |
12+15       0.5713      0.92  |Q       V|          |          |          |
12+20       0.5777      0.93  |Q       V|          |          |          |
12+25       0.5842      0.94  |Q       V|          |          |          |
12+30       0.5908      0.95  |Q       V|          |          |          |
12+35       0.5975      0.97  |Q       V|          |          |          |
12+40       0.6042      0.98  |Q       V|          |          |          |
12+45       0.6110      0.99  |Q       V|          |          |          |
12+50       0.6179      1.00  | Q      V|          |          |          |
12+55       0.6249      1.01  | Q       V          |          |          |
13+ 0       0.6320      1.03  | Q       V          |          |          |
13+ 5       0.6391      1.04  | Q       V          |          |          |
13+10       0.6464      1.06  | Q       V          |          |          |
13+15       0.6538      1.07  | Q       V          |          |          |
13+20       0.6613      1.09  | Q       V          |          |          |
13+25       0.6689      1.10  | Q       V          |          |          |
13+30       0.6766      1.12  | Q       V          |          |          |
13+35       0.6844      1.14  | Q       V          |          |          |
13+40       0.6924      1.16  | Q       |V         |          |          |
13+45       0.7005      1.18  | Q       |V         |          |          |
13+50       0.7088      1.20  | Q       |V         |          |          |
13+55       0.7172      1.22  | Q       |V         |          |          |
14+ 0       0.7258      1.24  | Q       |V         |          |          |
14+ 5       0.7345      1.27  | Q       |V         |          |          |
14+10       0.7434      1.29  | Q       |V         |          |          |
14+15       0.7525      1.32  | Q       | V        |          |          |
14+20       0.7618      1.35  | Q       | V        |          |          |
14+25       0.7713      1.38  | Q       | V        |          |          |
14+30       0.7811      1.41  | Q       | V        |          |          |
14+35       0.7910      1.45  | Q       | V        |          |          |
14+40       0.8013      1.49  | Q       | V        |          |          |
14+45       0.8118      1.53  |  Q      |  V       |          |          |
14+50       0.8226      1.57  |  Q      |  V       |          |          |
14+55       0.8337      1.62  |  Q      |  V       |          |          |
15+ 0       0.8452      1.67  |  Q      |  V       |          |          |
15+ 5       0.8571      1.72  |  Q      |  V       |          |          |
15+10       0.8694      1.78  |  Q      |  V       |          |          |
15+15       0.8821      1.85  |  Q      |   V      |          |          |
15+20       0.8954      1.93  |  Q      |   V      |          |          |
15+25       0.9093      2.01  |   Q     |   V      |          |          |
15+30       0.9238      2.11  |   Q     |   V      |          |          |
15+35       0.9391      2.22  |   Q     |    V     |          |          |
15+40       0.9553      2.35  |   Q     |    V     |          |          |
15+45       0.9726      2.51  |    Q    |    V     |          |          |
15+50       0.9912      2.71  |    Q    |    V     |          |          |
```

15+55	1.0119	3.00	Q	V			
16+ 0	1.0362	3.53	Q	V			
16+ 5	1.0721	5.21	Q	V			
16+10	1.1243	7.58	Q	Q V			
16+15	1.1937	10.08	VQ				
16+20	1.2793	12.42	V	Q			
16+25	1.3755	13.97	V	Q			
16+30	1.4723	14.06	V	Q			
16+35	1.5567	12.26	QV				
16+40	1.6233	9.66	Q	V			
16+45	1.6767	7.76	Q	V			
16+50	1.7208	6.41	Q	V			
16+55	1.7582	5.43	Q	V			
17+ 0	1.7915	4.84	Q	V			
17+ 5	1.8220	4.41	Q	V			
17+10	1.8499	4.05	Q	V			
17+15	1.8755	3.73	Q	V			
17+20	1.8995	3.48	Q	V			
17+25	1.9220	3.26	Q	V			
17+30	1.9427	3.00	Q	V			
17+35	1.9620	2.81	Q	V			
17+40	1.9803	2.67	Q	V			
17+45	1.9980	2.57	Q	V			
17+50	2.0143	2.37	Q	V			
17+55	2.0297	2.23	Q	V			
18+ 0	2.0445	2.15	Q	V			
18+ 5	2.0583	2.00	Q	V			
18+10	2.0713	1.90	Q	V			
18+15	2.0841	1.85	Q	V			
18+20	2.0964	1.79	Q	V			
18+25	2.1084	1.74	Q	V			
18+30	2.1200	1.69	Q	V			
18+35	2.1309	1.58	Q	V			
18+40	2.1413	1.51	Q	V			
18+45	2.1514	1.47	Q	V			
18+50	2.1611	1.41	Q	V			
18+55	2.1705	1.36	Q	V			
19+ 0	2.1796	1.32	Q	V			
19+ 5	2.1883	1.26	Q	V			
19+10	2.1966	1.22	Q	V			
19+15	2.2048	1.18	Q	V			
19+20	2.2126	1.13	Q	V			
19+25	2.2201	1.09	Q	V			
19+30	2.2274	1.07	Q	V			
19+35	2.2346	1.05	Q	V			
19+40	2.2417	1.03	Q	V			
19+45	2.2486	1.01	Q	V			
19+50	2.2554	0.98	Q	V			
19+55	2.2619	0.95	Q	V			
20+ 0	2.2679	0.86	Q	V			

```
20+ 5       2.2733      0.78  |Q        |         |         |     V   |
20+10       2.2785      0.77  |Q        |         |         |     V   |
20+15       2.2837      0.75  |Q        |         |         |     V   |
20+20       2.2888      0.74  |Q        |         |         |     V   |
20+25       2.2938      0.72  |Q        |         |         |     V   |
20+30       2.2987      0.71  |Q        |         |         |     V   |
20+35       2.3035      0.70  |Q        |         |         |      V  |
20+40       2.3082      0.69  |Q        |         |         |      V  |
20+45       2.3129      0.68  |Q        |         |         |      V  |
20+50       2.3175      0.67  |Q        |         |         |      V  |
20+55       2.3221      0.66  |Q        |         |         |      V  |
21+ 0       2.3266      0.65  |Q        |         |         |      V  |
21+ 5       2.3310      0.64  |Q        |         |         |      V  |
21+10       2.3354      0.64  |Q        |         |         |      V  |
21+15       2.3397      0.63  |Q        |         |         |      V  |
21+20       2.3440      0.62  |Q        |         |         |      V  |
21+25       2.3482      0.61  |Q        |         |         |      V  |
21+30       2.3524      0.61  |Q        |         |         |      V  |
21+35       2.3565      0.60  |Q        |         |         |      V  |
21+40       2.3606      0.59  |Q        |         |         |      V  |
21+45       2.3646      0.59  |Q        |         |         |      V  |
21+50       2.3686      0.58  |Q        |         |         |       V |
21+55       2.3726      0.57  |Q        |         |         |       V |
22+ 0       2.3765      0.57  |Q        |         |         |       V |
22+ 5       2.3804      0.56  |Q        |         |         |       V |
22+10       2.3842      0.56  |Q        |         |         |       V |
22+15       2.3880      0.55  |Q        |         |         |       V |
22+20       2.3918      0.55  |Q        |         |         |       V |
22+25       2.3955      0.54  |Q        |         |         |       V |
22+30       2.3992      0.54  |Q        |         |         |       V |
22+35       2.4029      0.53  |Q        |         |         |       V |
22+40       2.4065      0.53  |Q        |         |         |       V |
22+45       2.4101      0.52  |Q        |         |         |       V |
22+50       2.4137      0.52  |Q        |         |         |       V |
22+55       2.4173      0.51  |Q        |         |         |       V |
23+ 0       2.4208      0.51  |Q        |         |         |       V |
23+ 5       2.4242      0.51  |Q        |         |         |       V |
23+10       2.4277      0.50  |Q        |         |         |        V|
23+15       2.4311      0.50  Q        |         |         |        V|
23+20       2.4345      0.49  Q        |         |         |        V|
23+25       2.4379      0.49  Q        |         |         |        V|
23+30       2.4412      0.49  Q        |         |         |        V|
23+35       2.4446      0.48  Q        |         |         |        V|
23+40       2.4479      0.48  Q        |         |         |        V|
23+45       2.4511      0.48  Q        |         |         |        V|
23+50       2.4544      0.47  Q        |         |         |        V|
23+55       2.4576      0.47  Q        |         |         |        V|
24+ 0       2.4608      0.47  Q        |         |         |        V|
24+ 5       2.4640      0.46  Q        |         |         |        V|
24+10       2.4670      0.44  Q        |         |         |        V|
```

```
  24+15       2.4697      0.40  Q          |          |          |         V|
  24+20       2.4722      0.36  Q          |          |          |         V|
  24+25       2.4744      0.31  Q          |          |          |         V|
  24+30       2.4761      0.26  Q          |          |          |         V|
  24+35       2.4776      0.21  Q          |          |          |         V|
  24+40       2.4788      0.18  Q          |          |          |         V|
  24+45       2.4798      0.15  Q          |          |          |         V|
  24+50       2.4807      0.13  Q          |          |          |         V|
  24+55       2.4815      0.12  Q          |          |          |         V|
  25+ 0       2.4823      0.11  Q          |          |          |         V|
  25+ 5       2.4829      0.10  Q          |          |          |         V|
  25+10       2.4836      0.09  Q          |          |          |         V|
  25+15       2.4841      0.08  Q          |          |          |         V|
  25+20       2.4846      0.07  Q          |          |          |         V|
  25+25       2.4850      0.07  Q          |          |          |         V|
  25+30       2.4855      0.06  Q          |          |          |         V|
  25+35       2.4858      0.05  Q          |          |          |         V|
  25+40       2.4862      0.05  Q          |          |          |         V|
  25+45       2.4865      0.05  Q          |          |          |         V|
  25+50       2.4868      0.04  Q          |          |          |         V|
  25+55       2.4870      0.04  Q          |          |          |         V|
  26+ 0       2.4873      0.03  Q          |          |          |         V|
  26+ 5       2.4875      0.03  Q          |          |          |         V|
  26+10       2.4877      0.03  Q          |          |          |         V|
  26+15       2.4879      0.03  Q          |          |          |         V|
  26+20       2.4880      0.02  Q          |          |          |         V|
  26+25       2.4882      0.02  Q          |          |          |         V|
  26+30       2.4883      0.02  Q          |          |          |         V|
  26+35       2.4884      0.02  Q          |          |          |         V|
  26+40       2.4885      0.02  Q          |          |          |         V|
  26+45       2.4886      0.01  Q          |          |          |         V|
  26+50       2.4887      0.01  Q          |          |          |         V|
  26+55       2.4888      0.01  Q          |          |          |         V|
  27+ 0       2.4889      0.01  Q          |          |          |         V|
  27+ 5       2.4889      0.01  Q          |          |          |         V|
  27+10       2.4890      0.01  Q          |          |          |         V|
  27+15       2.4890      0.01  Q          |          |          |         V|
  27+20       2.4891      0.01  Q          |          |          |         V|
  27+25       2.4891      0.00  Q          |          |          |         V|
  27+30       2.4891      0.00  Q          |          |          |         V|
  27+35       2.4892      0.00  Q          |          |          |         V|
  27+40       2.4892      0.00  Q          |          |          |         V|
  27+45       2.4892      0.00  Q          |          |          |         V|
  27+50       2.4892      0.00  Q          |          |          |         V|
  27+55       2.4892      0.00  Q          |          |          |          V
-------------------------------------------------------------------------
```

EXISTING CONDITION
100-YEAR, 24-HOUR UNIT HYDROGRAPH

UHEXOFF

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/12/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, OFFSITE
EXISTING CONDITION, 25-YEAR 24-HOUR
FN: UHEXOFF25.OUT - ABE

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1715.40	1	0.60
Rainfall data for year 2		
1715.40	6	0.70
Rainfall data for year 2		
1715.40	24	1.20
Rainfall data for year 100		
1715.40	1	1.00
Rainfall data for year 100		
1715.40	6	1.90
Rainfall data for year 100		
1715.40	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
86.0	86.0	1715.40	1.000	0.265	1.000	0.265

Area-averaged adjusted loss rate Fm (In/Hr) = 0.265

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1715.40	1.000	86.0	86.0	1.63	0.512

Area-averaged catchment yield fraction, Y = 0.512
Area-averaged low loss fraction, Yb = 0.488
User entry of time of concentration = 1.580 (hours)
++
Watershed area = 1715.40(Ac.)
Catchment Lag time = 1.264 hours
Unit interval = 10.000 minutes
Unit interval percentage of lag time = 13.1857
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.265(In/Hr)
Average low loss rate fraction (Yb) = 0.488 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.281(In)
Computed peak 30-minute rainfall = 0.575(In)
Specified peak 1-hour rainfall = 0.759(In)
Computed peak 3-hour rainfall = 1.141(In)
Specified peak 6-hour rainfall = 1.475(In)
Specified peak 24-hour rainfall = 2.620(In)

Rainfall depth area reduction factors:
Using a total area of 1715.40(Ac.) (Ref: fig. E-4)

5-minute factor = 0.920 Adjusted rainfall = 0.258(In)
30-minute factor = 0.920 Adjusted rainfall = 0.529(In)
1-hour factor = 0.920 Adjusted rainfall = 0.698(In)
3-hour factor = 0.990 Adjusted rainfall = 1.129(In)
6-hour factor = 0.995 Adjusted rainfall = 1.467(In)
24-hour factor = 0.998 Adjusted rainfall = 2.615(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 10372.81 (CFS))		
1	1.143	118.536
2	3.764	271.867
3	7.946	433.803
4	13.778	604.995
5	21.415	792.097
6	30.278	919.340
7	39.709	978.286
8	48.982	961.880
9	56.301	759.242
10	61.948	585.668
11	66.256	446.852
12	69.779	365.463
13	72.506	282.854
14	74.734	231.154
15	76.696	203.536
16	78.520	189.168
17	80.108	164.667
18	81.574	152.144
19	82.893	136.815
20	84.127	127.923
21	85.285	120.133
22	86.311	106.493
23	87.256	97.971
24	88.092	86.704
25	88.883	82.063
26	89.674	82.063
27	90.443	79.788
28	91.055	63.418
29	91.635	60.180
30	92.215	60.180
31	92.760	56.562
32	93.191	44.694
33	93.613	43.767
34	94.035	43.767
35	94.447	42.727
36	94.843	41.054
37	95.238	41.032

38	95.634	40.997
39	95.968	34.720
40	96.258	30.090
41	96.548	30.090
42	96.836	29.863
43	97.087	26.006
44	97.324	24.619
45	97.562	24.619
46	97.793	23.946
47	97.984	19.843
48	98.168	19.148
49	98.353	19.148
50	98.525	17.792
51	98.659	13.917
52	98.791	13.677
53	98.922	13.677
54	99.054	13.677
55	99.186	13.677
56	99.318	13.677
57	99.450	13.677
58	99.582	13.677
59	99.714	13.677
60	99.845	13.677
61	100.000	6.839

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3409	0.0826
2	0.4499	0.0489
3	0.5291	0.0372
4	0.5936	0.0309
5	0.6490	0.0268
6	0.6981	0.0239
7	0.7468	0.0238
8	0.7918	0.0220
9	0.8337	0.0206
10	0.8730	0.0194
11	0.9102	0.0183
12	0.9455	0.0174
13	0.9792	0.0167
14	1.0115	0.0160
15	1.0425	0.0154
16	1.0723	0.0148
17	1.1012	0.0143
18	1.1291	0.0138
19	1.1523	0.0115
20	1.1749	0.0112
21	1.1967	0.0108
22	1.2179	0.0105
23	1.2385	0.0102
24	1.2586	0.0100
25	1.2782	0.0097
26	1.2972	0.0095
27	1.3159	0.0093
28	1.3341	0.0090
29	1.3518	0.0088
30	1.3693	0.0087
31	1.3863	0.0085
32	1.4030	0.0083
33	1.4194	0.0082
34	1.4355	0.0080
35	1.4513	0.0079
36	1.4669	0.0077
37	1.4837	0.0084
38	1.5003	0.0083
39	1.5166	0.0081
40	1.5327	0.0080
41	1.5486	0.0079
42	1.5642	0.0078
43	1.5797	0.0077
44	1.5949	0.0076
45	1.6099	0.0075
46	1.6247	0.0074
47	1.6393	0.0073
48	1.6538	0.0072

49	1.6681	0.0071
50	1.6822	0.0070
51	1.6961	0.0070
52	1.7099	0.0069
53	1.7236	0.0068
54	1.7371	0.0067
55	1.7504	0.0067
56	1.7636	0.0066
57	1.7767	0.0065
58	1.7896	0.0064
59	1.8024	0.0064
60	1.8151	0.0063
61	1.8276	0.0063
62	1.8401	0.0062
63	1.8524	0.0061
64	1.8646	0.0061
65	1.8767	0.0060
66	1.8887	0.0060
67	1.9005	0.0059
68	1.9123	0.0059
69	1.9240	0.0058
70	1.9356	0.0058
71	1.9471	0.0057
72	1.9584	0.0057
73	1.9697	0.0056
74	1.9809	0.0056
75	1.9921	0.0055
76	2.0031	0.0055
77	2.0140	0.0055
78	2.0249	0.0054
79	2.0357	0.0054
80	2.0464	0.0053
81	2.0570	0.0053
82	2.0676	0.0053
83	2.0781	0.0052
84	2.0885	0.0052
85	2.0988	0.0052
86	2.1091	0.0051
87	2.1192	0.0051
88	2.1294	0.0051
89	2.1394	0.0050
90	2.1494	0.0050
91	2.1593	0.0050
92	2.1692	0.0049
93	2.1790	0.0049
94	2.1887	0.0049
95	2.1984	0.0048
96	2.2080	0.0048
97	2.2176	0.0048
98	2.2271	0.0047
99	2.2366	0.0047
100	2.2459	0.0047
101	2.2553	0.0047
102	2.2646	0.0046
103	2.2738	0.0046
104	2.2830	0.0046
105	2.2921	0.0046
106	2.3012	0.0045
107	2.3102	0.0045
108	2.3192	0.0045
109	2.3281	0.0045
110	2.3370	0.0044
111	2.3458	0.0044
112	2.3546	0.0044
113	2.3634	0.0044
114	2.3721	0.0043
115	2.3807	0.0043
116	2.3893	0.0043
117	2.3979	0.0043
118	2.4064	0.0043
119	2.4149	0.0042
120	2.4234	0.0042
121	2.4318	0.0042
122	2.4401	0.0042
123	2.4484	0.0042

124	2.4567	0.0041
125	2.4650	0.0041
126	2.4732	0.0041
127	2.4813	0.0041
128	2.4895	0.0041
129	2.4975	0.0040
130	2.5056	0.0040
131	2.5136	0.0040
132	2.5216	0.0040
133	2.5296	0.0040
134	2.5375	0.0040
135	2.5453	0.0039
136	2.5532	0.0039
137	2.5610	0.0039
138	2.5688	0.0039
139	2.5765	0.0039
140	2.5842	0.0039
141	2.5919	0.0038
142	2.5996	0.0038
143	2.6072	0.0038
144	2.6148	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0037	0.0039
2	0.0076	0.0037	0.0039
3	0.0077	0.0037	0.0039
4	0.0077	0.0038	0.0040
5	0.0078	0.0038	0.0040
6	0.0078	0.0038	0.0040
7	0.0079	0.0038	0.0040
8	0.0079	0.0039	0.0041
9	0.0080	0.0039	0.0041
10	0.0080	0.0039	0.0041
11	0.0081	0.0039	0.0041
12	0.0081	0.0040	0.0042
13	0.0082	0.0040	0.0042
14	0.0083	0.0040	0.0042
15	0.0083	0.0041	0.0043
16	0.0084	0.0041	0.0043
17	0.0084	0.0041	0.0043
18	0.0085	0.0041	0.0044
19	0.0086	0.0042	0.0044
20	0.0086	0.0042	0.0044
21	0.0087	0.0042	0.0045
22	0.0088	0.0043	0.0045
23	0.0088	0.0043	0.0045
24	0.0089	0.0043	0.0046
25	0.0090	0.0044	0.0046
26	0.0091	0.0044	0.0046
27	0.0091	0.0045	0.0047
28	0.0092	0.0045	0.0047
29	0.0093	0.0045	0.0048
30	0.0094	0.0046	0.0048
31	0.0094	0.0046	0.0048
32	0.0095	0.0046	0.0049
33	0.0096	0.0047	0.0049
34	0.0097	0.0047	0.0050
35	0.0098	0.0048	0.0050
36	0.0099	0.0048	0.0051
37	0.0100	0.0049	0.0051
38	0.0101	0.0049	0.0052
39	0.0102	0.0050	0.0052
40	0.0103	0.0050	0.0053
41	0.0104	0.0051	0.0053
42	0.0105	0.0051	0.0054
43	0.0106	0.0052	0.0054
44	0.0107	0.0052	0.0055
45	0.0109	0.0053	0.0056
46	0.0110	0.0054	0.0056
47	0.0111	0.0054	0.0057
48	0.0113	0.0055	0.0058
49	0.0114	0.0056	0.0058

50	0.0115	0.0056	0.0059
51	0.0117	0.0057	0.0060
52	0.0118	0.0058	0.0061
53	0.0120	0.0058	0.0061
54	0.0121	0.0059	0.0062
55	0.0123	0.0060	0.0063
56	0.0125	0.0061	0.0064
57	0.0127	0.0062	0.0065
58	0.0129	0.0063	0.0066
59	0.0131	0.0064	0.0067
60	0.0133	0.0065	0.0068
61	0.0135	0.0066	0.0069
62	0.0137	0.0067	0.0070
63	0.0139	0.0068	0.0071
64	0.0142	0.0069	0.0073
65	0.0145	0.0070	0.0074
66	0.0147	0.0072	0.0075
67	0.0150	0.0073	0.0077
68	0.0153	0.0075	0.0078
69	0.0156	0.0076	0.0080
70	0.0160	0.0078	0.0082
71	0.0163	0.0080	0.0084
72	0.0167	0.0082	0.0086
73	0.0155	0.0076	0.0080
74	0.0159	0.0078	0.0082
75	0.0164	0.0080	0.0084
76	0.0169	0.0082	0.0087
77	0.0174	0.0085	0.0089
78	0.0180	0.0088	0.0092
79	0.0186	0.0091	0.0095
80	0.0193	0.0094	0.0099
81	0.0201	0.0098	0.0103
82	0.0209	0.0102	0.0107
83	0.0218	0.0107	0.0112
84	0.0229	0.0112	0.0117
85	0.0279	0.0136	0.0143
86	0.0293	0.0143	0.0150
87	0.0310	0.0151	0.0159
88	0.0330	0.0161	0.0169
89	0.0353	0.0172	0.0181
90	0.0382	0.0186	0.0196
91	0.0419	0.0204	0.0215
92	0.0467	0.0228	0.0239
93	0.0491	0.0239	0.0252
94	0.0595	0.0290	0.0305
95	0.0792	0.0386	0.0406
96	0.1426	0.0442	0.0984
97	0.3073	0.0442	0.2631
98	0.0604	0.0295	0.0310
99	0.0469	0.0229	0.0240
100	0.0383	0.0187	0.0196
101	0.0330	0.0161	0.0169
102	0.0294	0.0143	0.0150
103	0.0229	0.0112	0.0117
104	0.0209	0.0102	0.0107
105	0.0193	0.0094	0.0099
106	0.0180	0.0088	0.0092
107	0.0169	0.0082	0.0087
108	0.0159	0.0078	0.0082
109	0.0167	0.0082	0.0086
110	0.0160	0.0078	0.0082
111	0.0153	0.0075	0.0078
112	0.0147	0.0072	0.0075
113	0.0142	0.0069	0.0073
114	0.0137	0.0067	0.0070
115	0.0133	0.0065	0.0068
116	0.0129	0.0063	0.0066
117	0.0125	0.0061	0.0064
118	0.0121	0.0059	0.0062
119	0.0118	0.0058	0.0061
120	0.0115	0.0056	0.0059
121	0.0113	0.0055	0.0058
122	0.0110	0.0054	0.0056
123	0.0107	0.0052	0.0055
124	0.0105	0.0051	0.0054

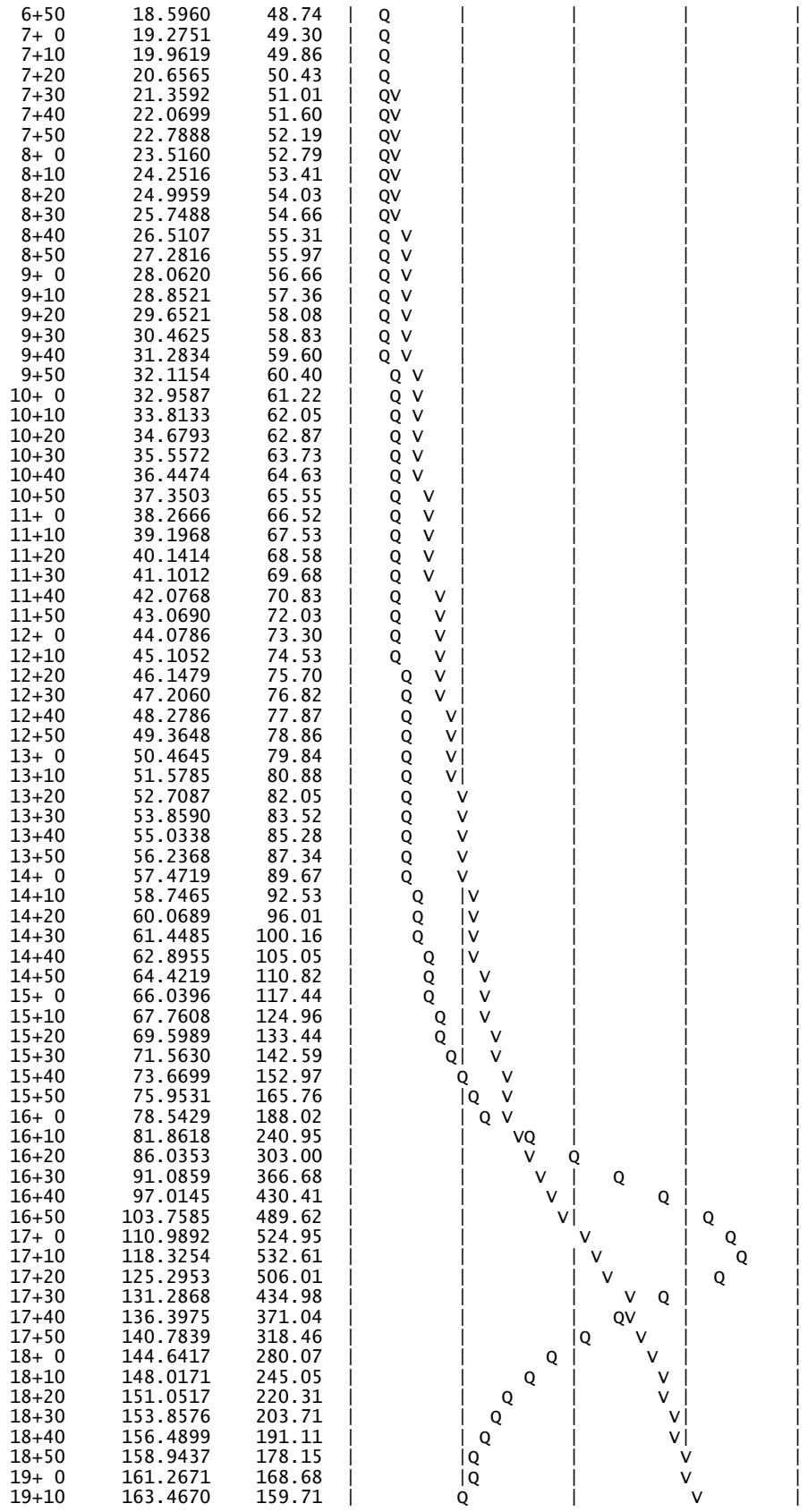
125	0.0103	0.0050	0.0053
126	0.0101	0.0049	0.0052
127	0.0099	0.0048	0.0051
128	0.0097	0.0047	0.0050
129	0.0095	0.0046	0.0049
130	0.0094	0.0046	0.0048
131	0.0092	0.0045	0.0047
132	0.0091	0.0044	0.0046
133	0.0089	0.0043	0.0046
134	0.0088	0.0043	0.0045
135	0.0086	0.0042	0.0044
136	0.0085	0.0041	0.0044
137	0.0084	0.0041	0.0043
138	0.0083	0.0040	0.0042
139	0.0081	0.0040	0.0042
140	0.0080	0.0039	0.0041
141	0.0079	0.0039	0.0041
142	0.0078	0.0038	0.0040
143	0.0077	0.0038	0.0040
144	0.0076	0.0037	0.0039

Total soil rain loss = 1.14(In)
Total effective rainfall = 1.47(In)
Peak flow rate in flood hydrograph = 532.61(CFS)

24 - 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 10 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	150.0	300.0	450.0	600.0
0+10	0.0063	0.46	Q				
0+20	0.0273	1.52	Q				
0+30	0.0716	3.22	Q				
0+40	0.1485	5.59	Q				
0+50	0.2684	8.70	Q				
1+ 0	0.4382	12.33	Q				
1+10	0.6615	16.21	VQ				
1+20	0.9376	20.05	VQ				
1+30	1.2562	23.13	VQ				
1+40	1.6081	25.55	VQ				
1+50	1.9862	27.45	VQ				
2+ 0	2.3863	29.05	VQ				
2+10	2.8041	30.34	V Q				
2+20	3.2371	31.43	V Q				
2+30	3.6838	32.43	V Q				
2+40	4.1436	33.38	V Q				
2+50	4.6154	34.25	V Q				
3+ 0	5.0985	35.07	V Q				
3+10	5.5923	35.85	|VQ				
3+20	6.0963	36.59	|VQ				
3+30	6.6103	37.32	|VQ				
3+40	7.1337	38.00	|VQ				
3+50	7.6660	38.65	|VQ				
4+ 0	8.2069	39.27	|VQ				
4+10	8.7561	39.87	|VQ				
4+20	9.3138	40.49	|VQ				
4+30	9.8799	41.10	|VQ				
4+40	10.4538	41.66	|VQ				
4+50	11.0352	42.21	| Q				
5+ 0	11.6244	42.78	| Q				
5+10	12.2213	43.33	| Q				
5+20	12.8253	43.85	| Q				
5+30	13.4366	44.38	| Q				
5+40	14.0552	44.91	| Q				
5+50	14.6812	45.45	| VQ				
6+ 0	15.3146	45.99	| VQ				
6+10	15.9557	46.54	| Q				
6+20	16.6045	47.10	| Q				
6+30	17.2608	47.65	| Q				
6+40	17.9246	48.19	| Q				



19+20	165.5707	152.73	| Q | | V |
19+30	167.5803	145.90	| Q| | V |
19+40	169.4843	138.23	| Q| | V |
19+50	171.2999	131.82	| Q | | V |
20+ 0	173.0286	125.50	| Q | | V |
20+10	174.6973	121.15	| Q | | V |
20+20	176.3199	117.80	| Q | | V |
20+30	177.8804	113.29	| Q | | V |
20+40	179.3482	106.57	| Q | | V |
20+50	180.7690	103.15	| Q | | V |
21+ 0	182.1516	100.38	| Q | | V |
21+10	183.4805	96.48	| Q | | V |
21+20	184.7410	91.52	| Q | | V |
21+30	185.9703	89.25	| Q | | V |
21+40	187.1727	87.29	| Q | | V |
21+50	188.3459	85.17	| Q | | V |
22+ 0	189.4900	83.06	| Q | | V |
22+10	190.6103	81.33	| Q | | V |
22+20	191.7023	79.28	| Q | | V |
22+30	192.7490	75.99	| Q | | V |
22+40	193.7599	73.39	| Q | | V |
22+50	194.7501	71.89	| Q | | V |
23+ 0	195.7170	70.20	| Q | | V |
23+10	196.6523	67.90	| Q | | V |
23+20	197.5652	66.28	| Q | | V |
23+30	198.4602	64.97	| Q | | V |
23+40	199.3330	63.37	| Q | | V |
23+50	200.1767	61.25	| Q | | V |
24+ 0	201.0027	59.97	| Q | | V |
24+10	201.8061	58.33	| Q | | V |
24+20	202.5732	55.69	| Q | | V |
24+30	203.2913	52.13	| Q | | V |
24+40	203.9638	48.82	| Q | | V |
24+50	204.5827	44.93	| Q | | V |
25+ 0	205.1421	40.62	| Q | | V|
25+10	205.6397	36.13	| Q | | V|
25+20	206.0769	31.74	| Q | | V|
25+30	206.4653	28.19	|Q | | V|
25+40	206.8140	25.32	|Q | | V|
25+50	207.1297	22.92	|Q | | V|
26+ 0	207.4107	20.40	|Q | | V|
26+10	207.6407	16.70	|Q | | V|
26+20	207.8293	13.69	Q | | V|
26+30	208.0005	12.43	Q | | V|
26+40	208.1564	11.32	Q | | V|
26+50	208.2993	10.37	Q | | V|
27+ 0	208.4303	9.51	Q | | V|
27+10	208.5509	8.76	Q | | V|
27+20	208.6622	8.08	Q | | V|
27+30	208.7648	7.45	Q | | V|
27+40	208.8598	6.89	Q | | V|
27+50	208.9478	6.39	Q | | V|
28+ 0	209.0295	5.94	Q | | V|
28+10	209.1054	5.51	Q | | V|
28+20	209.1755	5.09	Q | | V|
28+30	209.2400	4.68	Q | | V|
28+40	209.3000	4.35	Q | | V|
28+50	209.3557	4.04	Q | | V|
29+ 0	209.4072	3.74	Q | | V|
29+10	209.4547	3.45	Q | | V|
29+20	209.4991	3.22	Q | | V|
29+30	209.5404	3.00	Q | | V|
29+40	209.5787	2.78	Q | | V|
29+50	209.6141	2.57	Q | | V|
30+ 0	209.6468	2.37	Q | | V|
30+10	209.6767	2.17	Q | | V|
30+20	209.7040	1.98	Q | | V|
30+30	209.7290	1.82	Q | | V|
30+40	209.7521	1.67	Q | | V|
30+50	209.7732	1.53	Q | | V|
31+ 0	209.7923	1.39	Q | | V|
31+10	209.8098	1.27	Q | | V|
31+20	209.8258	1.16	Q | | V|
31+30	209.8402	1.05	Q | | V|
31+40	209.8531	0.94	Q | | V|

```
   31+50     209.8648      0.85  Q          |          |          |         v|
   32+ 0     209.8753      0.76  Q          |          |          |         v|
   32+10     209.8846      0.68  Q          |          |          |         v|
   32+20     209.8929      0.60  Q          |          |          |         v|
   32+30     209.9003      0.54  Q          |          |          |         v|
   32+40     209.9069      0.48  Q          |          |          |         v|
   32+50     209.9127      0.42  Q          |          |          |         v|
   33+ 0     209.9176      0.36  Q          |          |          |         v|
   33+10     209.9218      0.30  Q          |          |          |         v|
   33+20     209.9252      0.25  Q          |          |          |         v|
   33+30     209.9278      0.19  Q          |          |          |         v|
   33+40     209.9297      0.14  Q          |          |          |         v|
   33+50     209.9308      0.08  Q          |          |          |         v|
   34+ 0     209.9311      0.03  Q          |          |          |         v|
-------------------------------------------------------------------------
```

UHEXWESTOFF

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/12/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, OFFSITE WEST
EXISTING CONDITION, 25-YEAR 24-HOUR
FN: UHEXWESTOFF25.OUT - ABE

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
39.40	1	0.60
Rainfall data for year 2		
39.40	6	0.70
Rainfall data for year 2		
39.40	24	1.20
Rainfall data for year 100		
39.40	1	1.00
Rainfall data for year 100		
39.40	6	1.90
Rainfall data for year 100		
39.40	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
86.0	86.0	39.40	1.000	0.265	0.890	0.236

Area-averaged adjusted loss rate Fm (In/Hr) = 0.236

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
35.07	0.890	86.0	86.0	1.63	0.512
4.33	0.110	98.0	98.0	0.20	0.912

Area-averaged catchment yield fraction, Y = 0.556
Area-averaged low loss fraction, Yb = 0.444
User entry of time of concentration = 0.620 (hours)
++
Watershed area = 39.40(Ac.)
Catchment Lag time = 0.496 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 16.8011
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.236(In/Hr)
Average low loss rate fraction (Yb) = 0.444 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.281(In)
Computed peak 30-minute rainfall = 0.575(In)
Specified peak 1-hour rainfall = 0.759(In)
Computed peak 3-hour rainfall = 1.141(In)
Specified peak 6-hour rainfall = 1.475(In)
Specified peak 24-hour rainfall = 2.620(In)

Rainfall depth area reduction factors:
Using a total area of 39.40(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998 Adjusted rainfall = 0.280(In)
30-minute factor = 0.998 Adjusted rainfall = 0.574(In)
1-hour factor = 0.998 Adjusted rainfall = 0.758(In)
3-hour factor = 1.000 Adjusted rainfall = 1.140(In)
6-hour factor = 1.000 Adjusted rainfall = 1.475(In)
24-hour factor = 1.000 Adjusted rainfall = 2.620(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 476.49 (CFS))	
1	1.463	6.969
2	5.313	18.346
3	11.828	31.045
4	21.085	44.111
5	32.472	54.255
6	44.529	57.450
7	54.825	49.064
8	62.176	35.026
9	67.509	25.411
10	71.476	18.903
11	74.477	14.298
12	76.993	11.990
13	79.202	10.523
14	81.156	9.311
15	82.860	8.122
16	84.417	7.417
17	85.841	6.789
18	87.067	5.841
19	88.149	5.155
20	89.157	4.803
21	90.162	4.785
22	90.994	3.966
23	91.733	3.522
24	92.469	3.505
25	93.072	2.875
26	93.610	2.562
27	94.147	2.558
28	94.661	2.451
29	95.165	2.402
30	95.665	2.383
31	96.074	1.946
32	96.443	1.761
33	96.810	1.750
34	97.131	1.528
35	97.433	1.441
36	97.733	1.428

37	97.985	1.202
38	98.221	1.121
39	98.453	1.105
40	98.636	0.876
41	98.804	0.801
42	98.972	0.801
43	99.140	0.801
44	99.308	0.801
45	99.476	0.801
46	99.644	0.801
47	99.812	0.801
48	100.000	0.400

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2805	0.2805
2	0.3701	0.0896
3	0.4352	0.0652
4	0.4883	0.0531
5	0.5339	0.0456
6	0.5743	0.0404
7	0.6108	0.0365
8	0.6443	0.0335
9	0.6754	0.0311
10	0.7045	0.0291
11	0.7319	0.0274
12	0.7578	0.0259
13	0.7807	0.0229
14	0.8025	0.0218
15	0.8234	0.0209
16	0.8434	0.0200
17	0.8626	0.0192
18	0.8812	0.0185
19	0.8991	0.0179
20	0.9164	0.0173
21	0.9332	0.0168
22	0.9495	0.0163
23	0.9653	0.0158
24	0.9807	0.0154
25	0.9957	0.0150
26	1.0104	0.0146
27	1.0246	0.0143
28	1.0386	0.0140
29	1.0523	0.0136
30	1.0656	0.0134
31	1.0787	0.0131
32	1.0915	0.0128
33	1.1041	0.0126
34	1.1164	0.0123
35	1.1285	0.0121
36	1.1404	0.0119
37	1.1520	0.0116
38	1.1635	0.0114
39	1.1748	0.0113
40	1.1858	0.0111
41	1.1967	0.0109
42	1.2075	0.0107
43	1.2181	0.0106
44	1.2285	0.0104
45	1.2388	0.0103
46	1.2489	0.0101
47	1.2589	0.0100
48	1.2688	0.0099
49	1.2785	0.0097
50	1.2881	0.0096
51	1.2976	0.0095
52	1.3070	0.0094
53	1.3162	0.0093
54	1.3254	0.0092
55	1.3344	0.0090
56	1.3434	0.0089
57	1.3522	0.0088
58	1.3610	0.0087
59	1.3696	0.0087
60	1.3782	0.0086

61	1.3867	0.0085
62	1.3951	0.0084
63	1.4034	0.0083
64	1.4116	0.0082
65	1.4197	0.0081
66	1.4278	0.0081
67	1.4357	0.0080
68	1.4437	0.0079
69	1.4515	0.0078
70	1.4593	0.0078
71	1.4670	0.0077
72	1.4746	0.0076
73	1.4830	0.0085
74	1.4914	0.0084
75	1.4998	0.0083
76	1.5080	0.0083
77	1.5162	0.0082
78	1.5243	0.0081
79	1.5324	0.0081
80	1.5404	0.0080
81	1.5484	0.0080
82	1.5563	0.0079
83	1.5641	0.0078
84	1.5719	0.0078
85	1.5797	0.0077
86	1.5873	0.0077
87	1.5950	0.0076
88	1.6025	0.0076
89	1.6101	0.0075
90	1.6175	0.0075
91	1.6250	0.0074
92	1.6324	0.0074
93	1.6397	0.0073
94	1.6470	0.0073
95	1.6542	0.0072
96	1.6614	0.0072
97	1.6686	0.0072
98	1.6757	0.0071
99	1.6828	0.0071
100	1.6898	0.0070
101	1.6968	0.0070
102	1.7037	0.0069
103	1.7106	0.0069
104	1.7175	0.0069
105	1.7243	0.0068
106	1.7311	0.0068
107	1.7379	0.0068
108	1.7446	0.0067
109	1.7513	0.0067
110	1.7579	0.0066
111	1.7645	0.0066
112	1.7711	0.0066
113	1.7776	0.0065
114	1.7841	0.0065
115	1.7906	0.0065
116	1.7971	0.0064
117	1.8035	0.0064
118	1.8098	0.0064
119	1.8162	0.0063
120	1.8225	0.0063
121	1.8288	0.0063
122	1.8350	0.0063
123	1.8413	0.0062
124	1.8475	0.0062
125	1.8536	0.0062
126	1.8598	0.0061
127	1.8659	0.0061
128	1.8719	0.0061
129	1.8780	0.0061
130	1.8840	0.0060
131	1.8900	0.0060
132	1.8960	0.0060
133	1.9019	0.0059
134	1.9078	0.0059
135	1.9137	0.0059

136	1.9196	0.0059
137	1.9254	0.0058
138	1.9313	0.0058
139	1.9371	0.0058
140	1.9428	0.0058
141	1.9486	0.0057
142	1.9543	0.0057
143	1.9600	0.0057
144	1.9656	0.0057
145	1.9713	0.0056
146	1.9769	0.0056
147	1.9825	0.0056
148	1.9881	0.0056
149	1.9937	0.0056
150	1.9992	0.0055
151	2.0047	0.0055
152	2.0102	0.0055
153	2.0157	0.0055
154	2.0211	0.0055
155	2.0266	0.0054
156	2.0320	0.0054
157	2.0374	0.0054
158	2.0428	0.0054
159	2.0481	0.0054
160	2.0534	0.0053
161	2.0588	0.0053
162	2.0640	0.0053
163	2.0693	0.0053
164	2.0746	0.0053
165	2.0798	0.0052
166	2.0850	0.0052
167	2.0902	0.0052
168	2.0954	0.0052
169	2.1006	0.0052
170	2.1057	0.0051
171	2.1108	0.0051
172	2.1160	0.0051
173	2.1211	0.0051
174	2.1261	0.0051
175	2.1312	0.0051
176	2.1362	0.0050
177	2.1413	0.0050
178	2.1463	0.0050
179	2.1513	0.0050
180	2.1562	0.0050
181	2.1612	0.0050
182	2.1661	0.0049
183	2.1711	0.0049
184	2.1760	0.0049
185	2.1809	0.0049
186	2.1858	0.0049
187	2.1906	0.0049
188	2.1955	0.0049
189	2.2003	0.0048
190	2.2051	0.0048
191	2.2099	0.0048
192	2.2147	0.0048
193	2.2195	0.0048
194	2.2243	0.0048
195	2.2290	0.0047
196	2.2337	0.0047
197	2.2385	0.0047
198	2.2432	0.0047
199	2.2479	0.0047
200	2.2525	0.0047
201	2.2572	0.0047
202	2.2618	0.0047
203	2.2665	0.0046
204	2.2711	0.0046
205	2.2757	0.0046
206	2.2803	0.0046
207	2.2849	0.0046
208	2.2895	0.0046
209	2.2940	0.0046
210	2.2986	0.0045

211	2.3031	0.0045
212	2.3076	0.0045
213	2.3121	0.0045
214	2.3166	0.0045
215	2.3211	0.0045
216	2.3256	0.0045
217	2.3300	0.0045
218	2.3345	0.0044
219	2.3389	0.0044
220	2.3433	0.0044
221	2.3478	0.0044
222	2.3522	0.0044
223	2.3565	0.0044
224	2.3609	0.0044
225	2.3653	0.0044
226	2.3696	0.0044
227	2.3740	0.0043
228	2.3783	0.0043
229	2.3826	0.0043
230	2.3869	0.0043
231	2.3912	0.0043
232	2.3955	0.0043
233	2.3998	0.0043
234	2.4041	0.0043
235	2.4083	0.0043
236	2.4126	0.0042
237	2.4168	0.0042
238	2.4210	0.0042
239	2.4252	0.0042
240	2.4294	0.0042
241	2.4336	0.0042
242	2.4378	0.0042
243	2.4420	0.0042
244	2.4462	0.0042
245	2.4503	0.0042
246	2.4545	0.0041
247	2.4586	0.0041
248	2.4627	0.0041
249	2.4668	0.0041
250	2.4709	0.0041
251	2.4750	0.0041
252	2.4791	0.0041
253	2.4832	0.0041
254	2.4872	0.0041
255	2.4913	0.0041
256	2.4954	0.0040
257	2.4994	0.0040
258	2.5034	0.0040
259	2.5074	0.0040
260	2.5114	0.0040
261	2.5154	0.0040
262	2.5194	0.0040
263	2.5234	0.0040
264	2.5274	0.0040
265	2.5314	0.0040
266	2.5353	0.0040
267	2.5393	0.0039
268	2.5432	0.0039
269	2.5471	0.0039
270	2.5511	0.0039
271	2.5550	0.0039
272	2.5589	0.0039
273	2.5628	0.0039
274	2.5667	0.0039
275	2.5705	0.0039
276	2.5744	0.0039
277	2.5783	0.0039
278	2.5821	0.0039
279	2.5860	0.0038
280	2.5898	0.0038
281	2.5937	0.0038
282	2.5975	0.0038
283	2.6013	0.0038
284	2.6051	0.0038
285	2.6089	0.0038

286	2.6127	0.0038
287	2.6165	0.0038
288	2.6203	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0038	0.0017	0.0021
2	0.0038	0.0017	0.0021
3	0.0038	0.0017	0.0021
4	0.0038	0.0017	0.0021
5	0.0038	0.0017	0.0021
6	0.0038	0.0017	0.0021
7	0.0038	0.0017	0.0021
8	0.0039	0.0017	0.0021
9	0.0039	0.0017	0.0022
10	0.0039	0.0017	0.0022
11	0.0039	0.0017	0.0022
12	0.0039	0.0017	0.0022
13	0.0039	0.0017	0.0022
14	0.0039	0.0017	0.0022
15	0.0039	0.0018	0.0022
16	0.0040	0.0018	0.0022
17	0.0040	0.0018	0.0022
18	0.0040	0.0018	0.0022
19	0.0040	0.0018	0.0022
20	0.0040	0.0018	0.0022
21	0.0040	0.0018	0.0022
22	0.0040	0.0018	0.0022
23	0.0041	0.0018	0.0023
24	0.0041	0.0018	0.0023
25	0.0041	0.0018	0.0023
26	0.0041	0.0018	0.0023
27	0.0041	0.0018	0.0023
28	0.0041	0.0018	0.0023
29	0.0041	0.0018	0.0023
30	0.0042	0.0018	0.0023
31	0.0042	0.0019	0.0023
32	0.0042	0.0019	0.0023
33	0.0042	0.0019	0.0023
34	0.0042	0.0019	0.0023
35	0.0042	0.0019	0.0024
36	0.0042	0.0019	0.0024
37	0.0043	0.0019	0.0024
38	0.0043	0.0019	0.0024
39	0.0043	0.0019	0.0024
40	0.0043	0.0019	0.0024
41	0.0043	0.0019	0.0024
42	0.0043	0.0019	0.0024
43	0.0044	0.0019	0.0024
44	0.0044	0.0019	0.0024
45	0.0044	0.0020	0.0024
46	0.0044	0.0020	0.0025
47	0.0044	0.0020	0.0025
48	0.0044	0.0020	0.0025
49	0.0045	0.0020	0.0025
50	0.0045	0.0020	0.0025
51	0.0045	0.0020	0.0025
52	0.0045	0.0020	0.0025
53	0.0045	0.0020	0.0025
54	0.0046	0.0020	0.0025
55	0.0046	0.0020	0.0026
56	0.0046	0.0020	0.0026
57	0.0046	0.0021	0.0026
58	0.0046	0.0021	0.0026
59	0.0047	0.0021	0.0026
60	0.0047	0.0021	0.0026
61	0.0047	0.0021	0.0026
62	0.0047	0.0021	0.0026
63	0.0047	0.0021	0.0026
64	0.0048	0.0021	0.0026
65	0.0048	0.0021	0.0027
66	0.0048	0.0021	0.0027
67	0.0048	0.0021	0.0027

68	0.0049	0.0022	0.0027
69	0.0049	0.0022	0.0027
70	0.0049	0.0022	0.0027
71	0.0049	0.0022	0.0027
72	0.0049	0.0022	0.0028
73	0.0050	0.0022	0.0028
74	0.0050	0.0022	0.0028
75	0.0050	0.0022	0.0028
76	0.0050	0.0022	0.0028
77	0.0051	0.0023	0.0028
78	0.0051	0.0023	0.0028
79	0.0051	0.0023	0.0029
80	0.0051	0.0023	0.0029
81	0.0052	0.0023	0.0029
82	0.0052	0.0023	0.0029
83	0.0052	0.0023	0.0029
84	0.0053	0.0023	0.0029
85	0.0053	0.0023	0.0029
86	0.0053	0.0024	0.0030
87	0.0054	0.0024	0.0030
88	0.0054	0.0024	0.0030
89	0.0054	0.0024	0.0030
90	0.0054	0.0024	0.0030
91	0.0055	0.0024	0.0030
92	0.0055	0.0024	0.0031
93	0.0055	0.0025	0.0031
94	0.0056	0.0025	0.0031
95	0.0056	0.0025	0.0031
96	0.0056	0.0025	0.0031
97	0.0057	0.0025	0.0032
98	0.0057	0.0025	0.0032
99	0.0057	0.0025	0.0032
100	0.0058	0.0026	0.0032
101	0.0058	0.0026	0.0032
102	0.0058	0.0026	0.0032
103	0.0059	0.0026	0.0033
104	0.0059	0.0026	0.0033
105	0.0060	0.0026	0.0033
106	0.0060	0.0027	0.0033
107	0.0061	0.0027	0.0034
108	0.0061	0.0027	0.0034
109	0.0061	0.0027	0.0034
110	0.0062	0.0027	0.0034
111	0.0062	0.0028	0.0035
112	0.0063	0.0028	0.0035
113	0.0063	0.0028	0.0035
114	0.0063	0.0028	0.0035
115	0.0064	0.0028	0.0036
116	0.0064	0.0029	0.0036
117	0.0065	0.0029	0.0036
118	0.0065	0.0029	0.0036
119	0.0066	0.0029	0.0037
120	0.0066	0.0029	0.0037
121	0.0067	0.0030	0.0037
122	0.0068	0.0030	0.0038
123	0.0068	0.0030	0.0038
124	0.0069	0.0030	0.0038
125	0.0069	0.0031	0.0039
126	0.0070	0.0031	0.0039
127	0.0071	0.0031	0.0039
128	0.0071	0.0032	0.0040
129	0.0072	0.0032	0.0040
130	0.0072	0.0032	0.0040
131	0.0073	0.0033	0.0041
132	0.0074	0.0033	0.0041
133	0.0075	0.0033	0.0042
134	0.0075	0.0033	0.0042
135	0.0076	0.0034	0.0042
136	0.0077	0.0034	0.0043
137	0.0078	0.0035	0.0043
138	0.0078	0.0035	0.0044
139	0.0080	0.0035	0.0044
140	0.0080	0.0036	0.0045
141	0.0081	0.0036	0.0045
142	0.0082	0.0036	0.0046

143	0.0083	0.0037	0.0046
144	0.0084	0.0037	0.0047
145	0.0076	0.0034	0.0042
146	0.0077	0.0034	0.0043
147	0.0078	0.0035	0.0044
148	0.0079	0.0035	0.0044
149	0.0081	0.0036	0.0045
150	0.0081	0.0036	0.0045
151	0.0083	0.0037	0.0046
152	0.0084	0.0037	0.0047
153	0.0086	0.0038	0.0048
154	0.0087	0.0038	0.0048
155	0.0088	0.0039	0.0049
156	0.0089	0.0040	0.0050
157	0.0092	0.0041	0.0051
158	0.0093	0.0041	0.0052
159	0.0095	0.0042	0.0053
160	0.0096	0.0043	0.0053
161	0.0099	0.0044	0.0055
162	0.0100	0.0044	0.0056
163	0.0103	0.0046	0.0057
164	0.0104	0.0046	0.0058
165	0.0107	0.0048	0.0060
166	0.0109	0.0048	0.0061
167	0.0113	0.0050	0.0063
168	0.0114	0.0051	0.0064
169	0.0119	0.0053	0.0066
170	0.0121	0.0054	0.0067
171	0.0126	0.0056	0.0070
172	0.0128	0.0057	0.0071
173	0.0134	0.0059	0.0074
174	0.0136	0.0061	0.0076
175	0.0143	0.0063	0.0079
176	0.0146	0.0065	0.0081
177	0.0154	0.0068	0.0086
178	0.0158	0.0070	0.0088
179	0.0168	0.0074	0.0093
180	0.0173	0.0077	0.0096
181	0.0185	0.0082	0.0103
182	0.0192	0.0085	0.0107
183	0.0209	0.0093	0.0116
184	0.0218	0.0097	0.0121
185	0.0259	0.0115	0.0144
186	0.0274	0.0121	0.0152
187	0.0311	0.0138	0.0173
188	0.0335	0.0149	0.0186
189	0.0404	0.0179	0.0225
190	0.0456	0.0197	0.0259
191	0.0652	0.0197	0.0455
192	0.0896	0.0197	0.0699
193	0.2805	0.0197	0.2608
194	0.0531	0.0197	0.0334
195	0.0365	0.0162	0.0203
196	0.0291	0.0129	0.0162
197	0.0229	0.0102	0.0127
198	0.0200	0.0089	0.0111
199	0.0179	0.0079	0.0100
200	0.0163	0.0072	0.0091
201	0.0150	0.0067	0.0083
202	0.0140	0.0062	0.0078
203	0.0131	0.0058	0.0073
204	0.0123	0.0055	0.0069
205	0.0116	0.0052	0.0065
206	0.0111	0.0049	0.0062
207	0.0106	0.0047	0.0059
208	0.0101	0.0045	0.0056
209	0.0097	0.0043	0.0054
210	0.0094	0.0042	0.0052
211	0.0090	0.0040	0.0050
212	0.0087	0.0039	0.0049
213	0.0085	0.0038	0.0047
214	0.0082	0.0036	0.0046
215	0.0080	0.0035	0.0044
216	0.0078	0.0034	0.0043
217	0.0085	0.0038	0.0047

218	0.0083	0.0037	0.0046
219	0.0081	0.0036	0.0045
220	0.0079	0.0035	0.0044
221	0.0077	0.0034	0.0043
222	0.0076	0.0034	0.0042
223	0.0074	0.0033	0.0041
224	0.0073	0.0032	0.0041
225	0.0072	0.0032	0.0040
226	0.0070	0.0031	0.0039
227	0.0069	0.0031	0.0038
228	0.0068	0.0030	0.0038
229	0.0067	0.0030	0.0037
230	0.0066	0.0029	0.0037
231	0.0065	0.0029	0.0036
232	0.0064	0.0028	0.0035
233	0.0063	0.0028	0.0035
234	0.0062	0.0027	0.0034
235	0.0061	0.0027	0.0034
236	0.0060	0.0027	0.0034
237	0.0059	0.0026	0.0033
238	0.0059	0.0026	0.0033
239	0.0058	0.0026	0.0032
240	0.0057	0.0025	0.0032
241	0.0056	0.0025	0.0031
242	0.0056	0.0025	0.0031
243	0.0055	0.0024	0.0031
244	0.0055	0.0024	0.0030
245	0.0054	0.0024	0.0030
246	0.0053	0.0024	0.0030
247	0.0053	0.0023	0.0029
248	0.0052	0.0023	0.0029
249	0.0052	0.0023	0.0029
250	0.0051	0.0023	0.0028
251	0.0051	0.0022	0.0028
252	0.0050	0.0022	0.0028
253	0.0050	0.0022	0.0028
254	0.0049	0.0022	0.0027
255	0.0049	0.0022	0.0027
256	0.0048	0.0021	0.0027
257	0.0048	0.0021	0.0027
258	0.0047	0.0021	0.0026
259	0.0047	0.0021	0.0026
260	0.0047	0.0021	0.0026
261	0.0046	0.0020	0.0026
262	0.0046	0.0020	0.0025
263	0.0045	0.0020	0.0025
264	0.0045	0.0020	0.0025
265	0.0045	0.0020	0.0025
266	0.0044	0.0020	0.0025
267	0.0044	0.0019	0.0024
268	0.0044	0.0019	0.0024
269	0.0043	0.0019	0.0024
270	0.0043	0.0019	0.0024
271	0.0043	0.0019	0.0024
272	0.0042	0.0019	0.0023
273	0.0042	0.0019	0.0023
274	0.0042	0.0018	0.0023
275	0.0041	0.0018	0.0023
276	0.0041	0.0018	0.0023
277	0.0041	0.0018	0.0023
278	0.0040	0.0018	0.0023
279	0.0040	0.0018	0.0022
280	0.0040	0.0018	0.0022
281	0.0040	0.0018	0.0022
282	0.0039	0.0017	0.0022
283	0.0039	0.0017	0.0022
284	0.0039	0.0017	0.0022
285	0.0039	0.0017	0.0021
286	0.0038	0.0017	0.0021
287	0.0038	0.0017	0.0021
288	0.0038	0.0017	0.0021

Total soil rain loss = 1.02(In)
Total effective rainfall = 1.60(In)

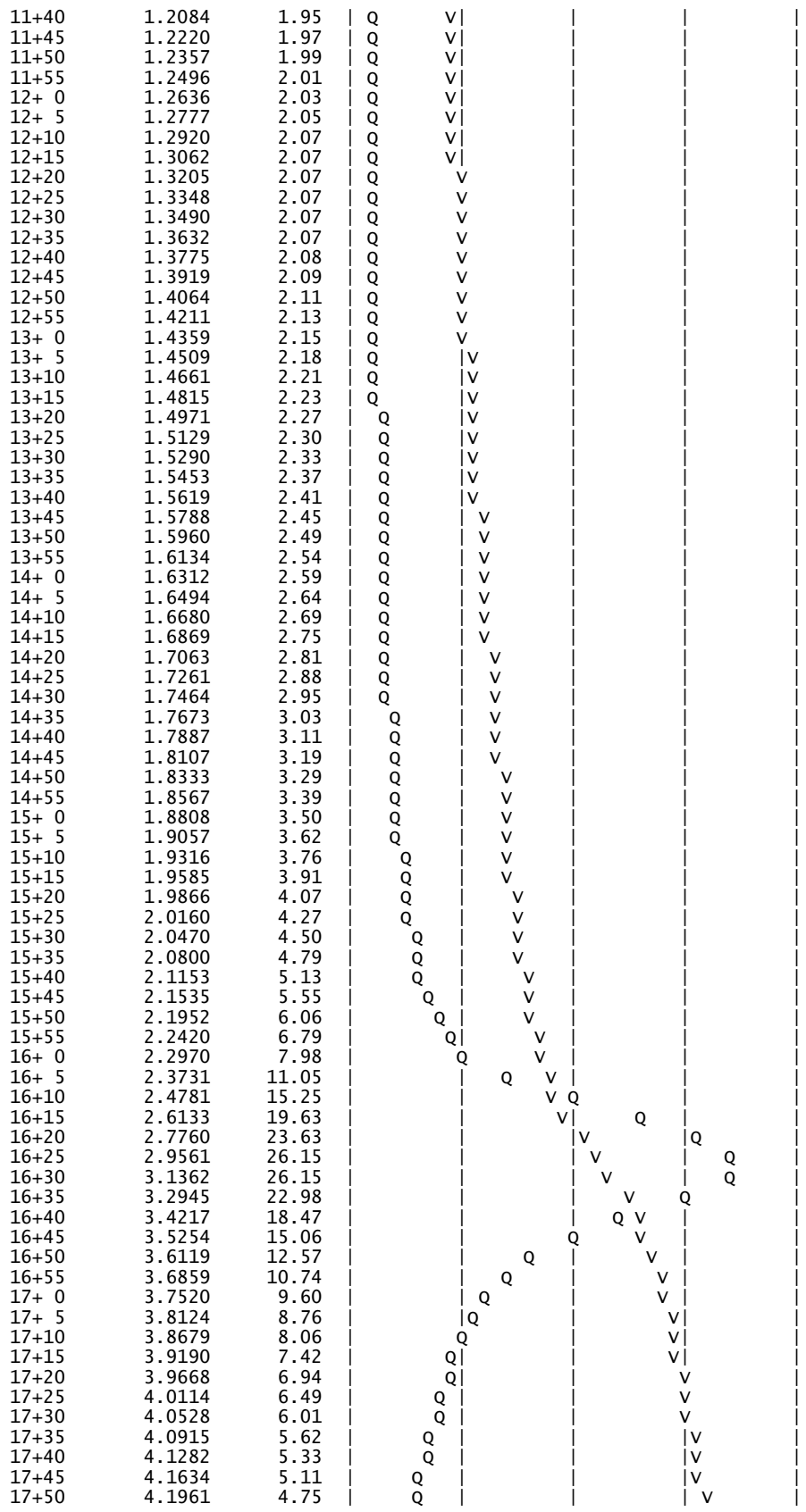
Peak flow rate in flood hydrograph = 26.15(CFS)

24 - 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 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0001	0.01	Q				
0+10	0.0005	0.05	Q				
0+15	0.0013	0.12	Q				
0+20	0.0027	0.21	Q				
0+25	0.0050	0.33	Q				
0+30	0.0081	0.45	Q				
0+35	0.0119	0.55	Q				
0+40	0.0162	0.63	Q				
0+45	0.0209	0.68	Q				
0+50	0.0259	0.72	Q				
0+55	0.0311	0.76	VQ				
1+ 0	0.0365	0.78	VQ				
1+ 5	0.0421	0.81	VQ				
1+10	0.0478	0.83	VQ				
1+15	0.0537	0.85	VQ				
1+20	0.0596	0.87	VQ				
1+25	0.0658	0.89	VQ				
1+30	0.0720	0.90	VQ				
1+35	0.0783	0.92	VQ				
1+40	0.0847	0.93	VQ				
1+45	0.0911	0.94	VQ				
1+50	0.0977	0.95	VQ				
1+55	0.1043	0.96	VQ				
2+ 0	0.1110	0.97	VQ				
2+ 5	0.1178	0.98	VQ				
2+10	0.1246	0.99	VQ				
2+15	0.1315	1.00	|Q				
2+20	0.1385	1.01	|Q				
2+25	0.1455	1.02	|Q				
2+30	0.1526	1.03	|Q				
2+35	0.1597	1.03	|Q				
2+40	0.1669	1.04	|Q				
2+45	0.1741	1.05	|Q				
2+50	0.1813	1.06	|Q				
2+55	0.1887	1.06	|Q				
3+ 0	0.1960	1.07	|Q				
3+ 5	0.2034	1.08	|Q				
3+10	0.2109	1.08	|Q				
3+15	0.2184	1.09	|Q				
3+20	0.2259	1.09	|Q				
3+25	0.2335	1.10	|Q				
3+30	0.2411	1.10	|Q				
3+35	0.2487	1.11	|Q				
3+40	0.2564	1.12	|Q				
3+45	0.2641	1.12	|QV				
3+50	0.2719	1.13	|QV				
3+55	0.2797	1.13	|QV				
4+ 0	0.2876	1.14	|QV				
4+ 5	0.2954	1.14	|QV				
4+10	0.3033	1.15	|QV				
4+15	0.3113	1.15	|QV				
4+20	0.3192	1.16	|QV				
4+25	0.3272	1.16	|QV				
4+30	0.3353	1.17	|QV				
4+35	0.3433	1.17	|QV				
4+40	0.3514	1.18	|QV				
4+45	0.3596	1.18	|QV				
4+50	0.3677	1.19	|QV				
4+55	0.3759	1.19	|QV				
5+ 0	0.3842	1.20	|QV				
5+ 5	0.3924	1.20	|QV				
5+10	0.4007	1.21	|Q V				
5+15	0.4091	1.21	|Q V				
5+20	0.4174	1.22	|Q V				

5+25	0.4258	1.22	Q V			
5+30	0.4343	1.23	Q V			
5+35	0.4428	1.23	Q V			
5+40	0.4513	1.24	Q V			
5+45	0.4598	1.24	Q V			
5+50	0.4684	1.25	Q V			
5+55	0.4770	1.25	Q V			
6+ 0	0.4857	1.26	Q V			
6+ 5	0.4944	1.26	Q V			
6+10	0.5032	1.27	Q V			
6+15	0.5120	1.28	Q V			
6+20	0.5208	1.28	Q V			
6+25	0.5297	1.29	Q V			
6+30	0.5386	1.29	Q V			
6+35	0.5475	1.30	Q V			
6+40	0.5565	1.31	Q V			
6+45	0.5656	1.31	Q V			
6+50	0.5747	1.32	Q V			
6+55	0.5838	1.33	Q V			
7+ 0	0.5930	1.33	Q V			
7+ 5	0.6022	1.34	Q V			
7+10	0.6115	1.35	Q V			
7+15	0.6208	1.35	Q V			
7+20	0.6302	1.36	Q V			
7+25	0.6396	1.37	Q V			
7+30	0.6491	1.37	Q V			
7+35	0.6586	1.38	Q V			
7+40	0.6681	1.39	Q V			
7+45	0.6778	1.40	Q V			
7+50	0.6874	1.40	Q V			
7+55	0.6972	1.41	Q V			
8+ 0	0.7069	1.42	Q V			
8+ 5	0.7168	1.43	Q V			
8+10	0.7267	1.44	Q V			
8+15	0.7366	1.44	Q V			
8+20	0.7466	1.45	Q V			
8+25	0.7567	1.46	Q V			
8+30	0.7668	1.47	Q V			
8+35	0.7770	1.48	Q V			
8+40	0.7872	1.49	Q V			
8+45	0.7975	1.50	Q V			
8+50	0.8079	1.51	Q V			
8+55	0.8184	1.52	Q V			
9+ 0	0.8289	1.52	Q V			
9+ 5	0.8394	1.53	Q V			
9+10	0.8501	1.54	Q V			
9+15	0.8608	1.55	Q V			
9+20	0.8715	1.56	Q V			
9+25	0.8824	1.58	Q V			
9+30	0.8933	1.59	Q V			
9+35	0.9043	1.60	Q V			
9+40	0.9154	1.61	Q V			
9+45	0.9265	1.62	Q V			
9+50	0.9378	1.63	Q V			
9+55	0.9491	1.64	Q V			
10+ 0	0.9604	1.65	Q V			
10+ 5	0.9719	1.67	Q V			
10+10	0.9835	1.68	Q V			
10+15	0.9951	1.69	Q V			
10+20	1.0069	1.70	Q V			
10+25	1.0187	1.72	Q V			
10+30	1.0306	1.73	Q V			
10+35	1.0426	1.74	Q V			
10+40	1.0547	1.76	Q V			
10+45	1.0669	1.77	Q V			
10+50	1.0792	1.79	Q V			
10+55	1.0916	1.80	Q V			
11+ 0	1.1042	1.82	Q V			
11+ 5	1.1168	1.83	Q V			
11+10	1.1295	1.85	Q V			
11+15	1.1424	1.87	Q V			
11+20	1.1553	1.88	Q V			
11+25	1.1684	1.90	Q V			
11+30	1.1816	1.92	Q V			
11+35	1.1949	1.94	Q V			



17+55	4.2270	4.48	Q			V
18+ 0	4.2567	4.31	Q			V
18+ 5	4.2844	4.03	Q			V
18+10	4.3108	3.84	Q			V
18+15	4.3366	3.74	Q			V
18+20	4.3617	3.64	Q			V
18+25	4.3862	3.55	Q			V
18+30	4.4100	3.47	Q			V
18+35	4.4327	3.29	Q			V
18+40	4.4546	3.18	Q			V
18+45	4.4759	3.10	Q			V
18+50	4.4964	2.98	Q			V
18+55	4.5163	2.89	Q			V
19+ 0	4.5357	2.81	Q			V
19+ 5	4.5543	2.70	Q			V
19+10	4.5723	2.62	Q			V
19+15	4.5898	2.55	Q			V
19+20	4.6066	2.44	Q			V
19+25	4.6229	2.37	Q			V
19+30	4.6389	2.32	Q			V
19+35	4.6546	2.28	Q			V
19+40	4.6700	2.23	Q			V
19+45	4.6850	2.19	Q			V
19+50	4.6997	2.13	Q			V
19+55	4.7139	2.06	Q			V
20+ 0	4.7271	1.91	Q			V
20+ 5	4.7393	1.77	Q			V
20+10	4.7512	1.73	Q			V
20+15	4.7628	1.69	Q			V
20+20	4.7743	1.66	Q			V
20+25	4.7856	1.64	Q			V
20+30	4.7967	1.61	Q			V
20+35	4.8076	1.59	Q			V
20+40	4.8184	1.57	Q			V
20+45	4.8290	1.54	Q			V
20+50	4.8395	1.52	Q			V
20+55	4.8499	1.50	Q			V
21+ 0	4.8601	1.48	Q			V
21+ 5	4.8702	1.47	Q			V
21+10	4.8802	1.45	Q			V
21+15	4.8901	1.43	Q			V
21+20	4.8998	1.42	Q			V
21+25	4.9094	1.40	Q			V
21+30	4.9190	1.39	Q			V
21+35	4.9284	1.37	Q			V
21+40	4.9378	1.36	Q			V
21+45	4.9470	1.34	Q			V
21+50	4.9562	1.33	Q			V
21+55	4.9652	1.32	Q			V
22+ 0	4.9742	1.30	Q			V
22+ 5	4.9831	1.29	Q			V
22+10	4.9919	1.28	Q			V
22+15	5.0006	1.27	Q			V
22+20	5.0092	1.25	Q			V
22+25	5.0178	1.24	Q			V
22+30	5.0263	1.23	Q			V
22+35	5.0347	1.22	Q			V
22+40	5.0430	1.21	Q			V
22+45	5.0513	1.20	Q			V
22+50	5.0595	1.19	Q			V
22+55	5.0676	1.18	Q			V
23+ 0	5.0756	1.17	Q			V
23+ 5	5.0836	1.16	Q			V
23+10	5.0916	1.15	Q			V
23+15	5.0994	1.14	Q			V
23+20	5.1073	1.13	Q			V
23+25	5.1150	1.13	Q			V
23+30	5.1227	1.12	Q			V
23+35	5.1303	1.11	Q			V
23+40	5.1379	1.10	Q			V
23+45	5.1454	1.09	Q			V
23+50	5.1529	1.08	Q			V
23+55	5.1603	1.08	Q			V
24+ 0	5.1677	1.07	Q			V
24+ 5	5.1749	1.05	Q			V

24+10	5.1818	1.00	|Q	|	|	|	V|
24+15	5.1882	0.93	|Q	|	|	|	V|
24+20	5.1939	0.83	|Q	|	|	|	V|
24+25	5.1988	0.71	Q	|	|	|	V|
24+30	5.2029	0.59	Q	|	|	|	V|
24+35	5.2062	0.48	Q	|	|	|	V|
24+40	5.2090	0.40	Q	|	|	|	V|
24+45	5.2114	0.35	Q	|	|	|	V|
24+50	5.2135	0.31	Q	|	|	|	V|
24+55	5.2153	0.27	Q	|	|	|	V|
25+ 0	5.2170	0.25	Q	|	|	|	V|
25+ 5	5.2186	0.22	Q	|	|	|	V|
25+10	5.2199	0.20	Q	|	|	|	V|
25+15	5.2212	0.18	Q	|	|	|	V|
25+20	5.2224	0.17	Q	|	|	|	V|
25+25	5.2234	0.15	Q	|	|	|	V|
25+30	5.2243	0.14	Q	|	|	|	V|
25+35	5.2252	0.13	Q	|	|	|	V|
25+40	5.2260	0.11	Q	|	|	|	V|
25+45	5.2267	0.10	Q	|	|	|	V|
25+50	5.2274	0.09	Q	|	|	|	V|
25+55	5.2280	0.09	Q	|	|	|	V|
26+ 0	5.2285	0.08	Q	|	|	|	V|
26+ 5	5.2290	0.07	Q	|	|	|	V|
26+10	5.2295	0.07	Q	|	|	|	V|
26+15	5.2299	0.06	Q	|	|	|	V|
26+20	5.2303	0.06	Q	|	|	|	V|
26+25	5.2306	0.05	Q	|	|	|	V|
26+30	5.2309	0.04	Q	|	|	|	V|
26+35	5.2312	0.04	Q	|	|	|	V|
26+40	5.2314	0.04	Q	|	|	|	V|
26+45	5.2317	0.03	Q	|	|	|	V|
26+50	5.2319	0.03	Q	|	|	|	V|
26+55	5.2320	0.03	Q	|	|	|	V|
27+ 0	5.2322	0.02	Q	|	|	|	V|
27+ 5	5.2323	0.02	Q	|	|	|	V|
27+10	5.2324	0.02	Q	|	|	|	V|
27+15	5.2325	0.01	Q	|	|	|	V|
27+20	5.2326	0.01	Q	|	|	|	V|
27+25	5.2327	0.01	Q	|	|	|	V|
27+30	5.2328	0.01	Q	|	|	|	V|
27+35	5.2328	0.01	Q	|	|	|	V|
27+40	5.2329	0.01	Q	|	|	|	V|
27+45	5.2329	0.00	Q	|	|	|	V|
27+50	5.2329	0.00	Q	|	|	|	V|
27+55	5.2329	0.00	Q	|	|	|	V|

UHEXEASTOFF

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/12/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, OFFSITE EAST
EXISTING CONDITION, 25-YEAR 24-HOUR
FN: UHEXEASTOFF25.OUT - ABE

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
201.70	1	0.60
Rainfall data for year 2		
201.70	6	0.70
Rainfall data for year 2		
201.70	24	1.20
Rainfall data for year 100		
201.70	1	1.00
Rainfall data for year 100		
201.70	6	1.90
Rainfall data for year 100		
201.70	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
86.0	86.0	201.70	1.000	0.265	1.000	0.265

Area-averaged adjusted loss rate Fm (In/Hr) = 0.265

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
201.70	1.000	86.0	86.0	1.63	0.512

Area-averaged catchment yield fraction, Y = 0.512
Area-averaged low loss fraction, Yb = 0.488
User entry of time of concentration = 0.470 (hours)
++
Watershed area = 201.70(Ac.)
Catchment Lag time = 0.376 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 22.1631
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.265(In/Hr)
Average low loss rate fraction (Yb) = 0.488 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.281(In)
Computed peak 30-minute rainfall = 0.575(In)
Specified peak 1-hour rainfall = 0.759(In)
Computed peak 3-hour rainfall = 1.141(In)
Specified peak 6-hour rainfall = 1.475(In)
Specified peak 24-hour rainfall = 2.620(In)

Rainfall depth area reduction factors:
Using a total area of 201.70(Ac.) (Ref: fig. E-4)

5-minute factor = 0.991 Adjusted rainfall = 0.278(In)
30-minute factor = 0.991 Adjusted rainfall = 0.570(In)
1-hour factor = 0.991 Adjusted rainfall = 0.752(In)
3-hour factor = 0.999 Adjusted rainfall = 1.139(In)
6-hour factor = 0.999 Adjusted rainfall = 1.474(In)
24-hour factor = 1.000 Adjusted rainfall = 2.620(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 2439.31 (CFS))		
1	1.998	48.737
2	8.186	150.947
3	19.054	265.106
4	33.884	361.739
5	49.298	376.009
6	60.552	274.525
7	67.803	176.860
8	72.725	120.064
9	76.281	86.748
10	79.266	72.803
11	81.766	60.992
12	83.919	52.506
13	85.817	46.314
14	87.414	38.947
15	88.782	33.370
16	90.104	32.251
17	91.190	26.501
18	92.166	23.788
19	93.020	20.848
20	93.730	17.308
21	94.428	17.038
22	95.095	16.269
23	95.743	15.800
24	96.258	12.572
25	96.744	11.857
26	97.173	10.451
27	97.572	9.731
28	97.933	8.800
29	98.243	7.574
30	98.533	7.081
31	98.760	5.523
32	98.981	5.406
33	99.203	5.406
34	99.425	5.406
35	99.646	5.406
36	99.868	5.406
37	100.000	3.222

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2783	0.2783
2	0.3672	0.0889
3	0.4319	0.0647
4	0.4846	0.0527
5	0.5298	0.0452
6	0.5699	0.0401
7	0.6062	0.0362
8	0.6394	0.0333
9	0.6703	0.0308
10	0.6991	0.0289
11	0.7263	0.0272
12	0.7520	0.0257
13	0.7751	0.0231
14	0.7971	0.0220
15	0.8182	0.0211
16	0.8384	0.0202
17	0.8579	0.0194
18	0.8766	0.0187
19	0.8947	0.0181
20	0.9122	0.0175
21	0.9292	0.0170
22	0.9457	0.0165
23	0.9617	0.0160
24	0.9774	0.0156
25	0.9926	0.0152
26	1.0074	0.0148
27	1.0219	0.0145
28	1.0360	0.0142
29	1.0499	0.0138
30	1.0634	0.0135
31	1.0767	0.0133
32	1.0897	0.0130
33	1.1024	0.0128
34	1.1149	0.0125
35	1.1272	0.0123
36	1.1393	0.0121
37	1.1510	0.0117
38	1.1624	0.0115
39	1.1737	0.0113
40	1.1848	0.0111
41	1.1957	0.0109
42	1.2064	0.0107
43	1.2170	0.0106
44	1.2275	0.0104
45	1.2378	0.0103
46	1.2479	0.0101
47	1.2579	0.0100
48	1.2678	0.0099
49	1.2775	0.0097
50	1.2872	0.0096
51	1.2967	0.0095
52	1.3060	0.0094
53	1.3153	0.0093
54	1.3245	0.0092
55	1.3335	0.0091
56	1.3425	0.0090
57	1.3513	0.0089
58	1.3601	0.0088
59	1.3688	0.0087
60	1.3773	0.0086
61	1.3858	0.0085
62	1.3942	0.0084
63	1.4025	0.0083
64	1.4107	0.0082
65	1.4189	0.0081
66	1.4270	0.0081
67	1.4350	0.0080
68	1.4429	0.0079
69	1.4507	0.0078
70	1.4585	0.0078
71	1.4662	0.0077
72	1.4738	0.0076

73	1.4823	0.0085
74	1.4907	0.0084
75	1.4990	0.0083
76	1.5073	0.0083
77	1.5155	0.0082
78	1.5236	0.0081
79	1.5317	0.0081
80	1.5397	0.0080
81	1.5476	0.0080
82	1.5555	0.0079
83	1.5634	0.0078
84	1.5712	0.0078
85	1.5789	0.0077
86	1.5866	0.0077
87	1.5942	0.0076
88	1.6018	0.0076
89	1.6093	0.0075
90	1.6168	0.0075
91	1.6242	0.0074
92	1.6316	0.0074
93	1.6390	0.0073
94	1.6462	0.0073
95	1.6535	0.0072
96	1.6607	0.0072
97	1.6678	0.0072
98	1.6750	0.0071
99	1.6820	0.0071
100	1.6891	0.0070
101	1.6960	0.0070
102	1.7030	0.0069
103	1.7099	0.0069
104	1.7168	0.0069
105	1.7236	0.0068
106	1.7304	0.0068
107	1.7371	0.0068
108	1.7439	0.0067
109	1.7505	0.0067
110	1.7572	0.0066
111	1.7638	0.0066
112	1.7704	0.0066
113	1.7769	0.0065
114	1.7834	0.0065
115	1.7899	0.0065
116	1.7963	0.0064
117	1.8027	0.0064
118	1.8091	0.0064
119	1.8155	0.0063
120	1.8218	0.0063
121	1.8281	0.0063
122	1.8343	0.0063
123	1.8405	0.0062
124	1.8467	0.0062
125	1.8529	0.0062
126	1.8590	0.0061
127	1.8652	0.0061
128	1.8712	0.0061
129	1.8773	0.0061
130	1.8833	0.0060
131	1.8893	0.0060
132	1.8953	0.0060
133	1.9012	0.0059
134	1.9071	0.0059
135	1.9130	0.0059
136	1.9189	0.0059
137	1.9247	0.0058
138	1.9306	0.0058
139	1.9363	0.0058
140	1.9421	0.0058
141	1.9479	0.0057
142	1.9536	0.0057
143	1.9593	0.0057
144	1.9650	0.0057
145	1.9706	0.0057
146	1.9762	0.0056
147	1.9818	0.0056

148	1.9874	0.0056
149	1.9930	0.0056
150	1.9985	0.0055
151	2.0040	0.0055
152	2.0095	0.0055
153	2.0150	0.0055
154	2.0205	0.0055
155	2.0259	0.0054
156	2.0313	0.0054
157	2.0367	0.0054
158	2.0421	0.0054
159	2.0474	0.0054
160	2.0528	0.0053
161	2.0581	0.0053
162	2.0634	0.0053
163	2.0686	0.0053
164	2.0739	0.0053
165	2.0791	0.0052
166	2.0844	0.0052
167	2.0896	0.0052
168	2.0947	0.0052
169	2.0999	0.0052
170	2.1050	0.0051
171	2.1102	0.0051
172	2.1153	0.0051
173	2.1204	0.0051
174	2.1255	0.0051
175	2.1305	0.0051
176	2.1356	0.0050
177	2.1406	0.0050
178	2.1456	0.0050
179	2.1506	0.0050
180	2.1556	0.0050
181	2.1605	0.0050
182	2.1655	0.0049
183	2.1704	0.0049
184	2.1753	0.0049
185	2.1802	0.0049
186	2.1851	0.0049
187	2.1900	0.0049
188	2.1948	0.0049
189	2.1997	0.0048
190	2.2045	0.0048
191	2.2093	0.0048
192	2.2141	0.0048
193	2.2189	0.0048
194	2.2236	0.0048
195	2.2284	0.0047
196	2.2331	0.0047
197	2.2378	0.0047
198	2.2425	0.0047
199	2.2472	0.0047
200	2.2519	0.0047
201	2.2566	0.0047
202	2.2612	0.0047
203	2.2658	0.0046
204	2.2705	0.0046
205	2.2751	0.0046
206	2.2797	0.0046
207	2.2843	0.0046
208	2.2888	0.0046
209	2.2934	0.0046
210	2.2979	0.0045
211	2.3025	0.0045
212	2.3070	0.0045
213	2.3115	0.0045
214	2.3160	0.0045
215	2.3205	0.0045
216	2.3250	0.0045
217	2.3294	0.0045
218	2.3339	0.0044
219	2.3383	0.0044
220	2.3427	0.0044
221	2.3471	0.0044
222	2.3515	0.0044

223	2.3559	0.0044
224	2.3603	0.0044
225	2.3647	0.0044
226	2.3690	0.0044
227	2.3734	0.0043
228	2.3777	0.0043
229	2.3820	0.0043
230	2.3863	0.0043
231	2.3906	0.0043
232	2.3949	0.0043
233	2.3992	0.0043
234	2.4035	0.0043
235	2.4077	0.0043
236	2.4120	0.0042
237	2.4162	0.0042
238	2.4204	0.0042
239	2.4247	0.0042
240	2.4289	0.0042
241	2.4331	0.0042
242	2.4372	0.0042
243	2.4414	0.0042
244	2.4456	0.0042
245	2.4497	0.0042
246	2.4539	0.0041
247	2.4580	0.0041
248	2.4621	0.0041
249	2.4662	0.0041
250	2.4703	0.0041
251	2.4744	0.0041
252	2.4785	0.0041
253	2.4826	0.0041
254	2.4867	0.0041
255	2.4907	0.0041
256	2.4948	0.0040
257	2.4988	0.0040
258	2.5028	0.0040
259	2.5069	0.0040
260	2.5109	0.0040
261	2.5149	0.0040
262	2.5189	0.0040
263	2.5229	0.0040
264	2.5268	0.0040
265	2.5308	0.0040
266	2.5348	0.0040
267	2.5387	0.0039
268	2.5427	0.0039
269	2.5466	0.0039
270	2.5505	0.0039
271	2.5544	0.0039
272	2.5583	0.0039
273	2.5622	0.0039
274	2.5661	0.0039
275	2.5700	0.0039
276	2.5739	0.0039
277	2.5777	0.0039
278	2.5816	0.0039
279	2.5854	0.0038
280	2.5893	0.0038
281	2.5931	0.0038
282	2.5969	0.0038
283	2.6008	0.0038
284	2.6046	0.0038
285	2.6084	0.0038
286	2.6122	0.0038
287	2.6160	0.0038
288	2.6197	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0038	0.0018	0.0019
2	0.0038	0.0018	0.0019
3	0.0038	0.0019	0.0019
4	0.0038	0.0019	0.0020

5	0.0038	0.0019	0.0020
6	0.0038	0.0019	0.0020
7	0.0038	0.0019	0.0020
8	0.0039	0.0019	0.0020
9	0.0039	0.0019	0.0020
10	0.0039	0.0019	0.0020
11	0.0039	0.0019	0.0020
12	0.0039	0.0019	0.0020
13	0.0039	0.0019	0.0020
14	0.0039	0.0019	0.0020
15	0.0039	0.0019	0.0020
16	0.0040	0.0019	0.0020
17	0.0040	0.0019	0.0020
18	0.0040	0.0019	0.0020
19	0.0040	0.0020	0.0021
20	0.0040	0.0020	0.0021
21	0.0040	0.0020	0.0021
22	0.0040	0.0020	0.0021
23	0.0041	0.0020	0.0021
24	0.0041	0.0020	0.0021
25	0.0041	0.0020	0.0021
26	0.0041	0.0020	0.0021
27	0.0041	0.0020	0.0021
28	0.0041	0.0020	0.0021
29	0.0041	0.0020	0.0021
30	0.0042	0.0020	0.0021
31	0.0042	0.0020	0.0021
32	0.0042	0.0020	0.0021
33	0.0042	0.0021	0.0022
34	0.0042	0.0021	0.0022
35	0.0042	0.0021	0.0022
36	0.0042	0.0021	0.0022
37	0.0043	0.0021	0.0022
38	0.0043	0.0021	0.0022
39	0.0043	0.0021	0.0022
40	0.0043	0.0021	0.0022
41	0.0043	0.0021	0.0022
42	0.0043	0.0021	0.0022
43	0.0044	0.0021	0.0022
44	0.0044	0.0021	0.0022
45	0.0044	0.0021	0.0023
46	0.0044	0.0022	0.0023
47	0.0044	0.0022	0.0023
48	0.0044	0.0022	0.0023
49	0.0045	0.0022	0.0023
50	0.0045	0.0022	0.0023
51	0.0045	0.0022	0.0023
52	0.0045	0.0022	0.0023
53	0.0045	0.0022	0.0023
54	0.0046	0.0022	0.0023
55	0.0046	0.0022	0.0023
56	0.0046	0.0022	0.0024
57	0.0046	0.0023	0.0024
58	0.0046	0.0023	0.0024
59	0.0047	0.0023	0.0024
60	0.0047	0.0023	0.0024
61	0.0047	0.0023	0.0024
62	0.0047	0.0023	0.0024
63	0.0047	0.0023	0.0024
64	0.0048	0.0023	0.0024
65	0.0048	0.0023	0.0025
66	0.0048	0.0023	0.0025
67	0.0048	0.0024	0.0025
68	0.0049	0.0024	0.0025
69	0.0049	0.0024	0.0025
70	0.0049	0.0024	0.0025
71	0.0049	0.0024	0.0025
72	0.0049	0.0024	0.0025
73	0.0050	0.0024	0.0025
74	0.0050	0.0024	0.0026
75	0.0050	0.0025	0.0026
76	0.0050	0.0025	0.0026
77	0.0051	0.0025	0.0026
78	0.0051	0.0025	0.0026
79	0.0051	0.0025	0.0026

80	0.0051	0.0025	0.0026
81	0.0052	0.0025	0.0027
82	0.0052	0.0025	0.0027
83	0.0052	0.0026	0.0027
84	0.0053	0.0026	0.0027
85	0.0053	0.0026	0.0027
86	0.0053	0.0026	0.0027
87	0.0054	0.0026	0.0027
88	0.0054	0.0026	0.0028
89	0.0054	0.0026	0.0028
90	0.0054	0.0026	0.0028
91	0.0055	0.0027	0.0028
92	0.0055	0.0027	0.0028
93	0.0055	0.0027	0.0028
94	0.0056	0.0027	0.0028
95	0.0056	0.0027	0.0029
96	0.0056	0.0027	0.0029
97	0.0057	0.0028	0.0029
98	0.0057	0.0028	0.0029
99	0.0057	0.0028	0.0029
100	0.0058	0.0028	0.0030
101	0.0058	0.0028	0.0030
102	0.0058	0.0028	0.0030
103	0.0059	0.0029	0.0030
104	0.0059	0.0029	0.0030
105	0.0060	0.0029	0.0031
106	0.0060	0.0029	0.0031
107	0.0061	0.0030	0.0031
108	0.0061	0.0030	0.0031
109	0.0061	0.0030	0.0031
110	0.0062	0.0030	0.0032
111	0.0062	0.0030	0.0032
112	0.0063	0.0030	0.0032
113	0.0063	0.0031	0.0032
114	0.0063	0.0031	0.0033
115	0.0064	0.0031	0.0033
116	0.0064	0.0031	0.0033
117	0.0065	0.0032	0.0033
118	0.0065	0.0032	0.0034
119	0.0066	0.0032	0.0034
120	0.0066	0.0032	0.0034
121	0.0067	0.0033	0.0034
122	0.0068	0.0033	0.0035
123	0.0068	0.0033	0.0035
124	0.0069	0.0033	0.0035
125	0.0069	0.0034	0.0036
126	0.0070	0.0034	0.0036
127	0.0071	0.0034	0.0036
128	0.0071	0.0035	0.0036
129	0.0072	0.0035	0.0037
130	0.0072	0.0035	0.0037
131	0.0073	0.0036	0.0038
132	0.0074	0.0036	0.0038
133	0.0075	0.0036	0.0038
134	0.0075	0.0037	0.0039
135	0.0076	0.0037	0.0039
136	0.0077	0.0037	0.0039
137	0.0078	0.0038	0.0040
138	0.0078	0.0038	0.0040
139	0.0080	0.0039	0.0041
140	0.0080	0.0039	0.0041
141	0.0081	0.0040	0.0042
142	0.0082	0.0040	0.0042
143	0.0083	0.0041	0.0043
144	0.0084	0.0041	0.0043
145	0.0076	0.0037	0.0039
146	0.0077	0.0038	0.0039
147	0.0078	0.0038	0.0040
148	0.0079	0.0039	0.0041
149	0.0081	0.0039	0.0041
150	0.0081	0.0040	0.0042
151	0.0083	0.0041	0.0043
152	0.0084	0.0041	0.0043
153	0.0086	0.0042	0.0044
154	0.0087	0.0042	0.0044

155	0.0089	0.0043	0.0045
156	0.0090	0.0044	0.0046
157	0.0092	0.0045	0.0047
158	0.0093	0.0045	0.0048
159	0.0095	0.0046	0.0049
160	0.0096	0.0047	0.0049
161	0.0099	0.0048	0.0051
162	0.0100	0.0049	0.0051
163	0.0103	0.0050	0.0053
164	0.0104	0.0051	0.0053
165	0.0107	0.0052	0.0055
166	0.0109	0.0053	0.0056
167	0.0113	0.0055	0.0058
168	0.0115	0.0056	0.0059
169	0.0121	0.0059	0.0062
170	0.0123	0.0060	0.0063
171	0.0128	0.0062	0.0065
172	0.0130	0.0063	0.0067
173	0.0135	0.0066	0.0069
174	0.0138	0.0067	0.0071
175	0.0145	0.0071	0.0074
176	0.0148	0.0072	0.0076
177	0.0156	0.0076	0.0080
178	0.0160	0.0078	0.0082
179	0.0170	0.0083	0.0087
180	0.0175	0.0085	0.0090
181	0.0187	0.0091	0.0096
182	0.0194	0.0095	0.0100
183	0.0211	0.0103	0.0108
184	0.0220	0.0107	0.0113
185	0.0257	0.0125	0.0132
186	0.0272	0.0132	0.0139
187	0.0308	0.0150	0.0158
188	0.0333	0.0162	0.0170
189	0.0401	0.0195	0.0205
190	0.0452	0.0221	0.0232
191	0.0647	0.0221	0.0426
192	0.0889	0.0221	0.0668
193	0.2783	0.0221	0.2562
194	0.0527	0.0221	0.0306
195	0.0362	0.0177	0.0186
196	0.0289	0.0141	0.0148
197	0.0231	0.0113	0.0118
198	0.0202	0.0099	0.0104
199	0.0181	0.0088	0.0093
200	0.0165	0.0080	0.0084
201	0.0152	0.0074	0.0078
202	0.0142	0.0069	0.0072
203	0.0133	0.0065	0.0068
204	0.0125	0.0061	0.0064
205	0.0117	0.0057	0.0060
206	0.0111	0.0054	0.0057
207	0.0106	0.0052	0.0054
208	0.0101	0.0049	0.0052
209	0.0097	0.0048	0.0050
210	0.0094	0.0046	0.0048
211	0.0091	0.0044	0.0046
212	0.0088	0.0043	0.0045
213	0.0085	0.0041	0.0043
214	0.0082	0.0040	0.0042
215	0.0080	0.0039	0.0041
216	0.0078	0.0038	0.0040
217	0.0085	0.0041	0.0043
218	0.0083	0.0040	0.0042
219	0.0081	0.0039	0.0041
220	0.0079	0.0039	0.0040
221	0.0077	0.0038	0.0040
222	0.0076	0.0037	0.0039
223	0.0074	0.0036	0.0038
224	0.0073	0.0036	0.0037
225	0.0072	0.0035	0.0037
226	0.0070	0.0034	0.0036
227	0.0069	0.0034	0.0035
228	0.0068	0.0033	0.0035
229	0.0067	0.0033	0.0034

230	0.0066	0.0032	0.0034
231	0.0065	0.0032	0.0033
232	0.0064	0.0031	0.0033
233	0.0063	0.0031	0.0032
234	0.0062	0.0030	0.0032
235	0.0061	0.0030	0.0031
236	0.0060	0.0029	0.0031
237	0.0059	0.0029	0.0030
238	0.0059	0.0029	0.0030
239	0.0058	0.0028	0.0030
240	0.0057	0.0028	0.0029
241	0.0057	0.0028	0.0029
242	0.0056	0.0027	0.0029
243	0.0055	0.0027	0.0028
244	0.0055	0.0027	0.0028
245	0.0054	0.0026	0.0028
246	0.0053	0.0026	0.0027
247	0.0053	0.0026	0.0027
248	0.0052	0.0025	0.0027
249	0.0052	0.0025	0.0026
250	0.0051	0.0025	0.0026
251	0.0051	0.0025	0.0026
252	0.0050	0.0024	0.0026
253	0.0050	0.0024	0.0025
254	0.0049	0.0024	0.0025
255	0.0049	0.0024	0.0025
256	0.0048	0.0024	0.0025
257	0.0048	0.0023	0.0024
258	0.0047	0.0023	0.0024
259	0.0047	0.0023	0.0024
260	0.0047	0.0023	0.0024
261	0.0046	0.0022	0.0024
262	0.0046	0.0022	0.0023
263	0.0045	0.0022	0.0023
264	0.0045	0.0022	0.0023
265	0.0045	0.0022	0.0023
266	0.0044	0.0022	0.0023
267	0.0044	0.0021	0.0022
268	0.0044	0.0021	0.0022
269	0.0043	0.0021	0.0022
270	0.0043	0.0021	0.0022
271	0.0043	0.0021	0.0022
272	0.0042	0.0021	0.0022
273	0.0042	0.0020	0.0021
274	0.0042	0.0020	0.0021
275	0.0041	0.0020	0.0021
276	0.0041	0.0020	0.0021
277	0.0041	0.0020	0.0021
278	0.0040	0.0020	0.0021
279	0.0040	0.0020	0.0021
280	0.0040	0.0019	0.0020
281	0.0040	0.0019	0.0020
282	0.0039	0.0019	0.0020
283	0.0039	0.0019	0.0020
284	0.0039	0.0019	0.0020
285	0.0039	0.0019	0.0020
286	0.0038	0.0019	0.0020
287	0.0038	0.0019	0.0020
288	0.0038	0.0019	0.0019

Total soil rain loss = 1.13(In)
Total effective rainfall = 1.49(In)
Peak flow rate in flood hydrograph = 155.20(CFS)

++

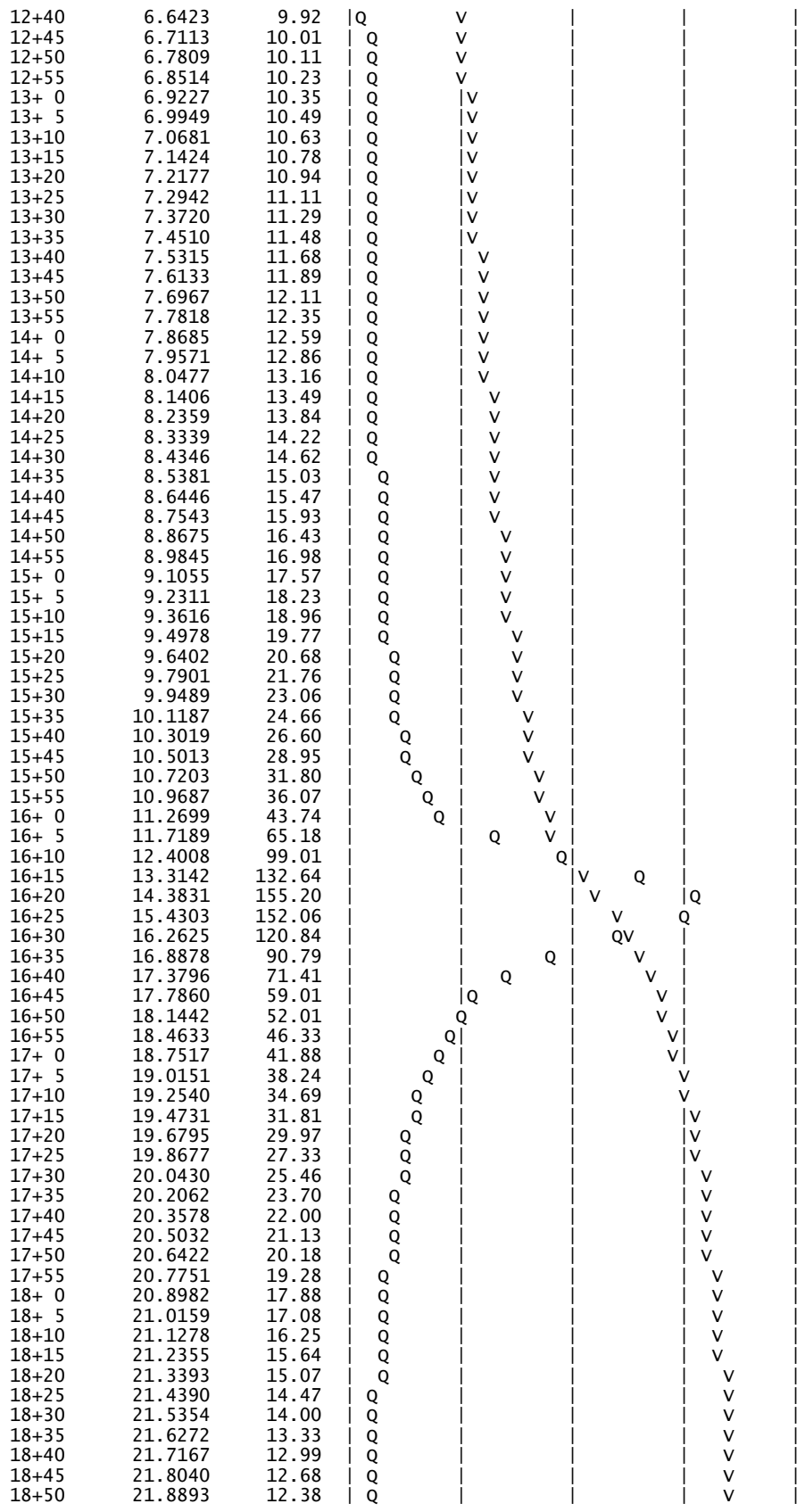
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0006	0.09	Q	|	|	|	|

0+10	0.0033	0.39	Q	|	|	|	|
0+15	0.0095	0.90	Q	|	|	|	|
0+20	0.0206	1.60	Q	|	|	|	|
0+25	0.0366	2.34	Q	|	|	|	|
0+30	0.0564	2.87	Q	|	|	|	|
0+35	0.0787	3.23	Q	|	|	|	|
0+40	0.1025	3.47	Q	|	|	|	|
0+45	0.1276	3.65	Q	|	|	|	|
0+50	0.1538	3.80	Q	|	|	|	|
0+55	0.1809	3.93	Q	|	|	|	|
1+ 0	0.2087	4.04	Q	|	|	|	|
1+ 5	0.2372	4.14	Q	|	|	|	|
1+10	0.2664	4.23	Q	|	|	|	|
1+15	0.2961	4.31	Q	|	|	|	|
1+20	0.3263	4.39	Q	|	|	|	|
1+25	0.3570	4.45	Q	|	|	|	|
1+30	0.3880	4.51	Q	|	|	|	|
1+35	0.4195	4.57	Q	|	|	|	|
1+40	0.4513	4.62	Q	|	|	|	|
1+45	0.4834	4.67	Q	|	|	|	|
1+50	0.5159	4.71	Q	|	|	|	|
1+55	0.5487	4.76	Q	|	|	|	|
2+ 0	0.5817	4.80	Q	|	|	|	|
2+ 5	0.6150	4.84	Q	|	|	|	|
2+10	0.6486	4.87	QV	|	|	|	|
2+15	0.6824	4.91	QV	|	|	|	|
2+20	0.7164	4.94	QV	|	|	|	|
2+25	0.7507	4.98	QV	|	|	|	|
2+30	0.7852	5.01	|Q	|	|	|	|
2+35	0.8199	5.03	|Q	|	|	|	|
2+40	0.8547	5.06	|Q	|	|	|	|
2+45	0.8898	5.09	|Q	|	|	|	|
2+50	0.9250	5.12	|Q	|	|	|	|
2+55	0.9605	5.15	|Q	|	|	|	|
3+ 0	0.9961	5.18	|Q	|	|	|	|
3+ 5	1.0320	5.20	|Q	|	|	|	|
3+10	1.0679	5.22	|Q	|	|	|	|
3+15	1.1040	5.24	|Q	|	|	|	|
3+20	1.1402	5.26	|Q	|	|	|	|
3+25	1.1766	5.28	|Q	|	|	|	|
3+30	1.2130	5.30	|Q	|	|	|	|
3+35	1.2497	5.32	|Q	|	|	|	|
3+40	1.2864	5.34	|QV	|	|	|	|
3+45	1.3233	5.36	|QV	|	|	|	|
3+50	1.3604	5.38	|QV	|	|	|	|
3+55	1.3975	5.40	|QV	|	|	|	|
4+ 0	1.4349	5.42	|QV	|	|	|	|
4+ 5	1.4723	5.44	|QV	|	|	|	|
4+10	1.5100	5.46	|QV	|	|	|	|
4+15	1.5477	5.48	|QV	|	|	|	|
4+20	1.5856	5.51	|QV	|	|	|	|
4+25	1.6237	5.53	|QV	|	|	|	|
4+30	1.6619	5.55	|QV	|	|	|	|
4+35	1.7003	5.57	|QV	|	|	|	|
4+40	1.7388	5.59	|QV	|	|	|	|
4+45	1.7775	5.62	|QV	|	|	|	|
4+50	1.8164	5.64	|QV	|	|	|	|
4+55	1.8554	5.66	|QV	|	|	|	|
5+ 0	1.8945	5.69	|Q V	|	|	|	|
5+ 5	1.9339	5.71	|Q V	|	|	|	|
5+10	1.9734	5.74	|Q V	|	|	|	|
5+15	2.0131	5.76	|Q V	|	|	|	|
5+20	2.0529	5.79	|Q V	|	|	|	|
5+25	2.0929	5.81	|Q V	|	|	|	|
5+30	2.1331	5.84	|Q V	|	|	|	|
5+35	2.1735	5.86	|Q V	|	|	|	|
5+40	2.2141	5.89	|Q V	|	|	|	|
5+45	2.2548	5.91	|Q V	|	|	|	|
5+50	2.2957	5.94	|Q V	|	|	|	|
5+55	2.3368	5.97	|Q V	|	|	|	|
6+ 0	2.3781	6.00	|Q V	|	|	|	|
6+ 5	2.4196	6.02	|Q V	|	|	|	|
6+10	2.4613	6.05	|Q V	|	|	|	|
6+15	2.5032	6.08	|Q V	|	|	|	|
6+20	2.5452	6.11	|Q V	|	|	|	|

6+25	2.5875	6.14	Q V			
6+30	2.6300	6.17	Q V			
6+35	2.6727	6.20	Q V			
6+40	2.7156	6.23	Q V			
6+45	2.7587	6.26	Q V			
6+50	2.8020	6.29	Q V			
6+55	2.8456	6.32	Q V			
7+ 0	2.8893	6.35	Q V			
7+ 5	2.9333	6.39	Q V			
7+10	2.9775	6.42	Q V			
7+15	3.0220	6.45	Q V			
7+20	3.0666	6.49	Q V			
7+25	3.1116	6.52	Q V			
7+30	3.1567	6.56	Q V			
7+35	3.2021	6.59	Q V			
7+40	3.2477	6.63	Q V			
7+45	3.2936	6.66	Q V			
7+50	3.3398	6.70	Q V			
7+55	3.3862	6.74	Q V			
8+ 0	3.4329	6.78	Q V			
8+ 5	3.4798	6.82	Q V			
8+10	3.5270	6.86	Q V			
8+15	3.5745	6.90	Q V			
8+20	3.6223	6.94	Q V			
8+25	3.6703	6.98	Q V			
8+30	3.7187	7.02	Q V			
8+35	3.7673	7.06	Q V			
8+40	3.8162	7.11	Q V			
8+45	3.8655	7.15	Q V			
8+50	3.9150	7.19	Q V			
8+55	3.9649	7.24	Q V			
9+ 0	4.0151	7.29	Q V			
9+ 5	4.0656	7.33	Q V			
9+10	4.1164	7.38	Q V			
9+15	4.1676	7.43	Q V			
9+20	4.2191	7.48	Q V			
9+25	4.2710	7.53	Q V			
9+30	4.3232	7.58	Q V			
9+35	4.3758	7.64	Q V			
9+40	4.4287	7.69	Q V			
9+45	4.4821	7.74	Q V			
9+50	4.5358	7.80	Q V			
9+55	4.5899	7.86	Q V			
10+ 0	4.6444	7.91	Q V			
10+ 5	4.6993	7.97	Q V			
10+10	4.7546	8.03	Q V			
10+15	4.8104	8.10	Q V			
10+20	4.8666	8.16	Q V			
10+25	4.9232	8.22	Q V			
10+30	4.9803	8.29	Q V			
10+35	5.0379	8.36	Q V			
10+40	5.0959	8.43	Q V			
10+45	5.1544	8.50	Q V			
10+50	5.2134	8.57	Q V			
10+55	5.2729	8.64	Q V			
11+ 0	5.3330	8.72	Q V			
11+ 5	5.3935	8.79	Q V			
11+10	5.4546	8.87	Q V			
11+15	5.5163	8.95	Q V			
11+20	5.5785	9.04	Q V			
11+25	5.6414	9.12	Q V			
11+30	5.7048	9.21	Q V			
11+35	5.7689	9.30	Q V			
11+40	5.8335	9.39	Q V			
11+45	5.8989	9.49	Q V			
11+50	5.9649	9.58	Q V			
11+55	6.0316	9.68	Q V			
12+ 0	6.0990	9.79	Q V			
12+ 5	6.1670	9.87	Q V			
12+10	6.2352	9.91	Q V			
12+15	6.3034	9.90	Q V			
12+20	6.3713	9.85	Q V			
12+25	6.4388	9.80	Q V			
12+30	6.5063	9.80	Q V			
12+35	6.5740	9.84	Q V			



18+55	21.9722	12.04	| Q	|	|	|	V |
19+ 0	22.0521	11.60	| Q	|	|	|	V |
19+ 5	22.1256	10.67	| Q	|	|	|	V |
19+10	22.1920	9.64	|Q	|	|	|	V |
19+15	22.2566	9.37	|Q	|	|	|	V |
19+20	22.3196	9.15	|Q	|	|	|	V |
19+25	22.3812	8.95	|Q	|	|	|	V |
19+30	22.4417	8.78	|Q	|	|	|	V |
19+35	22.5010	8.62	|Q	|	|	|	V |
19+40	22.5593	8.46	|Q	|	|	|	V |
19+45	22.6166	8.32	|Q	|	|	|	V |
19+50	22.6730	8.18	|Q	|	|	|	V |
19+55	22.7285	8.05	|Q	|	|	|	V |
20+ 0	22.7831	7.93	|Q	|	|	|	V |
20+ 5	22.8369	7.81	|Q	|	|	|	V |
20+10	22.8899	7.70	|Q	|	|	|	V |
20+15	22.9422	7.59	|Q	|	|	|	V |
20+20	22.9938	7.49	|Q	|	|	|	V |
20+25	23.0447	7.39	|Q	|	|	|	V |
20+30	23.0950	7.30	|Q	|	|	|	V |
20+35	23.1446	7.20	|Q	|	|	|	V |
20+40	23.1936	7.11	|Q	|	|	|	V |
20+45	23.2420	7.03	|Q	|	|	|	V |
20+50	23.2898	6.94	|Q	|	|	|	V |
20+55	23.3370	6.86	|Q	|	|	|	V |
21+ 0	23.3838	6.79	|Q	|	|	|	V |
21+ 5	23.4300	6.71	|Q	|	|	|	V |
21+10	23.4757	6.63	|Q	|	|	|	V |
21+15	23.5209	6.56	|Q	|	|	|	V |
21+20	23.5656	6.49	|Q	|	|	|	V |
21+25	23.6098	6.42	|Q	|	|	|	V |
21+30	23.6536	6.36	|Q	|	|	|	V |
21+35	23.6969	6.29	|Q	|	|	|	V |
21+40	23.7398	6.23	|Q	|	|	|	V |
21+45	23.7823	6.17	|Q	|	|	|	V |
21+50	23.8243	6.11	|Q	|	|	|	V |
21+55	23.8660	6.05	|Q	|	|	|	V |
22+ 0	23.9073	5.99	|Q	|	|	|	V |
22+ 5	23.9482	5.94	|Q	|	|	|	V |
22+10	23.9887	5.88	|Q	|	|	|	V |
22+15	24.0289	5.83	|Q	|	|	|	V |
22+20	24.0687	5.78	|Q	|	|	|	V |
22+25	24.1082	5.73	|Q	|	|	|	V |
22+30	24.1473	5.68	|Q	|	|	|	V |
22+35	24.1861	5.64	|Q	|	|	|	V |
22+40	24.2246	5.59	|Q	|	|	|	V |
22+45	24.2628	5.54	|Q	|	|	|	V |
22+50	24.3007	5.50	|Q	|	|	|	V |
22+55	24.3383	5.46	|Q	|	|	|	V |
23+ 0	24.3755	5.41	|Q	|	|	|	V |
23+ 5	24.4125	5.37	|Q	|	|	|	V|
23+10	24.4492	5.33	|Q	|	|	|	V|
23+15	24.4857	5.29	|Q	|	|	|	V|
23+20	24.5219	5.25	|Q	|	|	|	V|
23+25	24.5578	5.21	|Q	|	|	|	V|
23+30	24.5934	5.18	|Q	|	|	|	V|
23+35	24.6288	5.14	|Q	|	|	|	V|
23+40	24.6639	5.10	|Q	|	|	|	V|
23+45	24.6988	5.07	|Q	|	|	|	V|
23+50	24.7335	5.03	|Q	|	|	|	V|
23+55	24.7679	5.00	Q	|	|	|	V|
24+ 0	24.8021	4.96	Q	|	|	|	V|
24+ 5	24.8354	4.84	Q	|	|	|	V|
24+10	24.8665	4.51	Q	|	|	|	V|
24+15	24.8939	3.97	Q	|	|	|	V|
24+20	24.9163	3.25	Q	|	|	|	V|
24+25	24.9335	2.50	Q	|	|	|	V|
24+30	24.9469	1.95	Q	|	|	|	V|
24+35	24.9580	1.60	Q	|	|	|	V|
24+40	24.9673	1.36	Q	|	|	|	V|
24+45	24.9754	1.18	Q	|	|	|	V|
24+50	24.9825	1.03	Q	|	|	|	V|
24+55	24.9888	0.91	Q	|	|	|	V|
25+ 0	24.9943	0.80	Q	|	|	|	V|
25+ 5	24.9992	0.71	Q	|	|	|	V|

25+10	25.0035	0.63	Q				V
25+15	25.0073	0.56	Q				V
25+20	25.0107	0.49	Q				V
25+25	25.0137	0.44	Q				V
25+30	25.0163	0.39	Q				V
25+35	25.0187	0.34	Q				V
25+40	25.0208	0.31	Q				V
25+45	25.0227	0.27	Q				V
25+50	25.0244	0.24	Q				V
25+55	25.0258	0.21	Q				V
26+ 0	25.0271	0.18	Q				V
26+ 5	25.0282	0.16	Q				V
26+10	25.0291	0.14	Q				V
26+15	25.0299	0.12	Q				V
26+20	25.0306	0.10	Q				V
26+25	25.0312	0.08	Q				V
26+30	25.0317	0.07	Q				V
26+35	25.0321	0.06	Q				V
26+40	25.0324	0.05	Q				V
26+45	25.0327	0.04	Q				V
26+50	25.0329	0.03	Q				V
26+55	25.0330	0.02	Q				V
27+ 0	25.0331	0.01	Q				V

UHEX01CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/12/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 1
EXISTING CONDITION, 25-YEAR 24-HOUR
FN: UHEX01CUL25.OUT - ABE

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
75.60	1	0.60
Rainfall data for year 2		
75.60	6	0.70
Rainfall data for year 2		
75.60	24	1.20
Rainfall data for year 100		
75.60	1	1.00
Rainfall data for year 100		
75.60	6	1.90
Rainfall data for year 100		
75.60	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
86.0	86.0	75.60	1.000	0.265	0.520	0.138

Area-averaged adjusted loss rate Fm (In/Hr) = 0.138

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
39.31	0.520	86.0	86.0	1.63	0.512
36.29	0.480	98.0	98.0	0.20	0.912

Area-averaged catchment yield fraction, Y = 0.704
Area-averaged low loss fraction, Yb = 0.296
User entry of time of concentration = 0.770 (hours)
++
Watershed area = 75.60(Ac.)
Catchment Lag time = 0.616 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 13.5281
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.138(In/Hr)
Average low loss rate fraction (Yb) = 0.296 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.281(In)
Computed peak 30-minute rainfall = 0.575(In)
Specified peak 1-hour rainfall = 0.759(In)
Computed peak 3-hour rainfall = 1.141(In)
Specified peak 6-hour rainfall = 1.475(In)
Specified peak 24-hour rainfall = 2.620(In)

Rainfall depth area reduction factors:
Using a total area of 75.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.996 Adjusted rainfall = 0.280(In)
30-minute factor = 0.996 Adjusted rainfall = 0.573(In)
1-hour factor = 0.996 Adjusted rainfall = 0.756(In)
3-hour factor = 1.000 Adjusted rainfall = 1.140(In)
6-hour factor = 1.000 Adjusted rainfall = 1.474(In)
24-hour factor = 1.000 Adjusted rainfall = 2.620(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 914.29 (CFS))	
1	1.172	10.719
2	3.894	24.885
3	8.291	40.195
4	14.389	55.754
5	22.406	73.299
6	31.611	84.167
7	41.312	88.688
8	50.569	84.634
9	57.698	65.181
10	63.090	49.306
11	67.311	38.589
12	70.649	30.514
13	73.287	24.124
14	75.429	19.585
15	77.423	18.225
16	79.162	15.907
17	80.767	14.675
18	82.174	12.863
19	83.505	12.168
20	84.714	11.055
21	85.856	10.438
22	86.842	9.012
23	87.760	8.402
24	88.575	7.444
25	89.386	7.421
26	90.196	7.405
27	90.874	6.195
28	91.469	5.442
29	92.064	5.442
30	92.644	5.304
31	93.103	4.197
32	93.536	3.958
33	93.969	3.958
34	94.395	3.891
35	94.802	3.719
36	95.207	3.711

37	95.613	3.710
38	95.961	3.177
39	96.258	2.721
40	96.556	2.721
41	96.850	2.692
42	97.106	2.333
43	97.349	2.226
44	97.593	2.226
45	97.825	2.122
46	98.017	1.762
47	98.207	1.732
48	98.396	1.732
49	98.561	1.507
50	98.696	1.237
51	98.832	1.237
52	98.967	1.237
53	99.102	1.237
54	99.238	1.237
55	99.373	1.237
56	99.508	1.237
57	99.643	1.237
58	99.779	1.237
59	99.914	1.237
60	100.000	0.787

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2800	0.2800
2	0.3694	0.0895
3	0.4345	0.0651
4	0.4875	0.0530
5	0.5330	0.0455
6	0.5733	0.0403
7	0.6098	0.0365
8	0.6432	0.0335
9	0.6743	0.0310
10	0.7033	0.0290
11	0.7306	0.0273
12	0.7565	0.0259
13	0.7794	0.0230
14	0.8013	0.0219
15	0.8222	0.0209
16	0.8423	0.0201
17	0.8616	0.0193
18	0.8801	0.0186
19	0.8981	0.0180
20	0.9155	0.0174
21	0.9323	0.0168
22	0.9486	0.0163
23	0.9645	0.0159
24	0.9800	0.0155
25	0.9950	0.0151
26	1.0097	0.0147
27	1.0240	0.0143
28	1.0380	0.0140
29	1.0517	0.0137
30	1.0651	0.0134
31	1.0782	0.0131
32	1.0911	0.0129
33	1.1037	0.0126
34	1.1161	0.0124
35	1.1282	0.0121
36	1.1402	0.0119
37	1.1518	0.0116
38	1.1633	0.0114
39	1.1745	0.0113
40	1.1856	0.0111
41	1.1965	0.0109
42	1.2072	0.0107
43	1.2178	0.0106
44	1.2283	0.0104
45	1.2385	0.0103
46	1.2487	0.0101
47	1.2587	0.0100
48	1.2685	0.0099

49	1.2783	0.0097
50	1.2879	0.0096
51	1.2974	0.0095
52	1.3068	0.0094
53	1.3160	0.0093
54	1.3252	0.0092
55	1.3342	0.0090
56	1.3432	0.0089
57	1.3520	0.0088
58	1.3608	0.0087
59	1.3694	0.0087
60	1.3780	0.0086
61	1.3865	0.0085
62	1.3949	0.0084
63	1.4032	0.0083
64	1.4114	0.0082
65	1.4195	0.0081
66	1.4276	0.0081
67	1.4356	0.0080
68	1.4435	0.0079
69	1.4513	0.0078
70	1.4591	0.0078
71	1.4668	0.0077
72	1.4744	0.0076
73	1.4829	0.0085
74	1.4913	0.0084
75	1.4996	0.0083
76	1.5078	0.0083
77	1.5160	0.0082
78	1.5242	0.0081
79	1.5323	0.0081
80	1.5403	0.0080
81	1.5482	0.0080
82	1.5561	0.0079
83	1.5640	0.0078
84	1.5718	0.0078
85	1.5795	0.0077
86	1.5872	0.0077
87	1.5948	0.0076
88	1.6024	0.0076
89	1.6099	0.0075
90	1.6174	0.0075
91	1.6248	0.0074
92	1.6322	0.0074
93	1.6395	0.0073
94	1.6468	0.0073
95	1.6541	0.0072
96	1.6613	0.0072
97	1.6684	0.0072
98	1.6755	0.0071
99	1.6826	0.0071
100	1.6896	0.0070
101	1.6966	0.0070
102	1.7036	0.0069
103	1.7105	0.0069
104	1.7173	0.0069
105	1.7242	0.0068
106	1.7310	0.0068
107	1.7377	0.0068
108	1.7444	0.0067
109	1.7511	0.0067
110	1.7578	0.0066
111	1.7644	0.0066
112	1.7709	0.0066
113	1.7775	0.0065
114	1.7840	0.0065
115	1.7905	0.0065
116	1.7969	0.0064
117	1.8033	0.0064
118	1.8097	0.0064
119	1.8160	0.0063
120	1.8223	0.0063
121	1.8286	0.0063
122	1.8349	0.0063
123	1.8411	0.0062

124	1.8473	0.0062
125	1.8535	0.0062
126	1.8596	0.0061
127	1.8657	0.0061
128	1.8718	0.0061
129	1.8778	0.0061
130	1.8839	0.0060
131	1.8899	0.0060
132	1.8958	0.0060
133	1.9018	0.0059
134	1.9077	0.0059
135	1.9136	0.0059
136	1.9194	0.0059
137	1.9253	0.0058
138	1.9311	0.0058
139	1.9369	0.0058
140	1.9427	0.0058
141	1.9484	0.0057
142	1.9541	0.0057
143	1.9598	0.0057
144	1.9655	0.0057
145	1.9711	0.0056
146	1.9768	0.0056
147	1.9824	0.0056
148	1.9880	0.0056
149	1.9935	0.0056
150	1.9991	0.0055
151	2.0046	0.0055
152	2.0101	0.0055
153	2.0155	0.0055
154	2.0210	0.0055
155	2.0264	0.0054
156	2.0318	0.0054
157	2.0372	0.0054
158	2.0426	0.0054
159	2.0480	0.0054
160	2.0533	0.0053
161	2.0586	0.0053
162	2.0639	0.0053
163	2.0692	0.0053
164	2.0744	0.0053
165	2.0797	0.0052
166	2.0849	0.0052
167	2.0901	0.0052
168	2.0953	0.0052
169	2.1004	0.0052
170	2.1056	0.0051
171	2.1107	0.0051
172	2.1158	0.0051
173	2.1209	0.0051
174	2.1260	0.0051
175	2.1310	0.0051
176	2.1361	0.0050
177	2.1411	0.0050
178	2.1461	0.0050
179	2.1511	0.0050
180	2.1561	0.0050
181	2.1610	0.0050
182	2.1660	0.0049
183	2.1709	0.0049
184	2.1758	0.0049
185	2.1807	0.0049
186	2.1856	0.0049
187	2.1905	0.0049
188	2.1953	0.0049
189	2.2002	0.0048
190	2.2050	0.0048
191	2.2098	0.0048
192	2.2146	0.0048
193	2.2194	0.0048
194	2.2241	0.0048
195	2.2289	0.0047
196	2.2336	0.0047
197	2.2383	0.0047
198	2.2430	0.0047

199	2.2477	0.0047
200	2.2524	0.0047
201	2.2571	0.0047
202	2.2617	0.0047
203	2.2663	0.0046
204	2.2710	0.0046
205	2.2756	0.0046
206	2.2802	0.0046
207	2.2848	0.0046
208	2.2893	0.0046
209	2.2939	0.0046
210	2.2984	0.0045
211	2.3030	0.0045
212	2.3075	0.0045
213	2.3120	0.0045
214	2.3165	0.0045
215	2.3210	0.0045
216	2.3254	0.0045
217	2.3299	0.0045
218	2.3344	0.0044
219	2.3388	0.0044
220	2.3432	0.0044
221	2.3476	0.0044
222	2.3520	0.0044
223	2.3564	0.0044
224	2.3608	0.0044
225	2.3652	0.0044
226	2.3695	0.0044
227	2.3739	0.0043
228	2.3782	0.0043
229	2.3825	0.0043
230	2.3868	0.0043
231	2.3911	0.0043
232	2.3954	0.0043
233	2.3997	0.0043
234	2.4039	0.0043
235	2.4082	0.0043
236	2.4124	0.0042
237	2.4167	0.0042
238	2.4209	0.0042
239	2.4251	0.0042
240	2.4293	0.0042
241	2.4335	0.0042
242	2.4377	0.0042
243	2.4419	0.0042
244	2.4460	0.0042
245	2.4502	0.0042
246	2.4543	0.0041
247	2.4585	0.0041
248	2.4626	0.0041
249	2.4667	0.0041
250	2.4708	0.0041
251	2.4749	0.0041
252	2.4790	0.0041
253	2.4831	0.0041
254	2.4871	0.0041
255	2.4912	0.0041
256	2.4952	0.0040
257	2.4993	0.0040
258	2.5033	0.0040
259	2.5073	0.0040
260	2.5113	0.0040
261	2.5153	0.0040
262	2.5193	0.0040
263	2.5233	0.0040
264	2.5273	0.0040
265	2.5312	0.0040
266	2.5352	0.0040
267	2.5391	0.0039
268	2.5431	0.0039
269	2.5470	0.0039
270	2.5509	0.0039
271	2.5549	0.0039
272	2.5588	0.0039
273	2.5627	0.0039

274	2.5665	0.0039
275	2.5704	0.0039
276	2.5743	0.0039
277	2.5782	0.0039
278	2.5820	0.0039
279	2.5859	0.0038
280	2.5897	0.0038
281	2.5935	0.0038
282	2.5974	0.0038
283	2.6012	0.0038
284	2.6050	0.0038
285	2.6088	0.0038
286	2.6126	0.0038
287	2.6164	0.0038
288	2.6201	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0038	0.0011	0.0027
2	0.0038	0.0011	0.0027
3	0.0038	0.0011	0.0027
4	0.0038	0.0011	0.0027
5	0.0038	0.0011	0.0027
6	0.0038	0.0011	0.0027
7	0.0038	0.0011	0.0027
8	0.0039	0.0011	0.0027
9	0.0039	0.0011	0.0027
10	0.0039	0.0011	0.0027
11	0.0039	0.0012	0.0027
12	0.0039	0.0012	0.0028
13	0.0039	0.0012	0.0028
14	0.0039	0.0012	0.0028
15	0.0039	0.0012	0.0028
16	0.0040	0.0012	0.0028
17	0.0040	0.0012	0.0028
18	0.0040	0.0012	0.0028
19	0.0040	0.0012	0.0028
20	0.0040	0.0012	0.0028
21	0.0040	0.0012	0.0028
22	0.0040	0.0012	0.0028
23	0.0041	0.0012	0.0029
24	0.0041	0.0012	0.0029
25	0.0041	0.0012	0.0029
26	0.0041	0.0012	0.0029
27	0.0041	0.0012	0.0029
28	0.0041	0.0012	0.0029
29	0.0041	0.0012	0.0029
30	0.0042	0.0012	0.0029
31	0.0042	0.0012	0.0029
32	0.0042	0.0012	0.0029
33	0.0042	0.0012	0.0030
34	0.0042	0.0012	0.0030
35	0.0042	0.0013	0.0030
36	0.0042	0.0013	0.0030
37	0.0043	0.0013	0.0030
38	0.0043	0.0013	0.0030
39	0.0043	0.0013	0.0030
40	0.0043	0.0013	0.0030
41	0.0043	0.0013	0.0031
42	0.0043	0.0013	0.0031
43	0.0044	0.0013	0.0031
44	0.0044	0.0013	0.0031
45	0.0044	0.0013	0.0031
46	0.0044	0.0013	0.0031
47	0.0044	0.0013	0.0031
48	0.0044	0.0013	0.0031
49	0.0045	0.0013	0.0031
50	0.0045	0.0013	0.0032
51	0.0045	0.0013	0.0032
52	0.0045	0.0013	0.0032
53	0.0045	0.0013	0.0032
54	0.0046	0.0013	0.0032
55	0.0046	0.0014	0.0032

56	0.0046	0.0014	0.0032
57	0.0046	0.0014	0.0033
58	0.0046	0.0014	0.0033
59	0.0047	0.0014	0.0033
60	0.0047	0.0014	0.0033
61	0.0047	0.0014	0.0033
62	0.0047	0.0014	0.0033
63	0.0047	0.0014	0.0033
64	0.0048	0.0014	0.0034
65	0.0048	0.0014	0.0034
66	0.0048	0.0014	0.0034
67	0.0048	0.0014	0.0034
68	0.0049	0.0014	0.0034
69	0.0049	0.0014	0.0034
70	0.0049	0.0014	0.0034
71	0.0049	0.0015	0.0035
72	0.0049	0.0015	0.0035
73	0.0050	0.0015	0.0035
74	0.0050	0.0015	0.0035
75	0.0050	0.0015	0.0035
76	0.0050	0.0015	0.0036
77	0.0051	0.0015	0.0036
78	0.0051	0.0015	0.0036
79	0.0051	0.0015	0.0036
80	0.0051	0.0015	0.0036
81	0.0052	0.0015	0.0036
82	0.0052	0.0015	0.0037
83	0.0052	0.0015	0.0037
84	0.0053	0.0016	0.0037
85	0.0053	0.0016	0.0037
86	0.0053	0.0016	0.0037
87	0.0054	0.0016	0.0038
88	0.0054	0.0016	0.0038
89	0.0054	0.0016	0.0038
90	0.0054	0.0016	0.0038
91	0.0055	0.0016	0.0039
92	0.0055	0.0016	0.0039
93	0.0055	0.0016	0.0039
94	0.0056	0.0016	0.0039
95	0.0056	0.0017	0.0039
96	0.0056	0.0017	0.0040
97	0.0057	0.0017	0.0040
98	0.0057	0.0017	0.0040
99	0.0057	0.0017	0.0040
100	0.0058	0.0017	0.0041
101	0.0058	0.0017	0.0041
102	0.0058	0.0017	0.0041
103	0.0059	0.0017	0.0041
104	0.0059	0.0017	0.0042
105	0.0060	0.0018	0.0042
106	0.0060	0.0018	0.0042
107	0.0061	0.0018	0.0043
108	0.0061	0.0018	0.0043
109	0.0061	0.0018	0.0043
110	0.0062	0.0018	0.0043
111	0.0062	0.0018	0.0044
112	0.0063	0.0018	0.0044
113	0.0063	0.0019	0.0044
114	0.0063	0.0019	0.0045
115	0.0064	0.0019	0.0045
116	0.0064	0.0019	0.0045
117	0.0065	0.0019	0.0046
118	0.0065	0.0019	0.0046
119	0.0066	0.0020	0.0047
120	0.0066	0.0020	0.0047
121	0.0067	0.0020	0.0047
122	0.0068	0.0020	0.0048
123	0.0068	0.0020	0.0048
124	0.0069	0.0020	0.0048
125	0.0069	0.0021	0.0049
126	0.0070	0.0021	0.0049
127	0.0071	0.0021	0.0050
128	0.0071	0.0021	0.0050
129	0.0072	0.0021	0.0051
130	0.0072	0.0021	0.0051

131	0.0073	0.0022	0.0052
132	0.0074	0.0022	0.0052
133	0.0075	0.0022	0.0053
134	0.0075	0.0022	0.0053
135	0.0076	0.0023	0.0054
136	0.0077	0.0023	0.0054
137	0.0078	0.0023	0.0055
138	0.0078	0.0023	0.0055
139	0.0080	0.0024	0.0056
140	0.0080	0.0024	0.0056
141	0.0081	0.0024	0.0057
142	0.0082	0.0024	0.0058
143	0.0083	0.0025	0.0059
144	0.0084	0.0025	0.0059
145	0.0076	0.0023	0.0054
146	0.0077	0.0023	0.0054
147	0.0078	0.0023	0.0055
148	0.0079	0.0023	0.0056
149	0.0081	0.0024	0.0057
150	0.0081	0.0024	0.0057
151	0.0083	0.0025	0.0058
152	0.0084	0.0025	0.0059
153	0.0086	0.0025	0.0060
154	0.0087	0.0026	0.0061
155	0.0088	0.0026	0.0062
156	0.0089	0.0026	0.0063
157	0.0092	0.0027	0.0064
158	0.0093	0.0027	0.0065
159	0.0095	0.0028	0.0067
160	0.0096	0.0028	0.0068
161	0.0099	0.0029	0.0069
162	0.0100	0.0030	0.0070
163	0.0103	0.0030	0.0072
164	0.0104	0.0031	0.0073
165	0.0107	0.0032	0.0076
166	0.0109	0.0032	0.0077
167	0.0113	0.0033	0.0079
168	0.0114	0.0034	0.0081
169	0.0119	0.0035	0.0084
170	0.0121	0.0036	0.0086
171	0.0126	0.0037	0.0089
172	0.0129	0.0038	0.0091
173	0.0134	0.0040	0.0094
174	0.0137	0.0040	0.0096
175	0.0143	0.0042	0.0101
176	0.0147	0.0043	0.0103
177	0.0155	0.0046	0.0109
178	0.0159	0.0047	0.0112
179	0.0168	0.0050	0.0119
180	0.0174	0.0051	0.0122
181	0.0186	0.0055	0.0131
182	0.0193	0.0057	0.0136
183	0.0209	0.0062	0.0147
184	0.0219	0.0065	0.0154
185	0.0259	0.0077	0.0182
186	0.0273	0.0081	0.0192
187	0.0310	0.0092	0.0219
188	0.0335	0.0099	0.0236
189	0.0403	0.0115	0.0288
190	0.0455	0.0115	0.0340
191	0.0651	0.0115	0.0536
192	0.0895	0.0115	0.0780
193	0.2800	0.0115	0.2685
194	0.0530	0.0115	0.0415
195	0.0365	0.0108	0.0257
196	0.0290	0.0086	0.0204
197	0.0230	0.0068	0.0162
198	0.0201	0.0059	0.0141
199	0.0180	0.0053	0.0126
200	0.0163	0.0048	0.0115
201	0.0151	0.0045	0.0106
202	0.0140	0.0041	0.0099
203	0.0131	0.0039	0.0092
204	0.0124	0.0037	0.0087
205	0.0116	0.0034	0.0082

206	0.0111	0.0033	0.0078
207	0.0106	0.0031	0.0075
208	0.0101	0.0030	0.0071
209	0.0097	0.0029	0.0069
210	0.0094	0.0028	0.0066
211	0.0090	0.0027	0.0064
212	0.0087	0.0026	0.0062
213	0.0085	0.0025	0.0060
214	0.0082	0.0024	0.0058
215	0.0080	0.0024	0.0056
216	0.0078	0.0023	0.0055
217	0.0085	0.0025	0.0060
218	0.0083	0.0024	0.0058
219	0.0081	0.0024	0.0057
220	0.0079	0.0023	0.0056
221	0.0077	0.0023	0.0054
222	0.0076	0.0022	0.0053
223	0.0074	0.0022	0.0052
224	0.0073	0.0022	0.0051
225	0.0072	0.0021	0.0050
226	0.0070	0.0021	0.0050
227	0.0069	0.0020	0.0049
228	0.0068	0.0020	0.0048
229	0.0067	0.0020	0.0047
230	0.0066	0.0019	0.0046
231	0.0065	0.0019	0.0046
232	0.0064	0.0019	0.0045
233	0.0063	0.0019	0.0044
234	0.0062	0.0018	0.0044
235	0.0061	0.0018	0.0043
236	0.0060	0.0018	0.0042
237	0.0059	0.0018	0.0042
238	0.0059	0.0017	0.0041
239	0.0058	0.0017	0.0041
240	0.0057	0.0017	0.0040
241	0.0056	0.0017	0.0040
242	0.0056	0.0017	0.0039
243	0.0055	0.0016	0.0039
244	0.0055	0.0016	0.0038
245	0.0054	0.0016	0.0038
246	0.0053	0.0016	0.0038
247	0.0053	0.0016	0.0037
248	0.0052	0.0015	0.0037
249	0.0052	0.0015	0.0036
250	0.0051	0.0015	0.0036
251	0.0051	0.0015	0.0036
252	0.0050	0.0015	0.0035
253	0.0050	0.0015	0.0035
254	0.0049	0.0015	0.0035
255	0.0049	0.0014	0.0034
256	0.0048	0.0014	0.0034
257	0.0048	0.0014	0.0034
258	0.0047	0.0014	0.0033
259	0.0047	0.0014	0.0033
260	0.0047	0.0014	0.0033
261	0.0046	0.0014	0.0032
262	0.0046	0.0014	0.0032
263	0.0045	0.0013	0.0032
264	0.0045	0.0013	0.0032
265	0.0045	0.0013	0.0031
266	0.0044	0.0013	0.0031
267	0.0044	0.0013	0.0031
268	0.0044	0.0013	0.0031
269	0.0043	0.0013	0.0030
270	0.0043	0.0013	0.0030
271	0.0043	0.0013	0.0030
272	0.0042	0.0012	0.0030
273	0.0042	0.0012	0.0030
274	0.0042	0.0012	0.0029
275	0.0041	0.0012	0.0029
276	0.0041	0.0012	0.0029
277	0.0041	0.0012	0.0029
278	0.0040	0.0012	0.0029
279	0.0040	0.0012	0.0028
280	0.0040	0.0012	0.0028

281	0.0040	0.0012	0.0028
282	0.0039	0.0012	0.0028
283	0.0039	0.0012	0.0028
284	0.0039	0.0012	0.0027
285	0.0039	0.0011	0.0027
286	0.0038	0.0011	0.0027
287	0.0038	0.0011	0.0027
288	0.0038	0.0011	0.0027

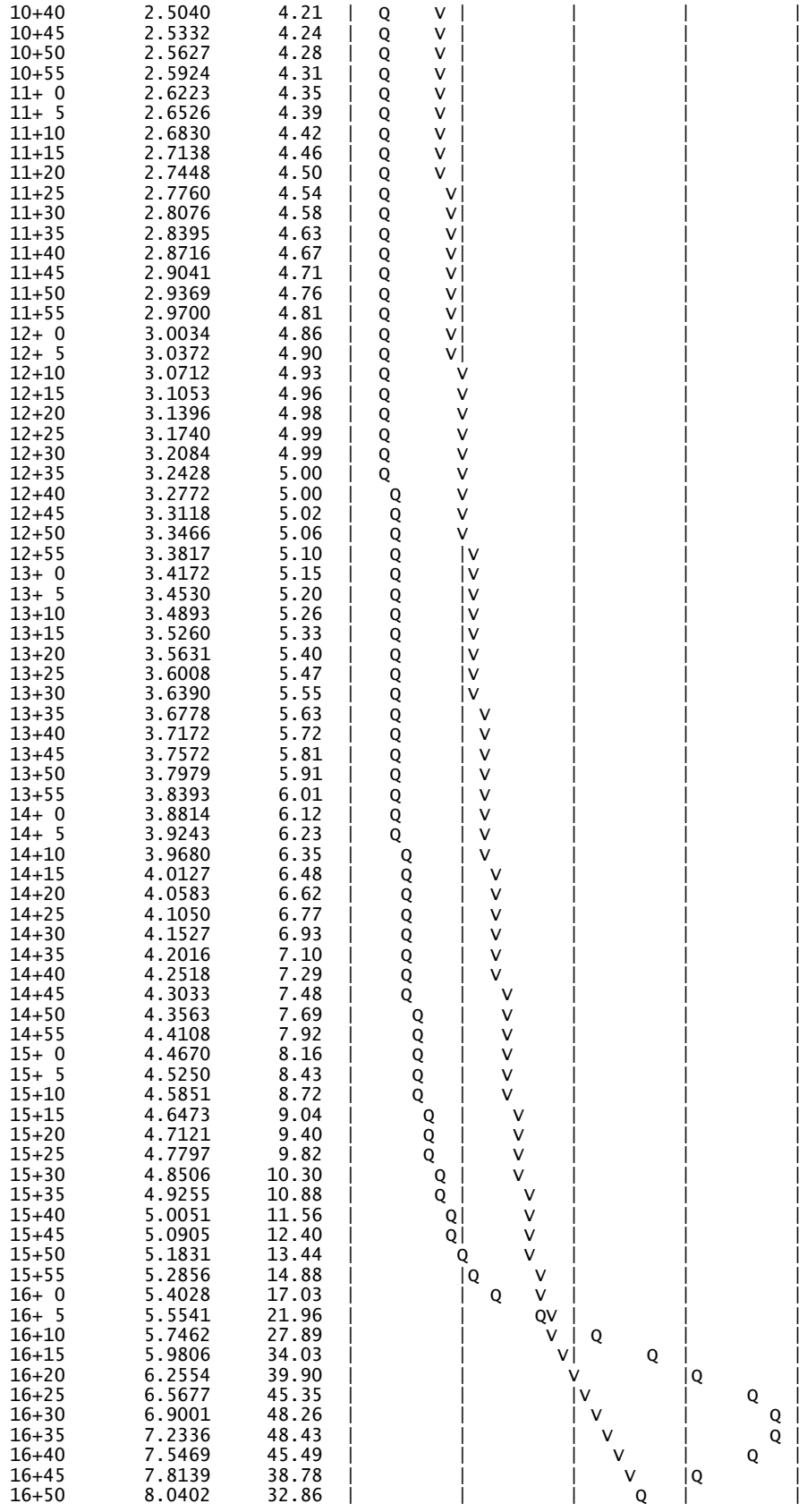
Total soil rain loss = 0.67(In)
Total effective rainfall = 1.95(In)
Peak flow rate in flood hydrograph = 48.43(CFS)

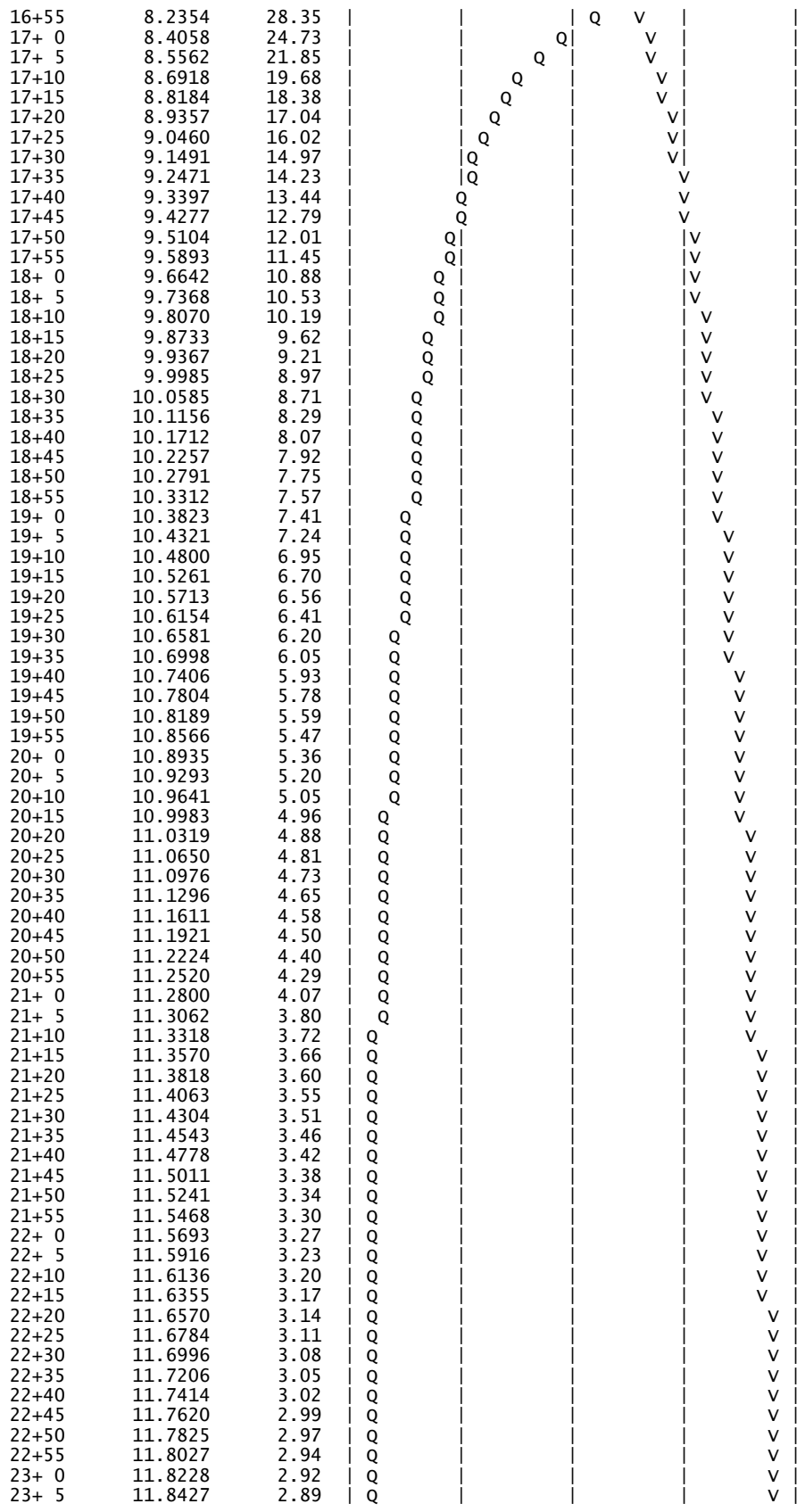
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 12.5 25.0 37.5 50.0
0+ 5	0.0002	0.03	Q
0+10	0.0008	0.09	Q
0+15	0.0022	0.20	Q
0+20	0.0047	0.35	Q
0+25	0.0084	0.55	Q
0+30	0.0137	0.77	Q
0+35	0.0207	1.01	Q
0+40	0.0292	1.24	Q
0+45	0.0390	1.42	VQ
0+50	0.0497	1.55	VQ
0+55	0.0611	1.66	VQ
1+ 0	0.0731	1.75	VQ
1+ 5	0.0856	1.81	VQ
1+10	0.0985	1.87	VQ
1+15	0.1118	1.93	VQ
1+20	0.1254	1.98	VQ
1+25	0.1393	2.02	VQ
1+30	0.1535	2.06	VQ
1+35	0.1680	2.10	VQ
1+40	0.1827	2.14	VQ
1+45	0.1976	2.17	VQ
1+50	0.2128	2.20	VQ
1+55	0.2282	2.23	VQ
2+ 0	0.2437	2.26	VQ
2+ 5	0.2595	2.29	VQ
2+10	0.2754	2.31	VQ
2+15	0.2915	2.34	VQ
2+20	0.3078	2.36	|Q
2+25	0.3242	2.38	|Q
2+30	0.3407	2.41	|Q
2+35	0.3574	2.42	|Q
2+40	0.3743	2.44	|Q
2+45	0.3912	2.46	|Q
2+50	0.4083	2.48	|Q
2+55	0.4255	2.50	|Q
3+ 0	0.4429	2.52	|VQ
3+ 5	0.4604	2.54	|VQ
3+10	0.4779	2.55	|VQ
3+15	0.4957	2.57	|VQ
3+20	0.5135	2.59	|VQ
3+25	0.5314	2.60	|VQ
3+30	0.5495	2.62	|VQ
3+35	0.5676	2.64	|VQ
3+40	0.5859	2.65	|VQ
3+45	0.6042	2.67	|VQ
3+50	0.6227	2.68	| Q
3+55	0.6413	2.70	| Q
4+ 0	0.6599	2.71	| Q
4+ 5	0.6787	2.73	| Q
4+10	0.6976	2.74	| Q
4+15	0.7165	2.75	| Q
4+20	0.7356	2.77	| Q

4+25	0.7547	2.78	Q			
4+30	0.7740	2.80	Q			
4+35	0.7933	2.81	Q			
4+40	0.8128	2.82	Q			
4+45	0.8323	2.84	Q			
4+50	0.8520	2.85	Q			
4+55	0.8717	2.87	Q			
5+ 0	0.8916	2.88	Q			
5+ 5	0.9115	2.89	Q			
5+10	0.9315	2.91	QV			
5+15	0.9516	2.92	QV			
5+20	0.9718	2.93	QV			
5+25	0.9921	2.94	QV			
5+30	1.0124	2.96	QV			
5+35	1.0329	2.97	QV			
5+40	1.0534	2.98	QV			
5+45	1.0740	2.99	QV			
5+50	1.0947	3.01	QV			
5+55	1.1155	3.02	QV			
6+ 0	1.1364	3.03	QV			
6+ 5	1.1574	3.05	QV			
6+10	1.1785	3.06	QV			
6+15	1.1997	3.08	QV			
6+20	1.2209	3.09	QV			
6+25	1.2423	3.10	Q V			
6+30	1.2638	3.12	Q V			
6+35	1.2854	3.13	Q V			
6+40	1.3071	3.15	Q V			
6+45	1.3288	3.16	Q V			
6+50	1.3507	3.18	Q V			
6+55	1.3727	3.19	Q V			
7+ 0	1.3948	3.21	Q V			
7+ 5	1.4170	3.23	Q V			
7+10	1.4394	3.24	Q V			
7+15	1.4618	3.26	Q V			
7+20	1.4844	3.27	Q V			
7+25	1.5070	3.29	Q V			
7+30	1.5298	3.31	Q V			
7+35	1.5527	3.33	Q V			
7+40	1.5757	3.34	Q V			
7+45	1.5989	3.36	Q V			
7+50	1.6222	3.38	Q V			
7+55	1.6456	3.40	Q V			
8+ 0	1.6691	3.42	Q V			
8+ 5	1.6927	3.43	Q V			
8+10	1.7165	3.45	Q V			
8+15	1.7405	3.47	Q V			
8+20	1.7645	3.49	Q V			
8+25	1.7887	3.51	Q V			
8+30	1.8130	3.53	Q V			
8+35	1.8375	3.55	Q V			
8+40	1.8621	3.58	Q V			
8+45	1.8869	3.60	Q V			
8+50	1.9118	3.62	Q V			
8+55	1.9369	3.64	Q V			
9+ 0	1.9621	3.66	Q V			
9+ 5	1.9875	3.69	Q V			
9+10	2.0131	3.71	Q V			
9+15	2.0388	3.73	Q V			
9+20	2.0647	3.76	Q V			
9+25	2.0907	3.78	Q V			
9+30	2.1169	3.81	Q V			
9+35	2.1433	3.83	Q V			
9+40	2.1699	3.86	Q V			
9+45	2.1966	3.88	Q V			
9+50	2.2236	3.91	Q V			
9+55	2.2507	3.94	Q V			
10+ 0	2.2780	3.97	Q V			
10+ 5	2.3055	4.00	Q V			
10+10	2.3333	4.02	Q V			
10+15	2.3612	4.05	Q V			
10+20	2.3893	4.08	Q V			
10+25	2.4176	4.11	Q V			
10+30	2.4462	4.15	Q V			
10+35	2.4750	4.18	Q V			





```
  23+10      11.8625      2.87  | Q       |         |         |       V |
  23+15      11.8821      2.84  | Q       |         |         |       V |
  23+20      11.9015      2.82  | Q       |         |         |       V |
  23+25      11.9207      2.80  | Q       |         |         |       V |
  23+30      11.9399      2.78  | Q       |         |         |       V |
  23+35      11.9588      2.75  | Q       |         |         |        V|
  23+40      11.9776      2.73  | Q       |         |         |        V|
  23+45      11.9963      2.71  | Q       |         |         |        V|
  23+50      12.0149      2.69  | Q       |         |         |        V|
  23+55      12.0333      2.67  | Q       |         |         |        V|
  24+ 0      12.0515      2.65  | Q       |         |         |        V|
  24+ 5      12.0695      2.61  | Q       |         |         |        V|
  24+10      12.0868      2.52  | Q       |         |         |        V|
  24+15      12.1033      2.40  |Q        |         |         |        V|
  24+20      12.1187      2.23  |Q        |         |         |        V|
  24+25      12.1326      2.02  |Q        |         |         |        V|
  24+30      12.1449      1.78  |Q        |         |         |        V|
  24+35      12.1555      1.54  |Q        |         |         |        V|
  24+40      12.1644      1.30  |Q        |         |         |        V|
  24+45      12.1721      1.12  Q         |         |         |        V|
  24+50      12.1789      0.98  Q         |         |         |        V|
  24+55      12.1849      0.87  Q         |         |         |        V|
  25+ 0      12.1903      0.78  Q         |         |         |        V|
  25+ 5      12.1952      0.71  Q         |         |         |        V|
  25+10      12.1997      0.66  Q         |         |         |        V|
  25+15      12.2038      0.60  Q         |         |         |        V|
  25+20      12.2077      0.56  Q         |         |         |        V|
  25+25      12.2112      0.51  Q         |         |         |        V|
  25+30      12.2145      0.48  Q         |         |         |        V|
  25+35      12.2175      0.44  Q         |         |         |        V|
  25+40      12.2203      0.41  Q         |         |         |        V|
  25+45      12.2229      0.38  Q         |         |         |        V|
  25+50      12.2253      0.35  Q         |         |         |        V|
  25+55      12.2275      0.32  Q         |         |         |        V|
  26+ 0      12.2296      0.30  Q         |         |         |        V|
  26+ 5      12.2316      0.28  Q         |         |         |        V|
  26+10      12.2333      0.26  Q         |         |         |        V|
  26+15      12.2350      0.24  Q         |         |         |        V|
  26+20      12.2365      0.22  Q         |         |         |        V|
  26+25      12.2380      0.21  Q         |         |         |        V|
  26+30      12.2393      0.19  Q         |         |         |        V|
  26+35      12.2406      0.18  Q         |         |         |        V|
  26+40      12.2417      0.17  Q         |         |         |        V|
  26+45      12.2428      0.16  Q         |         |         |        V|
  26+50      12.2438      0.15  Q         |         |         |        V|
  26+55      12.2447      0.14  Q         |         |         |        V|
  27+ 0      12.2456      0.12  Q         |         |         |        V|
  27+ 5      12.2464      0.11  Q         |         |         |        V|
  27+10      12.2471      0.10  Q         |         |         |        V|
  27+15      12.2478      0.10  Q         |         |         |        V|
  27+20      12.2484      0.09  Q         |         |         |        V|
  27+25      12.2489      0.08  Q         |         |         |        V|
  27+30      12.2495      0.07  Q         |         |         |        V|
  27+35      12.2499      0.07  Q         |         |         |        V|
  27+40      12.2503      0.06  Q         |         |         |        V|
  27+45      12.2507      0.06  Q         |         |         |        V|
  27+50      12.2511      0.05  Q         |         |         |        V|
  27+55      12.2514      0.05  Q         |         |         |        V|
  28+ 0      12.2517      0.04  Q         |         |         |        V|
  28+ 5      12.2519      0.04  Q         |         |         |        V|
  28+10      12.2521      0.03  Q         |         |         |        V|
  28+15      12.2523      0.03  Q         |         |         |        V|
  28+20      12.2525      0.03  Q         |         |         |        V|
  28+25      12.2527      0.02  Q         |         |         |        V|
  28+30      12.2528      0.02  Q         |         |         |        V|
  28+35      12.2529      0.02  Q         |         |         |        V|
  28+40      12.2530      0.01  Q         |         |         |        V|
  28+45      12.2530      0.01  Q         |         |         |        V|
  28+50      12.2531      0.01  Q         |         |         |        V|
  28+55      12.2531      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

UHEX02CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/12/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 2
EXISTING CONDITION, 25-YEAR 24-HOUR
FN: UHEX02CUL25.OUT - ABE

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
223.50	1	0.60
Rainfall data for year 2		
223.50	6	0.70
Rainfall data for year 2		
223.50	24	1.20
Rainfall data for year 100		
223.50	1	1.00
Rainfall data for year 100		
223.50	6	1.90
Rainfall data for year 100		
223.50	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
86.0	86.0	223.50	1.000	0.265	0.640	0.170

Area-averaged adjusted loss rate Fm (In/Hr) = 0.170

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
143.04	0.640	86.0	86.0	1.63	0.512
80.46	0.360	98.0	98.0	0.20	0.912

Area-averaged catchment yield fraction, Y = 0.656
Area-averaged low loss fraction, Yb = 0.344
User entry of time of concentration = 0.800 (hours)
++
Watershed area = 223.50(Ac.)
Catchment Lag time = 0.640 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 13.0208
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.170(In/Hr)
Average low loss rate fraction (Yb) = 0.344 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.281(In)
Computed peak 30-minute rainfall = 0.575(In)
Specified peak 1-hour rainfall = 0.759(In)
Computed peak 3-hour rainfall = 1.141(In)
Specified peak 6-hour rainfall = 1.475(In)
Specified peak 24-hour rainfall = 2.620(In)

Rainfall depth area reduction factors:
Using a total area of 223.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.990 Adjusted rainfall = 0.278(In)
30-minute factor = 0.990 Adjusted rainfall = 0.569(In)
1-hour factor = 0.990 Adjusted rainfall = 0.751(In)
3-hour factor = 0.999 Adjusted rainfall = 1.139(In)
6-hour factor = 0.999 Adjusted rainfall = 1.474(In)
24-hour factor = 1.000 Adjusted rainfall = 2.620(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 2702.95 (CFS))	
1	1.128	30.502
2	3.703	69.576
3	7.782	110.270
4	13.492	154.347
5	20.943	201.378
6	29.638	235.021
7	38.937	251.369
8	48.184	249.918
9	55.602	200.511
10	61.372	155.976
11	65.730	117.783
12	69.335	97.434
13	72.111	75.055
14	74.388	61.531
15	76.343	52.838
16	78.195	50.070
17	79.781	42.872
18	81.276	40.409
19	82.589	35.471
20	83.841	33.843
21	84.990	31.056
22	86.055	28.791
23	86.994	25.381
24	87.859	23.394
25	88.641	21.120
26	89.422	21.117
27	90.202	21.076
28	90.855	17.666
29	91.428	15.486
30	92.001	15.486
31	92.568	15.320
32	93.025	12.357
33	93.442	11.262
34	93.858	11.262
35	94.272	11.194
36	94.667	10.669

37	95.058	10.558
38	95.448	10.558
39	95.820	10.052
40	96.115	7.968
41	96.402	7.743
42	96.688	7.743
43	96.959	7.336
44	97.195	6.376
45	97.430	6.335
46	97.664	6.335
47	97.876	5.739
48	98.059	4.932
49	98.241	4.927
50	98.423	4.923
51	98.576	4.115
52	98.706	3.519
53	98.836	3.519
54	98.966	3.519
55	99.096	3.519
56	99.227	3.519
57	99.357	3.519
58	99.487	3.519
59	99.617	3.519
60	99.747	3.519
61	99.878	3.519
62	100.000	3.308

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2780	0.2780
2	0.3669	0.0888
3	0.4315	0.0646
4	0.4841	0.0526
5	0.5293	0.0452
6	0.5693	0.0400
7	0.6055	0.0362
8	0.6388	0.0332
9	0.6696	0.0308
10	0.6984	0.0288
11	0.7255	0.0271
12	0.7512	0.0257
13	0.7744	0.0231
14	0.7964	0.0221
15	0.8175	0.0211
16	0.8378	0.0202
17	0.8572	0.0195
18	0.8760	0.0188
19	0.8941	0.0181
20	0.9117	0.0176
21	0.9287	0.0170
22	0.9452	0.0165
23	0.9613	0.0161
24	0.9769	0.0156
25	0.9921	0.0152
26	1.0070	0.0149
27	1.0215	0.0145
28	1.0357	0.0142
29	1.0495	0.0139
30	1.0631	0.0136
31	1.0764	0.0133
32	1.0894	0.0130
33	1.1022	0.0128
34	1.1147	0.0125
35	1.1271	0.0123
36	1.1392	0.0121
37	1.1508	0.0117
38	1.1623	0.0115
39	1.1735	0.0113
40	1.1846	0.0111
41	1.1955	0.0109
42	1.2063	0.0108
43	1.2169	0.0106
44	1.2273	0.0104
45	1.2376	0.0103
46	1.2478	0.0101

47	1.2578	0.0100
48	1.2676	0.0099
49	1.2774	0.0097
50	1.2870	0.0096
51	1.2965	0.0095
52	1.3059	0.0094
53	1.3152	0.0093
54	1.3243	0.0092
55	1.3334	0.0091
56	1.3424	0.0090
57	1.3512	0.0089
58	1.3600	0.0088
59	1.3686	0.0087
60	1.3772	0.0086
61	1.3857	0.0085
62	1.3941	0.0084
63	1.4024	0.0083
64	1.4106	0.0082
65	1.4188	0.0081
66	1.4269	0.0081
67	1.4348	0.0080
68	1.4428	0.0079
69	1.4506	0.0078
70	1.4584	0.0078
71	1.4661	0.0077
72	1.4737	0.0076
73	1.4822	0.0085
74	1.4906	0.0084
75	1.4989	0.0083
76	1.5072	0.0083
77	1.5154	0.0082
78	1.5235	0.0081
79	1.5316	0.0081
80	1.5396	0.0080
81	1.5475	0.0080
82	1.5554	0.0079
83	1.5633	0.0078
84	1.5711	0.0078
85	1.5788	0.0077
86	1.5865	0.0077
87	1.5941	0.0076
88	1.6017	0.0076
89	1.6092	0.0075
90	1.6167	0.0075
91	1.6241	0.0074
92	1.6315	0.0074
93	1.6389	0.0073
94	1.6461	0.0073
95	1.6534	0.0072
96	1.6606	0.0072
97	1.6677	0.0072
98	1.6749	0.0071
99	1.6819	0.0071
100	1.6890	0.0070
101	1.6959	0.0070
102	1.7029	0.0069
103	1.7098	0.0069
104	1.7167	0.0069
105	1.7235	0.0068
106	1.7303	0.0068
107	1.7370	0.0068
108	1.7438	0.0067
109	1.7504	0.0067
110	1.7571	0.0066
111	1.7637	0.0066
112	1.7703	0.0066
113	1.7768	0.0065
114	1.7833	0.0065
115	1.7898	0.0065
116	1.7962	0.0064
117	1.8027	0.0064
118	1.8090	0.0064
119	1.8154	0.0063
120	1.8217	0.0063
121	1.8280	0.0063

122	1.8342	0.0063
123	1.8405	0.0062
124	1.8466	0.0062
125	1.8528	0.0062
126	1.8589	0.0061
127	1.8651	0.0061
128	1.8711	0.0061
129	1.8772	0.0061
130	1.8832	0.0060
131	1.8892	0.0060
132	1.8952	0.0060
133	1.9011	0.0059
134	1.9070	0.0059
135	1.9129	0.0059
136	1.9188	0.0059
137	1.9246	0.0058
138	1.9305	0.0058
139	1.9363	0.0058
140	1.9420	0.0058
141	1.9478	0.0057
142	1.9535	0.0057
143	1.9592	0.0057
144	1.9649	0.0057
145	1.9705	0.0057
146	1.9761	0.0056
147	1.9817	0.0056
148	1.9873	0.0056
149	1.9929	0.0056
150	1.9984	0.0055
151	2.0039	0.0055
152	2.0094	0.0055
153	2.0149	0.0055
154	2.0204	0.0055
155	2.0258	0.0054
156	2.0312	0.0054
157	2.0366	0.0054
158	2.0420	0.0054
159	2.0473	0.0054
160	2.0527	0.0053
161	2.0580	0.0053
162	2.0633	0.0053
163	2.0686	0.0053
164	2.0738	0.0053
165	2.0790	0.0052
166	2.0843	0.0052
167	2.0895	0.0052
168	2.0946	0.0052
169	2.0998	0.0052
170	2.1050	0.0051
171	2.1101	0.0051
172	2.1152	0.0051
173	2.1203	0.0051
174	2.1254	0.0051
175	2.1304	0.0051
176	2.1355	0.0050
177	2.1405	0.0050
178	2.1455	0.0050
179	2.1505	0.0050
180	2.1555	0.0050
181	2.1604	0.0050
182	2.1654	0.0049
183	2.1703	0.0049
184	2.1752	0.0049
185	2.1801	0.0049
186	2.1850	0.0049
187	2.1899	0.0049
188	2.1947	0.0049
189	2.1996	0.0048
190	2.2044	0.0048
191	2.2092	0.0048
192	2.2140	0.0048
193	2.2188	0.0048
194	2.2235	0.0048
195	2.2283	0.0047
196	2.2330	0.0047

197	2.2377	0.0047
198	2.2424	0.0047
199	2.2471	0.0047
200	2.2518	0.0047
201	2.2565	0.0047
202	2.2611	0.0047
203	2.2658	0.0046
204	2.2704	0.0046
205	2.2750	0.0046
206	2.2796	0.0046
207	2.2842	0.0046
208	2.2888	0.0046
209	2.2933	0.0046
210	2.2979	0.0045
211	2.3024	0.0045
212	2.3069	0.0045
213	2.3114	0.0045
214	2.3159	0.0045
215	2.3204	0.0045
216	2.3249	0.0045
217	2.3293	0.0045
218	2.3338	0.0044
219	2.3382	0.0044
220	2.3427	0.0044
221	2.3471	0.0044
222	2.3515	0.0044
223	2.3559	0.0044
224	2.3602	0.0044
225	2.3646	0.0044
226	2.3690	0.0044
227	2.3733	0.0043
228	2.3776	0.0043
229	2.3820	0.0043
230	2.3863	0.0043
231	2.3906	0.0043
232	2.3949	0.0043
233	2.3991	0.0043
234	2.4034	0.0043
235	2.4077	0.0043
236	2.4119	0.0042
237	2.4161	0.0042
238	2.4204	0.0042
239	2.4246	0.0042
240	2.4288	0.0042
241	2.4330	0.0042
242	2.4372	0.0042
243	2.4413	0.0042
244	2.4455	0.0042
245	2.4497	0.0042
246	2.4538	0.0041
247	2.4579	0.0041
248	2.4621	0.0041
249	2.4662	0.0041
250	2.4703	0.0041
251	2.4744	0.0041
252	2.4785	0.0041
253	2.4825	0.0041
254	2.4866	0.0041
255	2.4907	0.0041
256	2.4947	0.0040
257	2.4987	0.0040
258	2.5028	0.0040
259	2.5068	0.0040
260	2.5108	0.0040
261	2.5148	0.0040
262	2.5188	0.0040
263	2.5228	0.0040
264	2.5268	0.0040
265	2.5307	0.0040
266	2.5347	0.0040
267	2.5386	0.0039
268	2.5426	0.0039
269	2.5465	0.0039
270	2.5504	0.0039
271	2.5543	0.0039

272	2.5583	0.0039
273	2.5622	0.0039
274	2.5660	0.0039
275	2.5699	0.0039
276	2.5738	0.0039
277	2.5777	0.0039
278	2.5815	0.0039
279	2.5854	0.0038
280	2.5892	0.0038
281	2.5930	0.0038
282	2.5969	0.0038
283	2.6007	0.0038
284	2.6045	0.0038
285	2.6083	0.0038
286	2.6121	0.0038
287	2.6159	0.0038
288	2.6197	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0038	0.0013	0.0025
2	0.0038	0.0013	0.0025
3	0.0038	0.0013	0.0025
4	0.0038	0.0013	0.0025
5	0.0038	0.0013	0.0025
6	0.0038	0.0013	0.0025
7	0.0038	0.0013	0.0025
8	0.0039	0.0013	0.0025
9	0.0039	0.0013	0.0025
10	0.0039	0.0013	0.0025
11	0.0039	0.0013	0.0026
12	0.0039	0.0013	0.0026
13	0.0039	0.0013	0.0026
14	0.0039	0.0014	0.0026
15	0.0039	0.0014	0.0026
16	0.0040	0.0014	0.0026
17	0.0040	0.0014	0.0026
18	0.0040	0.0014	0.0026
19	0.0040	0.0014	0.0026
20	0.0040	0.0014	0.0026
21	0.0040	0.0014	0.0026
22	0.0040	0.0014	0.0027
23	0.0041	0.0014	0.0027
24	0.0041	0.0014	0.0027
25	0.0041	0.0014	0.0027
26	0.0041	0.0014	0.0027
27	0.0041	0.0014	0.0027
28	0.0041	0.0014	0.0027
29	0.0041	0.0014	0.0027
30	0.0042	0.0014	0.0027
31	0.0042	0.0014	0.0027
32	0.0042	0.0014	0.0027
33	0.0042	0.0014	0.0028
34	0.0042	0.0014	0.0028
35	0.0042	0.0015	0.0028
36	0.0042	0.0015	0.0028
37	0.0043	0.0015	0.0028
38	0.0043	0.0015	0.0028
39	0.0043	0.0015	0.0028
40	0.0043	0.0015	0.0028
41	0.0043	0.0015	0.0028
42	0.0043	0.0015	0.0029
43	0.0044	0.0015	0.0029
44	0.0044	0.0015	0.0029
45	0.0044	0.0015	0.0029
46	0.0044	0.0015	0.0029
47	0.0044	0.0015	0.0029
48	0.0044	0.0015	0.0029
49	0.0045	0.0015	0.0029
50	0.0045	0.0015	0.0029
51	0.0045	0.0015	0.0030
52	0.0045	0.0016	0.0030
53	0.0045	0.0016	0.0030

54	0.0046	0.0016	0.0030
55	0.0046	0.0016	0.0030
56	0.0046	0.0016	0.0030
57	0.0046	0.0016	0.0030
58	0.0046	0.0016	0.0030
59	0.0047	0.0016	0.0031
60	0.0047	0.0016	0.0031
61	0.0047	0.0016	0.0031
62	0.0047	0.0016	0.0031
63	0.0047	0.0016	0.0031
64	0.0048	0.0016	0.0031
65	0.0048	0.0016	0.0031
66	0.0048	0.0017	0.0032
67	0.0048	0.0017	0.0032
68	0.0049	0.0017	0.0032
69	0.0049	0.0017	0.0032
70	0.0049	0.0017	0.0032
71	0.0049	0.0017	0.0032
72	0.0049	0.0017	0.0032
73	0.0050	0.0017	0.0033
74	0.0050	0.0017	0.0033
75	0.0050	0.0017	0.0033
76	0.0050	0.0017	0.0033
77	0.0051	0.0017	0.0033
78	0.0051	0.0018	0.0033
79	0.0051	0.0018	0.0034
80	0.0051	0.0018	0.0034
81	0.0052	0.0018	0.0034
82	0.0052	0.0018	0.0034
83	0.0052	0.0018	0.0034
84	0.0053	0.0018	0.0034
85	0.0053	0.0018	0.0035
86	0.0053	0.0018	0.0035
87	0.0054	0.0018	0.0035
88	0.0054	0.0018	0.0035
89	0.0054	0.0019	0.0036
90	0.0054	0.0019	0.0036
91	0.0055	0.0019	0.0036
92	0.0055	0.0019	0.0036
93	0.0055	0.0019	0.0036
94	0.0056	0.0019	0.0036
95	0.0056	0.0019	0.0037
96	0.0056	0.0019	0.0037
97	0.0057	0.0020	0.0037
98	0.0057	0.0020	0.0037
99	0.0057	0.0020	0.0038
100	0.0058	0.0020	0.0038
101	0.0058	0.0020	0.0038
102	0.0058	0.0020	0.0038
103	0.0059	0.0020	0.0039
104	0.0059	0.0020	0.0039
105	0.0060	0.0021	0.0039
106	0.0060	0.0021	0.0039
107	0.0061	0.0021	0.0040
108	0.0061	0.0021	0.0040
109	0.0061	0.0021	0.0040
110	0.0062	0.0021	0.0040
111	0.0062	0.0021	0.0041
112	0.0063	0.0021	0.0041
113	0.0063	0.0022	0.0041
114	0.0063	0.0022	0.0042
115	0.0064	0.0022	0.0042
116	0.0064	0.0022	0.0042
117	0.0065	0.0022	0.0043
118	0.0065	0.0022	0.0043
119	0.0066	0.0023	0.0043
120	0.0066	0.0023	0.0044
121	0.0067	0.0023	0.0044
122	0.0068	0.0023	0.0044
123	0.0068	0.0023	0.0045
124	0.0069	0.0024	0.0045
125	0.0069	0.0024	0.0046
126	0.0070	0.0024	0.0046
127	0.0071	0.0024	0.0046
128	0.0071	0.0024	0.0047

129	0.0072	0.0025	0.0047
130	0.0072	0.0025	0.0048
131	0.0073	0.0025	0.0048
132	0.0074	0.0025	0.0048
133	0.0075	0.0026	0.0049
134	0.0075	0.0026	0.0049
135	0.0076	0.0026	0.0050
136	0.0077	0.0026	0.0050
137	0.0078	0.0027	0.0051
138	0.0078	0.0027	0.0051
139	0.0080	0.0027	0.0052
140	0.0080	0.0028	0.0053
141	0.0081	0.0028	0.0053
142	0.0082	0.0028	0.0054
143	0.0083	0.0029	0.0055
144	0.0084	0.0029	0.0055
145	0.0076	0.0026	0.0050
146	0.0077	0.0026	0.0051
147	0.0078	0.0027	0.0051
148	0.0079	0.0027	0.0052
149	0.0081	0.0028	0.0053
150	0.0081	0.0028	0.0053
151	0.0083	0.0029	0.0055
152	0.0084	0.0029	0.0055
153	0.0086	0.0029	0.0056
154	0.0087	0.0030	0.0057
155	0.0089	0.0030	0.0058
156	0.0090	0.0031	0.0059
157	0.0092	0.0031	0.0060
158	0.0093	0.0032	0.0061
159	0.0095	0.0033	0.0062
160	0.0096	0.0033	0.0063
161	0.0099	0.0034	0.0065
162	0.0100	0.0034	0.0066
163	0.0103	0.0035	0.0068
164	0.0104	0.0036	0.0069
165	0.0108	0.0037	0.0071
166	0.0109	0.0038	0.0072
167	0.0113	0.0039	0.0074
168	0.0115	0.0039	0.0075
169	0.0121	0.0042	0.0079
170	0.0123	0.0042	0.0081
171	0.0128	0.0044	0.0084
172	0.0130	0.0045	0.0086
173	0.0136	0.0047	0.0089
174	0.0139	0.0048	0.0091
175	0.0145	0.0050	0.0095
176	0.0149	0.0051	0.0098
177	0.0156	0.0054	0.0103
178	0.0161	0.0055	0.0105
179	0.0170	0.0058	0.0112
180	0.0176	0.0060	0.0115
181	0.0188	0.0065	0.0123
182	0.0195	0.0067	0.0128
183	0.0211	0.0073	0.0138
184	0.0221	0.0076	0.0145
185	0.0257	0.0088	0.0169
186	0.0271	0.0093	0.0178
187	0.0308	0.0106	0.0202
188	0.0332	0.0114	0.0218
189	0.0400	0.0138	0.0263
190	0.0452	0.0141	0.0311
191	0.0646	0.0141	0.0505
192	0.0888	0.0141	0.0747
193	0.2780	0.0141	0.2639
194	0.0526	0.0141	0.0385
195	0.0362	0.0124	0.0238
196	0.0288	0.0099	0.0189
197	0.0231	0.0080	0.0152
198	0.0202	0.0070	0.0133
199	0.0181	0.0062	0.0119
200	0.0165	0.0057	0.0108
201	0.0152	0.0052	0.0100
202	0.0142	0.0049	0.0093
203	0.0133	0.0046	0.0087

204	0.0125	0.0043	0.0082
205	0.0117	0.0040	0.0076
206	0.0111	0.0038	0.0073
207	0.0106	0.0036	0.0070
208	0.0101	0.0035	0.0067
209	0.0097	0.0034	0.0064
210	0.0094	0.0032	0.0062
211	0.0091	0.0031	0.0059
212	0.0088	0.0030	0.0057
213	0.0085	0.0029	0.0056
214	0.0082	0.0028	0.0054
215	0.0080	0.0027	0.0052
216	0.0078	0.0027	0.0051
217	0.0085	0.0029	0.0056
218	0.0083	0.0028	0.0054
219	0.0081	0.0028	0.0053
220	0.0079	0.0027	0.0052
221	0.0077	0.0027	0.0051
222	0.0076	0.0026	0.0050
223	0.0074	0.0026	0.0049
224	0.0073	0.0025	0.0048
225	0.0072	0.0025	0.0047
226	0.0070	0.0024	0.0046
227	0.0069	0.0024	0.0045
228	0.0068	0.0023	0.0045
229	0.0067	0.0023	0.0044
230	0.0066	0.0023	0.0043
231	0.0065	0.0022	0.0042
232	0.0064	0.0022	0.0042
233	0.0063	0.0022	0.0041
234	0.0062	0.0021	0.0041
235	0.0061	0.0021	0.0040
236	0.0060	0.0021	0.0040
237	0.0059	0.0020	0.0039
238	0.0059	0.0020	0.0039
239	0.0058	0.0020	0.0038
240	0.0057	0.0020	0.0038
241	0.0057	0.0019	0.0037
242	0.0056	0.0019	0.0037
243	0.0055	0.0019	0.0036
244	0.0055	0.0019	0.0036
245	0.0054	0.0019	0.0035
246	0.0053	0.0018	0.0035
247	0.0053	0.0018	0.0035
248	0.0052	0.0018	0.0034
249	0.0052	0.0018	0.0034
250	0.0051	0.0018	0.0034
251	0.0051	0.0017	0.0033
252	0.0050	0.0017	0.0033
253	0.0050	0.0017	0.0033
254	0.0049	0.0017	0.0032
255	0.0049	0.0017	0.0032
256	0.0048	0.0017	0.0032
257	0.0048	0.0016	0.0031
258	0.0047	0.0016	0.0031
259	0.0047	0.0016	0.0031
260	0.0047	0.0016	0.0031
261	0.0046	0.0016	0.0030
262	0.0046	0.0016	0.0030
263	0.0045	0.0016	0.0030
264	0.0045	0.0015	0.0030
265	0.0045	0.0015	0.0029
266	0.0044	0.0015	0.0029
267	0.0044	0.0015	0.0029
268	0.0044	0.0015	0.0029
269	0.0043	0.0015	0.0028
270	0.0043	0.0015	0.0028
271	0.0043	0.0015	0.0028
272	0.0042	0.0015	0.0028
273	0.0042	0.0014	0.0028
274	0.0042	0.0014	0.0027
275	0.0041	0.0014	0.0027
276	0.0041	0.0014	0.0027
277	0.0041	0.0014	0.0027
278	0.0040	0.0014	0.0027

279	0.0040	0.0014	0.0026
280	0.0040	0.0014	0.0026
281	0.0040	0.0014	0.0026
282	0.0039	0.0014	0.0026
283	0.0039	0.0013	0.0026
284	0.0039	0.0013	0.0026
285	0.0039	0.0013	0.0025
286	0.0038	0.0013	0.0025
287	0.0038	0.0013	0.0025
288	0.0038	0.0013	0.0025

Total soil rain loss = 0.79(In)
Total effective rainfall = 1.83(In)
Peak flow rate in flood hydrograph = 134.56(CFS)

++

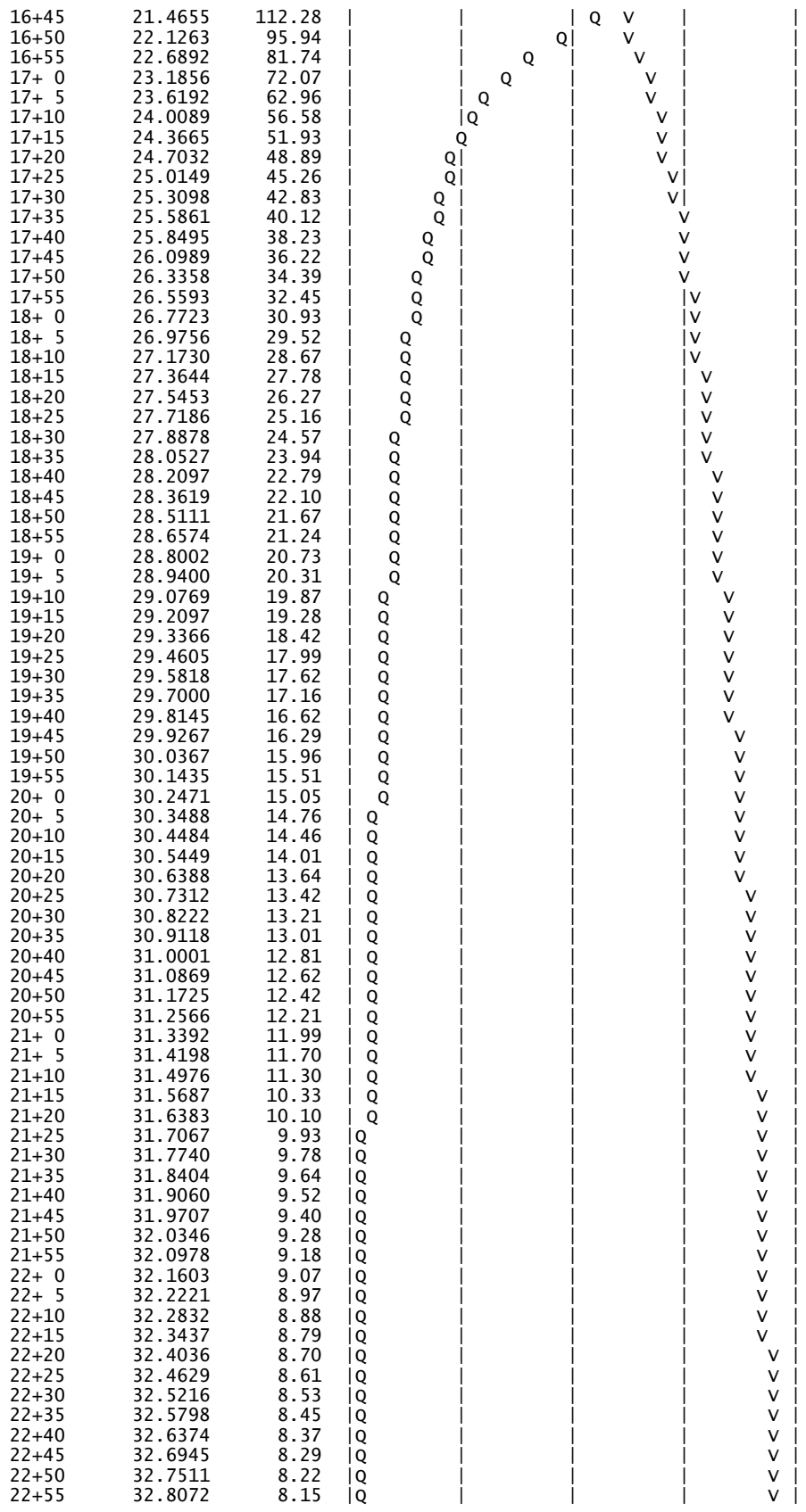
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0005	0.08	Q				
0+10	0.0022	0.25	Q				
0+15	0.0058	0.52	Q				
0+20	0.0121	0.91	Q				
0+25	0.0218	1.41	Q				
0+30	0.0355	2.00	Q				
0+35	0.0536	2.62	Q				
0+40	0.0760	3.25	Q				
0+45	0.1019	3.76	Q				
0+50	0.1305	4.16	Q				
0+55	0.1612	4.46	Q				
1+ 0	0.1937	4.72	Q				
1+ 5	0.2276	4.92	Q				
1+10	0.2626	5.09	VQ				
1+15	0.2987	5.23	VQ				
1+20	0.3357	5.37	VQ				
1+25	0.3735	5.50	VQ				
1+30	0.4122	5.62	VQ				
1+35	0.4516	5.72	VQ				
1+40	0.4917	5.82	VQ				
1+45	0.5325	5.92	VQ				
1+50	0.5739	6.01	VQ				
1+55	0.6159	6.09	VQ				
2+ 0	0.6584	6.17	VQ				
2+ 5	0.7014	6.24	VQ				
2+10	0.7449	6.32	VQ				
2+15	0.7889	6.39	VQ				
2+20	0.8334	6.46	VQ				
2+25	0.8783	6.52	|Q				
2+30	0.9236	6.58	|Q				
2+35	0.9693	6.64	|Q				
2+40	1.0154	6.69	|Q				
2+45	1.0618	6.74	|Q				
2+50	1.1086	6.79	|Q				
2+55	1.1557	6.85	|Q				
3+ 0	1.2032	6.90	|Q				
3+ 5	1.2511	6.95	|Q				
3+10	1.2992	7.00	|Q				
3+15	1.3478	7.05	|Q				
3+20	1.3966	7.09	|Q				
3+25	1.4458	7.14	|Q				
3+30	1.4952	7.18	|Q				
3+35	1.5450	7.23	|Q				
3+40	1.5951	7.27	|Q				
3+45	1.6454	7.31	|Q				
3+50	1.6961	7.36	|Q				
3+55	1.7470	7.40	|QV				
4+ 0	1.7983	7.44	|QV				
4+ 5	1.8498	7.48	|QV				
4+10	1.9015	7.52	|QV				

4+15	1.9536	7.56		QV			
4+20	2.0059	7.60		QV			
4+25	2.0585	7.63		QV			
4+30	2.1113	7.67		QV			
4+35	2.1644	7.71		QV			
4+40	2.2178	7.75		QV			
4+45	2.2715	7.79		QV			
4+50	2.3254	7.83		QV			
4+55	2.3796	7.87		QV			
5+ 0	2.4341	7.91		QV			
5+ 5	2.4889	7.95		QV			
5+10	2.5439	7.99		QV			
5+15	2.5992	8.03		Q V			
5+20	2.6547	8.06		Q V			
5+25	2.7105	8.10		Q V			
5+30	2.7665	8.13		Q V			
5+35	2.8227	8.16		Q V			
5+40	2.8792	8.20		Q V			
5+45	2.9359	8.24		Q V			
5+50	2.9928	8.27		Q V			
5+55	3.0501	8.31		Q V			
6+ 0	3.1075	8.35		Q V			
6+ 5	3.1653	8.38		Q V			
6+10	3.2233	8.42		Q V			
6+15	3.2815	8.46		Q V			
6+20	3.3400	8.50		Q V			
6+25	3.3988	8.54		Q V			
6+30	3.4579	8.58		Q V			
6+35	3.5172	8.62		Q V			
6+40	3.5769	8.66		Q V			
6+45	3.6368	8.70		Q V			
6+50	3.6970	8.74		Q V			
6+55	3.7575	8.78		Q V			
7+ 0	3.8183	8.83		Q V			
7+ 5	3.8794	8.87		Q V			
7+10	3.9408	8.91		Q V			
7+15	4.0025	8.96		Q V			
7+20	4.0645	9.01		Q V			
7+25	4.1268	9.05		Q V			
7+30	4.1895	9.10		Q V			
7+35	4.2525	9.15		Q V			
7+40	4.3158	9.19		Q V			
7+45	4.3794	9.24		Q V			
7+50	4.4434	9.29		Q V			
7+55	4.5077	9.34		Q V			
8+ 0	4.5724	9.39		Q V			
8+ 5	4.6375	9.44		Q V			
8+10	4.7029	9.50		Q V			
8+15	4.7687	9.55		Q V			
8+20	4.8348	9.60		Q V			
8+25	4.9013	9.66		Q V			
8+30	4.9682	9.72		Q V			
8+35	5.0356	9.77		Q V			
8+40	5.1032	9.83		Q V			
8+45	5.1714	9.89		Q V			
8+50	5.2399	9.95		Q V			
8+55	5.3088	10.01		Q V			
9+ 0	5.3781	10.07		Q V			
9+ 5	5.4479	10.13		Q V			
9+10	5.5182	10.20		Q V			
9+15	5.5888	10.26		Q V			
9+20	5.6600	10.33		Q V			
9+25	5.7315	10.39		Q V			
9+30	5.8036	10.46		Q V			
9+35	5.8761	10.53		Q V			
9+40	5.9492	10.60		Q V			
9+45	6.0227	10.68		Q V			
9+50	6.0967	10.75		Q V			
9+55	6.1712	10.82		Q V			
10+ 0	6.2463	10.90		Q V			
10+ 5	6.3219	10.98		Q V			
10+10	6.3981	11.06		Q V			
10+15	6.4748	11.14		Q V			
10+20	6.5521	11.22		Q V			
10+25	6.6299	11.31		Q V			

10+30	6.7084	11.39	Q V			
10+35	6.7874	11.48	Q V			
10+40	6.8671	11.57	Q V			
10+45	6.9474	11.66	Q V			
10+50	7.0284	11.75	Q V			
10+55	7.1100	11.85	Q V			
11+ 0	7.1923	11.95	Q V			
11+ 5	7.2753	12.05	Q V			
11+10	7.3590	12.15	Q V			
11+15	7.4434	12.26	Q V			
11+20	7.5285	12.36	Q V			
11+25	7.6144	12.47	Q V			
11+30	7.7011	12.59	Q V			
11+35	7.7886	12.70	Q V			
11+40	7.8769	12.82	Q V			
11+45	7.9661	12.94	Q V			
11+50	8.0561	13.07	Q V			
11+55	8.1470	13.20	Q V			
12+ 0	8.2388	13.33	Q V			
12+ 5	8.3314	13.45	Q V			
12+10	8.4247	13.55	Q V			
12+15	8.5186	13.63	Q V			
12+20	8.6128	13.68	Q V			
12+25	8.7073	13.72	Q V			
12+30	8.8019	13.74	Q V			
12+35	8.8966	13.75	Q V			
12+40	8.9914	13.77	Q V			
12+45	9.0866	13.82	Q V			
12+50	9.1823	13.90	Q V			
12+55	9.2789	14.02	Q V			
13+ 0	9.3763	14.15	Q V			
13+ 5	9.4748	14.30	Q V			
13+10	9.5743	14.46	Q V			
13+15	9.6751	14.64	Q V			
13+20	9.7772	14.82	Q V			
13+25	9.8807	15.02	Q V			
13+30	9.9856	15.23	Q V			
13+35	10.0921	15.46	Q V			
13+40	10.2002	15.69	Q V			
13+45	10.3099	15.94	Q V			
13+50	10.4215	16.20	Q V			
13+55	10.5350	16.48	Q V			
14+ 0	10.6506	16.77	Q V			
14+ 5	10.7683	17.09	Q V			
14+10	10.8883	17.43	Q V			
14+15	11.0108	17.79	Q V			
14+20	11.1361	18.19	Q V			
14+25	11.2643	18.61	Q V			
14+30	11.3956	19.07	Q V			
14+35	11.5303	19.56	Q V			
14+40	11.6686	20.08	Q V			
14+45	11.8107	20.63	Q V			
14+50	11.9568	21.21	Q V			
14+55	12.1072	21.84	Q V			
15+ 0	12.2622	22.51	Q V			
15+ 5	12.4222	23.24	Q V			
15+10	12.5877	24.03	Q V			
15+15	12.7593	24.91	Q V			
15+20	12.9375	25.88	Q V			
15+25	13.1235	27.00	Q V			
15+30	13.3183	28.29	Q V			
15+35	13.5236	29.81	Q V			
15+40	13.7412	31.59	Q V			
15+45	13.9737	33.76	Q V			
15+50	14.2246	36.44	Q V			
15+55	14.5014	40.19	Q V			
16+ 0	14.8171	45.85	Q V			
16+ 5	15.2255	59.29	Q V			
16+10	15.7438	75.26	Q V			
16+15	16.3745	91.57	QV			
16+20	17.1173	107.86	VQ			
16+25	17.9634	122.85	V Q			
16+30	18.8745	132.30	V Q			
16+35	19.8012	134.56	V Q			
16+40	20.6922	129.37	VQ			



23+ 0	32.8628	8.08	|Q	|	|	|	V |
23+ 5	32.9180	8.01	|Q	|	|	|	V |
23+10	32.9727	7.94	|Q	|	|	|	V |
23+15	33.0269	7.87	|Q	|	|	|	V |
23+20	33.0807	7.81	|Q	|	|	|	V |
23+25	33.1341	7.75	|Q	|	|	|	V |
23+30	33.1870	7.68	|Q	|	|	|	V |
23+35	33.2395	7.62	|Q	|	|	|	V|
23+40	33.2916	7.56	|Q	|	|	|	V|
23+45	33.3433	7.51	|Q	|	|	|	V|
23+50	33.3946	7.45	|Q	|	|	|	V|
23+55	33.4455	7.39	|Q	|	|	|	V|
24+ 0	33.4960	7.34	|Q	|	|	|	V|
24+ 5	33.5457	7.21	|Q	|	|	|	V|
24+10	33.5938	6.99	|Q	|	|	|	V|
24+15	33.6397	6.66	|Q	|	|	|	V|
24+20	33.6827	6.24	|Q	|	|	|	V|
24+25	33.7219	5.69	|Q	|	|	|	V|
24+30	33.7568	5.07	|Q	|	|	|	V|
24+35	33.7872	4.41	Q	|	|	|	V|
24+40	33.8131	3.76	Q	|	|	|	V|
24+45	33.8355	3.24	Q	|	|	|	V|
24+50	33.8550	2.83	Q	|	|	|	V|
24+55	33.8723	2.52	Q	|	|	|	V|
25+ 0	33.8879	2.26	Q	|	|	|	V|
25+ 5	33.9021	2.06	Q	|	|	|	V|
25+10	33.9151	1.89	Q	|	|	|	V|
25+15	33.9272	1.75	Q	|	|	|	V|
25+20	33.9383	1.61	Q	|	|	|	V|
25+25	33.9485	1.49	Q	|	|	|	V|
25+30	33.9580	1.38	Q	|	|	|	V|
25+35	33.9669	1.28	Q	|	|	|	V|
25+40	33.9751	1.19	Q	|	|	|	V|
25+45	33.9827	1.11	Q	|	|	|	V|
25+50	33.9898	1.03	Q	|	|	|	V|
25+55	33.9964	0.96	Q	|	|	|	V|
26+ 0	34.0025	0.89	Q	|	|	|	V|
26+ 5	34.0082	0.83	Q	|	|	|	V|
26+10	34.0136	0.77	Q	|	|	|	V|
26+15	34.0185	0.72	Q	|	|	|	V|
26+20	34.0231	0.67	Q	|	|	|	V|
26+25	34.0274	0.62	Q	|	|	|	V|
26+30	34.0314	0.58	Q	|	|	|	V|
26+35	34.0351	0.54	Q	|	|	|	V|
26+40	34.0386	0.51	Q	|	|	|	V|
26+45	34.0419	0.47	Q	|	|	|	V|
26+50	34.0449	0.44	Q	|	|	|	V|
26+55	34.0478	0.41	Q	|	|	|	V|
27+ 0	34.0504	0.38	Q	|	|	|	V|
27+ 5	34.0529	0.35	Q	|	|	|	V|
27+10	34.0551	0.33	Q	|	|	|	V|
27+15	34.0572	0.30	Q	|	|	|	V|
27+20	34.0591	0.28	Q	|	|	|	V|
27+25	34.0608	0.26	Q	|	|	|	V|
27+30	34.0625	0.24	Q	|	|	|	V|
27+35	34.0640	0.22	Q	|	|	|	V|
27+40	34.0653	0.20	Q	|	|	|	V|
27+45	34.0666	0.18	Q	|	|	|	V|
27+50	34.0677	0.16	Q	|	|	|	V|
27+55	34.0687	0.15	Q	|	|	|	V|
28+ 0	34.0697	0.14	Q	|	|	|	V|
28+ 5	34.0705	0.12	Q	|	|	|	V|
28+10	34.0713	0.11	Q	|	|	|	V|
28+15	34.0719	0.10	Q	|	|	|	V|
28+20	34.0726	0.09	Q	|	|	|	V|
28+25	34.0731	0.08	Q	|	|	|	V|
28+30	34.0736	0.07	Q	|	|	|	V|
28+35	34.0740	0.06	Q	|	|	|	V|
28+40	34.0744	0.05	Q	|	|	|	V|
28+45	34.0747	0.04	Q	|	|	|	V|
28+50	34.0749	0.03	Q	|	|	|	V|
28+55	34.0751	0.03	Q	|	|	|	V|
29+ 0	34.0752	0.02	Q	|	|	|	V|
29+ 5	34.0753	0.01	Q	|	|	|	V|

UHEX03CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/12/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 3
EXISTING CONDITION, 25-YEAR 24-HOUR
FN: UHEX03CUL25.OUT - ABE

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
40.00	1	0.60
Rainfall data for year 2		
40.00	6	0.70
Rainfall data for year 2		
40.00	24	1.20
Rainfall data for year 100		
40.00	1	1.00
Rainfall data for year 100		
40.00	6	1.90
Rainfall data for year 100		
40.00	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
86.0	86.0	40.00	1.000	0.265	1.000	0.265

Area-averaged adjusted loss rate Fm (In/Hr) = 0.265

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
40.00	1.000	86.0	86.0	1.63	0.512

Area-averaged catchment yield fraction, Y = 0.512
Area-averaged low loss fraction, Yb = 0.488
User entry of time of concentration = 0.490 (hours)
++
Watershed area = 40.00(Ac.)
Catchment Lag time = 0.392 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 21.2585
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.265(In/Hr)
Average low loss rate fraction (Yb) = 0.488 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.281(In)
Computed peak 30-minute rainfall = 0.575(In)
Specified peak 1-hour rainfall = 0.759(In)
Computed peak 3-hour rainfall = 1.141(In)
Specified peak 6-hour rainfall = 1.475(In)
Specified peak 24-hour rainfall = 2.620(In)

Rainfall depth area reduction factors:
Using a total area of 40.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998 Adjusted rainfall = 0.280(In)
30-minute factor = 0.998 Adjusted rainfall = 0.574(In)
1-hour factor = 0.998 Adjusted rainfall = 0.758(In)
3-hour factor = 1.000 Adjusted rainfall = 1.140(In)
6-hour factor = 1.000 Adjusted rainfall = 1.475(In)
24-hour factor = 1.000 Adjusted rainfall = 2.620(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 483.75 (CFS))		
1	1.904	9.210
2	7.652	27.807
3	17.721	48.708
4	31.633	67.300
5	46.698	72.874
6	58.466	56.931
7	66.126	37.057
8	71.426	25.639
9	75.131	17.919
10	78.185	14.776
11	80.749	12.402
12	82.940	10.599
13	84.884	9.403
14	86.563	8.125
15	87.993	6.918
16	89.270	6.178
17	90.497	5.934
18	91.469	4.702
19	92.400	4.504
20	93.165	3.702
21	93.846	3.291
22	94.511	3.220
23	95.149	3.088
24	95.768	2.990
25	96.258	2.374
26	96.725	2.259
27	97.140	2.007
28	97.523	1.851
29	97.880	1.727
30	98.180	1.450
31	98.470	1.403
32	98.696	1.097
33	98.909	1.028
34	99.122	1.028
35	99.334	1.028
36	99.547	1.028
37	99.759	1.028

38	100.000	0.514

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2804	0.2804
2	0.3701	0.0896
3	0.4352	0.0652
4	0.4883	0.0531
5	0.5339	0.0456
6	0.5743	0.0404
7	0.6108	0.0365
8	0.6443	0.0335
9	0.6754	0.0311
10	0.7045	0.0291
11	0.7318	0.0274
12	0.7578	0.0259
13	0.7807	0.0229
14	0.8025	0.0218
15	0.8234	0.0209
16	0.8434	0.0200
17	0.8626	0.0192
18	0.8811	0.0185
19	0.8991	0.0179
20	0.9164	0.0173
21	0.9332	0.0168
22	0.9495	0.0163
23	0.9653	0.0158
24	0.9807	0.0154
25	0.9957	0.0150
26	1.0103	0.0146
27	1.0246	0.0143
28	1.0386	0.0140
29	1.0522	0.0136
30	1.0656	0.0134
31	1.0787	0.0131
32	1.0915	0.0128
33	1.1041	0.0126
34	1.1164	0.0123
35	1.1285	0.0121
36	1.1404	0.0119
37	1.1520	0.0116
38	1.1635	0.0114
39	1.1748	0.0113
40	1.1858	0.0111
41	1.1967	0.0109
42	1.2075	0.0107
43	1.2181	0.0106
44	1.2285	0.0104
45	1.2388	0.0103
46	1.2489	0.0101
47	1.2589	0.0100
48	1.2688	0.0099
49	1.2785	0.0097
50	1.2881	0.0096
51	1.2976	0.0095
52	1.3070	0.0094
53	1.3162	0.0093
54	1.3254	0.0092
55	1.3344	0.0090
56	1.3434	0.0089
57	1.3522	0.0088
58	1.3610	0.0087
59	1.3696	0.0087
60	1.3782	0.0086
61	1.3867	0.0085
62	1.3950	0.0084
63	1.4033	0.0083
64	1.4116	0.0082
65	1.4197	0.0081
66	1.4278	0.0081
67	1.4357	0.0080
68	1.4437	0.0079
69	1.4515	0.0078
70	1.4593	0.0078
71	1.4669	0.0077

72	1.4746	0.0076
73	1.4830	0.0085
74	1.4914	0.0084
75	1.4998	0.0083
76	1.5080	0.0083
77	1.5162	0.0082
78	1.5243	0.0081
79	1.5324	0.0081
80	1.5404	0.0080
81	1.5484	0.0080
82	1.5563	0.0079
83	1.5641	0.0078
84	1.5719	0.0078
85	1.5797	0.0077
86	1.5873	0.0077
87	1.5950	0.0076
88	1.6025	0.0076
89	1.6101	0.0075
90	1.6175	0.0075
91	1.6250	0.0074
92	1.6324	0.0074
93	1.6397	0.0073
94	1.6470	0.0073
95	1.6542	0.0072
96	1.6614	0.0072
97	1.6686	0.0072
98	1.6757	0.0071
99	1.6828	0.0071
100	1.6898	0.0070
101	1.6968	0.0070
102	1.7037	0.0069
103	1.7106	0.0069
104	1.7175	0.0069
105	1.7243	0.0068
106	1.7311	0.0068
107	1.7379	0.0068
108	1.7446	0.0067
109	1.7513	0.0067
110	1.7579	0.0066
111	1.7645	0.0066
112	1.7711	0.0066
113	1.7776	0.0065
114	1.7841	0.0065
115	1.7906	0.0065
116	1.7971	0.0064
117	1.8035	0.0064
118	1.8098	0.0064
119	1.8162	0.0063
120	1.8225	0.0063
121	1.8288	0.0063
122	1.8350	0.0063
123	1.8413	0.0062
124	1.8475	0.0062
125	1.8536	0.0062
126	1.8598	0.0061
127	1.8659	0.0061
128	1.8719	0.0061
129	1.8780	0.0061
130	1.8840	0.0060
131	1.8900	0.0060
132	1.8960	0.0060
133	1.9019	0.0059
134	1.9078	0.0059
135	1.9137	0.0059
136	1.9196	0.0059
137	1.9254	0.0058
138	1.9313	0.0058
139	1.9370	0.0058
140	1.9428	0.0058
141	1.9486	0.0057
142	1.9543	0.0057
143	1.9600	0.0057
144	1.9656	0.0057
145	1.9713	0.0056
146	1.9769	0.0056

147	1.9825	0.0056
148	1.9881	0.0056
149	1.9937	0.0056
150	1.9992	0.0055
151	2.0047	0.0055
152	2.0102	0.0055
153	2.0157	0.0055
154	2.0211	0.0055
155	2.0266	0.0054
156	2.0320	0.0054
157	2.0374	0.0054
158	2.0428	0.0054
159	2.0481	0.0054
160	2.0534	0.0053
161	2.0587	0.0053
162	2.0640	0.0053
163	2.0693	0.0053
164	2.0746	0.0053
165	2.0798	0.0052
166	2.0850	0.0052
167	2.0902	0.0052
168	2.0954	0.0052
169	2.1006	0.0052
170	2.1057	0.0051
171	2.1108	0.0051
172	2.1160	0.0051
173	2.1210	0.0051
174	2.1261	0.0051
175	2.1312	0.0051
176	2.1362	0.0050
177	2.1413	0.0050
178	2.1463	0.0050
179	2.1513	0.0050
180	2.1562	0.0050
181	2.1612	0.0050
182	2.1661	0.0049
183	2.1711	0.0049
184	2.1760	0.0049
185	2.1809	0.0049
186	2.1857	0.0049
187	2.1906	0.0049
188	2.1955	0.0049
189	2.2003	0.0048
190	2.2051	0.0048
191	2.2099	0.0048
192	2.2147	0.0048
193	2.2195	0.0048
194	2.2243	0.0048
195	2.2290	0.0047
196	2.2337	0.0047
197	2.2385	0.0047
198	2.2432	0.0047
199	2.2479	0.0047
200	2.2525	0.0047
201	2.2572	0.0047
202	2.2618	0.0047
203	2.2665	0.0046
204	2.2711	0.0046
205	2.2757	0.0046
206	2.2803	0.0046
207	2.2849	0.0046
208	2.2895	0.0046
209	2.2940	0.0046
210	2.2986	0.0045
211	2.3031	0.0045
212	2.3076	0.0045
213	2.3121	0.0045
214	2.3166	0.0045
215	2.3211	0.0045
216	2.3256	0.0045
217	2.3300	0.0045
218	2.3345	0.0044
219	2.3389	0.0044
220	2.3433	0.0044
221	2.3478	0.0044

222	2.3522	0.0044
223	2.3565	0.0044
224	2.3609	0.0044
225	2.3653	0.0044
226	2.3696	0.0044
227	2.3740	0.0043
228	2.3783	0.0043
229	2.3826	0.0043
230	2.3869	0.0043
231	2.3912	0.0043
232	2.3955	0.0043
233	2.3998	0.0043
234	2.4041	0.0043
235	2.4083	0.0043
236	2.4126	0.0042
237	2.4168	0.0042
238	2.4210	0.0042
239	2.4252	0.0042
240	2.4294	0.0042
241	2.4336	0.0042
242	2.4378	0.0042
243	2.4420	0.0042
244	2.4462	0.0042
245	2.4503	0.0042
246	2.4545	0.0041
247	2.4586	0.0041
248	2.4627	0.0041
249	2.4668	0.0041
250	2.4709	0.0041
251	2.4750	0.0041
252	2.4791	0.0041
253	2.4832	0.0041
254	2.4872	0.0041
255	2.4913	0.0041
256	2.4953	0.0040
257	2.4994	0.0040
258	2.5034	0.0040
259	2.5074	0.0040
260	2.5114	0.0040
261	2.5154	0.0040
262	2.5194	0.0040
263	2.5234	0.0040
264	2.5274	0.0040
265	2.5314	0.0040
266	2.5353	0.0040
267	2.5393	0.0039
268	2.5432	0.0039
269	2.5471	0.0039
270	2.5511	0.0039
271	2.5550	0.0039
272	2.5589	0.0039
273	2.5628	0.0039
274	2.5667	0.0039
275	2.5705	0.0039
276	2.5744	0.0039
277	2.5783	0.0039
278	2.5821	0.0039
279	2.5860	0.0038
280	2.5898	0.0038
281	2.5937	0.0038
282	2.5975	0.0038
283	2.6013	0.0038
284	2.6051	0.0038
285	2.6089	0.0038
286	2.6127	0.0038
287	2.6165	0.0038
288	2.6203	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0038	0.0018	0.0019
2	0.0038	0.0018	0.0019
3	0.0038	0.0019	0.0019

4	0.0038	0.0019	0.0020
5	0.0038	0.0019	0.0020
6	0.0038	0.0019	0.0020
7	0.0038	0.0019	0.0020
8	0.0039	0.0019	0.0020
9	0.0039	0.0019	0.0020
10	0.0039	0.0019	0.0020
11	0.0039	0.0019	0.0020
12	0.0039	0.0019	0.0020
13	0.0039	0.0019	0.0020
14	0.0039	0.0019	0.0020
15	0.0039	0.0019	0.0020
16	0.0040	0.0019	0.0020
17	0.0040	0.0019	0.0020
18	0.0040	0.0019	0.0020
19	0.0040	0.0020	0.0020
20	0.0040	0.0020	0.0021
21	0.0040	0.0020	0.0021
22	0.0040	0.0020	0.0021
23	0.0041	0.0020	0.0021
24	0.0041	0.0020	0.0021
25	0.0041	0.0020	0.0021
26	0.0041	0.0020	0.0021
27	0.0041	0.0020	0.0021
28	0.0041	0.0020	0.0021
29	0.0041	0.0020	0.0021
30	0.0042	0.0020	0.0021
31	0.0042	0.0020	0.0021
32	0.0042	0.0020	0.0021
33	0.0042	0.0020	0.0022
34	0.0042	0.0021	0.0022
35	0.0042	0.0021	0.0022
36	0.0042	0.0021	0.0022
37	0.0043	0.0021	0.0022
38	0.0043	0.0021	0.0022
39	0.0043	0.0021	0.0022
40	0.0043	0.0021	0.0022
41	0.0043	0.0021	0.0022
42	0.0043	0.0021	0.0022
43	0.0044	0.0021	0.0022
44	0.0044	0.0021	0.0022
45	0.0044	0.0021	0.0023
46	0.0044	0.0022	0.0023
47	0.0044	0.0022	0.0023
48	0.0044	0.0022	0.0023
49	0.0045	0.0022	0.0023
50	0.0045	0.0022	0.0023
51	0.0045	0.0022	0.0023
52	0.0045	0.0022	0.0023
53	0.0045	0.0022	0.0023
54	0.0046	0.0022	0.0023
55	0.0046	0.0022	0.0023
56	0.0046	0.0022	0.0024
57	0.0046	0.0023	0.0024
58	0.0046	0.0023	0.0024
59	0.0047	0.0023	0.0024
60	0.0047	0.0023	0.0024
61	0.0047	0.0023	0.0024
62	0.0047	0.0023	0.0024
63	0.0047	0.0023	0.0024
64	0.0048	0.0023	0.0024
65	0.0048	0.0023	0.0025
66	0.0048	0.0023	0.0025
67	0.0048	0.0024	0.0025
68	0.0049	0.0024	0.0025
69	0.0049	0.0024	0.0025
70	0.0049	0.0024	0.0025
71	0.0049	0.0024	0.0025
72	0.0049	0.0024	0.0025
73	0.0050	0.0024	0.0025
74	0.0050	0.0024	0.0026
75	0.0050	0.0025	0.0026
76	0.0050	0.0025	0.0026
77	0.0051	0.0025	0.0026
78	0.0051	0.0025	0.0026

79	0.0051	0.0025	0.0026
80	0.0051	0.0025	0.0026
81	0.0052	0.0025	0.0027
82	0.0052	0.0025	0.0027
83	0.0052	0.0026	0.0027
84	0.0053	0.0026	0.0027
85	0.0053	0.0026	0.0027
86	0.0053	0.0026	0.0027
87	0.0054	0.0026	0.0027
88	0.0054	0.0026	0.0028
89	0.0054	0.0026	0.0028
90	0.0054	0.0026	0.0028
91	0.0055	0.0027	0.0028
92	0.0055	0.0027	0.0028
93	0.0055	0.0027	0.0028
94	0.0056	0.0027	0.0028
95	0.0056	0.0027	0.0029
96	0.0056	0.0027	0.0029
97	0.0057	0.0028	0.0029
98	0.0057	0.0028	0.0029
99	0.0057	0.0028	0.0029
100	0.0058	0.0028	0.0030
101	0.0058	0.0028	0.0030
102	0.0058	0.0028	0.0030
103	0.0059	0.0029	0.0030
104	0.0059	0.0029	0.0030
105	0.0060	0.0029	0.0031
106	0.0060	0.0029	0.0031
107	0.0061	0.0030	0.0031
108	0.0061	0.0030	0.0031
109	0.0061	0.0030	0.0031
110	0.0062	0.0030	0.0032
111	0.0062	0.0030	0.0032
112	0.0063	0.0030	0.0032
113	0.0063	0.0031	0.0032
114	0.0063	0.0031	0.0033
115	0.0064	0.0031	0.0033
116	0.0064	0.0031	0.0033
117	0.0065	0.0032	0.0033
118	0.0065	0.0032	0.0034
119	0.0066	0.0032	0.0034
120	0.0066	0.0032	0.0034
121	0.0067	0.0033	0.0034
122	0.0068	0.0033	0.0035
123	0.0068	0.0033	0.0035
124	0.0069	0.0033	0.0035
125	0.0069	0.0034	0.0036
126	0.0070	0.0034	0.0036
127	0.0071	0.0034	0.0036
128	0.0071	0.0035	0.0036
129	0.0072	0.0035	0.0037
130	0.0072	0.0035	0.0037
131	0.0073	0.0036	0.0038
132	0.0074	0.0036	0.0038
133	0.0075	0.0036	0.0038
134	0.0075	0.0037	0.0039
135	0.0076	0.0037	0.0039
136	0.0077	0.0037	0.0039
137	0.0078	0.0038	0.0040
138	0.0078	0.0038	0.0040
139	0.0080	0.0039	0.0041
140	0.0080	0.0039	0.0041
141	0.0081	0.0040	0.0042
142	0.0082	0.0040	0.0042
143	0.0083	0.0041	0.0043
144	0.0084	0.0041	0.0043
145	0.0076	0.0037	0.0039
146	0.0077	0.0038	0.0039
147	0.0078	0.0038	0.0040
148	0.0079	0.0039	0.0041
149	0.0081	0.0039	0.0041
150	0.0081	0.0040	0.0042
151	0.0083	0.0040	0.0043
152	0.0084	0.0041	0.0043
153	0.0086	0.0042	0.0044

154	0.0087	0.0042	0.0044
155	0.0088	0.0043	0.0045
156	0.0089	0.0044	0.0046
157	0.0092	0.0045	0.0047
158	0.0093	0.0045	0.0047
159	0.0095	0.0046	0.0049
160	0.0096	0.0047	0.0049
161	0.0099	0.0048	0.0051
162	0.0100	0.0049	0.0051
163	0.0103	0.0050	0.0053
164	0.0104	0.0051	0.0053
165	0.0107	0.0052	0.0055
166	0.0109	0.0053	0.0056
167	0.0113	0.0055	0.0058
168	0.0114	0.0056	0.0059
169	0.0119	0.0058	0.0061
170	0.0121	0.0059	0.0062
171	0.0126	0.0061	0.0064
172	0.0128	0.0063	0.0066
173	0.0134	0.0065	0.0068
174	0.0136	0.0067	0.0070
175	0.0143	0.0070	0.0073
176	0.0146	0.0071	0.0075
177	0.0154	0.0075	0.0079
178	0.0158	0.0077	0.0081
179	0.0168	0.0082	0.0086
180	0.0173	0.0084	0.0089
181	0.0185	0.0090	0.0095
182	0.0192	0.0094	0.0099
183	0.0209	0.0102	0.0107
184	0.0218	0.0106	0.0112
185	0.0259	0.0126	0.0133
186	0.0274	0.0134	0.0140
187	0.0311	0.0152	0.0159
188	0.0335	0.0163	0.0172
189	0.0404	0.0197	0.0207
190	0.0456	0.0221	0.0235
191	0.0652	0.0221	0.0431
192	0.0896	0.0221	0.0675
193	0.2804	0.0221	0.2584
194	0.0531	0.0221	0.0310
195	0.0365	0.0178	0.0187
196	0.0291	0.0142	0.0149
197	0.0229	0.0112	0.0117
198	0.0200	0.0098	0.0103
199	0.0179	0.0087	0.0092
200	0.0163	0.0079	0.0083
201	0.0150	0.0073	0.0077
202	0.0140	0.0068	0.0072
203	0.0131	0.0064	0.0067
204	0.0123	0.0060	0.0063
205	0.0116	0.0057	0.0060
206	0.0111	0.0054	0.0057
207	0.0106	0.0052	0.0054
208	0.0101	0.0049	0.0052
209	0.0097	0.0047	0.0050
210	0.0094	0.0046	0.0048
211	0.0090	0.0044	0.0046
212	0.0087	0.0043	0.0045
213	0.0085	0.0041	0.0043
214	0.0082	0.0040	0.0042
215	0.0080	0.0039	0.0041
216	0.0078	0.0038	0.0040
217	0.0085	0.0041	0.0043
218	0.0083	0.0040	0.0042
219	0.0081	0.0039	0.0041
220	0.0079	0.0039	0.0040
221	0.0077	0.0038	0.0040
222	0.0076	0.0037	0.0039
223	0.0074	0.0036	0.0038
224	0.0073	0.0036	0.0037
225	0.0072	0.0035	0.0037
226	0.0070	0.0034	0.0036
227	0.0069	0.0034	0.0035
228	0.0068	0.0033	0.0035

229	0.0067	0.0033	0.0034
230	0.0066	0.0032	0.0034
231	0.0065	0.0032	0.0033
232	0.0064	0.0031	0.0033
233	0.0063	0.0031	0.0032
234	0.0062	0.0030	0.0032
235	0.0061	0.0030	0.0031
236	0.0060	0.0029	0.0031
237	0.0059	0.0029	0.0030
238	0.0059	0.0029	0.0030
239	0.0058	0.0028	0.0030
240	0.0057	0.0028	0.0029
241	0.0056	0.0028	0.0029
242	0.0056	0.0027	0.0029
243	0.0055	0.0027	0.0028
244	0.0055	0.0027	0.0028
245	0.0054	0.0026	0.0028
246	0.0053	0.0026	0.0027
247	0.0053	0.0026	0.0027
248	0.0052	0.0025	0.0027
249	0.0052	0.0025	0.0026
250	0.0051	0.0025	0.0026
251	0.0051	0.0025	0.0026
252	0.0050	0.0024	0.0026
253	0.0050	0.0024	0.0025
254	0.0049	0.0024	0.0025
255	0.0049	0.0024	0.0025
256	0.0048	0.0024	0.0025
257	0.0048	0.0023	0.0024
258	0.0047	0.0023	0.0024
259	0.0047	0.0023	0.0024
260	0.0047	0.0023	0.0024
261	0.0046	0.0022	0.0024
262	0.0046	0.0022	0.0023
263	0.0045	0.0022	0.0023
264	0.0045	0.0022	0.0023
265	0.0045	0.0022	0.0023
266	0.0044	0.0022	0.0023
267	0.0044	0.0021	0.0022
268	0.0044	0.0021	0.0022
269	0.0043	0.0021	0.0022
270	0.0043	0.0021	0.0022
271	0.0043	0.0021	0.0022
272	0.0042	0.0021	0.0022
273	0.0042	0.0020	0.0021
274	0.0042	0.0020	0.0021
275	0.0041	0.0020	0.0021
276	0.0041	0.0020	0.0021
277	0.0041	0.0020	0.0021
278	0.0040	0.0020	0.0021
279	0.0040	0.0020	0.0021
280	0.0040	0.0019	0.0020
281	0.0040	0.0019	0.0020
282	0.0039	0.0019	0.0020
283	0.0039	0.0019	0.0020
284	0.0039	0.0019	0.0020
285	0.0039	0.0019	0.0020
286	0.0038	0.0019	0.0020
287	0.0038	0.0019	0.0020
288	0.0038	0.0018	0.0019

Total soil rain loss = 1.13(In)
Total effective rainfall = 1.49(In)
Peak flow rate in flood hydrograph = 30.09(CFS)

++

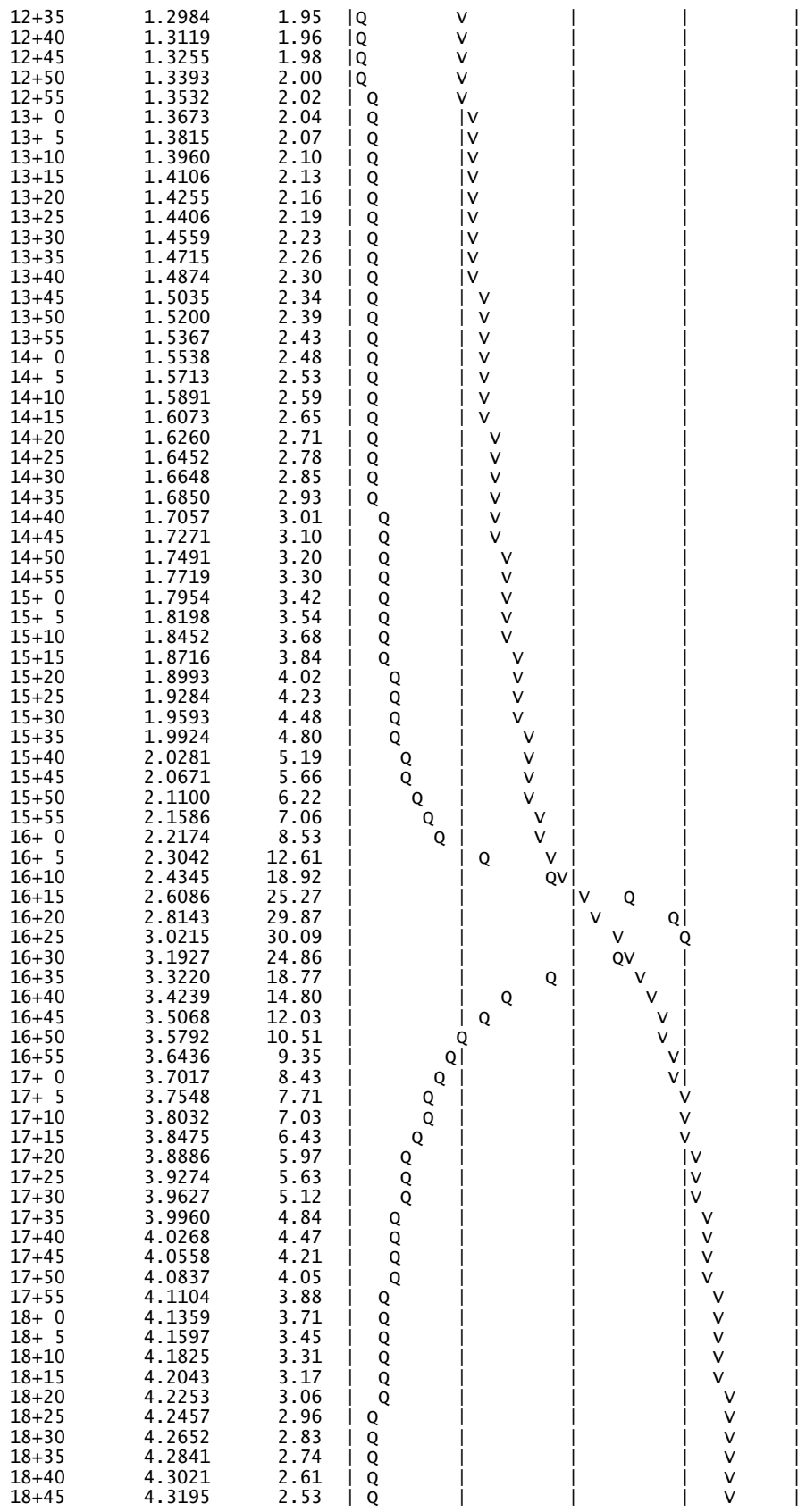
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m) Volume Ac.Ft Q(CFS) 0 10.0 20.0 30.0 40.0

0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0006	0.07	Q	|	|	|	|
0+15	0.0018	0.17	Q	|	|	|	|
0+20	0.0038	0.30	Q	|	|	|	|
0+25	0.0068	0.44	Q	|	|	|	|
0+30	0.0106	0.55	Q	|	|	|	|
0+35	0.0149	0.62	Q	|	|	|	|
0+40	0.0196	0.67	Q	|	|	|	|
0+45	0.0245	0.71	Q	|	|	|	|
0+50	0.0296	0.74	Q	|	|	|	|
0+55	0.0349	0.77	Q	|	|	|	|
1+ 0	0.0403	0.79	Q	|	|	|	|
1+ 5	0.0459	0.81	Q	|	|	|	|
1+10	0.0516	0.83	Q	|	|	|	|
1+15	0.0575	0.85	Q	|	|	|	|
1+20	0.0634	0.86	Q	|	|	|	|
1+25	0.0694	0.88	Q	|	|	|	|
1+30	0.0755	0.89	Q	|	|	|	|
1+35	0.0817	0.90	Q	|	|	|	|
1+40	0.0880	0.91	Q	|	|	|	|
1+45	0.0943	0.92	Q	|	|	|	|
1+50	0.1007	0.93	Q	|	|	|	|
1+55	0.1072	0.94	Q	|	|	|	|
2+ 0	0.1137	0.95	Q	|	|	|	|
2+ 5	0.1203	0.95	Q	|	|	|	|
2+10	0.1269	0.96	QV	|	|	|	|
2+15	0.1335	0.97	QV	|	|	|	|
2+20	0.1403	0.98	QV	|	|	|	|
2+25	0.1470	0.98	QV	|	|	|	|
2+30	0.1538	0.99	QV	|	|	|	|
2+35	0.1607	0.99	QV	|	|	|	|
2+40	0.1676	1.00	|Q	|	|	|	|
2+45	0.1745	1.01	|Q	|	|	|	|
2+50	0.1815	1.01	|Q	|	|	|	|
2+55	0.1885	1.02	|Q	|	|	|	|
3+ 0	0.1955	1.02	|Q	|	|	|	|
3+ 5	0.2026	1.03	|Q	|	|	|	|
3+10	0.2097	1.03	|Q	|	|	|	|
3+15	0.2168	1.04	|Q	|	|	|	|
3+20	0.2240	1.04	|Q	|	|	|	|
3+25	0.2312	1.04	|Q	|	|	|	|
3+30	0.2384	1.05	|Q	|	|	|	|
3+35	0.2456	1.05	|Q	|	|	|	|
3+40	0.2529	1.06	|QV	|	|	|	|
3+45	0.2602	1.06	|QV	|	|	|	|
3+50	0.2675	1.06	|QV	|	|	|	|
3+55	0.2749	1.07	|QV	|	|	|	|
4+ 0	0.2823	1.07	|QV	|	|	|	|
4+ 5	0.2897	1.08	|QV	|	|	|	|
4+10	0.2971	1.08	|QV	|	|	|	|
4+15	0.3046	1.08	|QV	|	|	|	|
4+20	0.3121	1.09	|QV	|	|	|	|
4+25	0.3196	1.09	|QV	|	|	|	|
4+30	0.3272	1.10	|QV	|	|	|	|
4+35	0.3348	1.10	|QV	|	|	|	|
4+40	0.3424	1.11	|QV	|	|	|	|
4+45	0.3501	1.11	|QV	|	|	|	|
4+50	0.3577	1.12	|QV	|	|	|	|
4+55	0.3655	1.12	|QV	|	|	|	|
5+ 0	0.3732	1.13	|Q V	|	|	|	|
5+ 5	0.3810	1.13	|Q V	|	|	|	|
5+10	0.3888	1.13	|Q V	|	|	|	|
5+15	0.3967	1.14	|Q V	|	|	|	|
5+20	0.4045	1.14	|Q V	|	|	|	|
5+25	0.4124	1.15	|Q V	|	|	|	|
5+30	0.4204	1.15	|Q V	|	|	|	|
5+35	0.4284	1.16	|Q V	|	|	|	|
5+40	0.4364	1.16	|Q V	|	|	|	|
5+45	0.4445	1.17	|Q V	|	|	|	|
5+50	0.4526	1.18	|Q V	|	|	|	|
5+55	0.4607	1.18	|Q V	|	|	|	|
6+ 0	0.4689	1.19	|Q V	|	|	|	|
6+ 5	0.4771	1.19	|Q V	|	|	|	|
6+10	0.4853	1.20	|Q V	|	|	|	|
6+15	0.4936	1.20	|Q V	|	|	|	|

6+20	0.5019	1.21	Q V	|	|	|
6+25	0.5103	1.21	Q V	|	|	|
6+30	0.5187	1.22	Q V	|	|	|
6+35	0.5271	1.23	Q V	|	|	|
6+40	0.5356	1.23	Q V	|	|	|
6+45	0.5441	1.24	Q V	|	|	|
6+50	0.5527	1.24	Q V	|	|	|
6+55	0.5613	1.25	Q V	|	|	|
7+ 0	0.5700	1.26	Q V	|	|	|
7+ 5	0.5787	1.26	Q V	|	|	|
7+10	0.5874	1.27	Q V	|	|	|
7+15	0.5962	1.28	Q V	|	|	|
7+20	0.6050	1.28	Q V	|	|	|
7+25	0.6139	1.29	Q V	|	|	|
7+30	0.6228	1.30	Q V	|	|	|
7+35	0.6318	1.30	Q V	|	|	|
7+40	0.6408	1.31	Q V	|	|	|
7+45	0.6499	1.32	Q V	|	|	|
7+50	0.6590	1.33	Q V	|	|	|
7+55	0.6682	1.33	Q V	|	|	|
8+ 0	0.6775	1.34	Q V	|	|	|
8+ 5	0.6867	1.35	Q V	|	|	|
8+10	0.6961	1.36	Q V	|	|	|
8+15	0.7055	1.36	Q V	|	|	|
8+20	0.7149	1.37	Q V	|	|	|
8+25	0.7244	1.38	Q V	|	|	|
8+30	0.7340	1.39	Q V	|	|	|
8+35	0.7436	1.40	Q V	|	|	|
8+40	0.7533	1.40	Q V	|	|	|
8+45	0.7630	1.41	Q V	|	|	|
8+50	0.7728	1.42	Q V	|	|	|
8+55	0.7827	1.43	Q V	|	|	|
9+ 0	0.7926	1.44	Q V	|	|	|
9+ 5	0.8026	1.45	Q V	|	|	|
9+10	0.8126	1.46	Q V	|	|	|
9+15	0.8227	1.47	Q V	|	|	|
9+20	0.8329	1.48	Q V	|	|	|
9+25	0.8432	1.49	Q V	|	|	|
9+30	0.8535	1.50	Q V	|	|	|
9+35	0.8639	1.51	Q V	|	|	|
9+40	0.8744	1.52	Q V	|	|	|
9+45	0.8849	1.53	Q V	|	|	|
9+50	0.8955	1.54	Q V	|	|	|
9+55	0.9062	1.55	Q V	|	|	|
10+ 0	0.9170	1.56	Q V	|	|	|
10+ 5	0.9279	1.58	Q V	|	|	|
10+10	0.9388	1.59	Q V	|	|	|
10+15	0.9498	1.60	Q V	|	|	|
10+20	0.9609	1.61	Q V	|	|	|
10+25	0.9721	1.63	Q V	|	|	|
10+30	0.9834	1.64	Q V	|	|	|
10+35	0.9948	1.65	Q V	|	|	|
10+40	1.0062	1.67	Q V	|	|	|
10+45	1.0178	1.68	Q V	|	|	|
10+50	1.0295	1.69	Q V	|	|	|
10+55	1.0412	1.71	Q V	|	|	|
11+ 0	1.0531	1.72	Q V	|	|	|
11+ 5	1.0651	1.74	Q V	|	|	|
11+10	1.0771	1.75	Q V	|	|	|
11+15	1.0893	1.77	Q V	|	|	|
11+20	1.1016	1.79	Q V	|	|	|
11+25	1.1140	1.80	Q V	|	|	|
11+30	1.1266	1.82	Q V	|	|	|
11+35	1.1392	1.84	Q V	|	|	|
11+40	1.1520	1.86	Q V	|	|	|
11+45	1.1649	1.87	Q V	|	|	|
11+50	1.1780	1.89	Q V	|	|	|
11+55	1.1911	1.91	Q V	|	|	|
12+ 0	1.2045	1.93	Q V	|	|	|
12+ 5	1.2179	1.95	Q V	|	|	|
12+10	1.2314	1.96	Q V	|	|	|
12+15	1.2449	1.96	Q V	|	|	|
12+20	1.2583	1.95	Q V	|	|	|
12+25	1.2717	1.94	Q V	|	|	|
12+30	1.2850	1.94	Q V	|	|	|



```
18+50       4.3365      2.47  | Q       |         |         |   V     |
18+55       4.3530      2.41  | Q       |         |         |    V    |
19+ 0       4.3692      2.34  | Q       |         |         |    V    |
19+ 5       4.3847      2.25  | Q       |         |         |    V    |
19+10       4.3989      2.06  | Q       |         |         |    V    |
19+15       4.4118      1.88  |Q        |         |         |    V    |
19+20       4.4244      1.83  |Q        |         |         |    V    |
19+25       4.4367      1.79  |Q        |         |         |    V    |
19+30       4.4488      1.75  |Q        |         |         |    V    |
19+35       4.4606      1.72  |Q        |         |         |    V    |
19+40       4.4722      1.69  |Q        |         |         |     V   |
19+45       4.4836      1.66  |Q        |         |         |     V   |
19+50       4.4948      1.63  |Q        |         |         |     V   |
19+55       4.5059      1.60  |Q        |         |         |     V   |
20+ 0       4.5167      1.58  |Q        |         |         |     V   |
20+ 5       4.5274      1.55  |Q        |         |         |     V   |
20+10       4.5380      1.53  |Q        |         |         |     V   |
20+15       4.5484      1.51  |Q        |         |         |     V   |
20+20       4.5586      1.49  |Q        |         |         |     V   |
20+25       4.5688      1.47  |Q        |         |         |     V   |
20+30       4.5788      1.45  |Q        |         |         |     V   |
20+35       4.5886      1.43  |Q        |         |         |     V   |
20+40       4.5983      1.41  |Q        |         |         |      V  |
20+45       4.6080      1.40  |Q        |         |         |      V  |
20+50       4.6175      1.38  |Q        |         |         |      V  |
20+55       4.6269      1.36  |Q        |         |         |      V  |
21+ 0       4.6361      1.35  |Q        |         |         |      V  |
21+ 5       4.6453      1.33  |Q        |         |         |      V  |
21+10       4.6544      1.32  |Q        |         |         |      V  |
21+15       4.6634      1.30  |Q        |         |         |      V  |
21+20       4.6723      1.29  |Q        |         |         |      V  |
21+25       4.6810      1.28  |Q        |         |         |      V  |
21+30       4.6897      1.26  |Q        |         |         |      V  |
21+35       4.6983      1.25  |Q        |         |         |      V  |
21+40       4.7069      1.24  |Q        |         |         |      V  |
21+45       4.7153      1.22  |Q        |         |         |      V  |
21+50       4.7236      1.21  |Q        |         |         |       V |
21+55       4.7319      1.20  |Q        |         |         |       V |
22+ 0       4.7401      1.19  |Q        |         |         |       V |
22+ 5       4.7482      1.18  |Q        |         |         |       V |
22+10       4.7563      1.17  |Q        |         |         |       V |
22+15       4.7643      1.16  |Q        |         |         |       V |
22+20       4.7722      1.15  |Q        |         |         |       V |
22+25       4.7800      1.14  |Q        |         |         |       V |
22+30       4.7878      1.13  |Q        |         |         |       V |
22+35       4.7955      1.12  |Q        |         |         |       V |
22+40       4.8031      1.11  |Q        |         |         |       V |
22+45       4.8107      1.10  |Q        |         |         |       V |
22+50       4.8182      1.09  |Q        |         |         |       V |
22+55       4.8256      1.08  |Q        |         |         |       V |
23+ 0       4.8330      1.07  |Q        |         |         |       V |
23+ 5       4.8404      1.07  |Q        |         |         |       V |
23+10       4.8477      1.06  |Q        |         |         |        V|
23+15       4.8549      1.05  |Q        |         |         |        V|
23+20       4.8621      1.04  |Q        |         |         |        V|
23+25       4.8692      1.03  |Q        |         |         |        V|
23+30       4.8763      1.03  |Q        |         |         |        V|
23+35       4.8833      1.02  |Q        |         |         |        V|
23+40       4.8903      1.01  |Q        |         |         |        V|
23+45       4.8972      1.01  |Q        |         |         |        V|
23+50       4.9041      1.00  Q         |         |         |        V|
23+55       4.9109      0.99  Q         |         |         |        V|
24+ 0       4.9177      0.98  Q         |         |         |        V|
24+ 5       4.9243      0.96  Q         |         |         |        V|
24+10       4.9305      0.90  Q         |         |         |        V|
24+15       4.9360      0.80  Q         |         |         |        V|
24+20       4.9406      0.67  Q         |         |         |        V|
24+25       4.9442      0.52  Q         |         |         |        V|
24+30       4.9470      0.41  Q         |         |         |        V|
24+35       4.9493      0.33  Q         |         |         |        V|
24+40       4.9512      0.28  Q         |         |         |        V|
24+45       4.9529      0.24  Q         |         |         |        V|
24+50       4.9544      0.21  Q         |         |         |        V|
24+55       4.9557      0.19  Q         |         |         |        V|
25+ 0       4.9568      0.17  Q         |         |         |        V|
```

```
  25+ 5       4.9578      0.15  Q          |          |          |         V|
  25+10       4.9587      0.13  Q          |          |          |         V|
  25+15       4.9595      0.12  Q          |          |          |         V|
  25+20       4.9602      0.10  Q          |          |          |         V|
  25+25       4.9609      0.09  Q          |          |          |         V|
  25+30       4.9615      0.08  Q          |          |          |         V|
  25+35       4.9620      0.07  Q          |          |          |         V|
  25+40       4.9624      0.07  Q          |          |          |         V|
  25+45       4.9628      0.06  Q          |          |          |         V|
  25+50       4.9632      0.05  Q          |          |          |         V|
  25+55       4.9635      0.05  Q          |          |          |         V|
  26+ 0       4.9638      0.04  Q          |          |          |         V|
  26+ 5       4.9640      0.03  Q          |          |          |         V|
  26+10       4.9642      0.03  Q          |          |          |         V|
  26+15       4.9644      0.03  Q          |          |          |         V|
  26+20       4.9645      0.02  Q          |          |          |         V|
  26+25       4.9647      0.02  Q          |          |          |         V|
  26+30       4.9648      0.02  Q          |          |          |         V|
  26+35       4.9649      0.01  Q          |          |          |         V|
  26+40       4.9650      0.01  Q          |          |          |         V|
  26+45       4.9650      0.01  Q          |          |          |         V|
  26+50       4.9651      0.01  Q          |          |          |         V|
  26+55       4.9651      0.01  Q          |          |          |         V|
  27+ 0       4.9651      0.00  Q          |          |          |         V|
  27+ 5       4.9651      0.00  Q          |          |          |         V|
-------------------------------------------------------------------------
```

UHEX04CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/12/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 4
EXISTING CONDITION, 25-YEAR 24-HOUR
FN: UHEX04CUL25.OUT - ABE

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
25.00	1	0.60
Rainfall data for year 2		
25.00	6	0.70
Rainfall data for year 2		
25.00	24	1.20
Rainfall data for year 100		
25.00	1	1.00
Rainfall data for year 100		
25.00	6	1.90
Rainfall data for year 100		
25.00	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
84.6	84.6	25.00	1.000	0.290	0.930	0.270

Area-averaged adjusted loss rate Fm (In/Hr) = 0.270

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
23.25	0.930	84.6	84.6	1.82	0.477
1.75	0.070	98.0	98.0	0.20	0.912

Area-averaged catchment yield fraction, Y = 0.507
Area-averaged low loss fraction, Yb = 0.493
User entry of time of concentration = 0.460 (hours)
++
Watershed area = 25.00(Ac.)
Catchment Lag time = 0.368 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 22.6449
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.270(In/Hr)
Average low loss rate fraction (Yb) = 0.493 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.281(In)
Computed peak 30-minute rainfall = 0.575(In)
Specified peak 1-hour rainfall = 0.759(In)
Computed peak 3-hour rainfall = 1.141(In)
Specified peak 6-hour rainfall = 1.475(In)
Specified peak 24-hour rainfall = 2.620(In)

Rainfall depth area reduction factors:
Using a total area of 25.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.281(In)
30-minute factor = 0.999 Adjusted rainfall = 0.575(In)
1-hour factor = 0.999 Adjusted rainfall = 0.758(In)
3-hour factor = 1.000 Adjusted rainfall = 1.141(In)
6-hour factor = 1.000 Adjusted rainfall = 1.475(In)
24-hour factor = 1.000 Adjusted rainfall = 2.620(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 302.34 (CFS))	
1	2.049	6.194
2	8.477	19.435
3	19.785	34.191
4	35.087	46.264
5	50.623	46.971
6	61.571	33.102
7	68.622	21.316
8	73.370	14.356
9	76.878	10.608
10	79.814	8.877
11	82.277	7.446
12	84.416	6.468
13	86.277	5.624
14	87.834	4.709
15	89.201	4.133
16	90.506	3.946
17	91.540	3.126
18	92.521	2.966
19	93.306	2.372
20	94.030	2.190
21	94.727	2.106
22	95.406	2.054
23	96.009	1.822
24	96.507	1.508
25	96.983	1.437
26	97.394	1.244
27	97.790	1.198
28	98.118	0.992
29	98.431	0.947
30	98.680	0.753
31	98.907	0.685
32	99.133	0.685
33	99.360	0.685
34	99.586	0.685
35	99.812	0.685
36	100.000	0.567

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2806	0.2806
2	0.3703	0.0897
3	0.4355	0.0652
4	0.4886	0.0531
5	0.5343	0.0456
6	0.5747	0.0404
7	0.6112	0.0365
8	0.6448	0.0335
9	0.6759	0.0311
10	0.7050	0.0291
11	0.7323	0.0274
12	0.7583	0.0259
13	0.7812	0.0229
14	0.8030	0.0218
15	0.8238	0.0208
16	0.8438	0.0200
17	0.8630	0.0192
18	0.8816	0.0185
19	0.8995	0.0179
20	0.9168	0.0173
21	0.9335	0.0168
22	0.9498	0.0163
23	0.9656	0.0158
24	0.9810	0.0154
25	0.9960	0.0150
26	1.0106	0.0146
27	1.0249	0.0143
28	1.0388	0.0139
29	1.0525	0.0136
30	1.0658	0.0133
31	1.0789	0.0131
32	1.0917	0.0128
33	1.1042	0.0126
34	1.1165	0.0123
35	1.1286	0.0121
36	1.1405	0.0119
37	1.1521	0.0116
38	1.1636	0.0114
39	1.1749	0.0113
40	1.1859	0.0111
41	1.1968	0.0109
42	1.2076	0.0107
43	1.2182	0.0106
44	1.2286	0.0104
45	1.2389	0.0103
46	1.2490	0.0101
47	1.2590	0.0100
48	1.2689	0.0099
49	1.2786	0.0097
50	1.2882	0.0096
51	1.2977	0.0095
52	1.3071	0.0094
53	1.3163	0.0093
54	1.3255	0.0092
55	1.3345	0.0090
56	1.3435	0.0089
57	1.3523	0.0088
58	1.3611	0.0087
59	1.3697	0.0087
60	1.3783	0.0086
61	1.3867	0.0085
62	1.3951	0.0084
63	1.4034	0.0083
64	1.4116	0.0082
65	1.4198	0.0081
66	1.4278	0.0081
67	1.4358	0.0080
68	1.4437	0.0079
69	1.4516	0.0078
70	1.4593	0.0078
71	1.4670	0.0077
72	1.4746	0.0076

73	1.4831	0.0085
74	1.4915	0.0084
75	1.4998	0.0083
76	1.5081	0.0083
77	1.5163	0.0082
78	1.5244	0.0081
79	1.5325	0.0081
80	1.5405	0.0080
81	1.5485	0.0080
82	1.5564	0.0079
83	1.5642	0.0078
84	1.5720	0.0078
85	1.5797	0.0077
86	1.5874	0.0077
87	1.5950	0.0076
88	1.6026	0.0076
89	1.6101	0.0075
90	1.6176	0.0075
91	1.6250	0.0074
92	1.6324	0.0074
93	1.6398	0.0073
94	1.6470	0.0073
95	1.6543	0.0072
96	1.6615	0.0072
97	1.6686	0.0072
98	1.6758	0.0071
99	1.6828	0.0071
100	1.6899	0.0070
101	1.6968	0.0070
102	1.7038	0.0069
103	1.7107	0.0069
104	1.7176	0.0069
105	1.7244	0.0068
106	1.7312	0.0068
107	1.7379	0.0068
108	1.7447	0.0067
109	1.7513	0.0067
110	1.7580	0.0066
111	1.7646	0.0066
112	1.7712	0.0066
113	1.7777	0.0065
114	1.7842	0.0065
115	1.7907	0.0065
116	1.7971	0.0064
117	1.8035	0.0064
118	1.8099	0.0064
119	1.8163	0.0063
120	1.8226	0.0063
121	1.8289	0.0063
122	1.8351	0.0063
123	1.8413	0.0062
124	1.8475	0.0062
125	1.8537	0.0062
126	1.8598	0.0061
127	1.8659	0.0061
128	1.8720	0.0061
129	1.8781	0.0061
130	1.8841	0.0060
131	1.8901	0.0060
132	1.8960	0.0060
133	1.9020	0.0059
134	1.9079	0.0059
135	1.9138	0.0059
136	1.9197	0.0059
137	1.9255	0.0058
138	1.9313	0.0058
139	1.9371	0.0058
140	1.9429	0.0058
141	1.9486	0.0057
142	1.9543	0.0057
143	1.9600	0.0057
144	1.9657	0.0057
145	1.9714	0.0056
146	1.9770	0.0056
147	1.9826	0.0056

148	1.9882	0.0056
149	1.9937	0.0056
150	1.9993	0.0055
151	2.0048	0.0055
152	2.0103	0.0055
153	2.0158	0.0055
154	2.0212	0.0055
155	2.0266	0.0054
156	2.0321	0.0054
157	2.0374	0.0054
158	2.0428	0.0054
159	2.0482	0.0054
160	2.0535	0.0053
161	2.0588	0.0053
162	2.0641	0.0053
163	2.0694	0.0053
164	2.0746	0.0053
165	2.0799	0.0052
166	2.0851	0.0052
167	2.0903	0.0052
168	2.0955	0.0052
169	2.1006	0.0052
170	2.1058	0.0051
171	2.1109	0.0051
172	2.1160	0.0051
173	2.1211	0.0051
174	2.1262	0.0051
175	2.1312	0.0051
176	2.1363	0.0050
177	2.1413	0.0050
178	2.1463	0.0050
179	2.1513	0.0050
180	2.1563	0.0050
181	2.1612	0.0050
182	2.1662	0.0049
183	2.1711	0.0049
184	2.1760	0.0049
185	2.1809	0.0049
186	2.1858	0.0049
187	2.1907	0.0049
188	2.1955	0.0049
189	2.2004	0.0048
190	2.2052	0.0048
191	2.2100	0.0048
192	2.2148	0.0048
193	2.2196	0.0048
194	2.2243	0.0048
195	2.2291	0.0047
196	2.2338	0.0047
197	2.2385	0.0047
198	2.2432	0.0047
199	2.2479	0.0047
200	2.2526	0.0047
201	2.2573	0.0047
202	2.2619	0.0047
203	2.2665	0.0046
204	2.2712	0.0046
205	2.2758	0.0046
206	2.2804	0.0046
207	2.2850	0.0046
208	2.2895	0.0046
209	2.2941	0.0046
210	2.2986	0.0045
211	2.3032	0.0045
212	2.3077	0.0045
213	2.3122	0.0045
214	2.3167	0.0045
215	2.3212	0.0045
216	2.3256	0.0045
217	2.3301	0.0045
218	2.3345	0.0044
219	2.3390	0.0044
220	2.3434	0.0044
221	2.3478	0.0044
222	2.3522	0.0044

223	2.3566	0.0044
224	2.3610	0.0044
225	2.3653	0.0044
226	2.3697	0.0044
227	2.3740	0.0043
228	2.3784	0.0043
229	2.3827	0.0043
230	2.3870	0.0043
231	2.3913	0.0043
232	2.3956	0.0043
233	2.3999	0.0043
234	2.4041	0.0043
235	2.4084	0.0043
236	2.4126	0.0042
237	2.4169	0.0042
238	2.4211	0.0042
239	2.4253	0.0042
240	2.4295	0.0042
241	2.4337	0.0042
242	2.4379	0.0042
243	2.4420	0.0042
244	2.4462	0.0042
245	2.4504	0.0042
246	2.4545	0.0041
247	2.4586	0.0041
248	2.4628	0.0041
249	2.4669	0.0041
250	2.4710	0.0041
251	2.4751	0.0041
252	2.4792	0.0041
253	2.4832	0.0041
254	2.4873	0.0041
255	2.4914	0.0041
256	2.4954	0.0040
257	2.4994	0.0040
258	2.5035	0.0040
259	2.5075	0.0040
260	2.5115	0.0040
261	2.5155	0.0040
262	2.5195	0.0040
263	2.5235	0.0040
264	2.5274	0.0040
265	2.5314	0.0040
266	2.5354	0.0040
267	2.5393	0.0039
268	2.5433	0.0039
269	2.5472	0.0039
270	2.5511	0.0039
271	2.5550	0.0039
272	2.5589	0.0039
273	2.5628	0.0039
274	2.5667	0.0039
275	2.5706	0.0039
276	2.5745	0.0039
277	2.5783	0.0039
278	2.5822	0.0039
279	2.5860	0.0038
280	2.5899	0.0038
281	2.5937	0.0038
282	2.5975	0.0038
283	2.6013	0.0038
284	2.6052	0.0038
285	2.6090	0.0038
286	2.6127	0.0038
287	2.6165	0.0038
288	2.6203	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0038	0.0019	0.0019
2	0.0038	0.0019	0.0019
3	0.0038	0.0019	0.0019
4	0.0038	0.0019	0.0019

5	0.0038	0.0019	0.0019
6	0.0038	0.0019	0.0019
7	0.0038	0.0019	0.0020
8	0.0039	0.0019	0.0020
9	0.0039	0.0019	0.0020
10	0.0039	0.0019	0.0020
11	0.0039	0.0019	0.0020
12	0.0039	0.0019	0.0020
13	0.0039	0.0019	0.0020
14	0.0039	0.0019	0.0020
15	0.0039	0.0019	0.0020
16	0.0040	0.0020	0.0020
17	0.0040	0.0020	0.0020
18	0.0040	0.0020	0.0020
19	0.0040	0.0020	0.0020
20	0.0040	0.0020	0.0020
21	0.0040	0.0020	0.0020
22	0.0040	0.0020	0.0020
23	0.0041	0.0020	0.0021
24	0.0041	0.0020	0.0021
25	0.0041	0.0020	0.0021
26	0.0041	0.0020	0.0021
27	0.0041	0.0020	0.0021
28	0.0041	0.0020	0.0021
29	0.0041	0.0020	0.0021
30	0.0042	0.0020	0.0021
31	0.0042	0.0021	0.0021
32	0.0042	0.0021	0.0021
33	0.0042	0.0021	0.0021
34	0.0042	0.0021	0.0021
35	0.0042	0.0021	0.0021
36	0.0042	0.0021	0.0022
37	0.0043	0.0021	0.0022
38	0.0043	0.0021	0.0022
39	0.0043	0.0021	0.0022
40	0.0043	0.0021	0.0022
41	0.0043	0.0021	0.0022
42	0.0043	0.0021	0.0022
43	0.0044	0.0022	0.0022
44	0.0044	0.0022	0.0022
45	0.0044	0.0022	0.0022
46	0.0044	0.0022	0.0022
47	0.0044	0.0022	0.0022
48	0.0044	0.0022	0.0023
49	0.0045	0.0022	0.0023
50	0.0045	0.0022	0.0023
51	0.0045	0.0022	0.0023
52	0.0045	0.0022	0.0023
53	0.0045	0.0022	0.0023
54	0.0046	0.0022	0.0023
55	0.0046	0.0023	0.0023
56	0.0046	0.0023	0.0023
57	0.0046	0.0023	0.0023
58	0.0046	0.0023	0.0024
59	0.0047	0.0023	0.0024
60	0.0047	0.0023	0.0024
61	0.0047	0.0023	0.0024
62	0.0047	0.0023	0.0024
63	0.0047	0.0023	0.0024
64	0.0048	0.0023	0.0024
65	0.0048	0.0024	0.0024
66	0.0048	0.0024	0.0024
67	0.0048	0.0024	0.0025
68	0.0049	0.0024	0.0025
69	0.0049	0.0024	0.0025
70	0.0049	0.0024	0.0025
71	0.0049	0.0024	0.0025
72	0.0049	0.0024	0.0025
73	0.0050	0.0025	0.0025
74	0.0050	0.0025	0.0025
75	0.0050	0.0025	0.0025
76	0.0050	0.0025	0.0026
77	0.0051	0.0025	0.0026
78	0.0051	0.0025	0.0026
79	0.0051	0.0025	0.0026

80	0.0051	0.0025	0.0026
81	0.0052	0.0026	0.0026
82	0.0052	0.0026	0.0026
83	0.0052	0.0026	0.0027
84	0.0053	0.0026	0.0027
85	0.0053	0.0026	0.0027
86	0.0053	0.0026	0.0027
87	0.0054	0.0026	0.0027
88	0.0054	0.0026	0.0027
89	0.0054	0.0027	0.0027
90	0.0054	0.0027	0.0028
91	0.0055	0.0027	0.0028
92	0.0055	0.0027	0.0028
93	0.0055	0.0027	0.0028
94	0.0056	0.0027	0.0028
95	0.0056	0.0028	0.0028
96	0.0056	0.0028	0.0029
97	0.0057	0.0028	0.0029
98	0.0057	0.0028	0.0029
99	0.0057	0.0028	0.0029
100	0.0058	0.0028	0.0029
101	0.0058	0.0029	0.0029
102	0.0058	0.0029	0.0030
103	0.0059	0.0029	0.0030
104	0.0059	0.0029	0.0030
105	0.0060	0.0029	0.0030
106	0.0060	0.0030	0.0030
107	0.0061	0.0030	0.0031
108	0.0061	0.0030	0.0031
109	0.0061	0.0030	0.0031
110	0.0062	0.0030	0.0031
111	0.0062	0.0031	0.0032
112	0.0063	0.0031	0.0032
113	0.0063	0.0031	0.0032
114	0.0063	0.0031	0.0032
115	0.0064	0.0032	0.0032
116	0.0064	0.0032	0.0033
117	0.0065	0.0032	0.0033
118	0.0065	0.0032	0.0033
119	0.0066	0.0033	0.0034
120	0.0066	0.0033	0.0034
121	0.0067	0.0033	0.0034
122	0.0068	0.0033	0.0034
123	0.0068	0.0034	0.0035
124	0.0069	0.0034	0.0035
125	0.0069	0.0034	0.0035
126	0.0070	0.0034	0.0035
127	0.0071	0.0035	0.0036
128	0.0071	0.0035	0.0036
129	0.0072	0.0035	0.0037
130	0.0072	0.0036	0.0037
131	0.0073	0.0036	0.0037
132	0.0074	0.0036	0.0037
133	0.0075	0.0037	0.0038
134	0.0075	0.0037	0.0038
135	0.0076	0.0038	0.0039
136	0.0077	0.0038	0.0039
137	0.0078	0.0038	0.0039
138	0.0078	0.0039	0.0040
139	0.0080	0.0039	0.0040
140	0.0080	0.0040	0.0041
141	0.0081	0.0040	0.0041
142	0.0082	0.0040	0.0042
143	0.0083	0.0041	0.0042
144	0.0084	0.0041	0.0043
145	0.0076	0.0038	0.0039
146	0.0077	0.0038	0.0039
147	0.0078	0.0039	0.0040
148	0.0079	0.0039	0.0040
149	0.0081	0.0040	0.0041
150	0.0081	0.0040	0.0041
151	0.0083	0.0041	0.0042
152	0.0084	0.0041	0.0043
153	0.0086	0.0042	0.0043
154	0.0087	0.0043	0.0044

155	0.0088	0.0044	0.0045
156	0.0089	0.0044	0.0045
157	0.0092	0.0045	0.0046
158	0.0093	0.0046	0.0047
159	0.0095	0.0047	0.0048
160	0.0096	0.0047	0.0049
161	0.0099	0.0049	0.0050
162	0.0100	0.0049	0.0051
163	0.0103	0.0051	0.0052
164	0.0104	0.0051	0.0053
165	0.0107	0.0053	0.0054
166	0.0109	0.0054	0.0055
167	0.0113	0.0055	0.0057
168	0.0114	0.0056	0.0058
169	0.0119	0.0059	0.0060
170	0.0121	0.0060	0.0061
171	0.0126	0.0062	0.0064
172	0.0128	0.0063	0.0065
173	0.0133	0.0066	0.0068
174	0.0136	0.0067	0.0069
175	0.0143	0.0070	0.0072
176	0.0146	0.0072	0.0074
177	0.0154	0.0076	0.0078
178	0.0158	0.0078	0.0080
179	0.0168	0.0083	0.0085
180	0.0173	0.0085	0.0088
181	0.0185	0.0091	0.0094
182	0.0192	0.0095	0.0097
183	0.0208	0.0103	0.0106
184	0.0218	0.0107	0.0111
185	0.0259	0.0128	0.0132
186	0.0274	0.0135	0.0139
187	0.0311	0.0153	0.0158
188	0.0335	0.0165	0.0170
189	0.0404	0.0199	0.0205
190	0.0456	0.0225	0.0231
191	0.0652	0.0225	0.0427
192	0.0897	0.0225	0.0672
193	0.2806	0.0225	0.2582
194	0.0531	0.0225	0.0306
195	0.0365	0.0180	0.0185
196	0.0291	0.0143	0.0148
197	0.0229	0.0113	0.0116
198	0.0200	0.0099	0.0101
199	0.0179	0.0088	0.0091
200	0.0163	0.0080	0.0083
201	0.0150	0.0074	0.0076
202	0.0139	0.0069	0.0071
203	0.0131	0.0064	0.0066
204	0.0123	0.0061	0.0062
205	0.0116	0.0057	0.0059
206	0.0111	0.0055	0.0056
207	0.0106	0.0052	0.0054
208	0.0101	0.0050	0.0051
209	0.0097	0.0048	0.0049
210	0.0094	0.0046	0.0048
211	0.0090	0.0045	0.0046
212	0.0087	0.0043	0.0044
213	0.0085	0.0042	0.0043
214	0.0082	0.0041	0.0042
215	0.0080	0.0039	0.0040
216	0.0078	0.0038	0.0039
217	0.0085	0.0042	0.0043
218	0.0083	0.0041	0.0042
219	0.0081	0.0040	0.0041
220	0.0079	0.0039	0.0040
221	0.0077	0.0038	0.0039
222	0.0076	0.0037	0.0038
223	0.0074	0.0037	0.0038
224	0.0073	0.0036	0.0037
225	0.0072	0.0035	0.0036
226	0.0070	0.0035	0.0036
227	0.0069	0.0034	0.0035
228	0.0068	0.0033	0.0034
229	0.0067	0.0033	0.0034

230	0.0066	0.0032	0.0033
231	0.0065	0.0032	0.0033
232	0.0064	0.0031	0.0032
233	0.0063	0.0031	0.0032
234	0.0062	0.0031	0.0031
235	0.0061	0.0030	0.0031
236	0.0060	0.0030	0.0031
237	0.0059	0.0029	0.0030
238	0.0059	0.0029	0.0030
239	0.0058	0.0029	0.0029
240	0.0057	0.0028	0.0029
241	0.0056	0.0028	0.0029
242	0.0056	0.0028	0.0028
243	0.0055	0.0027	0.0028
244	0.0055	0.0027	0.0028
245	0.0054	0.0027	0.0027
246	0.0053	0.0026	0.0027
247	0.0053	0.0026	0.0027
248	0.0052	0.0026	0.0026
249	0.0052	0.0025	0.0026
250	0.0051	0.0025	0.0026
251	0.0051	0.0025	0.0026
252	0.0050	0.0025	0.0025
253	0.0050	0.0024	0.0025
254	0.0049	0.0024	0.0025
255	0.0049	0.0024	0.0025
256	0.0048	0.0024	0.0024
257	0.0048	0.0024	0.0024
258	0.0047	0.0023	0.0024
259	0.0047	0.0023	0.0024
260	0.0047	0.0023	0.0024
261	0.0046	0.0023	0.0023
262	0.0046	0.0023	0.0023
263	0.0045	0.0022	0.0023
264	0.0045	0.0022	0.0023
265	0.0045	0.0022	0.0023
266	0.0044	0.0022	0.0022
267	0.0044	0.0022	0.0022
268	0.0044	0.0021	0.0022
269	0.0043	0.0021	0.0022
270	0.0043	0.0021	0.0022
271	0.0043	0.0021	0.0022
272	0.0042	0.0021	0.0021
273	0.0042	0.0021	0.0021
274	0.0042	0.0021	0.0021
275	0.0041	0.0020	0.0021
276	0.0041	0.0020	0.0021
277	0.0041	0.0020	0.0021
278	0.0040	0.0020	0.0021
279	0.0040	0.0020	0.0020
280	0.0040	0.0020	0.0020
281	0.0040	0.0020	0.0020
282	0.0039	0.0019	0.0020
283	0.0039	0.0019	0.0020
284	0.0039	0.0019	0.0020
285	0.0039	0.0019	0.0020
286	0.0038	0.0019	0.0019
287	0.0038	0.0019	0.0019
288	0.0038	0.0019	0.0019

Total soil rain loss = 1.14(In)
Total effective rainfall = 1.48(In)
Peak flow rate in flood hydrograph = 19.70(CFS)

++

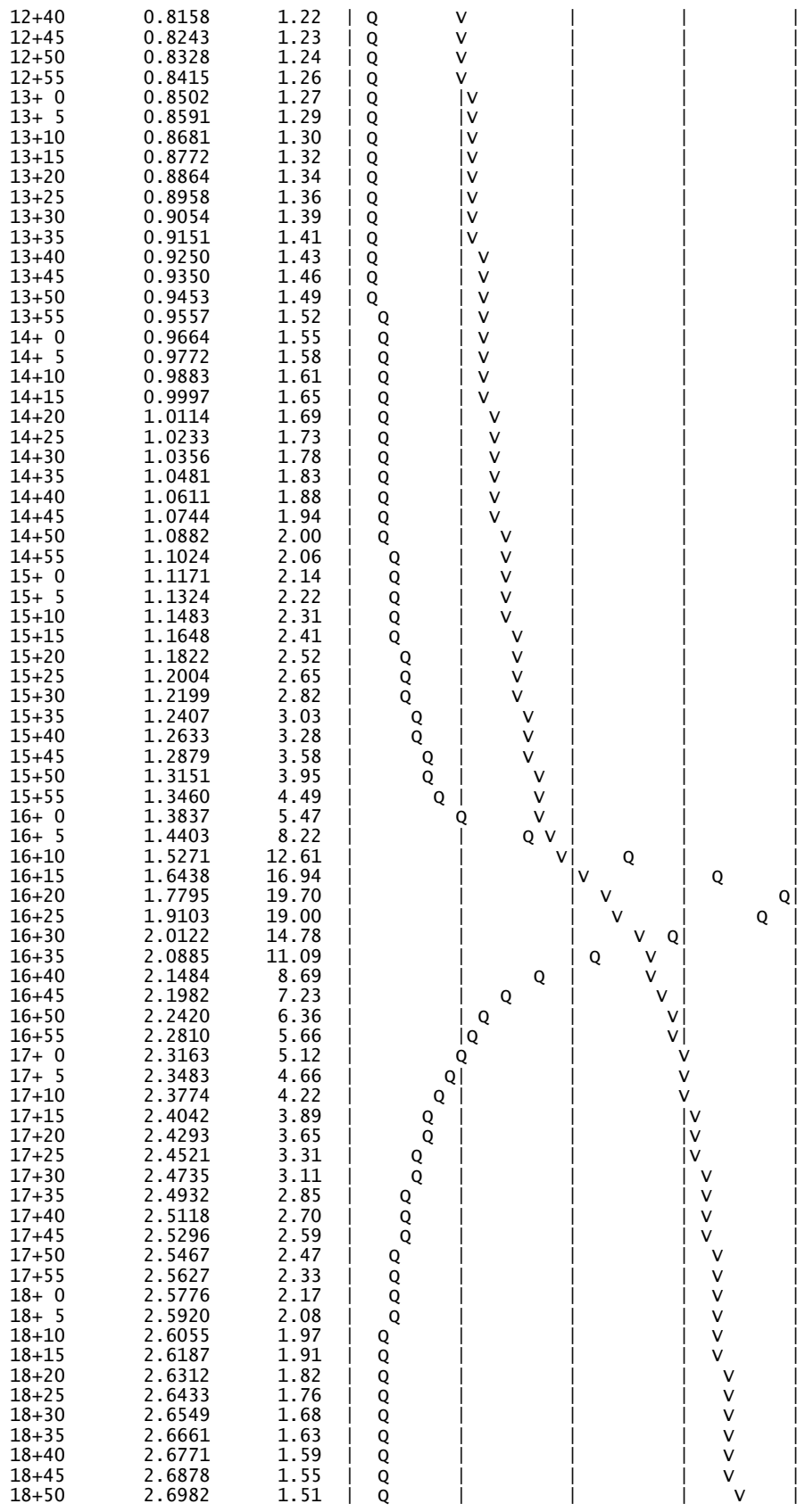
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0001	0.01	Q	|	|	|	|

```
0+10       0.0004      0.05  Q          |          |          |          |
0+15       0.0012      0.11  Q          |          |          |          |
0+20       0.0026      0.20  Q          |          |          |          |
0+25       0.0046      0.29  Q          |          |          |          |
0+30       0.0071      0.36  Q          |          |          |          |
0+35       0.0099      0.40  Q          |          |          |          |
0+40       0.0128      0.43  Q          |          |          |          |
0+45       0.0159      0.45  Q          |          |          |          |
0+50       0.0192      0.47  Q          |          |          |          |
0+55       0.0225      0.48  Q          |          |          |          |
1+ 0       0.0259      0.50  Q          |          |          |          |
1+ 5       0.0294      0.51  VQ         |          |          |          |
1+10       0.0330      0.52  VQ         |          |          |          |
1+15       0.0367      0.53  VQ         |          |          |          |
1+20       0.0404      0.54  VQ         |          |          |          |
1+25       0.0442      0.55  VQ         |          |          |          |
1+30       0.0480      0.56  VQ         |          |          |          |
1+35       0.0519      0.56  VQ         |          |          |          |
1+40       0.0558      0.57  VQ         |          |          |          |
1+45       0.0598      0.57  VQ         |          |          |          |
1+50       0.0638      0.58  VQ         |          |          |          |
1+55       0.0678      0.59  VQ         |          |          |          |
2+ 0       0.0719      0.59  VQ         |          |          |          |
2+ 5       0.0759      0.59  VQ         |          |          |          |
2+10       0.0801      0.60  |Q         |          |          |          |
2+15       0.0842      0.60  |Q         |          |          |          |
2+20       0.0884      0.61  |Q         |          |          |          |
2+25       0.0926      0.61  |Q         |          |          |          |
2+30       0.0969      0.62  |Q         |          |          |          |
2+35       0.1011      0.62  |Q         |          |          |          |
2+40       0.1054      0.62  |Q         |          |          |          |
2+45       0.1097      0.63  |Q         |          |          |          |
2+50       0.1140      0.63  |Q         |          |          |          |
2+55       0.1184      0.63  |Q         |          |          |          |
3+ 0       0.1228      0.64  |Q         |          |          |          |
3+ 5       0.1272      0.64  |Q         |          |          |          |
3+10       0.1316      0.64  |Q         |          |          |          |
3+15       0.1360      0.64  |Q         |          |          |          |
3+20       0.1405      0.65  |Q         |          |          |          |
3+25       0.1449      0.65  |Q         |          |          |          |
3+30       0.1494      0.65  |Q         |          |          |          |
3+35       0.1539      0.65  |Q         |          |          |          |
3+40       0.1584      0.65  |QV        |          |          |          |
3+45       0.1629      0.66  |QV        |          |          |          |
3+50       0.1675      0.66  |QV        |          |          |          |
3+55       0.1720      0.66  |QV        |          |          |          |
4+ 0       0.1766      0.67  |QV        |          |          |          |
4+ 5       0.1812      0.67  |QV        |          |          |          |
4+10       0.1858      0.67  |QV        |          |          |          |
4+15       0.1905      0.67  |QV        |          |          |          |
4+20       0.1951      0.68  |QV        |          |          |          |
4+25       0.1998      0.68  |QV        |          |          |          |
4+30       0.2045      0.68  |QV        |          |          |          |
4+35       0.2092      0.68  |QV        |          |          |          |
4+40       0.2139      0.69  |QV        |          |          |          |
4+45       0.2187      0.69  |QV        |          |          |          |
4+50       0.2234      0.69  |QV        |          |          |          |
4+55       0.2282      0.70  |QV        |          |          |          |
5+ 0       0.2330      0.70  |Q V       |          |          |          |
5+ 5       0.2379      0.70  |Q V       |          |          |          |
5+10       0.2427      0.70  |Q V       |          |          |          |
5+15       0.2476      0.71  |Q V       |          |          |          |
5+20       0.2525      0.71  |Q V       |          |          |          |
5+25       0.2574      0.71  |Q V       |          |          |          |
5+30       0.2623      0.72  |Q V       |          |          |          |
5+35       0.2673      0.72  |Q V       |          |          |          |
5+40       0.2722      0.72  |Q V       |          |          |          |
5+45       0.2772      0.73  |Q V       |          |          |          |
5+50       0.2823      0.73  |Q V       |          |          |          |
5+55       0.2873      0.73  |Q V       |          |          |          |
6+ 0       0.2924      0.74  |Q V       |          |          |          |
6+ 5       0.2975      0.74  |Q V       |          |          |          |
6+10       0.3026      0.74  |Q V       |          |          |          |
6+15       0.3077      0.75  |Q V       |          |          |          |
6+20       0.3129      0.75  |Q  V      |          |          |          |
```

6+25	0.3181	0.75	Q V			
6+30	0.3233	0.76	Q V			
6+35	0.3285	0.76	Q V			
6+40	0.3338	0.76	Q V			
6+45	0.3391	0.77	Q V			
6+50	0.3444	0.77	Q V			
6+55	0.3497	0.78	Q V			
7+ 0	0.3551	0.78	Q V			
7+ 5	0.3605	0.78	Q V			
7+10	0.3659	0.79	Q V			
7+15	0.3714	0.79	Q V			
7+20	0.3769	0.80	Q V			
7+25	0.3824	0.80	Q V			
7+30	0.3879	0.80	Q V			
7+35	0.3935	0.81	Q V			
7+40	0.3991	0.81	Q V			
7+45	0.4047	0.82	Q V			
7+50	0.4104	0.82	Q V			
7+55	0.4161	0.83	Q V			
8+ 0	0.4218	0.83	Q V			
8+ 5	0.4276	0.84	Q V			
8+10	0.4334	0.84	Q V			
8+15	0.4392	0.85	Q V			
8+20	0.4451	0.85	Q V			
8+25	0.4510	0.86	Q V			
8+30	0.4569	0.86	Q V			
8+35	0.4629	0.87	Q V			
8+40	0.4689	0.87	Q V			
8+45	0.4749	0.88	Q V			
8+50	0.4810	0.88	Q V			
8+55	0.4871	0.89	Q V			
9+ 0	0.4933	0.89	Q V			
9+ 5	0.4995	0.90	Q V			
9+10	0.5057	0.91	Q V			
9+15	0.5120	0.91	Q V			
9+20	0.5183	0.92	Q V			
9+25	0.5247	0.92	Q V			
9+30	0.5311	0.93	Q V			
9+35	0.5376	0.94	Q V			
9+40	0.5441	0.94	Q V			
9+45	0.5506	0.95	Q V			
9+50	0.5572	0.96	Q V			
9+55	0.5639	0.96	Q V			
10+ 0	0.5706	0.97	Q V			
10+ 5	0.5773	0.98	Q V			
10+10	0.5841	0.99	Q V			
10+15	0.5909	0.99	Q V			
10+20	0.5978	1.00	Q V			
10+25	0.6048	1.01	Q V			
10+30	0.6118	1.02	Q V			
10+35	0.6189	1.03	Q V			
10+40	0.6260	1.03	Q V			
10+45	0.6332	1.04	Q V			
10+50	0.6404	1.05	Q V			
10+55	0.6477	1.06	Q V			
11+ 0	0.6551	1.07	Q V			
11+ 5	0.6625	1.08	Q V			
11+10	0.6700	1.09	Q V			
11+15	0.6776	1.10	Q V			
11+20	0.6853	1.11	Q V			
11+25	0.6930	1.12	Q V			
11+30	0.7008	1.13	Q V			
11+35	0.7086	1.14	Q V			
11+40	0.7166	1.15	Q V			
11+45	0.7246	1.17	Q V			
11+50	0.7327	1.18	Q V			
11+55	0.7409	1.19	Q V			
12+ 0	0.7492	1.20	Q V			
12+ 5	0.7575	1.21	Q V			
12+10	0.7659	1.22	Q V			
12+15	0.7743	1.22	Q V			
12+20	0.7826	1.21	Q V			
12+25	0.7909	1.20	Q V			
12+30	0.7992	1.20	Q V			
12+35	0.8075	1.21	Q V			



18+55	2.7082	1.46	Q				V
19+ 0	2.7177	1.37	Q				V
19+ 5	2.7260	1.20	Q				V
19+10	2.7340	1.17	Q				V
19+15	2.7419	1.14	Q				V
19+20	2.7495	1.11	Q				V
19+25	2.7571	1.09	Q				V
19+30	2.7644	1.07	Q				V
19+35	2.7717	1.05	Q				V
19+40	2.7788	1.03	Q				V
19+45	2.7858	1.02	Q				V
19+50	2.7927	1.00	Q				V
19+55	2.7995	0.98	Q				V
20+ 0	2.8062	0.97	Q				V
20+ 5	2.8127	0.96	Q				V
20+10	2.8192	0.94	Q				V
20+15	2.8256	0.93	Q				V
20+20	2.8319	0.92	Q				V
20+25	2.8382	0.90	Q				V
20+30	2.8443	0.89	Q				V
20+35	2.8504	0.88	Q				V
20+40	2.8564	0.87	Q				V
20+45	2.8623	0.86	Q				V
20+50	2.8682	0.85	Q				V
20+55	2.8739	0.84	Q				V
21+ 0	2.8797	0.83	Q				V
21+ 5	2.8853	0.82	Q				V
21+10	2.8909	0.81	Q				V
21+15	2.8964	0.80	Q				V
21+20	2.9019	0.79	Q				V
21+25	2.9073	0.79	Q				V
21+30	2.9127	0.78	Q				V
21+35	2.9180	0.77	Q				V
21+40	2.9232	0.76	Q				V
21+45	2.9284	0.76	Q				V
21+50	2.9336	0.75	Q				V
21+55	2.9387	0.74	Q				V
22+ 0	2.9438	0.73	Q				V
22+ 5	2.9488	0.73	Q				V
22+10	2.9537	0.72	Q				V
22+15	2.9586	0.71	Q				V
22+20	2.9635	0.71	Q				V
22+25	2.9684	0.70	Q				V
22+30	2.9732	0.70	Q				V
22+35	2.9779	0.69	Q				V
22+40	2.9826	0.68	Q				V
22+45	2.9873	0.68	Q				V
22+50	2.9919	0.67	Q				V
22+55	2.9965	0.67	Q				V
23+ 0	3.0011	0.66	Q				V
23+ 5	3.0056	0.66	Q				V
23+10	3.0101	0.65	Q				V
23+15	3.0146	0.65	Q				V
23+20	3.0190	0.64	Q				V
23+25	3.0234	0.64	Q				V
23+30	3.0278	0.63	Q				V
23+35	3.0321	0.63	Q				V
23+40	3.0364	0.63	Q				V
23+45	3.0407	0.62	Q				V
23+50	3.0449	0.62	Q				V
23+55	3.0492	0.61	Q				V
24+ 0	3.0534	0.61	Q				V
24+ 5	3.0574	0.59	Q				V
24+10	3.0612	0.55	Q				V
24+15	3.0646	0.48	Q				V
24+20	3.0672	0.39	Q				V
24+25	3.0693	0.30	Q				V
24+30	3.0709	0.23	Q				V
24+35	3.0722	0.19	Q				V
24+40	3.0733	0.16	Q				V
24+45	3.0743	0.14	Q				V
24+50	3.0752	0.12	Q				V
24+55	3.0759	0.11	Q				V
25+ 0	3.0766	0.09	Q				V
25+ 5	3.0771	0.08	Q				V

25+10	3.0776	0.07	Q	|	|	|	V|
25+15	3.0781	0.07	Q	|	|	|	V|
25+20	3.0785	0.06	Q	|	|	|	V|
25+25	3.0788	0.05	Q	|	|	|	V|
25+30	3.0792	0.05	Q	|	|	|	V|
25+35	3.0794	0.04	Q	|	|	|	V|
25+40	3.0797	0.04	Q	|	|	|	V|
25+45	3.0799	0.03	Q	|	|	|	V|
25+50	3.0801	0.03	Q	|	|	|	V|
25+55	3.0803	0.02	Q	|	|	|	V|
26+ 0	3.0804	0.02	Q	|	|	|	V|
26+ 5	3.0805	0.02	Q	|	|	|	V|
26+10	3.0806	0.02	Q	|	|	|	V|
26+15	3.0807	0.01	Q	|	|	|	V|
26+20	3.0808	0.01	Q	|	|	|	V|
26+25	3.0809	0.01	Q	|	|	|	V|
26+30	3.0809	0.01	Q	|	|	|	V|
26+35	3.0810	0.01	Q	|	|	|	V|
26+40	3.0810	0.01	Q	|	|	|	V|
26+45	3.0810	0.00	Q	|	|	|	V|
26+50	3.0810	0.00	Q	|	|	|	V|
26+55	3.0810	0.00	Q	|	|	|	V|

UHEX05CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/18/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 5
EXISTING CONDITION, 25-YEAR 24-HOUR
FN: UHEX05CUL25.OUT - ABE

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
96.30	1	0.60
Rainfall data for year 2		
96.30	6	0.70
Rainfall data for year 2		
96.30	24	1.20
Rainfall data for year 100		
96.30	1	1.00
Rainfall data for year 100		
96.30	6	1.90
Rainfall data for year 100		
96.30	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
86.0	86.0	96.30	1.000	0.265	0.870	0.231

Area-averaged adjusted loss rate Fm (In/Hr) = 0.231

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
83.78	0.870	86.0	86.0	1.63	0.512
12.52	0.130	98.0	98.0	0.20	0.912

Area-averaged catchment yield fraction, Y = 0.564
Area-averaged low loss fraction, Yb = 0.436
User entry of time of concentration = 0.920 (hours)
++
Watershed area = 96.30(Ac.)
Catchment Lag time = 0.736 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 11.3225
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.231(In/Hr)
Average low loss rate fraction (Yb) = 0.436 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.281(In)
Computed peak 30-minute rainfall = 0.575(In)
Specified peak 1-hour rainfall = 0.759(In)
Computed peak 3-hour rainfall = 1.141(In)
Specified peak 6-hour rainfall = 1.475(In)
Specified peak 24-hour rainfall = 2.620(In)

Rainfall depth area reduction factors:
Using a total area of 96.30(Ac.) (Ref: fig. E-4)

5-minute factor = 0.995 Adjusted rainfall = 0.280(In)
30-minute factor = 0.995 Adjusted rainfall = 0.573(In)
1-hour factor = 0.995 Adjusted rainfall = 0.756(In)
3-hour factor = 0.999 Adjusted rainfall = 1.140(In)
6-hour factor = 1.000 Adjusted rainfall = 1.474(In)
24-hour factor = 1.000 Adjusted rainfall = 2.620(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 1164.63 (CFS))		
1	0.981	11.428
2	3.116	24.860
3	6.220	36.147
4	10.734	52.574
5	16.272	64.501
6	23.299	81.832
7	31.033	90.079
8	39.141	94.429
9	47.263	94.583
10	53.983	78.272
11	59.477	63.980
12	63.666	48.785
13	67.176	40.876
14	70.068	33.681
15	72.392	27.068
16	74.348	22.781
17	76.049	19.818
18	77.707	19.308
19	79.136	16.638
20	80.493	15.802
21	81.711	14.189
22	82.843	13.186
23	83.918	12.517
24	84.915	11.609
25	85.865	11.069
26	86.688	9.582
27	87.486	9.293
28	88.182	8.107
29	88.861	7.912
30	89.541	7.912
31	90.219	7.904
32	90.793	6.679
33	91.291	5.802
34	91.789	5.802
35	92.288	5.802
36	92.755	5.445

37	93.125	4.305
38	93.487	4.220
39	93.849	4.220
40	94.211	4.211
41	94.557	4.029
42	94.896	3.956
43	95.236	3.956
44	95.576	3.956
45	95.884	3.584
46	96.134	2.915
47	96.383	2.901
48	96.632	2.901
49	96.877	2.854
50	97.088	2.461
51	97.292	2.374
52	97.496	2.374
53	97.700	2.374
54	97.881	2.106
55	98.039	1.846
56	98.198	1.846
57	98.356	1.846
58	98.507	1.754
59	98.624	1.363
60	98.737	1.319
61	98.850	1.319
62	98.963	1.319
63	99.077	1.319
64	99.190	1.319
65	99.303	1.319
66	99.416	1.319
67	99.529	1.319
68	99.643	1.319
69	99.756	1.319
70	99.869	1.319
71	100.000	0.659

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2797	0.2797
2	0.3691	0.0894
3	0.4341	0.0650
4	0.4870	0.0529
5	0.5325	0.0455
6	0.5728	0.0403
7	0.6092	0.0364
8	0.6426	0.0334
9	0.6736	0.0310
10	0.7026	0.0290
11	0.7299	0.0273
12	0.7557	0.0259
13	0.7787	0.0230
14	0.8006	0.0219
15	0.8216	0.0209
16	0.8416	0.0201
17	0.8610	0.0193
18	0.8796	0.0186
19	0.8975	0.0180
20	0.9149	0.0174
21	0.9318	0.0169
22	0.9482	0.0164
23	0.9641	0.0159
24	0.9795	0.0155
25	0.9946	0.0151
26	1.0093	0.0147
27	1.0237	0.0144
28	1.0377	0.0140
29	1.0514	0.0137
30	1.0648	0.0134
31	1.0780	0.0131
32	1.0909	0.0129
33	1.1035	0.0126
34	1.1159	0.0124
35	1.1281	0.0122
36	1.1400	0.0120
37	1.1517	0.0116

38	1.1631	0.0115
39	1.1744	0.0113
40	1.1855	0.0111
41	1.1964	0.0109
42	1.2071	0.0107
43	1.2177	0.0106
44	1.2281	0.0104
45	1.2384	0.0103
46	1.2485	0.0101
47	1.2586	0.0100
48	1.2684	0.0099
49	1.2782	0.0097
50	1.2878	0.0096
51	1.2973	0.0095
52	1.3066	0.0094
53	1.3159	0.0093
54	1.3251	0.0092
55	1.3341	0.0091
56	1.3431	0.0089
57	1.3519	0.0088
58	1.3607	0.0088
59	1.3693	0.0087
60	1.3779	0.0086
61	1.3864	0.0085
62	1.3948	0.0084
63	1.4031	0.0083
64	1.4113	0.0082
65	1.4194	0.0081
66	1.4275	0.0081
67	1.4355	0.0080
68	1.4434	0.0079
69	1.4512	0.0078
70	1.4590	0.0078
71	1.4667	0.0077
72	1.4743	0.0076
73	1.4828	0.0085
74	1.4912	0.0084
75	1.4995	0.0083
76	1.5078	0.0083
77	1.5159	0.0082
78	1.5241	0.0081
79	1.5322	0.0081
80	1.5402	0.0080
81	1.5481	0.0080
82	1.5560	0.0079
83	1.5639	0.0078
84	1.5717	0.0078
85	1.5794	0.0077
86	1.5871	0.0077
87	1.5947	0.0076
88	1.6023	0.0076
89	1.6098	0.0075
90	1.6173	0.0075
91	1.6247	0.0074
92	1.6321	0.0074
93	1.6394	0.0073
94	1.6467	0.0073
95	1.6540	0.0072
96	1.6612	0.0072
97	1.6683	0.0072
98	1.6754	0.0071
99	1.6825	0.0071
100	1.6895	0.0070
101	1.6965	0.0070
102	1.7035	0.0069
103	1.7104	0.0069
104	1.7172	0.0069
105	1.7241	0.0068
106	1.7309	0.0068
107	1.7376	0.0068
108	1.7443	0.0067
109	1.7510	0.0067
110	1.7577	0.0066
111	1.7643	0.0066
112	1.7708	0.0066

113	1.7774	0.0065
114	1.7839	0.0065
115	1.7904	0.0065
116	1.7968	0.0064
117	1.8032	0.0064
118	1.8096	0.0064
119	1.8159	0.0063
120	1.8223	0.0063
121	1.8285	0.0063
122	1.8348	0.0063
123	1.8410	0.0062
124	1.8472	0.0062
125	1.8534	0.0062
126	1.8595	0.0061
127	1.8656	0.0061
128	1.8717	0.0061
129	1.8777	0.0061
130	1.8838	0.0060
131	1.8898	0.0060
132	1.8957	0.0060
133	1.9017	0.0059
134	1.9076	0.0059
135	1.9135	0.0059
136	1.9194	0.0059
137	1.9252	0.0058
138	1.9310	0.0058
139	1.9368	0.0058
140	1.9426	0.0058
141	1.9483	0.0057
142	1.9540	0.0057
143	1.9597	0.0057
144	1.9654	0.0057
145	1.9711	0.0056
146	1.9767	0.0056
147	1.9823	0.0056
148	1.9879	0.0056
149	1.9934	0.0056
150	1.9990	0.0055
151	2.0045	0.0055
152	2.0100	0.0055
153	2.0155	0.0055
154	2.0209	0.0055
155	2.0263	0.0054
156	2.0318	0.0054
157	2.0371	0.0054
158	2.0425	0.0054
159	2.0479	0.0054
160	2.0532	0.0053
161	2.0585	0.0053
162	2.0638	0.0053
163	2.0691	0.0053
164	2.0743	0.0053
165	2.0796	0.0052
166	2.0848	0.0052
167	2.0900	0.0052
168	2.0952	0.0052
169	2.1003	0.0052
170	2.1055	0.0051
171	2.1106	0.0051
172	2.1157	0.0051
173	2.1208	0.0051
174	2.1259	0.0051
175	2.1310	0.0051
176	2.1360	0.0050
177	2.1410	0.0050
178	2.1460	0.0050
179	2.1510	0.0050
180	2.1560	0.0050
181	2.1610	0.0050
182	2.1659	0.0049
183	2.1708	0.0049
184	2.1757	0.0049
185	2.1806	0.0049
186	2.1855	0.0049
187	2.1904	0.0049

188	2.1952	0.0049
189	2.2001	0.0048
190	2.2049	0.0048
191	2.2097	0.0048
192	2.2145	0.0048
193	2.2193	0.0048
194	2.2240	0.0048
195	2.2288	0.0047
196	2.2335	0.0047
197	2.2382	0.0047
198	2.2429	0.0047
199	2.2476	0.0047
200	2.2523	0.0047
201	2.2570	0.0047
202	2.2616	0.0047
203	2.2663	0.0046
204	2.2709	0.0046
205	2.2755	0.0046
206	2.2801	0.0046
207	2.2847	0.0046
208	2.2892	0.0046
209	2.2938	0.0046
210	2.2984	0.0045
211	2.3029	0.0045
212	2.3074	0.0045
213	2.3119	0.0045
214	2.3164	0.0045
215	2.3209	0.0045
216	2.3254	0.0045
217	2.3298	0.0045
218	2.3343	0.0044
219	2.3387	0.0044
220	2.3431	0.0044
221	2.3475	0.0044
222	2.3519	0.0044
223	2.3563	0.0044
224	2.3607	0.0044
225	2.3651	0.0044
226	2.3694	0.0044
227	2.3738	0.0043
228	2.3781	0.0043
229	2.3824	0.0043
230	2.3867	0.0043
231	2.3910	0.0043
232	2.3953	0.0043
233	2.3996	0.0043
234	2.4039	0.0043
235	2.4081	0.0043
236	2.4124	0.0042
237	2.4166	0.0042
238	2.4208	0.0042
239	2.4250	0.0042
240	2.4292	0.0042
241	2.4334	0.0042
242	2.4376	0.0042
243	2.4418	0.0042
244	2.4460	0.0042
245	2.4501	0.0042
246	2.4543	0.0041
247	2.4584	0.0041
248	2.4625	0.0041
249	2.4666	0.0041
250	2.4707	0.0041
251	2.4748	0.0041
252	2.4789	0.0041
253	2.4830	0.0041
254	2.4870	0.0041
255	2.4911	0.0041
256	2.4952	0.0040
257	2.4992	0.0040
258	2.5032	0.0040
259	2.5072	0.0040
260	2.5112	0.0040
261	2.5152	0.0040
262	2.5192	0.0040

263	2.5232	0.0040
264	2.5272	0.0040
265	2.5312	0.0040
266	2.5351	0.0040
267	2.5391	0.0039
268	2.5430	0.0039
269	2.5469	0.0039
270	2.5509	0.0039
271	2.5548	0.0039
272	2.5587	0.0039
273	2.5626	0.0039
274	2.5665	0.0039
275	2.5704	0.0039
276	2.5742	0.0039
277	2.5781	0.0039
278	2.5820	0.0039
279	2.5858	0.0038
280	2.5896	0.0038
281	2.5935	0.0038
282	2.5973	0.0038
283	2.6011	0.0038
284	2.6049	0.0038
285	2.6087	0.0038
286	2.6125	0.0038
287	2.6163	0.0038
288	2.6201	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0038	0.0016	0.0021
2	0.0038	0.0016	0.0021
3	0.0038	0.0017	0.0021
4	0.0038	0.0017	0.0021
5	0.0038	0.0017	0.0022
6	0.0038	0.0017	0.0022
7	0.0038	0.0017	0.0022
8	0.0039	0.0017	0.0022
9	0.0039	0.0017	0.0022
10	0.0039	0.0017	0.0022
11	0.0039	0.0017	0.0022
12	0.0039	0.0017	0.0022
13	0.0039	0.0017	0.0022
14	0.0039	0.0017	0.0022
15	0.0039	0.0017	0.0022
16	0.0040	0.0017	0.0022
17	0.0040	0.0017	0.0022
18	0.0040	0.0017	0.0022
19	0.0040	0.0017	0.0023
20	0.0040	0.0017	0.0023
21	0.0040	0.0018	0.0023
22	0.0040	0.0018	0.0023
23	0.0041	0.0018	0.0023
24	0.0041	0.0018	0.0023
25	0.0041	0.0018	0.0023
26	0.0041	0.0018	0.0023
27	0.0041	0.0018	0.0023
28	0.0041	0.0018	0.0023
29	0.0041	0.0018	0.0023
30	0.0042	0.0018	0.0023
31	0.0042	0.0018	0.0024
32	0.0042	0.0018	0.0024
33	0.0042	0.0018	0.0024
34	0.0042	0.0018	0.0024
35	0.0042	0.0018	0.0024
36	0.0042	0.0018	0.0024
37	0.0043	0.0019	0.0024
38	0.0043	0.0019	0.0024
39	0.0043	0.0019	0.0024
40	0.0043	0.0019	0.0024
41	0.0043	0.0019	0.0024
42	0.0043	0.0019	0.0025
43	0.0044	0.0019	0.0025
44	0.0044	0.0019	0.0025

45	0.0044	0.0019	0.0025
46	0.0044	0.0019	0.0025
47	0.0044	0.0019	0.0025
48	0.0044	0.0019	0.0025
49	0.0045	0.0019	0.0025
50	0.0045	0.0020	0.0025
51	0.0045	0.0020	0.0025
52	0.0045	0.0020	0.0026
53	0.0045	0.0020	0.0026
54	0.0046	0.0020	0.0026
55	0.0046	0.0020	0.0026
56	0.0046	0.0020	0.0026
57	0.0046	0.0020	0.0026
58	0.0046	0.0020	0.0026
59	0.0047	0.0020	0.0026
60	0.0047	0.0020	0.0026
61	0.0047	0.0021	0.0027
62	0.0047	0.0021	0.0027
63	0.0047	0.0021	0.0027
64	0.0048	0.0021	0.0027
65	0.0048	0.0021	0.0027
66	0.0048	0.0021	0.0027
67	0.0048	0.0021	0.0027
68	0.0049	0.0021	0.0027
69	0.0049	0.0021	0.0028
70	0.0049	0.0021	0.0028
71	0.0049	0.0021	0.0028
72	0.0049	0.0022	0.0028
73	0.0050	0.0022	0.0028
74	0.0050	0.0022	0.0028
75	0.0050	0.0022	0.0028
76	0.0050	0.0022	0.0028
77	0.0051	0.0022	0.0029
78	0.0051	0.0022	0.0029
79	0.0051	0.0022	0.0029
80	0.0051	0.0022	0.0029
81	0.0052	0.0023	0.0029
82	0.0052	0.0023	0.0029
83	0.0052	0.0023	0.0030
84	0.0053	0.0023	0.0030
85	0.0053	0.0023	0.0030
86	0.0053	0.0023	0.0030
87	0.0054	0.0023	0.0030
88	0.0054	0.0023	0.0030
89	0.0054	0.0024	0.0031
90	0.0054	0.0024	0.0031
91	0.0055	0.0024	0.0031
92	0.0055	0.0024	0.0031
93	0.0055	0.0024	0.0031
94	0.0056	0.0024	0.0031
95	0.0056	0.0024	0.0032
96	0.0056	0.0025	0.0032
97	0.0057	0.0025	0.0032
98	0.0057	0.0025	0.0032
99	0.0057	0.0025	0.0032
100	0.0058	0.0025	0.0033
101	0.0058	0.0025	0.0033
102	0.0058	0.0025	0.0033
103	0.0059	0.0026	0.0033
104	0.0059	0.0026	0.0033
105	0.0060	0.0026	0.0034
106	0.0060	0.0026	0.0034
107	0.0061	0.0026	0.0034
108	0.0061	0.0026	0.0034
109	0.0061	0.0027	0.0035
110	0.0062	0.0027	0.0035
111	0.0062	0.0027	0.0035
112	0.0063	0.0027	0.0035
113	0.0063	0.0028	0.0036
114	0.0063	0.0028	0.0036
115	0.0064	0.0028	0.0036
116	0.0064	0.0028	0.0036
117	0.0065	0.0028	0.0037
118	0.0065	0.0028	0.0037
119	0.0066	0.0029	0.0037

120	0.0066	0.0029	0.0038
121	0.0067	0.0029	0.0038
122	0.0068	0.0029	0.0038
123	0.0068	0.0030	0.0039
124	0.0069	0.0030	0.0039
125	0.0069	0.0030	0.0039
126	0.0070	0.0030	0.0039
127	0.0071	0.0031	0.0040
128	0.0071	0.0031	0.0040
129	0.0072	0.0031	0.0041
130	0.0072	0.0032	0.0041
131	0.0073	0.0032	0.0041
132	0.0074	0.0032	0.0042
133	0.0075	0.0033	0.0042
134	0.0075	0.0033	0.0042
135	0.0076	0.0033	0.0043
136	0.0077	0.0033	0.0043
137	0.0078	0.0034	0.0044
138	0.0078	0.0034	0.0044
139	0.0080	0.0035	0.0045
140	0.0080	0.0035	0.0045
141	0.0081	0.0035	0.0046
142	0.0082	0.0036	0.0046
143	0.0083	0.0036	0.0047
144	0.0084	0.0037	0.0047
145	0.0076	0.0033	0.0043
146	0.0077	0.0034	0.0043
147	0.0078	0.0034	0.0044
148	0.0079	0.0034	0.0045
149	0.0081	0.0035	0.0045
150	0.0081	0.0035	0.0046
151	0.0083	0.0036	0.0047
152	0.0084	0.0037	0.0047
153	0.0086	0.0037	0.0048
154	0.0087	0.0038	0.0049
155	0.0088	0.0039	0.0050
156	0.0089	0.0039	0.0050
157	0.0092	0.0040	0.0052
158	0.0093	0.0040	0.0052
159	0.0095	0.0041	0.0054
160	0.0096	0.0042	0.0054
161	0.0099	0.0043	0.0056
162	0.0100	0.0044	0.0056
163	0.0103	0.0045	0.0058
164	0.0104	0.0045	0.0059
165	0.0107	0.0047	0.0061
166	0.0109	0.0048	0.0062
167	0.0113	0.0049	0.0064
168	0.0115	0.0050	0.0065
169	0.0120	0.0052	0.0067
170	0.0122	0.0053	0.0069
171	0.0126	0.0055	0.0071
172	0.0129	0.0056	0.0073
173	0.0134	0.0058	0.0076
174	0.0137	0.0060	0.0077
175	0.0144	0.0063	0.0081
176	0.0147	0.0064	0.0083
177	0.0155	0.0067	0.0087
178	0.0159	0.0069	0.0090
179	0.0169	0.0073	0.0095
180	0.0174	0.0076	0.0098
181	0.0186	0.0081	0.0105
182	0.0193	0.0084	0.0109
183	0.0209	0.0091	0.0118
184	0.0219	0.0095	0.0124
185	0.0259	0.0113	0.0146
186	0.0273	0.0119	0.0154
187	0.0310	0.0135	0.0175
188	0.0334	0.0146	0.0189
189	0.0403	0.0176	0.0227
190	0.0455	0.0192	0.0262
191	0.0650	0.0192	0.0458
192	0.0894	0.0192	0.0701
193	0.2797	0.0192	0.2605
194	0.0529	0.0192	0.0337

195	0.0364	0.0159	0.0206
196	0.0290	0.0126	0.0164
197	0.0230	0.0100	0.0130
198	0.0201	0.0087	0.0113
199	0.0180	0.0078	0.0101
200	0.0164	0.0071	0.0092
201	0.0151	0.0066	0.0085
202	0.0140	0.0061	0.0079
203	0.0131	0.0057	0.0074
204	0.0124	0.0054	0.0070
205	0.0116	0.0051	0.0066
206	0.0111	0.0048	0.0063
207	0.0106	0.0046	0.0060
208	0.0101	0.0044	0.0057
209	0.0097	0.0042	0.0055
210	0.0094	0.0041	0.0053
211	0.0091	0.0039	0.0051
212	0.0088	0.0038	0.0049
213	0.0085	0.0037	0.0048
214	0.0082	0.0036	0.0046
215	0.0080	0.0035	0.0045
216	0.0078	0.0034	0.0044
217	0.0085	0.0037	0.0048
218	0.0083	0.0036	0.0047
219	0.0081	0.0035	0.0046
220	0.0079	0.0034	0.0045
221	0.0077	0.0034	0.0044
222	0.0076	0.0033	0.0043
223	0.0074	0.0032	0.0042
224	0.0073	0.0032	0.0041
225	0.0072	0.0031	0.0040
226	0.0070	0.0031	0.0040
227	0.0069	0.0030	0.0039
228	0.0068	0.0030	0.0038
229	0.0067	0.0029	0.0038
230	0.0066	0.0029	0.0037
231	0.0065	0.0028	0.0037
232	0.0064	0.0028	0.0036
233	0.0063	0.0027	0.0035
234	0.0062	0.0027	0.0035
235	0.0061	0.0027	0.0034
236	0.0060	0.0026	0.0034
237	0.0059	0.0026	0.0034
238	0.0059	0.0026	0.0033
239	0.0058	0.0025	0.0033
240	0.0057	0.0025	0.0032
241	0.0056	0.0025	0.0032
242	0.0056	0.0024	0.0032
243	0.0055	0.0024	0.0031
244	0.0055	0.0024	0.0031
245	0.0054	0.0023	0.0030
246	0.0053	0.0023	0.0030
247	0.0053	0.0023	0.0030
248	0.0052	0.0023	0.0029
249	0.0052	0.0022	0.0029
250	0.0051	0.0022	0.0029
251	0.0051	0.0022	0.0029
252	0.0050	0.0022	0.0028
253	0.0050	0.0022	0.0028
254	0.0049	0.0021	0.0028
255	0.0049	0.0021	0.0027
256	0.0048	0.0021	0.0027
257	0.0048	0.0021	0.0027
258	0.0047	0.0021	0.0027
259	0.0047	0.0020	0.0026
260	0.0047	0.0020	0.0026
261	0.0046	0.0020	0.0026
262	0.0046	0.0020	0.0026
263	0.0045	0.0020	0.0026
264	0.0045	0.0020	0.0025
265	0.0045	0.0019	0.0025
266	0.0044	0.0019	0.0025
267	0.0044	0.0019	0.0025
268	0.0044	0.0019	0.0025
269	0.0043	0.0019	0.0024

270	0.0043	0.0019	0.0024
271	0.0043	0.0019	0.0024
272	0.0042	0.0018	0.0024
273	0.0042	0.0018	0.0024
274	0.0042	0.0018	0.0023
275	0.0041	0.0018	0.0023
276	0.0041	0.0018	0.0023
277	0.0041	0.0018	0.0023
278	0.0040	0.0018	0.0023
279	0.0040	0.0018	0.0023
280	0.0040	0.0017	0.0023
281	0.0040	0.0017	0.0022
282	0.0039	0.0017	0.0022
283	0.0039	0.0017	0.0022
284	0.0039	0.0017	0.0022
285	0.0039	0.0017	0.0022
286	0.0038	0.0017	0.0022
287	0.0038	0.0017	0.0022
288	0.0038	0.0017	0.0021

Total soil rain loss = 1.01(In)
Total effective rainfall = 1.61(In)
Peak flow rate in flood hydrograph = 49.31(CFS)

++

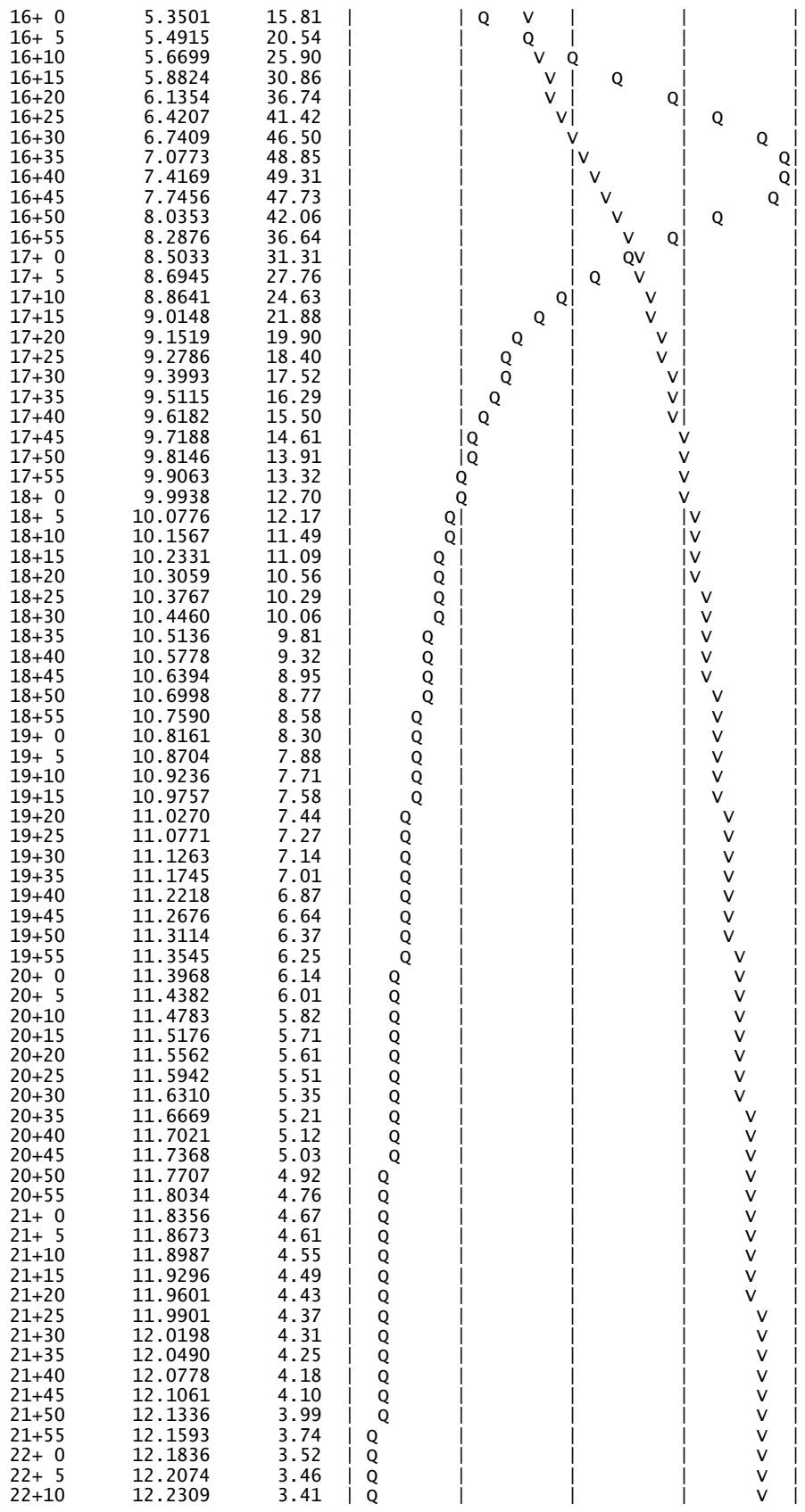
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0002	0.02	Q				
0+10	0.0007	0.08	Q				
0+15	0.0018	0.15	Q				
0+20	0.0036	0.27	Q				
0+25	0.0064	0.41	Q				
0+30	0.0104	0.58	Q				
0+35	0.0157	0.77	Q				
0+40	0.0225	0.98	Q				
0+45	0.0306	1.18	Q				
0+50	0.0399	1.35	VQ				
0+55	0.0502	1.49	VQ				
1+ 0	0.0613	1.60	VQ				
1+ 5	0.0729	1.69	VQ				
1+10	0.0851	1.77	VQ				
1+15	0.0978	1.83	VQ				
1+20	0.1108	1.89	VQ				
1+25	0.1241	1.94	VQ				
1+30	0.1378	1.98	VQ				
1+35	0.1518	2.03	VQ				
1+40	0.1660	2.07	VQ				
1+45	0.1805	2.10	VQ				
1+50	0.1952	2.14	VQ				
1+55	0.2102	2.17	VQ				
2+ 0	0.2253	2.20	VQ				
2+ 5	0.2407	2.24	VQ				
2+10	0.2563	2.26	VQ				
2+15	0.2721	2.29	VQ				
2+20	0.2881	2.32	VQ				
2+25	0.3042	2.34	VQ				
2+30	0.3205	2.36	VQ				
2+35	0.3369	2.39	|Q				
2+40	0.3535	2.41	|Q				
2+45	0.3703	2.43	|Q				
2+50	0.3872	2.45	|Q				
2+55	0.4042	2.47	|Q				
3+ 0	0.4214	2.49	|Q				
3+ 5	0.4387	2.51	|VQ				
3+10	0.4561	2.53	|VQ				
3+15	0.4737	2.55	|VQ				
3+20	0.4914	2.57	|VQ				
3+25	0.5092	2.58	|VQ				

3+30	0.5271	2.60	VQ				
3+35	0.5451	2.62	VQ				
3+40	0.5633	2.64	VQ				
3+45	0.5816	2.66	VQ				
3+50	0.6000	2.67	VQ				
3+55	0.6185	2.69	VQ				
4+ 0	0.6371	2.70	VQ				
4+ 5	0.6559	2.72	Q				
4+10	0.6747	2.74	Q				
4+15	0.6937	2.75	Q				
4+20	0.7127	2.77	Q				
4+25	0.7319	2.78	Q				
4+30	0.7512	2.80	Q				
4+35	0.7706	2.81	Q				
4+40	0.7900	2.83	Q				
4+45	0.8096	2.84	Q				
4+50	0.8293	2.86	Q				
4+55	0.8491	2.87	Q				
5+ 0	0.8690	2.89	Q				
5+ 5	0.8890	2.90	Q				
5+10	0.9091	2.92	Q				
5+15	0.9292	2.93	Q				
5+20	0.9495	2.95	Q				
5+25	0.9699	2.96	Q				
5+30	0.9904	2.98	QV				
5+35	1.0110	2.99	QV				
5+40	1.0318	3.01	QV				
5+45	1.0526	3.02	QV				
5+50	1.0735	3.04	QV				
5+55	1.0946	3.05	QV				
6+ 0	1.1157	3.07	QV				
6+ 5	1.1369	3.08	QV				
6+10	1.1582	3.10	QV				
6+15	1.1797	3.11	QV				
6+20	1.2012	3.12	QV				
6+25	1.2228	3.14	QV				
6+30	1.2445	3.15	QV				
6+35	1.2663	3.17	QV				
6+40	1.2882	3.18	QV				
6+45	1.3102	3.20	Q V				
6+50	1.3324	3.21	Q V				
6+55	1.3546	3.23	Q V				
7+ 0	1.3769	3.24	Q V				
7+ 5	1.3994	3.26	Q V				
7+10	1.4219	3.28	Q V				
7+15	1.4446	3.29	Q V				
7+20	1.4674	3.31	Q V				
7+25	1.4903	3.32	Q V				
7+30	1.5133	3.34	Q V				
7+35	1.5364	3.36	Q V				
7+40	1.5597	3.38	Q V				
7+45	1.5830	3.39	Q V				
7+50	1.6065	3.41	Q V				
7+55	1.6302	3.43	Q V				
8+ 0	1.6539	3.45	Q V				
8+ 5	1.6778	3.47	Q V				
8+10	1.7018	3.49	Q V				
8+15	1.7260	3.51	Q V				
8+20	1.7502	3.53	Q V				
8+25	1.7747	3.55	Q V				
8+30	1.7992	3.57	Q V				
8+35	1.8239	3.59	Q V				
8+40	1.8488	3.61	Q V				
8+45	1.8738	3.63	Q V				
8+50	1.8989	3.65	Q V				
8+55	1.9242	3.67	Q V				
9+ 0	1.9496	3.69	Q V				
9+ 5	1.9752	3.72	Q V				
9+10	2.0010	3.74	Q V				
9+15	2.0269	3.76	Q V				
9+20	2.0530	3.79	Q V				
9+25	2.0792	3.81	Q V				
9+30	2.1056	3.84	Q V				
9+35	2.1322	3.86	Q V				
9+40	2.1590	3.89	Q V				

9+45	2.1860	3.91	Q V			
9+50	2.2131	3.94	Q V			
9+55	2.2404	3.97	Q V			
10+ 0	2.2679	3.99	Q V			
10+ 5	2.2956	4.02	Q V			
10+10	2.3235	4.05	Q V			
10+15	2.3516	4.08	Q V			
10+20	2.3799	4.11	Q V			
10+25	2.4084	4.14	Q V			
10+30	2.4372	4.17	Q V			
10+35	2.4661	4.20	Q V			
10+40	2.4953	4.24	Q V			
10+45	2.5247	4.27	Q V			
10+50	2.5543	4.30	Q V			
10+55	2.5842	4.34	Q V			
11+ 0	2.6143	4.37	Q V			
11+ 5	2.6447	4.41	Q V			
11+10	2.6753	4.45	Q V			
11+15	2.7061	4.48	Q V			
11+20	2.7373	4.52	Q V			
11+25	2.7687	4.56	Q V			
11+30	2.8004	4.60	Q V			
11+35	2.8324	4.64	Q V			
11+40	2.8646	4.69	Q V			
11+45	2.8972	4.73	Q V			
11+50	2.9301	4.77	Q V			
11+55	2.9633	4.82	Q V			
12+ 0	2.9968	4.87	Q V			
12+ 5	3.0306	4.91	Q V			
12+10	3.0647	4.95	Q V			
12+15	3.0990	4.98	Q V			
12+20	3.1335	5.01	Q V			
12+25	3.1681	5.03	Q V			
12+30	3.2029	5.04	Q V			
12+35	3.2377	5.05	Q V			
12+40	3.2726	5.07	Q V			
12+45	3.3076	5.08	Q V			
12+50	3.3427	5.10	Q V			
12+55	3.3780	5.13	Q V			
13+ 0	3.4137	5.18	Q V			
13+ 5	3.4497	5.22	Q V			
13+10	3.4860	5.28	Q V			
13+15	3.5228	5.34	Q V			
13+20	3.5600	5.40	Q V			
13+25	3.5977	5.47	Q V			
13+30	3.6359	5.55	Q V			
13+35	3.6746	5.62	Q V			
13+40	3.7139	5.71	Q V			
13+45	3.7538	5.79	Q V			
13+50	3.7943	5.88	Q V			
13+55	3.8355	5.98	Q V			
14+ 0	3.8774	6.08	Q V			
14+ 5	3.9200	6.19	Q V			
14+10	3.9634	6.31	Q V			
14+15	4.0077	6.43	Q V			
14+20	4.0529	6.56	Q V			
14+25	4.0991	6.70	Q V			
14+30	4.1463	6.85	Q V			
14+35	4.1946	7.01	Q V			
14+40	4.2441	7.18	Q V			
14+45	4.2948	7.37	Q V			
14+50	4.3469	7.57	Q V			
14+55	4.4005	7.78	Q V			
15+ 0	4.4556	8.00	Q V			
15+ 5	4.5124	8.25	Q V			
15+10	4.5711	8.52	Q V			
15+15	4.6318	8.82	Q V			
15+20	4.6948	9.15	Q V			
15+25	4.7604	9.52	Q V			
15+30	4.8290	9.96	Q V			
15+35	4.9011	10.47	Q V			
15+40	4.9772	11.06	Q V			
15+45	5.0583	11.78	Q V			
15+50	5.1455	12.66	Q V			
15+55	5.2412	13.90	Q V			



22+15	12.2540	3.36	Q				V
22+20	12.2769	3.32	Q				V
22+25	12.2995	3.28	Q				V
22+30	12.3218	3.24	Q				V
22+35	12.3440	3.21	Q				V
22+40	12.3658	3.18	Q				V
22+45	12.3875	3.14	Q				V
22+50	12.4089	3.11	Q				V
22+55	12.4302	3.08	Q				V
23+ 0	12.4512	3.05	Q				V
23+ 5	12.4720	3.03	Q				V
23+10	12.4927	3.00	Q				V
23+15	12.5132	2.97	Q				V
23+20	12.5334	2.95	Q				V
23+25	12.5536	2.92	Q				V
23+30	12.5735	2.90	Q				V
23+35	12.5933	2.87	Q				V
23+40	12.6130	2.85	Q				V
23+45	12.6324	2.83	Q				V
23+50	12.6518	2.81	Q				V
23+55	12.6710	2.79	Q				V
24+ 0	12.6900	2.76	Q				V
24+ 5	12.7087	2.72	Q				V
24+10	12.7269	2.65	Q				V
24+15	12.7445	2.55	Q				V
24+20	12.7611	2.42	Q				V
24+25	12.7767	2.26	Q				V
24+30	12.7910	2.07	Q				V
24+35	12.8038	1.87	Q				V
24+40	12.8152	1.65	Q				V
24+45	12.8251	1.44	Q				V
24+50	12.8338	1.26	Q				V
24+55	12.8415	1.12	Q				V
25+ 0	12.8484	1.00	Q				V
25+ 5	12.8547	0.91	Q				V
25+10	12.8604	0.83	Q				V
25+15	12.8657	0.77	Q				V
25+20	12.8706	0.71	Q				V
25+25	12.8751	0.66	Q				V
25+30	12.8794	0.62	Q				V
25+35	12.8834	0.58	Q				V
25+40	12.8871	0.54	Q				V
25+45	12.8906	0.51	Q				V
25+50	12.8939	0.47	Q				V
25+55	12.8969	0.44	Q				V
26+ 0	12.8998	0.42	Q				V
26+ 5	12.9025	0.39	Q				V
26+10	12.9050	0.37	Q				V
26+15	12.9074	0.34	Q				V
26+20	12.9096	0.32	Q				V
26+25	12.9117	0.30	Q				V
26+30	12.9137	0.29	Q				V
26+35	12.9155	0.27	Q				V
26+40	12.9172	0.25	Q				V
26+45	12.9188	0.24	Q				V
26+50	12.9204	0.22	Q				V
26+55	12.9218	0.21	Q				V
27+ 0	12.9232	0.20	Q				V
27+ 5	12.9244	0.18	Q				V
27+10	12.9256	0.17	Q				V
27+15	12.9268	0.16	Q				V
27+20	12.9278	0.15	Q				V
27+25	12.9288	0.14	Q				V
27+30	12.9298	0.14	Q				V
27+35	12.9306	0.13	Q				V
27+40	12.9314	0.12	Q				V
27+45	12.9322	0.11	Q				V
27+50	12.9329	0.10	Q				V
27+55	12.9335	0.09	Q				V
28+ 0	12.9341	0.09	Q				V
28+ 5	12.9347	0.08	Q				V
28+10	12.9352	0.07	Q				V
28+15	12.9357	0.07	Q				V
28+20	12.9361	0.06	Q				V
28+25	12.9365	0.06	Q				V

```
   28+30      12.9369      0.05  Q          |          |          |         V|
   28+35      12.9372      0.05  Q          |          |          |         V|
   28+40      12.9375      0.04  Q          |          |          |         V|
   28+45      12.9378      0.04  Q          |          |          |         V|
   28+50      12.9380      0.04  Q          |          |          |         V|
   28+55      12.9383      0.03  Q          |          |          |         V|
   29+ 0      12.9385      0.03  Q          |          |          |         V|
   29+ 5      12.9387      0.03  Q          |          |          |         V|
   29+10      12.9388      0.02  Q          |          |          |         V|
   29+15      12.9390      0.02  Q          |          |          |         V|
   29+20      12.9391      0.02  Q          |          |          |         V|
   29+25      12.9392      0.02  Q          |          |          |         V|
   29+30      12.9393      0.01  Q          |          |          |         V|
   29+35      12.9394      0.01  Q          |          |          |         V|
   29+40      12.9394      0.01  Q          |          |          |         V|
   29+45      12.9395      0.00  Q          |          |          |         V|
   29+50      12.9395      0.00  Q          |          |          |          V
---------------------------------------------------------------------------
```

UHEX06CUL

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/12/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
UNIT HYDROGRAPH ANALYSIS, EX CULVERT 6
EXISTING CONDITION, 25-YEAR 24-HOUR
FN: UHEX06CUL25.OUT - ABE

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
40.10	1	0.60
Rainfall data for year 2		
40.10	6	0.70
Rainfall data for year 2		
40.10	24	1.20
Rainfall data for year 100		
40.10	1	1.00
Rainfall data for year 100		
40.10	6	1.90
Rainfall data for year 100		
40.10	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
86.0	86.0	40.10	1.000	0.265	1.000	0.265

Area-averaged adjusted loss rate Fm (In/Hr) = 0.265

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
40.10	1.000	86.0	86.0	1.63	0.512

Area-averaged catchment yield fraction, Y = 0.512
Area-averaged low loss fraction, Yb = 0.488
User entry of time of concentration = 0.560 (hours)
++
Watershed area = 40.10(Ac.)
Catchment Lag time = 0.448 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 18.6012
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.265(In/Hr)
Average low loss rate fraction (Yb) = 0.488 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.281(In)
Computed peak 30-minute rainfall = 0.575(In)
Specified peak 1-hour rainfall = 0.759(In)
Computed peak 3-hour rainfall = 1.141(In)
Specified peak 6-hour rainfall = 1.475(In)
Specified peak 24-hour rainfall = 2.620(In)

Rainfall depth area reduction factors:
Using a total area of 40.10(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998 Adjusted rainfall = 0.280(In)
30-minute factor = 0.998 Adjusted rainfall = 0.574(In)
1-hour factor = 0.998 Adjusted rainfall = 0.758(In)
3-hour factor = 1.000 Adjusted rainfall = 1.140(In)
6-hour factor = 1.000 Adjusted rainfall = 1.475(In)
24-hour factor = 1.000 Adjusted rainfall = 2.620(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 484.96 (CFS))		
1	1.635	7.931
2	6.190	22.087
3	14.048	38.111
4	25.224	54.200
5	38.268	63.256
6	50.961	61.554
7	60.220	44.907
8	66.539	30.640
9	71.168	22.451
10	74.519	16.252
11	77.290	13.438
12	79.670	11.539
13	81.750	10.088
14	83.577	8.859
15	85.228	8.009
16	86.659	6.939
17	87.913	6.083
18	89.031	5.421
19	90.142	5.388
20	91.060	4.450
21	91.878	3.969
22	92.669	3.836
23	93.293	3.024
24	93.888	2.887
25	94.471	2.828
26	95.030	2.710
27	95.587	2.701
28	96.054	2.264
29	96.463	1.985
30	96.865	1.951
31	97.212	1.682
32	97.547	1.624
33	97.861	1.524
34	98.124	1.275
35	98.384	1.262
36	98.603	1.063
37	98.789	0.902

38	98.975	0.902
39	99.161	0.902
40	99.347	0.902
41	99.533	0.902
42	99.719	0.902
43	99.906	0.902
44	100.000	0.458

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2804	0.2804
2	0.3701	0.0896
3	0.4352	0.0652
4	0.4883	0.0531
5	0.5339	0.0456
6	0.5743	0.0404
7	0.6108	0.0365
8	0.6443	0.0335
9	0.6754	0.0311
10	0.7045	0.0291
11	0.7318	0.0274
12	0.7577	0.0259
13	0.7807	0.0229
14	0.8025	0.0218
15	0.8234	0.0209
16	0.8434	0.0200
17	0.8626	0.0192
18	0.8811	0.0185
19	0.8991	0.0179
20	0.9164	0.0173
21	0.9332	0.0168
22	0.9495	0.0163
23	0.9653	0.0158
24	0.9807	0.0154
25	0.9957	0.0150
26	1.0103	0.0146
27	1.0246	0.0143
28	1.0386	0.0140
29	1.0522	0.0136
30	1.0656	0.0134
31	1.0787	0.0131
32	1.0915	0.0128
33	1.1041	0.0126
34	1.1164	0.0123
35	1.1285	0.0121
36	1.1404	0.0119
37	1.1520	0.0116
38	1.1635	0.0114
39	1.1748	0.0113
40	1.1858	0.0111
41	1.1967	0.0109
42	1.2075	0.0107
43	1.2181	0.0106
44	1.2285	0.0104
45	1.2388	0.0103
46	1.2489	0.0101
47	1.2589	0.0100
48	1.2688	0.0099
49	1.2785	0.0097
50	1.2881	0.0096
51	1.2976	0.0095
52	1.3070	0.0094
53	1.3162	0.0093
54	1.3254	0.0092
55	1.3344	0.0090
56	1.3434	0.0089
57	1.3522	0.0088
58	1.3610	0.0087
59	1.3696	0.0087
60	1.3782	0.0086
61	1.3867	0.0085
62	1.3950	0.0084
63	1.4033	0.0083
64	1.4116	0.0082
65	1.4197	0.0081

66	1.4278	0.0081
67	1.4357	0.0080
68	1.4437	0.0079
69	1.4515	0.0078
70	1.4593	0.0078
71	1.4669	0.0077
72	1.4746	0.0076
73	1.4830	0.0085
74	1.4914	0.0084
75	1.4997	0.0083
76	1.5080	0.0083
77	1.5162	0.0082
78	1.5243	0.0081
79	1.5324	0.0081
80	1.5404	0.0080
81	1.5484	0.0080
82	1.5563	0.0079
83	1.5641	0.0078
84	1.5719	0.0078
85	1.5797	0.0077
86	1.5873	0.0077
87	1.5950	0.0076
88	1.6025	0.0076
89	1.6101	0.0075
90	1.6175	0.0075
91	1.6250	0.0074
92	1.6324	0.0074
93	1.6397	0.0073
94	1.6470	0.0073
95	1.6542	0.0072
96	1.6614	0.0072
97	1.6686	0.0072
98	1.6757	0.0071
99	1.6828	0.0071
100	1.6898	0.0070
101	1.6968	0.0070
102	1.7037	0.0069
103	1.7106	0.0069
104	1.7175	0.0069
105	1.7243	0.0068
106	1.7311	0.0068
107	1.7379	0.0068
108	1.7446	0.0067
109	1.7513	0.0067
110	1.7579	0.0066
111	1.7645	0.0066
112	1.7711	0.0066
113	1.7776	0.0065
114	1.7841	0.0065
115	1.7906	0.0065
116	1.7971	0.0064
117	1.8035	0.0064
118	1.8098	0.0064
119	1.8162	0.0063
120	1.8225	0.0063
121	1.8288	0.0063
122	1.8350	0.0063
123	1.8413	0.0062
124	1.8475	0.0062
125	1.8536	0.0062
126	1.8598	0.0061
127	1.8659	0.0061
128	1.8719	0.0061
129	1.8780	0.0061
130	1.8840	0.0060
131	1.8900	0.0060
132	1.8960	0.0060
133	1.9019	0.0059
134	1.9078	0.0059
135	1.9137	0.0059
136	1.9196	0.0059
137	1.9254	0.0058
138	1.9313	0.0058
139	1.9370	0.0058
140	1.9428	0.0058

141	1.9486	0.0057
142	1.9543	0.0057
143	1.9600	0.0057
144	1.9656	0.0057
145	1.9713	0.0056
146	1.9769	0.0056
147	1.9825	0.0056
148	1.9881	0.0056
149	1.9937	0.0056
150	1.9992	0.0055
151	2.0047	0.0055
152	2.0102	0.0055
153	2.0157	0.0055
154	2.0211	0.0055
155	2.0266	0.0054
156	2.0320	0.0054
157	2.0374	0.0054
158	2.0428	0.0054
159	2.0481	0.0054
160	2.0534	0.0053
161	2.0587	0.0053
162	2.0640	0.0053
163	2.0693	0.0053
164	2.0746	0.0053
165	2.0798	0.0052
166	2.0850	0.0052
167	2.0902	0.0052
168	2.0954	0.0052
169	2.1006	0.0052
170	2.1057	0.0051
171	2.1108	0.0051
172	2.1160	0.0051
173	2.1210	0.0051
174	2.1261	0.0051
175	2.1312	0.0051
176	2.1362	0.0050
177	2.1413	0.0050
178	2.1463	0.0050
179	2.1513	0.0050
180	2.1562	0.0050
181	2.1612	0.0050
182	2.1661	0.0049
183	2.1711	0.0049
184	2.1760	0.0049
185	2.1809	0.0049
186	2.1857	0.0049
187	2.1906	0.0049
188	2.1955	0.0049
189	2.2003	0.0048
190	2.2051	0.0048
191	2.2099	0.0048
192	2.2147	0.0048
193	2.2195	0.0048
194	2.2243	0.0048
195	2.2290	0.0047
196	2.2337	0.0047
197	2.2385	0.0047
198	2.2432	0.0047
199	2.2479	0.0047
200	2.2525	0.0047
201	2.2572	0.0047
202	2.2618	0.0047
203	2.2665	0.0046
204	2.2711	0.0046
205	2.2757	0.0046
206	2.2803	0.0046
207	2.2849	0.0046
208	2.2895	0.0046
209	2.2940	0.0046
210	2.2986	0.0045
211	2.3031	0.0045
212	2.3076	0.0045
213	2.3121	0.0045
214	2.3166	0.0045
215	2.3211	0.0045

216	2.3256	0.0045
217	2.3300	0.0045
218	2.3345	0.0044
219	2.3389	0.0044
220	2.3433	0.0044
221	2.3478	0.0044
222	2.3522	0.0044
223	2.3565	0.0044
224	2.3609	0.0044
225	2.3653	0.0044
226	2.3696	0.0044
227	2.3740	0.0043
228	2.3783	0.0043
229	2.3826	0.0043
230	2.3869	0.0043
231	2.3912	0.0043
232	2.3955	0.0043
233	2.3998	0.0043
234	2.4041	0.0043
235	2.4083	0.0043
236	2.4126	0.0042
237	2.4168	0.0042
238	2.4210	0.0042
239	2.4252	0.0042
240	2.4294	0.0042
241	2.4336	0.0042
242	2.4378	0.0042
243	2.4420	0.0042
244	2.4462	0.0042
245	2.4503	0.0042
246	2.4545	0.0041
247	2.4586	0.0041
248	2.4627	0.0041
249	2.4668	0.0041
250	2.4709	0.0041
251	2.4750	0.0041
252	2.4791	0.0041
253	2.4832	0.0041
254	2.4872	0.0041
255	2.4913	0.0041
256	2.4953	0.0040
257	2.4994	0.0040
258	2.5034	0.0040
259	2.5074	0.0040
260	2.5114	0.0040
261	2.5154	0.0040
262	2.5194	0.0040
263	2.5234	0.0040
264	2.5274	0.0040
265	2.5314	0.0040
266	2.5353	0.0040
267	2.5393	0.0039
268	2.5432	0.0039
269	2.5471	0.0039
270	2.5511	0.0039
271	2.5550	0.0039
272	2.5589	0.0039
273	2.5628	0.0039
274	2.5667	0.0039
275	2.5705	0.0039
276	2.5744	0.0039
277	2.5783	0.0039
278	2.5821	0.0039
279	2.5860	0.0038
280	2.5898	0.0038
281	2.5937	0.0038
282	2.5975	0.0038
283	2.6013	0.0038
284	2.6051	0.0038
285	2.6089	0.0038
286	2.6127	0.0038
287	2.6165	0.0038
288	2.6203	0.0038

Unit	Unit	Unit	Effective

Period (number)	Rainfall (In)	Soil-Loss (In)	Rainfall (In)
1	0.0038	0.0018	0.0019
2	0.0038	0.0018	0.0019
3	0.0038	0.0019	0.0019
4	0.0038	0.0019	0.0020
5	0.0038	0.0019	0.0020
6	0.0038	0.0019	0.0020
7	0.0038	0.0019	0.0020
8	0.0039	0.0019	0.0020
9	0.0039	0.0019	0.0020
10	0.0039	0.0019	0.0020
11	0.0039	0.0019	0.0020
12	0.0039	0.0019	0.0020
13	0.0039	0.0019	0.0020
14	0.0039	0.0019	0.0020
15	0.0039	0.0019	0.0020
16	0.0040	0.0019	0.0020
17	0.0040	0.0019	0.0020
18	0.0040	0.0019	0.0020
19	0.0040	0.0020	0.0020
20	0.0040	0.0020	0.0021
21	0.0040	0.0020	0.0021
22	0.0040	0.0020	0.0021
23	0.0041	0.0020	0.0021
24	0.0041	0.0020	0.0021
25	0.0041	0.0020	0.0021
26	0.0041	0.0020	0.0021
27	0.0041	0.0020	0.0021
28	0.0041	0.0020	0.0021
29	0.0041	0.0020	0.0021
30	0.0042	0.0020	0.0021
31	0.0042	0.0020	0.0021
32	0.0042	0.0020	0.0021
33	0.0042	0.0020	0.0022
34	0.0042	0.0021	0.0022
35	0.0042	0.0021	0.0022
36	0.0042	0.0021	0.0022
37	0.0043	0.0021	0.0022
38	0.0043	0.0021	0.0022
39	0.0043	0.0021	0.0022
40	0.0043	0.0021	0.0022
41	0.0043	0.0021	0.0022
42	0.0043	0.0021	0.0022
43	0.0044	0.0021	0.0022
44	0.0044	0.0021	0.0022
45	0.0044	0.0021	0.0023
46	0.0044	0.0022	0.0023
47	0.0044	0.0022	0.0023
48	0.0044	0.0022	0.0023
49	0.0045	0.0022	0.0023
50	0.0045	0.0022	0.0023
51	0.0045	0.0022	0.0023
52	0.0045	0.0022	0.0023
53	0.0045	0.0022	0.0023
54	0.0046	0.0022	0.0023
55	0.0046	0.0022	0.0023
56	0.0046	0.0022	0.0024
57	0.0046	0.0023	0.0024
58	0.0046	0.0023	0.0024
59	0.0047	0.0023	0.0024
60	0.0047	0.0023	0.0024
61	0.0047	0.0023	0.0024
62	0.0047	0.0023	0.0024
63	0.0047	0.0023	0.0024
64	0.0048	0.0023	0.0024
65	0.0048	0.0023	0.0025
66	0.0048	0.0023	0.0025
67	0.0048	0.0024	0.0025
68	0.0049	0.0024	0.0025
69	0.0049	0.0024	0.0025
70	0.0049	0.0024	0.0025
71	0.0049	0.0024	0.0025
72	0.0049	0.0024	0.0025

73	0.0050	0.0024	0.0025
74	0.0050	0.0024	0.0026
75	0.0050	0.0025	0.0026
76	0.0050	0.0025	0.0026
77	0.0051	0.0025	0.0026
78	0.0051	0.0025	0.0026
79	0.0051	0.0025	0.0026
80	0.0051	0.0025	0.0026
81	0.0052	0.0025	0.0027
82	0.0052	0.0025	0.0027
83	0.0052	0.0026	0.0027
84	0.0053	0.0026	0.0027
85	0.0053	0.0026	0.0027
86	0.0053	0.0026	0.0027
87	0.0054	0.0026	0.0027
88	0.0054	0.0026	0.0028
89	0.0054	0.0026	0.0028
90	0.0054	0.0026	0.0028
91	0.0055	0.0027	0.0028
92	0.0055	0.0027	0.0028
93	0.0055	0.0027	0.0028
94	0.0056	0.0027	0.0028
95	0.0056	0.0027	0.0029
96	0.0056	0.0027	0.0029
97	0.0057	0.0028	0.0029
98	0.0057	0.0028	0.0029
99	0.0057	0.0028	0.0029
100	0.0058	0.0028	0.0030
101	0.0058	0.0028	0.0030
102	0.0058	0.0028	0.0030
103	0.0059	0.0029	0.0030
104	0.0059	0.0029	0.0030
105	0.0060	0.0029	0.0031
106	0.0060	0.0029	0.0031
107	0.0061	0.0030	0.0031
108	0.0061	0.0030	0.0031
109	0.0061	0.0030	0.0031
110	0.0062	0.0030	0.0032
111	0.0062	0.0030	0.0032
112	0.0063	0.0030	0.0032
113	0.0063	0.0031	0.0032
114	0.0063	0.0031	0.0033
115	0.0064	0.0031	0.0033
116	0.0064	0.0031	0.0033
117	0.0065	0.0032	0.0033
118	0.0065	0.0032	0.0034
119	0.0066	0.0032	0.0034
120	0.0066	0.0032	0.0034
121	0.0067	0.0033	0.0034
122	0.0068	0.0033	0.0035
123	0.0068	0.0033	0.0035
124	0.0069	0.0033	0.0035
125	0.0069	0.0034	0.0036
126	0.0070	0.0034	0.0036
127	0.0071	0.0034	0.0036
128	0.0071	0.0035	0.0036
129	0.0072	0.0035	0.0037
130	0.0072	0.0035	0.0037
131	0.0073	0.0036	0.0038
132	0.0074	0.0036	0.0038
133	0.0075	0.0036	0.0038
134	0.0075	0.0037	0.0039
135	0.0076	0.0037	0.0039
136	0.0077	0.0037	0.0039
137	0.0078	0.0038	0.0040
138	0.0078	0.0038	0.0040
139	0.0080	0.0039	0.0041
140	0.0080	0.0039	0.0041
141	0.0081	0.0040	0.0042
142	0.0082	0.0040	0.0042
143	0.0083	0.0041	0.0043
144	0.0084	0.0041	0.0043
145	0.0076	0.0037	0.0039
146	0.0077	0.0038	0.0039
147	0.0078	0.0038	0.0040

148	0.0079	0.0039	0.0041
149	0.0081	0.0039	0.0041
150	0.0081	0.0040	0.0042
151	0.0083	0.0040	0.0043
152	0.0084	0.0041	0.0043
153	0.0086	0.0042	0.0044
154	0.0087	0.0042	0.0044
155	0.0088	0.0043	0.0045
156	0.0089	0.0044	0.0046
157	0.0092	0.0045	0.0047
158	0.0093	0.0045	0.0047
159	0.0095	0.0046	0.0049
160	0.0096	0.0047	0.0049
161	0.0099	0.0048	0.0051
162	0.0100	0.0049	0.0051
163	0.0103	0.0050	0.0053
164	0.0104	0.0051	0.0053
165	0.0107	0.0052	0.0055
166	0.0109	0.0053	0.0056
167	0.0113	0.0055	0.0058
168	0.0114	0.0056	0.0059
169	0.0119	0.0058	0.0061
170	0.0121	0.0059	0.0062
171	0.0126	0.0061	0.0064
172	0.0128	0.0063	0.0066
173	0.0134	0.0065	0.0068
174	0.0136	0.0067	0.0070
175	0.0143	0.0070	0.0073
176	0.0146	0.0071	0.0075
177	0.0154	0.0075	0.0079
178	0.0158	0.0077	0.0081
179	0.0168	0.0082	0.0086
180	0.0173	0.0084	0.0089
181	0.0185	0.0090	0.0095
182	0.0192	0.0094	0.0099
183	0.0209	0.0102	0.0107
184	0.0218	0.0106	0.0112
185	0.0259	0.0126	0.0133
186	0.0274	0.0134	0.0140
187	0.0311	0.0152	0.0159
188	0.0335	0.0163	0.0172
189	0.0404	0.0197	0.0207
190	0.0456	0.0221	0.0235
191	0.0652	0.0221	0.0431
192	0.0896	0.0221	0.0675
193	0.2804	0.0221	0.2584
194	0.0531	0.0221	0.0310
195	0.0365	0.0178	0.0187
196	0.0291	0.0142	0.0149
197	0.0229	0.0112	0.0117
198	0.0200	0.0098	0.0103
199	0.0179	0.0087	0.0092
200	0.0163	0.0079	0.0083
201	0.0150	0.0073	0.0077
202	0.0140	0.0068	0.0072
203	0.0131	0.0064	0.0067
204	0.0123	0.0060	0.0063
205	0.0116	0.0057	0.0060
206	0.0111	0.0054	0.0057
207	0.0106	0.0052	0.0054
208	0.0101	0.0049	0.0052
209	0.0097	0.0047	0.0050
210	0.0094	0.0046	0.0048
211	0.0090	0.0044	0.0046
212	0.0087	0.0043	0.0045
213	0.0085	0.0041	0.0043
214	0.0082	0.0040	0.0042
215	0.0080	0.0039	0.0041
216	0.0078	0.0038	0.0040
217	0.0085	0.0041	0.0043
218	0.0083	0.0040	0.0042
219	0.0081	0.0039	0.0041
220	0.0079	0.0039	0.0040
221	0.0077	0.0038	0.0040
222	0.0076	0.0037	0.0039

223	0.0074	0.0036	0.0038
224	0.0073	0.0036	0.0037
225	0.0072	0.0035	0.0037
226	0.0070	0.0034	0.0036
227	0.0069	0.0034	0.0035
228	0.0068	0.0033	0.0035
229	0.0067	0.0033	0.0034
230	0.0066	0.0032	0.0034
231	0.0065	0.0032	0.0033
232	0.0064	0.0031	0.0033
233	0.0063	0.0031	0.0032
234	0.0062	0.0030	0.0032
235	0.0061	0.0030	0.0031
236	0.0060	0.0029	0.0031
237	0.0059	0.0029	0.0030
238	0.0059	0.0029	0.0030
239	0.0058	0.0028	0.0030
240	0.0057	0.0028	0.0029
241	0.0056	0.0028	0.0029
242	0.0056	0.0027	0.0029
243	0.0055	0.0027	0.0028
244	0.0055	0.0027	0.0028
245	0.0054	0.0026	0.0028
246	0.0053	0.0026	0.0027
247	0.0053	0.0026	0.0027
248	0.0052	0.0025	0.0027
249	0.0052	0.0025	0.0026
250	0.0051	0.0025	0.0026
251	0.0051	0.0025	0.0026
252	0.0050	0.0024	0.0026
253	0.0050	0.0024	0.0025
254	0.0049	0.0024	0.0025
255	0.0049	0.0024	0.0025
256	0.0048	0.0024	0.0025
257	0.0048	0.0023	0.0024
258	0.0047	0.0023	0.0024
259	0.0047	0.0023	0.0024
260	0.0047	0.0023	0.0024
261	0.0046	0.0022	0.0024
262	0.0046	0.0022	0.0023
263	0.0045	0.0022	0.0023
264	0.0045	0.0022	0.0023
265	0.0045	0.0022	0.0023
266	0.0044	0.0022	0.0023
267	0.0044	0.0021	0.0022
268	0.0044	0.0021	0.0022
269	0.0043	0.0021	0.0022
270	0.0043	0.0021	0.0022
271	0.0043	0.0021	0.0022
272	0.0042	0.0021	0.0022
273	0.0042	0.0020	0.0021
274	0.0042	0.0020	0.0021
275	0.0041	0.0020	0.0021
276	0.0041	0.0020	0.0021
277	0.0041	0.0020	0.0021
278	0.0040	0.0020	0.0021
279	0.0040	0.0020	0.0021
280	0.0040	0.0019	0.0020
281	0.0040	0.0019	0.0020
282	0.0039	0.0019	0.0020
283	0.0039	0.0019	0.0020
284	0.0039	0.0019	0.0020
285	0.0039	0.0019	0.0020
286	0.0038	0.0019	0.0020
287	0.0038	0.0019	0.0020
288	0.0038	0.0018	0.0019

Total soil rain loss = 1.13(In)
Total effective rainfall = 1.49(In)
Peak flow rate in flood hydrograph = 27.93(CFS)

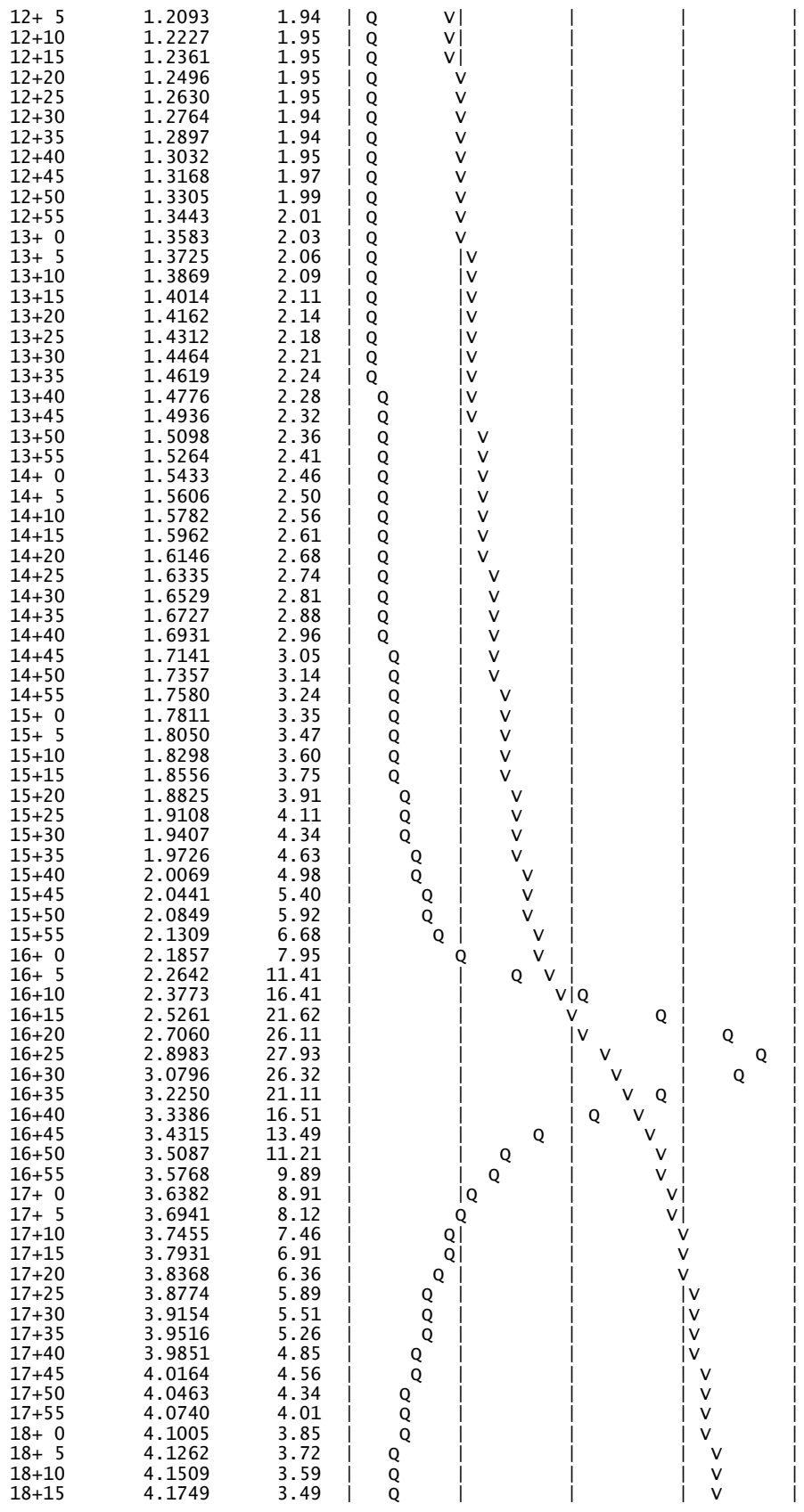
++

24 - 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 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0001	0.02	Q				
0+10	0.0005	0.06	Q				
0+15	0.0014	0.13	Q				
0+20	0.0030	0.24	Q				
0+25	0.0055	0.36	Q				
0+30	0.0088	0.48	Q				
0+35	0.0128	0.57	Q				
0+40	0.0171	0.63	Q				
0+45	0.0217	0.68	Q				
0+50	0.0266	0.71	Q				
0+55	0.0317	0.74	Q				
1+ 0	0.0369	0.76	VQ				
1+ 5	0.0423	0.78	VQ				
1+10	0.0479	0.80	VQ				
1+15	0.0535	0.82	VQ				
1+20	0.0593	0.84	VQ				
1+25	0.0652	0.85	VQ				
1+30	0.0711	0.86	VQ				
1+35	0.0772	0.88	VQ				
1+40	0.0833	0.89	VQ				
1+45	0.0895	0.90	VQ				
1+50	0.0958	0.91	VQ				
1+55	0.1021	0.92	VQ				
2+ 0	0.1085	0.93	VQ				
2+ 5	0.1149	0.94	VQ				
2+10	0.1214	0.95	VQ				
2+15	0.1280	0.95	|Q				
2+20	0.1346	0.96	|Q				
2+25	0.1413	0.97	|Q				
2+30	0.1480	0.98	|Q				
2+35	0.1548	0.98	|Q				
2+40	0.1616	0.99	|Q				
2+45	0.1684	1.00	|Q				
2+50	0.1753	1.00	|Q				
2+55	0.1823	1.01	|Q				
3+ 0	0.1893	1.01	|Q				
3+ 5	0.1963	1.02	|Q				
3+10	0.2033	1.02	|Q				
3+15	0.2104	1.03	|Q				
3+20	0.2175	1.03	|Q				
3+25	0.2247	1.04	|Q				
3+30	0.2319	1.05	|Q				
3+35	0.2391	1.05	|Q				
3+40	0.2464	1.06	|Q				
3+45	0.2537	1.06	|QV				
3+50	0.2610	1.06	|QV				
3+55	0.2684	1.07	|QV				
4+ 0	0.2758	1.07	|QV				
4+ 5	0.2832	1.08	|QV				
4+10	0.2906	1.08	|QV				
4+15	0.2981	1.08	|QV				
4+20	0.3056	1.09	|QV				
4+25	0.3131	1.09	|QV				
4+30	0.3207	1.10	|QV				
4+35	0.3283	1.10	|QV				
4+40	0.3359	1.11	|QV				
4+45	0.3435	1.11	|QV				
4+50	0.3512	1.12	|QV				
4+55	0.3589	1.12	|QV				
5+ 0	0.3667	1.12	|QV				
5+ 5	0.3745	1.13	|Q V				
5+10	0.3823	1.13	|Q V				
5+15	0.3901	1.14	|Q V				
5+20	0.3980	1.14	|Q V				
5+25	0.4059	1.15	|Q V				
5+30	0.4139	1.15	|Q V				
5+35	0.4218	1.16	|Q V				
5+40	0.4299	1.16	|Q V				
5+45	0.4379	1.17	|Q V				

5+50	0.4460	1.17	Q V			
5+55	0.4541	1.18	Q V			
6+ 0	0.4623	1.19	Q V			
6+ 5	0.4705	1.19	Q V			
6+10	0.4787	1.20	Q V			
6+15	0.4870	1.20	Q V			
6+20	0.4953	1.21	Q V			
6+25	0.5037	1.21	Q V			
6+30	0.5121	1.22	Q V			
6+35	0.5205	1.22	Q V			
6+40	0.5290	1.23	Q V			
6+45	0.5375	1.24	Q V			
6+50	0.5461	1.24	Q V			
6+55	0.5547	1.25	Q V			
7+ 0	0.5633	1.26	Q V			
7+ 5	0.5720	1.26	Q V			
7+10	0.5807	1.27	Q V			
7+15	0.5895	1.27	Q V			
7+20	0.5983	1.28	Q V			
7+25	0.6072	1.29	Q V			
7+30	0.6161	1.29	Q V			
7+35	0.6251	1.30	Q V			
7+40	0.6341	1.31	Q V			
7+45	0.6432	1.32	Q V			
7+50	0.6523	1.32	Q V			
7+55	0.6614	1.33	Q V			
8+ 0	0.6707	1.34	Q V			
8+ 5	0.6799	1.35	Q V			
8+10	0.6892	1.35	Q V			
8+15	0.6986	1.36	Q V			
8+20	0.7080	1.37	Q V			
8+25	0.7175	1.38	Q V			
8+30	0.7271	1.39	Q V			
8+35	0.7367	1.39	Q V			
8+40	0.7463	1.40	Q V			
8+45	0.7560	1.41	Q V			
8+50	0.7658	1.42	Q V			
8+55	0.7757	1.43	Q V			
9+ 0	0.7856	1.44	Q V			
9+ 5	0.7955	1.45	Q V			
9+10	0.8055	1.46	Q V			
9+15	0.8156	1.47	Q V			
9+20	0.8258	1.48	Q V			
9+25	0.8360	1.49	Q V			
9+30	0.8463	1.50	Q V			
9+35	0.8567	1.51	Q V			
9+40	0.8671	1.52	Q V			
9+45	0.8777	1.53	Q V			
9+50	0.8882	1.54	Q V			
9+55	0.8989	1.55	Q V			
10+ 0	0.9096	1.56	Q V			
10+ 5	0.9205	1.57	Q V			
10+10	0.9314	1.58	Q V			
10+15	0.9424	1.60	Q V			
10+20	0.9534	1.61	Q V			
10+25	0.9646	1.62	Q V			
10+30	0.9758	1.63	Q V			
10+35	0.9872	1.65	Q V			
10+40	0.9986	1.66	Q V			
10+45	1.0101	1.67	Q V			
10+50	1.0217	1.69	Q V			
10+55	1.0334	1.70	Q V			
11+ 0	1.0453	1.72	Q V			
11+ 5	1.0572	1.73	Q V			
11+10	1.0692	1.75	Q V			
11+15	1.0813	1.76	Q V			
11+20	1.0936	1.78	Q V			
11+25	1.1059	1.79	Q V			
11+30	1.1184	1.81	Q V			
11+35	1.1310	1.83	Q V			
11+40	1.1437	1.85	Q V			
11+45	1.1566	1.86	Q V			
11+50	1.1695	1.88	Q V			
11+55	1.1826	1.90	Q V			
12+ 0	1.1959	1.92	Q V			



18+20	4.1977	3.31	| Q	|	|	| V	|
18+25	4.2195	3.17	| Q	|	|	| V	|
18+30	4.2408	3.09	| Q	|	|	| V	|
18+35	4.2613	2.97	| Q	|	|	| V	|
18+40	4.2811	2.88	| Q	|	|	| V	|
18+45	4.3003	2.79	| Q	|	|	| V	|
18+50	4.3187	2.66	| Q	|	|	| V	|
18+55	4.3365	2.59	| Q	|	|	| V	|
19+ 0	4.3536	2.48	| Q	|	|	| V	|
19+ 5	4.3700	2.39	| Q	|	|	| V	|
19+10	4.3861	2.34	| Q	|	|	| V	|
19+15	4.4019	2.29	| Q	|	|	| V	|
19+20	4.4174	2.24	| Q	|	|	| V	|
19+25	4.4325	2.19	| Q	|	|	| V	|
19+30	4.4472	2.14	| Q	|	|	| V	|
19+35	4.4614	2.06	| Q	|	|	| V	|
19+40	4.4745	1.90	| Q	|	|	| V	|
19+45	4.4865	1.74	| Q	|	|	| V	|
19+50	4.4982	1.70	| Q	|	|	| V	|
19+55	4.5096	1.66	| Q	|	|	| V	|
20+ 0	4.5208	1.63	| Q	|	|	| V	|
20+ 5	4.5319	1.60	| Q	|	|	| V	|
20+10	4.5427	1.58	| Q	|	|	| V	|
20+15	4.5534	1.55	| Q	|	|	| V	|
20+20	4.5639	1.53	| Q	|	|	| V	|
20+25	4.5743	1.51	| Q	|	|	| V	|
20+30	4.5845	1.48	|Q	|	|	| V	|
20+35	4.5946	1.46	|Q	|	|	| V	|
20+40	4.6046	1.44	|Q	|	|	| V	|
20+45	4.6144	1.43	|Q	|	|	| V	|
20+50	4.6241	1.41	|Q	|	|	| V	|
20+55	4.6337	1.39	|Q	|	|	| V	|
21+ 0	4.6431	1.37	|Q	|	|	| V	|
21+ 5	4.6525	1.36	|Q	|	|	| V	|
21+10	4.6617	1.34	|Q	|	|	| V	|
21+15	4.6709	1.33	|Q	|	|	| V	|
21+20	4.6799	1.31	|Q	|	|	| V	|
21+25	4.6889	1.30	|Q	|	|	| V	|
21+30	4.6977	1.29	|Q	|	|	| V	|
21+35	4.7065	1.27	|Q	|	|	| V	|
21+40	4.7151	1.26	|Q	|	|	| V	|
21+45	4.7237	1.25	|Q	|	|	| V	|
21+50	4.7322	1.23	|Q	|	|	| V	|
21+55	4.7406	1.22	|Q	|	|	| V	|
22+ 0	4.7490	1.21	|Q	|	|	| V	|
22+ 5	4.7572	1.20	|Q	|	|	| V	|
22+10	4.7654	1.19	|Q	|	|	| V	|
22+15	4.7735	1.18	|Q	|	|	| V	|
22+20	4.7815	1.17	|Q	|	|	| V	|
22+25	4.7895	1.16	|Q	|	|	| V	|
22+30	4.7974	1.14	|Q	|	|	| V	|
22+35	4.8052	1.14	|Q	|	|	| V	|
22+40	4.8129	1.13	|Q	|	|	| V	|
22+45	4.8206	1.12	|Q	|	|	| V	|
22+50	4.8282	1.11	|Q	|	|	| V	|
22+55	4.8358	1.10	|Q	|	|	| V	|
23+ 0	4.8433	1.09	|Q	|	|	| V	|
23+ 5	4.8507	1.08	|Q	|	|	| V	|
23+10	4.8581	1.07	|Q	|	|	| V	|
23+15	4.8655	1.06	|Q	|	|	| V	|
23+20	4.8727	1.06	|Q	|	|	| V	|
23+25	4.8799	1.05	|Q	|	|	| V	|
23+30	4.8871	1.04	|Q	|	|	| V	|
23+35	4.8942	1.03	|Q	|	|	| V	|
23+40	4.9013	1.03	|Q	|	|	| V	|
23+45	4.9083	1.02	|Q	|	|	| V	|
23+50	4.9153	1.01	|Q	|	|	| V	|
23+55	4.9222	1.00	|Q	|	|	| V	|
24+ 0	4.9290	1.00	|Q	|	|	| V	|
24+ 5	4.9357	0.97	|Q	|	|	| V	|
24+10	4.9421	0.93	|Q	|	|	| V	|
24+15	4.9479	0.85	|Q	|	|	| V	|
24+20	4.9530	0.74	Q	|	|	| V	|
24+25	4.9572	0.61	Q	|	|	| V	|
24+30	4.9605	0.49	Q	|	|	| V	|

```
  24+35       4.9633      0.40  Q          |          |          |         V|
  24+40       4.9656      0.33  Q          |          |          |         V|
  24+45       4.9676      0.29  Q          |          |          |         V|
  24+50       4.9693      0.25  Q          |          |          |         V|
  24+55       4.9709      0.23  Q          |          |          |         V|
  25+ 0       4.9723      0.20  Q          |          |          |         V|
  25+ 5       4.9735      0.18  Q          |          |          |         V|
  25+10       4.9747      0.16  Q          |          |          |         V|
  25+15       4.9757      0.15  Q          |          |          |         V|
  25+20       4.9766      0.13  Q          |          |          |         V|
  25+25       4.9774      0.12  Q          |          |          |         V|
  25+30       4.9782      0.11  Q          |          |          |         V|
  25+35       4.9789      0.10  Q          |          |          |         V|
  25+40       4.9795      0.09  Q          |          |          |         V|
  25+45       4.9800      0.08  Q          |          |          |         V|
  25+50       4.9805      0.07  Q          |          |          |         V|
  25+55       4.9810      0.07  Q          |          |          |         V|
  26+ 0       4.9814      0.06  Q          |          |          |         V|
  26+ 5       4.9818      0.05  Q          |          |          |         V|
  26+10       4.9821      0.05  Q          |          |          |         V|
  26+15       4.9824      0.04  Q          |          |          |         V|
  26+20       4.9827      0.04  Q          |          |          |         V|
  26+25       4.9829      0.03  Q          |          |          |         V|
  26+30       4.9831      0.03  Q          |          |          |         V|
  26+35       4.9833      0.03  Q          |          |          |         V|
  26+40       4.9835      0.02  Q          |          |          |         V|
  26+45       4.9836      0.02  Q          |          |          |         V|
  26+50       4.9837      0.02  Q          |          |          |         V|
  26+55       4.9838      0.02  Q          |          |          |         V|
  27+ 0       4.9839      0.01  Q          |          |          |         V|
  27+ 5       4.9840      0.01  Q          |          |          |         V|
  27+10       4.9841      0.01  Q          |          |          |         V|
  27+15       4.9841      0.01  Q          |          |          |         V|
  27+20       4.9842      0.01  Q          |          |          |         V|
  27+25       4.9842      0.00  Q          |          |          |         V|
  27+30       4.9842      0.00  Q          |          |          |         V|
  27+35       4.9842      0.00  Q          |          |          |          V
-------------------------------------------------------------------------
```

PROPOSED CONDITION UNIT HYDROGRAPHS

PROPOSED CONDITION
10-YEAR, 24-HOUR UNIT HYDROGRAPH

BUILDING 1

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 1A
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 1APROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
10.00	1	0.60
Rainfall data for year 2		
10.00	6	0.70
Rainfall data for year 2		
10.00	24	1.20
Rainfall data for year 100		
10.00	1	1.00
Rainfall data for year 100		
10.00	6	1.90
Rainfall data for year 100		
10.00	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	10.00	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.00	0.100	69.0	69.0	4.49	0.121
9.00	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.160 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      10.00(Ac.)
Catchment Lag time =   0.128 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 65.1042
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      10.00(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.222(In)
30-minute factor = 1.000    Adjusted rainfall =  0.455(In)
1-hour factor = 1.000       Adjusted rainfall =  0.600(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       120.94 (CFS))

  1                7.634                   9.232
  2               47.879                  48.672
  3               85.995                  46.096
  4               97.049                  13.368
  5               99.073                   2.449
  6              100.000                   1.121
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2220              0.2220
  2              0.2929              0.0709
  3              0.3444              0.0516
  4              0.3865              0.0420
  5              0.4225              0.0361
  6              0.4545              0.0320
  7              0.4834              0.0289
  8              0.5099              0.0265
  9              0.5345              0.0246
 10              0.5575              0.0230
 11              0.5792              0.0217
 12              0.5997              0.0205
 13              0.6185              0.0187
 14              0.6363              0.0179
 15              0.6534              0.0171
 16              0.6698              0.0164
 17              0.6856              0.0158
 18              0.7008              0.0152
 19              0.7155              0.0147
 20              0.7298              0.0142
 21              0.7436              0.0138
 22              0.7570              0.0134
 23              0.7701              0.0130
 24              0.7828              0.0127
 25              0.7951              0.0124
 26              0.8072              0.0121
 27              0.8190              0.0118
```

28	0.8305	0.0115
29	0.8418	0.0113
30	0.8528	0.0110
31	0.8637	0.0108
32	0.8743	0.0106
33	0.8847	0.0104
34	0.8949	0.0102
35	0.9049	0.0100
36	0.9147	0.0098
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9433	0.0094
40	0.9525	0.0092
41	0.9616	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9966	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0216	0.0082
49	1.0297	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0535	0.0078
53	1.0612	0.0077
54	1.0688	0.0076
55	1.0764	0.0076
56	1.0839	0.0075
57	1.0912	0.0074
58	1.0986	0.0073
59	1.1058	0.0072
60	1.1130	0.0072
61	1.1200	0.0071
62	1.1271	0.0070
63	1.1340	0.0069
64	1.1409	0.0069
65	1.1477	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1873	0.0064
72	1.1937	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2138	0.0066
76	1.2204	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2652	0.0063
84	1.2714	0.0062
85	1.2776	0.0062
86	1.2837	0.0061
87	1.2898	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3255	0.0059
94	1.3313	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3542	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3710	0.0056
102	1.3765	0.0055

103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3984	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4662	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4812	0.0050
123	1.4861	0.0050
124	1.4911	0.0049
125	1.4960	0.0049
126	1.5009	0.0049
127	1.5057	0.0049
128	1.5106	0.0048
129	1.5154	0.0048
130	1.5202	0.0048
131	1.5250	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5532	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5716	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5852	0.0045
145	1.5897	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6075	0.0044
150	1.6119	0.0044
151	1.6163	0.0044
152	1.6206	0.0044
153	1.6250	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6508	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6760	0.0042
166	1.6801	0.0041
167	1.6843	0.0041
168	1.6884	0.0041
169	1.6925	0.0041
170	1.6966	0.0041
171	1.7007	0.0041
172	1.7047	0.0041
173	1.7088	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040
177	1.7248	0.0040

178	1.7288	0.0040
179	1.7328	0.0040
180	1.7367	0.0040
181	1.7407	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7641	0.0039
188	1.7679	0.0039
189	1.7718	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7946	0.0038
196	1.7983	0.0038
197	1.8021	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8133	0.0037
201	1.8170	0.0037
202	1.8207	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8317	0.0037
206	1.8353	0.0037
207	1.8390	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8642	0.0036
215	1.8677	0.0036
216	1.8713	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8819	0.0035
220	1.8854	0.0035
221	1.8889	0.0035
222	1.8924	0.0035
223	1.8959	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9063	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9166	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9370	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9604	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9703	0.0033
246	1.9736	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032
252	1.9931	0.0032

253	1.9964	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0220	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0440	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0657	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0931	0.0030
285	2.0961	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1051	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027
34	0.0033	0.0006	0.0027

35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039
109	0.0049	0.0009	0.0040

110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0098	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0086
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0098
177	0.0127	0.0023	0.0104
178	0.0130	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0142	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139
184	0.0179	0.0033	0.0146

185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0201
188	0.0265	0.0046	0.0220
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0516	0.0046	0.0470
192	0.0709	0.0046	0.0664
193	0.2220	0.0046	0.2174
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0043	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0054
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031
259	0.0037	0.0007	0.0030

260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 14.72(CFS)

++

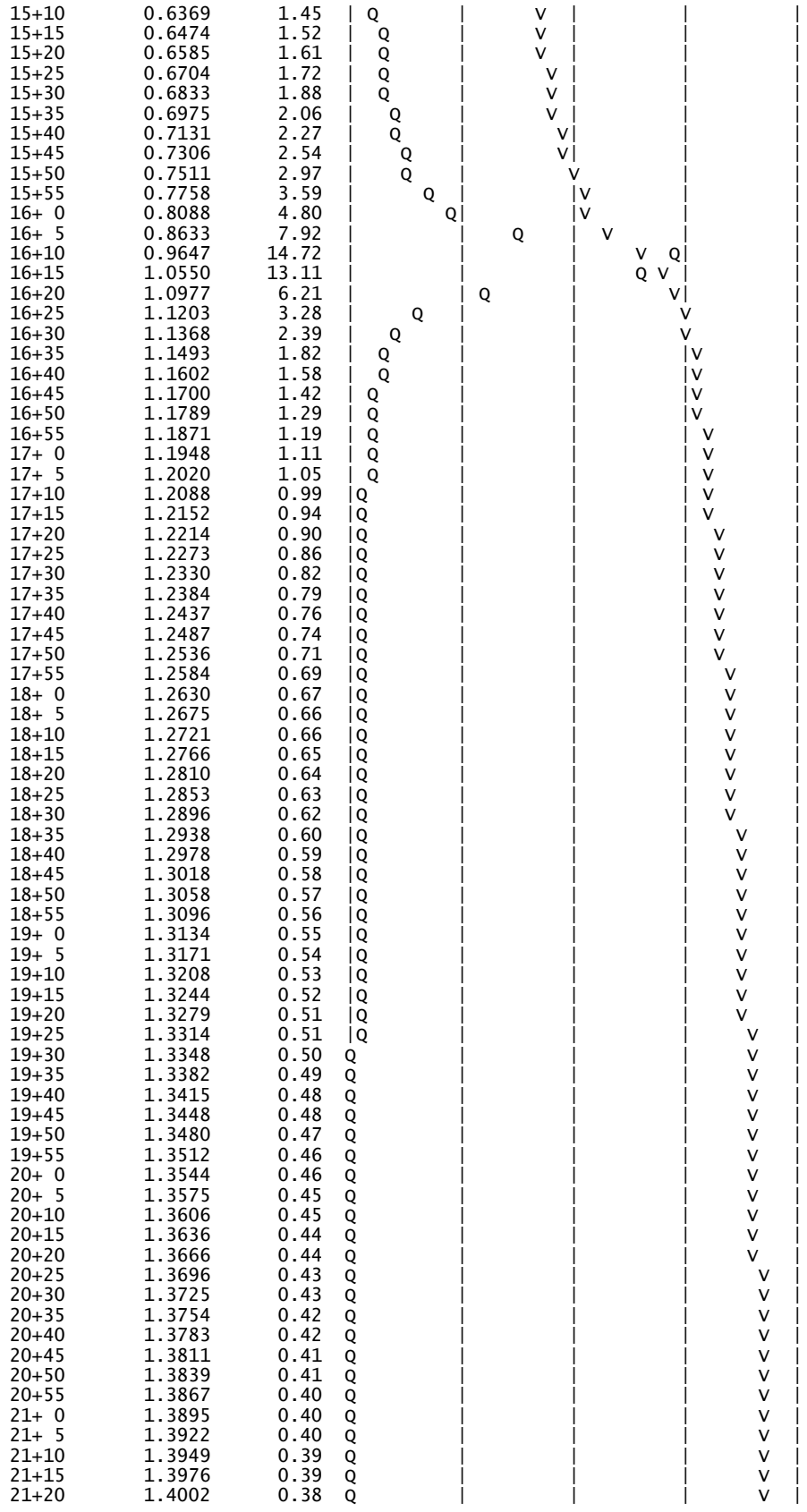
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0002	0.02	Q	|	|	|	|
0+10	0.0011	0.14	Q	|	|	|	|
0+15	0.0029	0.25	Q	|	|	|	|
0+20	0.0049	0.29	Q	|	|	|	|
0+25	0.0069	0.29	Q	|	|	|	|
0+30	0.0089	0.30	Q	|	|	|	|
0+35	0.0110	0.30	Q	|	|	|	|
0+40	0.0131	0.30	Q	|	|	|	|
0+45	0.0151	0.30	Q	|	|	|	|
0+50	0.0172	0.30	Q	|	|	|	|
0+55	0.0193	0.30	Q	|	|	|	|
1+ 0	0.0214	0.30	Q	|	|	|	|
1+ 5	0.0235	0.30	Q	|	|	|	|
1+10	0.0256	0.31	Q	|	|	|	|
1+15	0.0277	0.31	Q	|	|	|	|
1+20	0.0298	0.31	Q	|	|	|	|
1+25	0.0320	0.31	Q	|	|	|	|
1+30	0.0341	0.31	Q	|	|	|	|
1+35	0.0363	0.31	Q	|	|	|	|
1+40	0.0384	0.31	QV	|	|	|	|
1+45	0.0406	0.31	QV	|	|	|	|
1+50	0.0427	0.31	QV	|	|	|	|
1+55	0.0449	0.32	QV	|	|	|	|
2+ 0	0.0471	0.32	QV	|	|	|	|
2+ 5	0.0493	0.32	QV	|	|	|	|
2+10	0.0515	0.32	QV	|	|	|	|
2+15	0.0537	0.32	QV	|	|	|	|
2+20	0.0559	0.32	QV	|	|	|	|
2+25	0.0581	0.32	QV	|	|	|	|
2+30	0.0603	0.32	QV	|	|	|	|
2+35	0.0625	0.32	QV	|	|	|	|

2+40	0.0648	0.33	QV				
2+45	0.0670	0.33	QV				
2+50	0.0693	0.33	QV				
2+55	0.0716	0.33	QV				
3+ 0	0.0738	0.33	QV				
3+ 5	0.0761	0.33	Q V				
3+10	0.0784	0.33	Q V				
3+15	0.0807	0.33	Q V				
3+20	0.0830	0.34	Q V				
3+25	0.0853	0.34	Q V				
3+30	0.0877	0.34	Q V				
3+35	0.0900	0.34	Q V				
3+40	0.0924	0.34	Q V				
3+45	0.0947	0.34	Q V				
3+50	0.0971	0.34	Q V				
3+55	0.0994	0.34	Q V				
4+ 0	0.1018	0.35	Q V				
4+ 5	0.1042	0.35	Q V				
4+10	0.1066	0.35	Q V				
4+15	0.1090	0.35	Q V				
4+20	0.1115	0.35	Q V				
4+25	0.1139	0.35	Q V				
4+30	0.1163	0.35	Q V				
4+35	0.1188	0.36	Q V				
4+40	0.1213	0.36	Q V				
4+45	0.1237	0.36	Q V				
4+50	0.1262	0.36	Q V				
4+55	0.1287	0.36	Q V				
5+ 0	0.1312	0.36	Q V				
5+ 5	0.1337	0.37	Q V				
5+10	0.1363	0.37	Q V				
5+15	0.1388	0.37	Q V				
5+20	0.1414	0.37	Q V				
5+25	0.1439	0.37	Q V				
5+30	0.1465	0.37	Q V				
5+35	0.1491	0.38	Q V				
5+40	0.1517	0.38	Q V				
5+45	0.1543	0.38	Q V				
5+50	0.1569	0.38	Q V				
5+55	0.1596	0.38	Q V				
6+ 0	0.1622	0.38	Q V				
6+ 5	0.1649	0.39	Q V				
6+10	0.1675	0.39	Q V				
6+15	0.1702	0.39	Q V				
6+20	0.1729	0.39	Q V				
6+25	0.1757	0.39	Q V				
6+30	0.1784	0.40	Q V				
6+35	0.1811	0.40	Q V				
6+40	0.1839	0.40	Q V				
6+45	0.1867	0.40	Q V				
6+50	0.1894	0.40	Q V				
6+55	0.1922	0.41	Q V				
7+ 0	0.1951	0.41	Q V				
7+ 5	0.1979	0.41	Q V				
7+10	0.2007	0.41	Q V				
7+15	0.2036	0.42	Q V				
7+20	0.2065	0.42	Q V				
7+25	0.2094	0.42	Q V				
7+30	0.2123	0.42	Q V				
7+35	0.2152	0.42	Q V				
7+40	0.2181	0.43	Q V				
7+45	0.2211	0.43	Q V				
7+50	0.2241	0.43	Q V				
7+55	0.2271	0.43	Q V				
8+ 0	0.2301	0.44	Q V				
8+ 5	0.2331	0.44	Q V				
8+10	0.2362	0.44	Q V				
8+15	0.2393	0.45	Q V				
8+20	0.2423	0.45	Q V				
8+25	0.2454	0.45	Q V				
8+30	0.2486	0.45	Q V				
8+35	0.2517	0.46	Q V				
8+40	0.2549	0.46	Q V				
8+45	0.2581	0.46	Q V				
8+50	0.2613	0.47	Q V				

```
 8+55      0.2645      0.47  Q      V  |          |          |          |
 9+ 0      0.2678      0.47  Q      V  |          |          |          |
 9+ 5      0.2711      0.48  Q      V  |          |          |          |
 9+10      0.2744      0.48  Q      V  |          |          |          |
 9+15      0.2777      0.48  Q      V  |          |          |          |
 9+20      0.2810      0.49  Q      V  |          |          |          |
 9+25      0.2844      0.49  Q      V  |          |          |          |
 9+30      0.2878      0.49  Q      V  |          |          |          |
 9+35      0.2912      0.50  Q      V  |          |          |          |
 9+40      0.2947      0.50  |Q     V  |          |          |          |
 9+45      0.2981      0.50  |Q      V |          |          |          |
 9+50      0.3016      0.51  |Q      V |          |          |          |
 9+55      0.3052      0.51  |Q      V |          |          |          |
10+ 0      0.3087      0.52  |Q      V |          |          |          |
10+ 5      0.3123      0.52  |Q      V |          |          |          |
10+10      0.3159      0.52  |Q      V |          |          |          |
10+15      0.3196      0.53  |Q      V |          |          |          |
10+20      0.3232      0.53  |Q      V |          |          |          |
10+25      0.3269      0.54  |Q      V |          |          |          |
10+30      0.3307      0.54  |Q      V |          |          |          |
10+35      0.3344      0.55  |Q       V|          |          |          |
10+40      0.3382      0.55  |Q       V|          |          |          |
10+45      0.3421      0.56  |Q       V|          |          |          |
10+50      0.3459      0.56  |Q       V|          |          |          |
10+55      0.3499      0.57  |Q       V|          |          |          |
11+ 0      0.3538      0.57  |Q       V|          |          |          |
11+ 5      0.3578      0.58  |Q       V|          |          |          |
11+10      0.3618      0.58  |Q       V|          |          |          |
11+15      0.3659      0.59  |Q       V|          |          |          |
11+20      0.3700      0.60  |Q        V          |          |          |
11+25      0.3741      0.60  |Q        V          |          |          |
11+30      0.3783      0.61  |Q        V          |          |          |
11+35      0.3825      0.61  |Q        V          |          |          |
11+40      0.3868      0.62  |Q        V          |          |          |
11+45      0.3911      0.63  |Q        V          |          |          |
11+50      0.3955      0.63  |Q        V          |          |          |
11+55      0.3999      0.64  |Q        V          |          |          |
12+ 0      0.4044      0.65  |Q        V          |          |          |
12+ 5      0.4089      0.65  |Q        |V         |          |          |
12+10      0.4133      0.65  |Q        |V         |          |          |
12+15      0.4177      0.64  |Q        |V         |          |          |
12+20      0.4222      0.64  |Q        |V         |          |          |
12+25      0.4266      0.65  |Q        |V         |          |          |
12+30      0.4312      0.66  |Q        |V         |          |          |
12+35      0.4358      0.67  |Q        |V         |          |          |
12+40      0.4404      0.68  |Q        |V         |          |          |
12+45      0.4451      0.69  |Q        | V        |          |          |
12+50      0.4500      0.70  |Q        | V        |          |          |
12+55      0.4548      0.71  |Q        | V        |          |          |
13+ 0      0.4598      0.72  |Q        | V        |          |          |
13+ 5      0.4648      0.73  |Q        | V        |          |          |
13+10      0.4699      0.74  |Q        | V        |          |          |
13+15      0.4752      0.76  |Q        | V        |          |          |
13+20      0.4805      0.77  |Q        |  V       |          |          |
13+25      0.4859      0.78  |Q        |  V       |          |          |
13+30      0.4914      0.80  |Q        |  V       |          |          |
13+35      0.4970      0.81  |Q        |  V       |          |          |
13+40      0.5027      0.83  |Q        |  V       |          |          |
13+45      0.5085      0.85  |Q        |  V       |          |          |
13+50      0.5145      0.87  |Q        |  V       |          |          |
13+55      0.5206      0.89  |Q        |   V      |          |          |
14+ 0      0.5269      0.91  |Q        |   V      |          |          |
14+ 5      0.5332      0.93  |Q        |   V      |          |          |
14+10      0.5398      0.95  |Q        |   V      |          |          |
14+15      0.5465      0.98  |Q        |   V      |          |          |
14+20      0.5534      1.00  | Q       |   V      |          |          |
14+25      0.5606      1.03  | Q       |    V     |          |          |
14+30      0.5679      1.06  | Q       |    V     |          |          |
14+35      0.5754      1.10  | Q       |    V     |          |          |
14+40      0.5832      1.13  | Q       |    V     |          |          |
14+45      0.5913      1.17  | Q       |     V    |          |          |
14+50      0.5997      1.22  | Q       |     V    |          |          |
14+55      0.6084      1.26  | Q       |     V    |          |          |
15+ 0      0.6175      1.32  | Q       |     V    |          |          |
15+ 5      0.6270      1.38  | Q       |     V    |          |          |
```



```
   21+25       1.4028      0.38  Q          |          |          |       V  |
   21+30       1.4054      0.38  Q          |          |          |        V |
   21+35       1.4080      0.37  Q          |          |          |        V |
   21+40       1.4105      0.37  Q          |          |          |        V |
   21+45       1.4130      0.37  Q          |          |          |        V |
   21+50       1.4155      0.36  Q          |          |          |        V |
   21+55       1.4180      0.36  Q          |          |          |        V |
   22+ 0       1.4205      0.36  Q          |          |          |        V |
   22+ 5       1.4229      0.35  Q          |          |          |        V |
   22+10       1.4253      0.35  Q          |          |          |        V |
   22+15       1.4277      0.35  Q          |          |          |        V |
   22+20       1.4301      0.35  Q          |          |          |        V |
   22+25       1.4325      0.34  Q          |          |          |        V |
   22+30       1.4348      0.34  Q          |          |          |        V |
   22+35       1.4371      0.34  Q          |          |          |        V |
   22+40       1.4394      0.33  Q          |          |          |        V |
   22+45       1.4417      0.33  Q          |          |          |         V|
   22+50       1.4440      0.33  Q          |          |          |         V|
   22+55       1.4462      0.33  Q          |          |          |         V|
   23+ 0       1.4485      0.32  Q          |          |          |         V|
   23+ 5       1.4507      0.32  Q          |          |          |         V|
   23+10       1.4529      0.32  Q          |          |          |         V|
   23+15       1.4551      0.32  Q          |          |          |         V|
   23+20       1.4573      0.32  Q          |          |          |         V|
   23+25       1.4594      0.31  Q          |          |          |         V|
   23+30       1.4616      0.31  Q          |          |          |         V|
   23+35       1.4637      0.31  Q          |          |          |         V|
   23+40       1.4658      0.31  Q          |          |          |         V|
   23+45       1.4679      0.31  Q          |          |          |         V|
   23+50       1.4700      0.30  Q          |          |          |         V|
   23+55       1.4721      0.30  Q          |          |          |         V|
   24+ 0       1.4742      0.30  Q          |          |          |         V|
   24+ 5       1.4760      0.28  Q          |          |          |         V|
   24+10       1.4771      0.15  Q          |          |          |         V|
   24+15       1.4774      0.04  Q          |          |          |         V|
   24+20       1.4775      0.01  Q          |          |          |         V|
   24+25       1.4775      0.00  Q          |          |          |         V|
-------------------------------------------------------------------------
```

BUILDING 2

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 2A
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 2APROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
22.40	1	0.60
Rainfall data for year 2		
22.40	6	0.70
Rainfall data for year 2		
22.40	24	1.20
Rainfall data for year 100		
22.40	1	1.00
Rainfall data for year 100		
22.40	6	1.90
Rainfall data for year 100		
22.40	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	22.40	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.24	0.100	69.0	69.0	4.49	0.121
20.16	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      22.40(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      22.40(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       270.90 (CFS))

  1                5.469                  14.816
  2               35.337                  80.911
  3               75.925                 109.955
  4               93.130                  46.608
  5               98.077                  13.401
  6               99.228                   3.116
  7              100.000                   2.092
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2218              0.2218
  2              0.2927              0.0709
  3              0.3442              0.0515
  4              0.3862              0.0420
  5              0.4223              0.0361
  6              0.4542              0.0319
  7              0.4831              0.0289
  8              0.5096              0.0265
  9              0.5342              0.0246
 10              0.5572              0.0230
 11              0.5789              0.0217
 12              0.5994              0.0205
 13              0.6181              0.0187
 14              0.6360              0.0179
 15              0.6531              0.0171
 16              0.6695              0.0164
 17              0.6853              0.0158
 18              0.7006              0.0152
 19              0.7153              0.0147
 20              0.7295              0.0143
 21              0.7434              0.0138
 22              0.7568              0.0134
 23              0.7698              0.0131
 24              0.7826              0.0127
 25              0.7949              0.0124
 26              0.8070              0.0121
```

27	0.8188	0.0118
28	0.8304	0.0115
29	0.8417	0.0113
30	0.8527	0.0111
31	0.8635	0.0108
32	0.8741	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9243	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9704	0.0089
43	0.9793	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0049	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0376	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1339	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3427	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3709	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4249	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4761	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5624	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5985	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7755	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7907	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9199	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9335	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9503	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033
251	1.9898	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9995	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0839	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0111	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0319	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 31.15(CFS)

++

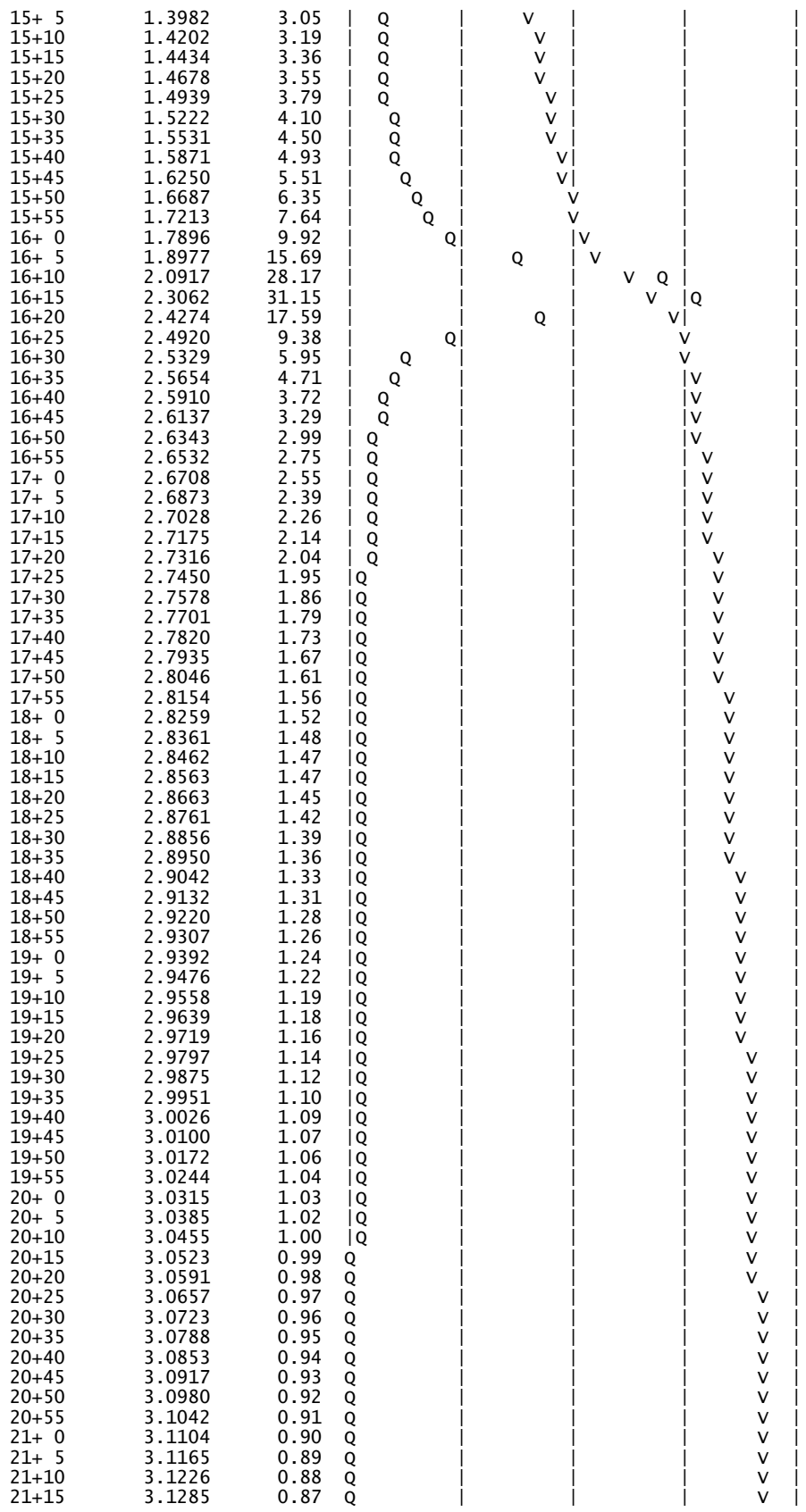
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0002	0.04	Q				
0+10	0.0019	0.23	Q				
0+15	0.0053	0.50	Q				
0+20	0.0096	0.62	Q				
0+25	0.0141	0.65	Q				
0+30	0.0186	0.66	Q				
0+35	0.0232	0.67	Q				
0+40	0.0279	0.67	Q				
0+45	0.0325	0.67	Q				
0+50	0.0372	0.68	Q				
0+55	0.0418	0.68	Q				
1+ 0	0.0465	0.68	Q				
1+ 5	0.0512	0.68	Q				
1+10	0.0559	0.68	Q				
1+15	0.0607	0.69	Q				
1+20	0.0654	0.69	Q				
1+25	0.0702	0.69	Q				
1+30	0.0749	0.69	Q				
1+35	0.0797	0.70	Q				
1+40	0.0846	0.70	QV				
1+45	0.0894	0.70	QV				
1+50	0.0942	0.70	QV				
1+55	0.0991	0.71	QV				
2+ 0	0.1040	0.71	QV				
2+ 5	0.1089	0.71	QV				
2+10	0.1138	0.71	QV				
2+15	0.1187	0.72	QV				
2+20	0.1236	0.72	QV				
2+25	0.1286	0.72	QV				
2+30	0.1336	0.72	QV				

2+35	0.1386	0.73	QV	|	|	|	|
2+40	0.1436	0.73	QV	|	|	|	|
2+45	0.1486	0.73	QV	|	|	|	|
2+50	0.1537	0.73	QV	|	|	|	|
2+55	0.1588	0.74	QV	|	|	|	|
3+ 0	0.1638	0.74	QV	|	|	|	|
3+ 5	0.1690	0.74	Q V	|	|	|	|
3+10	0.1741	0.74	Q V	|	|	|	|
3+15	0.1792	0.75	Q V	|	|	|	|
3+20	0.1844	0.75	Q V	|	|	|	|
3+25	0.1896	0.75	Q V	|	|	|	|
3+30	0.1948	0.76	Q V	|	|	|	|
3+35	0.2000	0.76	Q V	|	|	|	|
3+40	0.2053	0.76	Q V	|	|	|	|
3+45	0.2105	0.77	Q V	|	|	|	|
3+50	0.2158	0.77	Q V	|	|	|	|
3+55	0.2211	0.77	Q V	|	|	|	|
4+ 0	0.2265	0.77	Q V	|	|	|	|
4+ 5	0.2318	0.78	Q V	|	|	|	|
4+10	0.2372	0.78	Q V	|	|	|	|
4+15	0.2426	0.78	Q V	|	|	|	|
4+20	0.2480	0.79	Q V	|	|	|	|
4+25	0.2535	0.79	Q V	|	|	|	|
4+30	0.2589	0.79	Q V	|	|	|	|
4+35	0.2644	0.80	Q V	|	|	|	|
4+40	0.2699	0.80	Q V	|	|	|	|
4+45	0.2755	0.80	Q V	|	|	|	|
4+50	0.2810	0.81	Q V	|	|	|	|
4+55	0.2866	0.81	Q V	|	|	|	|
5+ 0	0.2922	0.81	Q V	|	|	|	|
5+ 5	0.2979	0.82	Q V	|	|	|	|
5+10	0.3035	0.82	Q V	|	|	|	|
5+15	0.3092	0.83	Q V	|	|	|	|
5+20	0.3149	0.83	Q V	|	|	|	|
5+25	0.3206	0.83	Q V	|	|	|	|
5+30	0.3264	0.84	Q V	|	|	|	|
5+35	0.3322	0.84	Q V	|	|	|	|
5+40	0.3380	0.84	Q V	|	|	|	|
5+45	0.3439	0.85	Q V	|	|	|	|
5+50	0.3497	0.85	Q V	|	|	|	|
5+55	0.3556	0.86	Q V	|	|	|	|
6+ 0	0.3615	0.86	Q V	|	|	|	|
6+ 5	0.3675	0.86	Q V	|	|	|	|
6+10	0.3735	0.87	Q V	|	|	|	|
6+15	0.3795	0.87	Q V	|	|	|	|
6+20	0.3855	0.88	Q V	|	|	|	|
6+25	0.3916	0.88	Q V	|	|	|	|
6+30	0.3977	0.89	Q V	|	|	|	|
6+35	0.4039	0.89	Q V	|	|	|	|
6+40	0.4100	0.90	Q V	|	|	|	|
6+45	0.4162	0.90	Q V	|	|	|	|
6+50	0.4225	0.90	Q V	|	|	|	|
6+55	0.4287	0.91	Q V	|	|	|	|
7+ 0	0.4350	0.91	Q V	|	|	|	|
7+ 5	0.4413	0.92	Q V	|	|	|	|
7+10	0.4477	0.92	Q V	|	|	|	|
7+15	0.4541	0.93	Q V	|	|	|	|
7+20	0.4605	0.93	Q V	|	|	|	|
7+25	0.4670	0.94	Q V	|	|	|	|
7+30	0.4735	0.94	Q V	|	|	|	|
7+35	0.4801	0.95	Q V	|	|	|	|
7+40	0.4867	0.96	Q V	|	|	|	|
7+45	0.4933	0.96	Q V	|	|	|	|
7+50	0.4999	0.97	Q V	|	|	|	|
7+55	0.5066	0.97	Q V	|	|	|	|
8+ 0	0.5134	0.98	Q V	|	|	|	|
8+ 5	0.5202	0.98	Q V	|	|	|	|
8+10	0.5270	0.99	Q V	|	|	|	|
8+15	0.5338	1.00	Q V	|	|	|	|
8+20	0.5407	1.00	|Q V	|	|	|	|
8+25	0.5477	1.01	|Q V	|	|	|	|
8+30	0.5547	1.02	|Q V	|	|	|	|
8+35	0.5617	1.02	|Q V	|	|	|	|
8+40	0.5688	1.03	|Q V	|	|	|	|
8+45	0.5759	1.04	|Q V	|	|	|	|

```
 8+50       0.5831      1.04  |Q     V  |          |          |          |
 8+55       0.5903      1.05  |Q     V  |          |          |          |
 9+ 0       0.5976      1.06  |Q     V  |          |          |          |
 9+ 5       0.6049      1.06  |Q     V  |          |          |          |
 9+10       0.6123      1.07  |Q     V  |          |          |          |
 9+15       0.6197      1.08  |Q     V  |          |          |          |
 9+20       0.6272      1.09  |Q     V  |          |          |          |
 9+25       0.6348      1.09  |Q     V  |          |          |          |
 9+30       0.6424      1.10  |Q     V  |          |          |          |
 9+35       0.6500      1.11  |Q     V  |          |          |          |
 9+40       0.6577      1.12  |Q     V  |          |          |          |
 9+45       0.6655      1.13  |Q      V |          |          |          |
 9+50       0.6733      1.14  |Q      V |          |          |          |
 9+55       0.6812      1.14  |Q      V |          |          |          |
10+ 0       0.6891      1.15  |Q      V |          |          |          |
10+ 5       0.6971      1.16  |Q      V |          |          |          |
10+10       0.7052      1.17  |Q      V |          |          |          |
10+15       0.7133      1.18  |Q      V |          |          |          |
10+20       0.7215      1.19  |Q      V |          |          |          |
10+25       0.7298      1.20  |Q      V |          |          |          |
10+30       0.7382      1.21  |Q      V |          |          |          |
10+35       0.7466      1.22  |Q       V|          |          |          |
10+40       0.7551      1.23  |Q       V|          |          |          |
10+45       0.7636      1.24  |Q       V|          |          |          |
10+50       0.7723      1.26  |Q       V|          |          |          |
10+55       0.7810      1.27  |Q       V|          |          |          |
11+ 0       0.7898      1.28  |Q       V|          |          |          |
11+ 5       0.7987      1.29  |Q       V|          |          |          |
11+10       0.8077      1.30  |Q       V|          |          |          |
11+15       0.8168      1.32  |Q       V|          |          |          |
11+20       0.8259      1.33  |Q       V|          |          |          |
11+25       0.8352      1.34  |Q        V          |          |          |
11+30       0.8445      1.36  |Q        V          |          |          |
11+35       0.8540      1.37  |Q        V          |          |          |
11+40       0.8635      1.39  |Q        V          |          |          |
11+45       0.8732      1.40  |Q        V          |          |          |
11+50       0.8829      1.42  |Q        V          |          |          |
11+55       0.8928      1.43  |Q        V          |          |          |
12+ 0       0.9028      1.45  |Q        V          |          |          |
12+ 5       0.9129      1.46  |Q        |V         |          |          |
12+10       0.9229      1.45  |Q        |V         |          |          |
12+15       0.9327      1.43  |Q        |V         |          |          |
12+20       0.9426      1.44  |Q        |V         |          |          |
12+25       0.9526      1.45  |Q        |V         |          |          |
12+30       0.9627      1.47  |Q        |V         |          |          |
12+35       0.9730      1.49  |Q        |V         |          |          |
12+40       0.9834      1.51  |Q        |V         |          |          |
12+45       0.9939      1.53  |Q        | V        |          |          |
12+50       1.0046      1.56  |Q        | V        |          |          |
12+55       1.0155      1.58  |Q        | V        |          |          |
13+ 0       1.0266      1.60  |Q        | V        |          |          |
13+ 5       1.0378      1.63  |Q        | V        |          |          |
13+10       1.0492      1.66  |Q        | V        |          |          |
13+15       1.0608      1.69  |Q        | V        |          |          |
13+20       1.0726      1.72  |Q        | V        |          |          |
13+25       1.0847      1.75  |Q        |  V       |          |          |
13+30       1.0969      1.78  |Q        |  V       |          |          |
13+35       1.1094      1.81  |Q        |  V       |          |          |
13+40       1.1222      1.85  |Q        |  V       |          |          |
13+45       1.1352      1.89  |Q        |  V       |          |          |
13+50       1.1485      1.93  |Q        |  V       |          |          |
13+55       1.1620      1.97  |Q        |   V      |          |          |
14+ 0       1.1759      2.02  | Q       |   V      |          |          |
14+ 5       1.1902      2.07  | Q       |   V      |          |          |
14+10       1.2047      2.12  | Q       |   V      |          |          |
14+15       1.2197      2.17  | Q       |   V      |          |          |
14+20       1.2351      2.23  | Q       |   V      |          |          |
14+25       1.2509      2.30  | Q       |    V     |          |          |
14+30       1.2672      2.36  | Q       |    V     |          |          |
14+35       1.2840      2.44  | Q       |    V     |          |          |
14+40       1.3013      2.52  | Q       |    V     |          |          |
14+45       1.3192      2.60  | Q       |    V     |          |          |
14+50       1.3378      2.70  | Q       |     V    |          |          |
14+55       1.3571      2.80  | Q       |     V    |          |          |
15+ 0       1.3772      2.92  | Q       |     V    |          |          |
```



```
   21+20       3.1345      0.86  Q          |          |          |      V  |
   21+25       3.1404      0.85  Q          |          |          |      V  |
   21+30       3.1462      0.85  Q          |          |          |       V |
   21+35       3.1520      0.84  Q          |          |          |       V |
   21+40       3.1577      0.83  Q          |          |          |       V |
   21+45       3.1633      0.82  Q          |          |          |       V |
   21+50       3.1690      0.82  Q          |          |          |       V |
   21+55       3.1745      0.81  Q          |          |          |       V |
   22+ 0       3.1800      0.80  Q          |          |          |       V |
   22+ 5       3.1855      0.79  Q          |          |          |       V |
   22+10       3.1909      0.79  Q          |          |          |       V |
   22+15       3.1963      0.78  Q          |          |          |       V |
   22+20       3.2017      0.78  Q          |          |          |       V |
   22+25       3.2070      0.77  Q          |          |          |       V |
   22+30       3.2122      0.76  Q          |          |          |       V |
   22+35       3.2174      0.76  Q          |          |          |       V |
   22+40       3.2226      0.75  Q          |          |          |       V |
   22+45       3.2277      0.75  Q          |          |          |        V|
   22+50       3.2328      0.74  Q          |          |          |        V|
   22+55       3.2379      0.73  Q          |          |          |        V|
   23+ 0       3.2429      0.73  Q          |          |          |        V|
   23+ 5       3.2479      0.72  Q          |          |          |        V|
   23+10       3.2529      0.72  Q          |          |          |        V|
   23+15       3.2578      0.71  Q          |          |          |        V|
   23+20       3.2626      0.71  Q          |          |          |        V|
   23+25       3.2675      0.70  Q          |          |          |        V|
   23+30       3.2723      0.70  Q          |          |          |        V|
   23+35       3.2771      0.69  Q          |          |          |        V|
   23+40       3.2818      0.69  Q          |          |          |        V|
   23+45       3.2866      0.69  Q          |          |          |        V|
   23+50       3.2913      0.68  Q          |          |          |        V|
   23+55       3.2959      0.68  Q          |          |          |        V|
   24+ 0       3.3005      0.67  Q          |          |          |        V|
   24+ 5       3.3049      0.63  Q          |          |          |        V|
   24+10       3.3079      0.43  Q          |          |          |        V|
   24+15       3.3090      0.16  Q          |          |          |        V|
   24+20       3.3093      0.05  Q          |          |          |        V|
   24+25       3.3094      0.01  Q          |          |          |        V|
   24+30       3.3094      0.01  Q          |          |          |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 2B
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 2BPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
12.50	1	0.60
Rainfall data for year 2		
12.50	6	0.70
Rainfall data for year 2		
12.50	24	1.20
Rainfall data for year 100		
12.50	1	1.00
Rainfall data for year 100		
12.50	6	1.90
Rainfall data for year 100		
12.50	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	12.50	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.25	0.100	69.0	69.0	4.49	0.121
11.25	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      12.50(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      12.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.600(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       151.17 (CFS))

  1                5.469                   8.268
  2               35.337                  45.151
  3               75.925                  61.359
  4               93.130                  26.009
  5               98.077                   7.478
  6               99.228                   1.739
  7              100.000                   1.168
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2219              0.2219
  2              0.2928              0.0709
  3              0.3444              0.0516
  4              0.3864              0.0420
  5              0.4225              0.0361
  6              0.4544              0.0320
  7              0.4834              0.0289
  8              0.5099              0.0265
  9              0.5345              0.0246
 10              0.5575              0.0230
 11              0.5791              0.0217
 12              0.5996              0.0205
 13              0.6184              0.0187
 14              0.6363              0.0179
 15              0.6534              0.0171
 16              0.6698              0.0164
 17              0.6856              0.0158
 18              0.7008              0.0152
 19              0.7155              0.0147
 20              0.7297              0.0142
 21              0.7436              0.0138
 22              0.7570              0.0134
 23              0.7700              0.0130
 24              0.7827              0.0127
 25              0.7951              0.0124
 26              0.8072              0.0121
```

27	0.8190	0.0118
28	0.8305	0.0115
29	0.8418	0.0113
30	0.8528	0.0110
31	0.8636	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9049	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9433	0.0094
40	0.9525	0.0092
41	0.9616	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9966	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0216	0.0082
49	1.0297	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0612	0.0077
54	1.0688	0.0076
55	1.0764	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1058	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1409	0.0069
65	1.1477	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1873	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2138	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2652	0.0063
84	1.2714	0.0062
85	1.2775	0.0062
86	1.2837	0.0061
87	1.2898	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3313	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3542	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3710	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3984	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4812	0.0050
123	1.4861	0.0050
124	1.4911	0.0049
125	1.4960	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5106	0.0048
129	1.5154	0.0048
130	1.5202	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6119	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6250	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6508	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6760	0.0042
166	1.6801	0.0041
167	1.6843	0.0041
168	1.6884	0.0041
169	1.6925	0.0041
170	1.6966	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7088	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7328	0.0040
180	1.7367	0.0040
181	1.7407	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7641	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7946	0.0038
196	1.7983	0.0038
197	1.8021	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8317	0.0037
206	1.8353	0.0037
207	1.8390	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8642	0.0036
215	1.8677	0.0036
216	1.8713	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8819	0.0035
220	1.8854	0.0035
221	1.8889	0.0035
222	1.8924	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9166	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9370	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9604	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9703	0.0033
246	1.9736	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0440	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0931	0.0030
285	2.0961	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1051	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0086
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0098
177	0.0127	0.0023	0.0104
178	0.0130	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0142	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0201
188	0.0265	0.0046	0.0220
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0516	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2219	0.0046	0.2174
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 17.39(CFS)

++

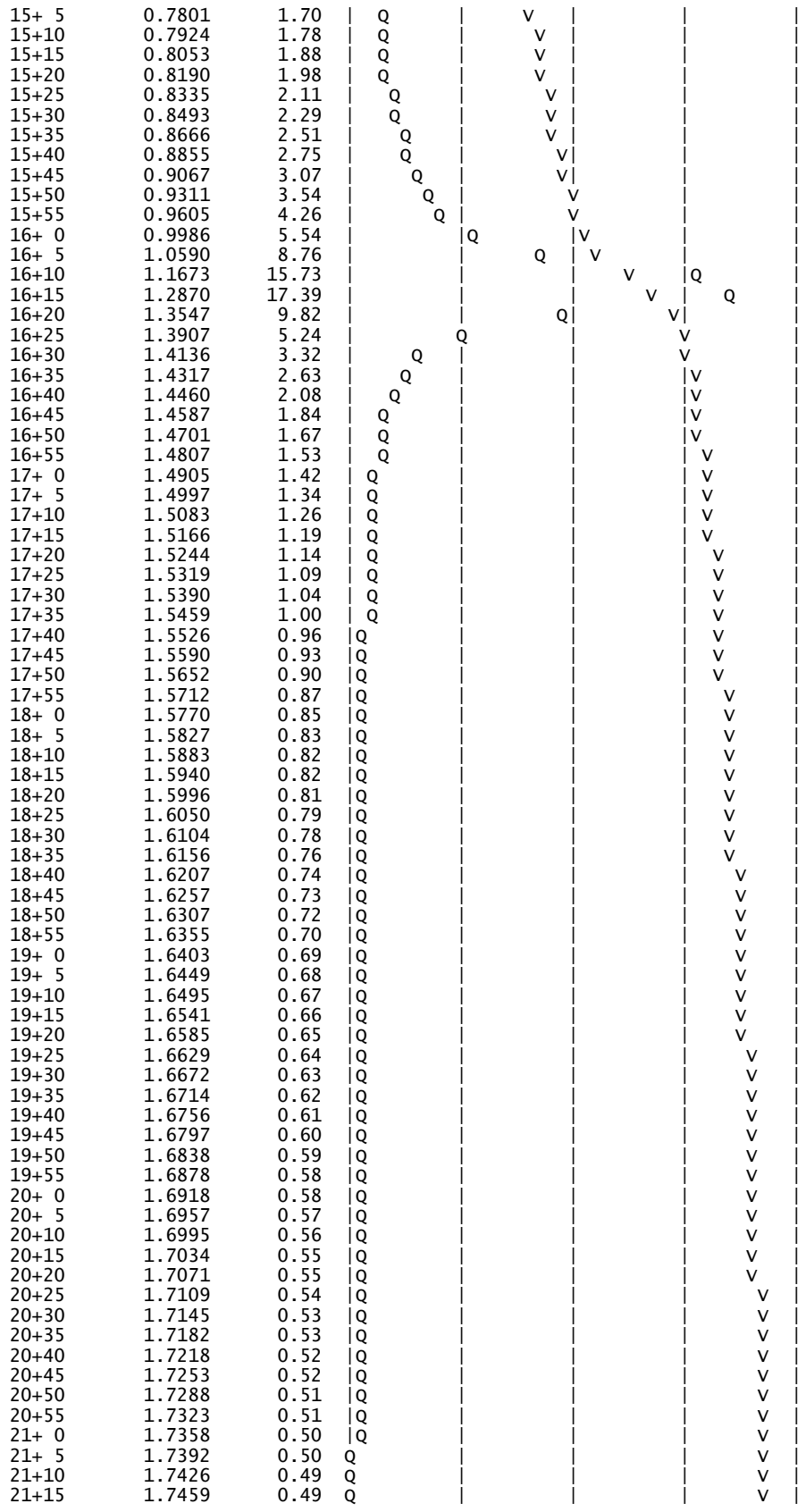
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0010	0.13	Q	|	|	|	|
0+15	0.0030	0.28	Q	|	|	|	|
0+20	0.0053	0.34	Q	|	|	|	|
0+25	0.0079	0.36	Q	|	|	|	|
0+30	0.0104	0.37	Q	|	|	|	|
0+35	0.0130	0.37	Q	|	|	|	|
0+40	0.0156	0.37	Q	|	|	|	|
0+45	0.0181	0.38	Q	|	|	|	|
0+50	0.0207	0.38	Q	|	|	|	|
0+55	0.0233	0.38	Q	|	|	|	|
1+ 0	0.0260	0.38	Q	|	|	|	|
1+ 5	0.0286	0.38	Q	|	|	|	|
1+10	0.0312	0.38	Q	|	|	|	|
1+15	0.0339	0.38	Q	|	|	|	|
1+20	0.0365	0.38	Q	|	|	|	|
1+25	0.0392	0.39	Q	|	|	|	|
1+30	0.0418	0.39	Q	|	|	|	|
1+35	0.0445	0.39	Q	|	|	|	|
1+40	0.0472	0.39	QV	|	|	|	|
1+45	0.0499	0.39	QV	|	|	|	|
1+50	0.0526	0.39	QV	|	|	|	|
1+55	0.0553	0.39	QV	|	|	|	|
2+ 0	0.0580	0.40	QV	|	|	|	|
2+ 5	0.0607	0.40	QV	|	|	|	|
2+10	0.0635	0.40	QV	|	|	|	|
2+15	0.0662	0.40	QV	|	|	|	|
2+20	0.0690	0.40	QV	|	|	|	|
2+25	0.0718	0.40	QV	|	|	|	|
2+30	0.0745	0.40	QV	|	|	|	|

2+35	0.0773	0.41	QV	|	|	|	|
2+40	0.0801	0.41	QV	|	|	|	|
2+45	0.0829	0.41	QV	|	|	|	|
2+50	0.0858	0.41	QV	|	|	|	|
2+55	0.0886	0.41	QV	|	|	|	|
3+ 0	0.0914	0.41	QV	|	|	|	|
3+ 5	0.0943	0.41	Q V	|	|	|	|
3+10	0.0971	0.42	Q V	|	|	|	|
3+15	0.1000	0.42	Q V	|	|	|	|
3+20	0.1029	0.42	Q V	|	|	|	|
3+25	0.1058	0.42	Q V	|	|	|	|
3+30	0.1087	0.42	Q V	|	|	|	|
3+35	0.1116	0.42	Q V	|	|	|	|
3+40	0.1145	0.43	Q V	|	|	|	|
3+45	0.1175	0.43	Q V	|	|	|	|
3+50	0.1204	0.43	Q V	|	|	|	|
3+55	0.1234	0.43	Q V	|	|	|	|
4+ 0	0.1264	0.43	Q V	|	|	|	|
4+ 5	0.1294	0.43	Q V	|	|	|	|
4+10	0.1324	0.44	Q V	|	|	|	|
4+15	0.1354	0.44	Q V	|	|	|	|
4+20	0.1384	0.44	Q V	|	|	|	|
4+25	0.1414	0.44	Q V	|	|	|	|
4+30	0.1445	0.44	Q V	|	|	|	|
4+35	0.1476	0.44	Q V	|	|	|	|
4+40	0.1506	0.45	Q V	|	|	|	|
4+45	0.1537	0.45	Q V	|	|	|	|
4+50	0.1568	0.45	Q V	|	|	|	|
4+55	0.1599	0.45	Q V	|	|	|	|
5+ 0	0.1631	0.45	Q V	|	|	|	|
5+ 5	0.1662	0.46	Q V	|	|	|	|
5+10	0.1694	0.46	Q V	|	|	|	|
5+15	0.1725	0.46	Q V	|	|	|	|
5+20	0.1757	0.46	Q V	|	|	|	|
5+25	0.1789	0.46	Q V	|	|	|	|
5+30	0.1821	0.47	Q V	|	|	|	|
5+35	0.1854	0.47	Q V	|	|	|	|
5+40	0.1886	0.47	Q V	|	|	|	|
5+45	0.1919	0.47	Q V	|	|	|	|
5+50	0.1952	0.48	Q V	|	|	|	|
5+55	0.1984	0.48	Q V	|	|	|	|
6+ 0	0.2018	0.48	Q V	|	|	|	|
6+ 5	0.2051	0.48	Q V	|	|	|	|
6+10	0.2084	0.48	Q V	|	|	|	|
6+15	0.2118	0.49	Q V	|	|	|	|
6+20	0.2151	0.49	Q V	|	|	|	|
6+25	0.2185	0.49	Q V	|	|	|	|
6+30	0.2219	0.49	Q V	|	|	|	|
6+35	0.2254	0.50	Q V	|	|	|	|
6+40	0.2288	0.50	Q V	|	|	|	|
6+45	0.2323	0.50	|Q V	|	|	|	|
6+50	0.2357	0.50	|Q V	|	|	|	|
6+55	0.2392	0.51	|Q V	|	|	|	|
7+ 0	0.2428	0.51	|Q V	|	|	|	|
7+ 5	0.2463	0.51	|Q V	|	|	|	|
7+10	0.2498	0.52	|Q V	|	|	|	|
7+15	0.2534	0.52	|Q V	|	|	|	|
7+20	0.2570	0.52	|Q V	|	|	|	|
7+25	0.2606	0.52	|Q V	|	|	|	|
7+30	0.2642	0.53	|Q V	|	|	|	|
7+35	0.2679	0.53	|Q V	|	|	|	|
7+40	0.2716	0.53	|Q V	|	|	|	|
7+45	0.2753	0.54	|Q V	|	|	|	|
7+50	0.2790	0.54	|Q V	|	|	|	|
7+55	0.2827	0.54	|Q V	|	|	|	|
8+ 0	0.2865	0.55	|Q V	|	|	|	|
8+ 5	0.2903	0.55	|Q V	|	|	|	|
8+10	0.2941	0.55	|Q V	|	|	|	|
8+15	0.2979	0.56	|Q V	|	|	|	|
8+20	0.3018	0.56	|Q V	|	|	|	|
8+25	0.3056	0.56	|Q V	|	|	|	|
8+30	0.3095	0.57	|Q V	|	|	|	|
8+35	0.3135	0.57	|Q V	|	|	|	|
8+40	0.3174	0.57	|Q V	|	|	|	|
8+45	0.3214	0.58	|Q V	|	|	|	|

8+50	0.3254	0.58	Q	V			
8+55	0.3294	0.59	Q	V			
9+ 0	0.3335	0.59	Q	V			
9+ 5	0.3376	0.59	Q	V			
9+10	0.3417	0.60	Q	V			
9+15	0.3458	0.60	Q	V			
9+20	0.3500	0.61	Q	V			
9+25	0.3542	0.61	Q	V			
9+30	0.3585	0.61	Q	V			
9+35	0.3627	0.62	Q	V			
9+40	0.3670	0.62	Q	V			
9+45	0.3713	0.63	Q	V			
9+50	0.3757	0.63	Q	V			
9+55	0.3801	0.64	Q	V			
10+ 0	0.3845	0.64	Q	V			
10+ 5	0.3890	0.65	Q	V			
10+10	0.3935	0.65	Q	V			
10+15	0.3981	0.66	Q	V			
10+20	0.4026	0.66	Q	V			
10+25	0.4073	0.67	Q	V			
10+30	0.4119	0.68	Q	V			
10+35	0.4166	0.68	Q	V			
10+40	0.4214	0.69	Q	V			
10+45	0.4261	0.69	Q	V			
10+50	0.4310	0.70	Q	V			
10+55	0.4358	0.71	Q	V			
11+ 0	0.4407	0.71	Q	V			
11+ 5	0.4457	0.72	Q	V			
11+10	0.4507	0.73	Q	V			
11+15	0.4558	0.73	Q	V			
11+20	0.4609	0.74	Q	V			
11+25	0.4661	0.75	Q	V			
11+30	0.4713	0.76	Q	V			
11+35	0.4765	0.77	Q	V			
11+40	0.4819	0.77	Q	V			
11+45	0.4873	0.78	Q	V			
11+50	0.4927	0.79	Q	V			
11+55	0.4982	0.80	Q	V			
12+ 0	0.5038	0.81	Q	V			
12+ 5	0.5094	0.82	Q	V			
12+10	0.5150	0.81	Q	V			
12+15	0.5205	0.80	Q	V			
12+20	0.5260	0.80	Q	V			
12+25	0.5316	0.81	Q	V			
12+30	0.5372	0.82	Q	V			
12+35	0.5429	0.83	Q	V			
12+40	0.5488	0.84	Q	V			
12+45	0.5546	0.86	Q	V			
12+50	0.5606	0.87	Q	V			
12+55	0.5667	0.88	Q	V			
13+ 0	0.5729	0.90	Q	V			
13+ 5	0.5791	0.91	Q	V			
13+10	0.5855	0.92	Q	V			
13+15	0.5920	0.94	Q	V			
13+20	0.5986	0.96	Q	V			
13+25	0.6053	0.98	Q	V			
13+30	0.6121	0.99	Q	V			
13+35	0.6191	1.01	Q	V			
13+40	0.6262	1.03	Q	V			
13+45	0.6335	1.05	Q	V			
13+50	0.6409	1.08	Q	V			
13+55	0.6484	1.10	Q	V			
14+ 0	0.6562	1.13	Q	V			
14+ 5	0.6641	1.15	Q	V			
14+10	0.6723	1.18	Q	V			
14+15	0.6806	1.21	Q	V			
14+20	0.6892	1.24	Q	V			
14+25	0.6980	1.28	Q	V			
14+30	0.7071	1.32	Q	V			
14+35	0.7164	1.36	Q	V			
14+40	0.7261	1.40	Q	V			
14+45	0.7361	1.45	Q	V			
14+50	0.7465	1.50	Q	V			
14+55	0.7572	1.56	Q	V			
15+ 0	0.7684	1.63	Q	V			



```
   21+20       1.7492      0.48  Q          |          |          |      V  |
   21+25       1.7525      0.48  Q          |          |          |      V  |
   21+30       1.7558      0.47  Q          |          |          |       V |
   21+35       1.7590      0.47  Q          |          |          |       V |
   21+40       1.7622      0.46  Q          |          |          |       V |
   21+45       1.7653      0.46  Q          |          |          |       V |
   21+50       1.7685      0.46  Q          |          |          |       V |
   21+55       1.7716      0.45  Q          |          |          |       V |
   22+ 0       1.7746      0.45  Q          |          |          |       V |
   22+ 5       1.7777      0.44  Q          |          |          |       V |
   22+10       1.7807      0.44  Q          |          |          |       V |
   22+15       1.7837      0.44  Q          |          |          |       V |
   22+20       1.7867      0.43  Q          |          |          |       V |
   22+25       1.7897      0.43  Q          |          |          |       V |
   22+30       1.7926      0.43  Q          |          |          |       V |
   22+35       1.7955      0.42  Q          |          |          |       V |
   22+40       1.7984      0.42  Q          |          |          |       V |
   22+45       1.8013      0.42  Q          |          |          |        V|
   22+50       1.8041      0.41  Q          |          |          |        V|
   22+55       1.8069      0.41  Q          |          |          |        V|
   23+ 0       1.8097      0.41  Q          |          |          |        V|
   23+ 5       1.8125      0.40  Q          |          |          |        V|
   23+10       1.8153      0.40  Q          |          |          |        V|
   23+15       1.8180      0.40  Q          |          |          |        V|
   23+20       1.8207      0.40  Q          |          |          |        V|
   23+25       1.8234      0.39  Q          |          |          |        V|
   23+30       1.8261      0.39  Q          |          |          |        V|
   23+35       1.8288      0.39  Q          |          |          |        V|
   23+40       1.8315      0.38  Q          |          |          |        V|
   23+45       1.8341      0.38  Q          |          |          |        V|
   23+50       1.8367      0.38  Q          |          |          |        V|
   23+55       1.8393      0.38  Q          |          |          |        V|
   24+ 0       1.8419      0.38  Q          |          |          |        V|
   24+ 5       1.8443      0.35  Q          |          |          |        V|
   24+10       1.8460      0.24  Q          |          |          |        V|
   24+15       1.8466      0.09  Q          |          |          |        V|
   24+20       1.8468      0.03  Q          |          |          |        V|
   24+25       1.8468      0.01  Q          |          |          |        V|
   24+30       1.8468      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 2C
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 2CPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
18.30	1	0.60
Rainfall data for year 2		
18.30	6	0.70
Rainfall data for year 2		
18.30	24	1.20
Rainfall data for year 100		
18.30	1	1.00
Rainfall data for year 100		
18.30	6	1.90
Rainfall data for year 100		
18.30	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	18.30	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.83	0.100	69.0	69.0	4.49	0.121
16.47	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.180 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      18.30(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.8704
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      18.30(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       221.32 (CFS))

  1                6.077                  13.449
  2               39.009                  72.885
  3               79.564                  89.753
  4               94.634                  33.354
  5               98.466                   8.480
  6               99.524                   2.341
  7              100.000                   1.054
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2219              0.2219
  2              0.2928              0.0709
  3              0.3443              0.0515
  4              0.3863              0.0420
  5              0.4224              0.0361
  6              0.4543              0.0320
  7              0.4832              0.0289
  8              0.5097              0.0265
  9              0.5343              0.0246
 10              0.5573              0.0230
 11              0.5790              0.0217
 12              0.5995              0.0205
 13              0.6182              0.0187
 14              0.6361              0.0179
 15              0.6532              0.0171
 16              0.6696              0.0164
 17              0.6854              0.0158
 18              0.7007              0.0152
 19              0.7154              0.0147
 20              0.7296              0.0143
 21              0.7434              0.0138
 22              0.7569              0.0134
 23              0.7699              0.0131
 24              0.7826              0.0127
 25              0.7950              0.0124
 26              0.8071              0.0121
```

27	0.8189	0.0118
28	0.8304	0.0115
29	0.8417	0.0113
30	0.8528	0.0110
31	0.8636	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9525	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1058	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1408	0.0069
65	1.1477	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2837	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3710	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5154	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6884	0.0041
169	1.6925	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8889	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9703	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0086
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2219	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 25.27(CFS)

++

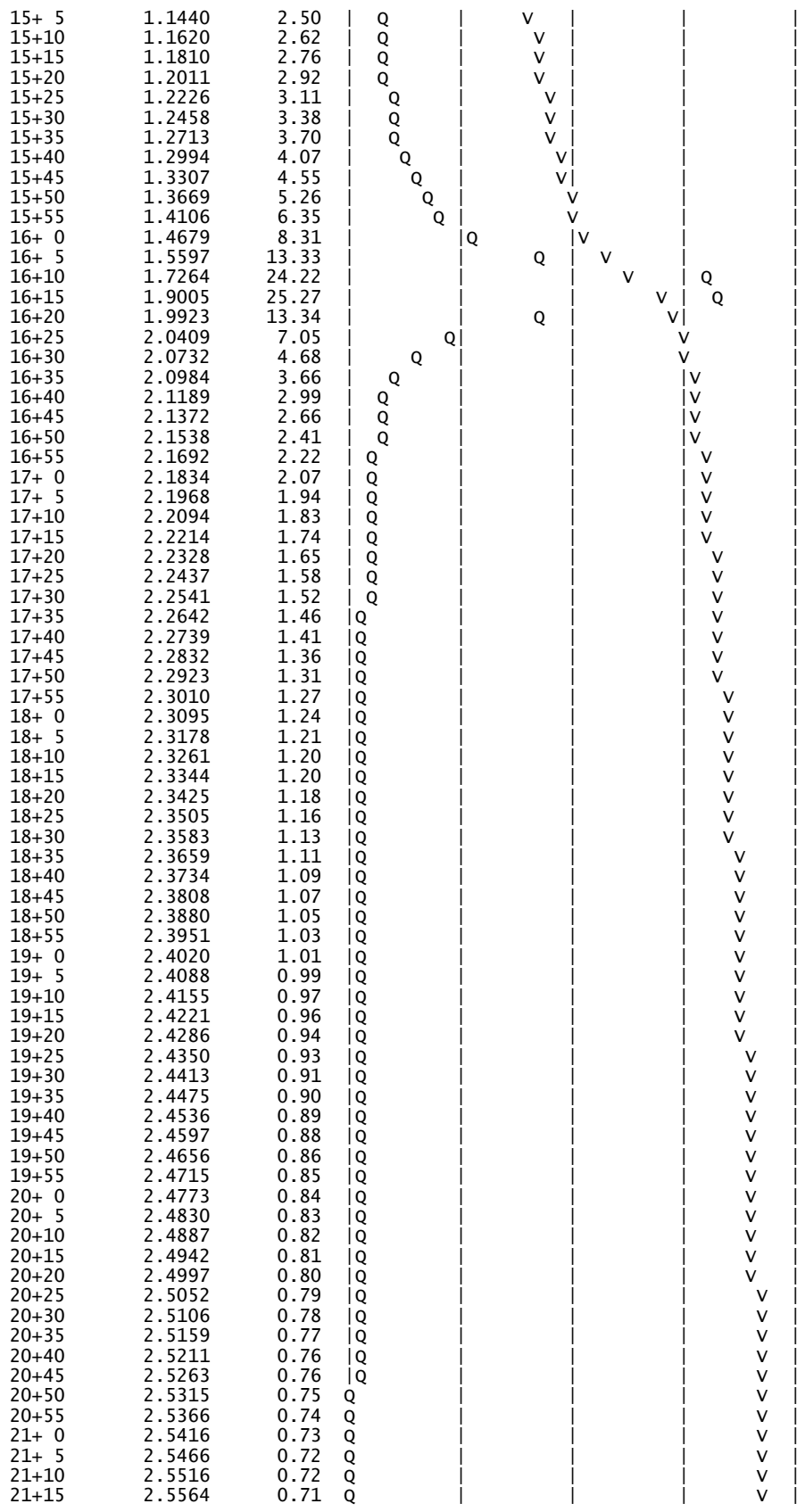
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q	|	|	|	|
0+10	0.0017	0.21	Q	|	|	|	|
0+15	0.0046	0.43	Q	|	|	|	|
0+20	0.0082	0.51	Q	|	|	|	|
0+25	0.0119	0.54	Q	|	|	|	|
0+30	0.0156	0.54	Q	|	|	|	|
0+35	0.0194	0.55	Q	|	|	|	|
0+40	0.0231	0.55	Q	|	|	|	|
0+45	0.0269	0.55	Q	|	|	|	|
0+50	0.0307	0.55	Q	|	|	|	|
0+55	0.0346	0.55	Q	|	|	|	|
1+ 0	0.0384	0.56	Q	|	|	|	|
1+ 5	0.0422	0.56	Q	|	|	|	|
1+10	0.0461	0.56	Q	|	|	|	|
1+15	0.0500	0.56	Q	|	|	|	|
1+20	0.0538	0.56	Q	|	|	|	|
1+25	0.0577	0.57	Q	|	|	|	|
1+30	0.0616	0.57	Q	|	|	|	|
1+35	0.0655	0.57	Q	|	|	|	|
1+40	0.0695	0.57	QV	|	|	|	|
1+45	0.0734	0.57	QV	|	|	|	|
1+50	0.0774	0.57	QV	|	|	|	|
1+55	0.0813	0.58	QV	|	|	|	|
2+ 0	0.0853	0.58	QV	|	|	|	|
2+ 5	0.0893	0.58	QV	|	|	|	|
2+10	0.0933	0.58	QV	|	|	|	|
2+15	0.0974	0.58	QV	|	|	|	|
2+20	0.1014	0.59	QV	|	|	|	|
2+25	0.1055	0.59	QV	|	|	|	|
2+30	0.1095	0.59	QV	|	|	|	|

2+35	0.1136	0.59	QV				
2+40	0.1177	0.60	QV				
2+45	0.1218	0.60	QV				
2+50	0.1260	0.60	QV				
2+55	0.1301	0.60	QV				
3+ 0	0.1343	0.60	QV				
3+ 5	0.1385	0.61	Q V				
3+10	0.1426	0.61	Q V				
3+15	0.1469	0.61	Q V				
3+20	0.1511	0.61	Q V				
3+25	0.1553	0.62	Q V				
3+30	0.1596	0.62	Q V				
3+35	0.1638	0.62	Q V				
3+40	0.1681	0.62	Q V				
3+45	0.1724	0.63	Q V				
3+50	0.1768	0.63	Q V				
3+55	0.1811	0.63	Q V				
4+ 0	0.1855	0.63	Q V				
4+ 5	0.1898	0.64	Q V				
4+10	0.1942	0.64	Q V				
4+15	0.1986	0.64	Q V				
4+20	0.2031	0.64	Q V				
4+25	0.2075	0.65	Q V				
4+30	0.2120	0.65	Q V				
4+35	0.2165	0.65	Q V				
4+40	0.2210	0.65	Q V				
4+45	0.2255	0.66	Q V				
4+50	0.2301	0.66	Q V				
4+55	0.2346	0.66	Q V				
5+ 0	0.2392	0.67	Q V				
5+ 5	0.2438	0.67	Q V				
5+10	0.2484	0.67	Q V				
5+15	0.2531	0.67	Q V				
5+20	0.2577	0.68	Q V				
5+25	0.2624	0.68	Q V				
5+30	0.2671	0.68	Q V				
5+35	0.2719	0.69	Q V				
5+40	0.2766	0.69	Q V				
5+45	0.2814	0.69	Q V				
5+50	0.2862	0.70	Q V				
5+55	0.2910	0.70	Q V				
6+ 0	0.2959	0.70	Q V				
6+ 5	0.3007	0.71	Q V				
6+10	0.3056	0.71	Q V				
6+15	0.3105	0.71	Q V				
6+20	0.3155	0.72	Q V				
6+25	0.3204	0.72	Q V				
6+30	0.3254	0.72	Q V				
6+35	0.3304	0.73	Q V				
6+40	0.3355	0.73	Q V				
6+45	0.3405	0.74	Q V				
6+50	0.3456	0.74	Q V				
6+55	0.3508	0.74	Q V				
7+ 0	0.3559	0.75	Q V				
7+ 5	0.3611	0.75	|Q V				
7+10	0.3663	0.76	|Q V				
7+15	0.3715	0.76	|Q V				
7+20	0.3768	0.76	|Q V				
7+25	0.3821	0.77	|Q V				
7+30	0.3874	0.77	|Q V				
7+35	0.3927	0.78	|Q V				
7+40	0.3981	0.78	|Q V				
7+45	0.4035	0.79	|Q V				
7+50	0.4090	0.79	|Q V				
7+55	0.4145	0.80	|Q V				
8+ 0	0.4200	0.80	|Q V				
8+ 5	0.4255	0.80	|Q V				
8+10	0.4311	0.81	|Q V				
8+15	0.4367	0.81	|Q V				
8+20	0.4423	0.82	|Q V				
8+25	0.4480	0.82	|Q V				
8+30	0.4537	0.83	|Q V				
8+35	0.4595	0.84	|Q V				
8+40	0.4653	0.84	|Q V				
8+45	0.4711	0.85	|Q V				

```
 8+50       0.4770      0.85  |Q     V  |          |          |          |
 8+55       0.4829      0.86  |Q     V  |          |          |          |
 9+ 0       0.4888      0.86  |Q     V  |          |          |          |
 9+ 5       0.4948      0.87  |Q     V  |          |          |          |
 9+10       0.5009      0.88  |Q     V  |          |          |          |
 9+15       0.5069      0.88  |Q     V  |          |          |          |
 9+20       0.5130      0.89  |Q     V  |          |          |          |
 9+25       0.5192      0.89  |Q     V  |          |          |          |
 9+30       0.5254      0.90  |Q     V  |          |          |          |
 9+35       0.5317      0.91  |Q     V  |          |          |          |
 9+40       0.5380      0.91  |Q     V  |          |          |          |
 9+45       0.5443      0.92  |Q      V |          |          |          |
 9+50       0.5507      0.93  |Q      V |          |          |          |
 9+55       0.5571      0.94  |Q      V |          |          |          |
10+ 0       0.5636      0.94  |Q      V |          |          |          |
10+ 5       0.5702      0.95  |Q      V |          |          |          |
10+10       0.5768      0.96  |Q      V |          |          |          |
10+15       0.5834      0.97  |Q      V |          |          |          |
10+20       0.5901      0.97  |Q      V |          |          |          |
10+25       0.5969      0.98  |Q      V |          |          |          |
10+30       0.6037      0.99  |Q      V |          |          |          |
10+35       0.6106      1.00  |Q       V|          |          |          |
10+40       0.6176      1.01  |Q       V|          |          |          |
10+45       0.6246      1.02  |Q       V|          |          |          |
10+50       0.6316      1.03  |Q       V|          |          |          |
10+55       0.6388      1.04  |Q       V|          |          |          |
11+ 0       0.6460      1.05  |Q       V|          |          |          |
11+ 5       0.6533      1.06  |Q       V|          |          |          |
11+10       0.6606      1.07  |Q       V|          |          |          |
11+15       0.6680      1.08  |Q       V|          |          |          |
11+20       0.6755      1.09  |Q       V|          |          |          |
11+25       0.6831      1.10  |Q        V          |          |          |
11+30       0.6907      1.11  |Q        V          |          |          |
11+35       0.6984      1.12  |Q        V          |          |          |
11+40       0.7063      1.13  |Q        V          |          |          |
11+45       0.7141      1.15  |Q        V          |          |          |
11+50       0.7221      1.16  |Q        V          |          |          |
11+55       0.7302      1.17  |Q        V          |          |          |
12+ 0       0.7384      1.19  |Q        V          |          |          |
12+ 5       0.7466      1.20  |Q        |V         |          |          |
12+10       0.7548      1.19  |Q        |V         |          |          |
12+15       0.7628      1.17  |Q        |V         |          |          |
12+20       0.7709      1.17  |Q        |V         |          |          |
12+25       0.7791      1.19  |Q        |V         |          |          |
12+30       0.7873      1.20  |Q        |V         |          |          |
12+35       0.7957      1.22  |Q        |V         |          |          |
12+40       0.8042      1.24  |Q        |V         |          |          |
12+45       0.8129      1.25  |Q        | V        |          |          |
12+50       0.8216      1.27  |Q        | V        |          |          |
12+55       0.8305      1.29  |Q        | V        |          |          |
13+ 0       0.8396      1.31  |Q        | V        |          |          |
13+ 5       0.8488      1.33  |Q        | V        |          |          |
13+10       0.8581      1.36  |Q        | V        |          |          |
13+15       0.8676      1.38  |Q        | V        |          |          |
13+20       0.8773      1.40  |Q        | V        |          |          |
13+25       0.8871      1.43  |Q        |  V       |          |          |
13+30       0.8972      1.46  |Q        |  V       |          |          |
13+35       0.9074      1.49  |Q        |  V       |          |          |
13+40       0.9178      1.51  | Q       |  V       |          |          |
13+45       0.9285      1.55  | Q       |  V       |          |          |
13+50       0.9393      1.58  | Q       |  V       |          |          |
13+55       0.9505      1.61  | Q       |   V      |          |          |
14+ 0       0.9618      1.65  | Q       |   V      |          |          |
14+ 5       0.9735      1.69  | Q       |   V      |          |          |
14+10       0.9854      1.73  | Q       |   V      |          |          |
14+15       0.9977      1.78  | Q       |   V      |          |          |
14+20       1.0103      1.83  | Q       |   V      |          |          |
14+25       1.0232      1.88  | Q       |    V     |          |          |
14+30       1.0366      1.94  | Q       |    V     |          |          |
14+35       1.0503      2.00  | Q       |    V     |          |          |
14+40       1.0645      2.06  | Q       |    V     |          |          |
14+45       1.0792      2.13  | Q       |    V     |          |          |
14+50       1.0944      2.21  | Q       |     V    |          |          |
14+55       1.1102      2.30  |  Q      |     V    |          |          |
15+ 0       1.1267      2.39  |  Q      |     V    |          |          |
```



```
   21+20       2.5613      0.70  Q          |          |          |      V  |
   21+25       2.5661      0.70  Q          |          |          |      V  |
   21+30       2.5708      0.69  Q          |          |          |       V |
   21+35       2.5756      0.68  Q          |          |          |       V |
   21+40       2.5802      0.68  Q          |          |          |       V |
   21+45       2.5848      0.67  Q          |          |          |       V |
   21+50       2.5894      0.67  Q          |          |          |       V |
   21+55       2.5940      0.66  Q          |          |          |       V |
   22+ 0       2.5985      0.65  Q          |          |          |       V |
   22+ 5       2.6029      0.65  Q          |          |          |       V |
   22+10       2.6074      0.64  Q          |          |          |       V |
   22+15       2.6118      0.64  Q          |          |          |       V |
   22+20       2.6161      0.63  Q          |          |          |       V |
   22+25       2.6204      0.63  Q          |          |          |       V |
   22+30       2.6247      0.62  Q          |          |          |       V |
   22+35       2.6290      0.62  Q          |          |          |       V |
   22+40       2.6332      0.61  Q          |          |          |       V |
   22+45       2.6374      0.61  Q          |          |          |        V|
   22+50       2.6416      0.60  Q          |          |          |        V|
   22+55       2.6457      0.60  Q          |          |          |        V|
   23+ 0       2.6498      0.60  Q          |          |          |        V|
   23+ 5       2.6539      0.59  Q          |          |          |        V|
   23+10       2.6579      0.59  Q          |          |          |        V|
   23+15       2.6619      0.58  Q          |          |          |        V|
   23+20       2.6659      0.58  Q          |          |          |        V|
   23+25       2.6699      0.57  Q          |          |          |        V|
   23+30       2.6738      0.57  Q          |          |          |        V|
   23+35       2.6777      0.57  Q          |          |          |        V|
   23+40       2.6816      0.56  Q          |          |          |        V|
   23+45       2.6854      0.56  Q          |          |          |        V|
   23+50       2.6893      0.56  Q          |          |          |        V|
   23+55       2.6931      0.55  Q          |          |          |        V|
   24+ 0       2.6968      0.55  Q          |          |          |        V|
   24+ 5       2.7004      0.51  Q          |          |          |        V|
   24+10       2.7027      0.33  Q          |          |          |        V|
   24+15       2.7034      0.11  Q          |          |          |        V|
   24+20       2.7036      0.03  Q          |          |          |        V|
   24+25       2.7037      0.01  Q          |          |          |        V|
   24+30       2.7037      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 2D
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 2DPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	8.80	1	0.60
Rainfall data for year 2	8.80	6	0.70
Rainfall data for year 2	8.80	24	1.20
Rainfall data for year 100	8.80	1	1.00
Rainfall data for year 100	8.80	6	1.90
Rainfall data for year 100	8.80	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	8.80	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.88	0.100	69.0	69.0	4.49	0.121
7.92	0.900	98.0	98.0	0.20	0.892

Area-averaged catchment yield fraction, Y = 0.815
Area-averaged low loss fraction, Yb = 0.185
User entry of time of concentration = 0.190 (hours)
++
Watershed area = 8.80(Ac.)
Catchment Lag time = 0.152 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.222(In)
Computed peak 30-minute rainfall = 0.455(In)
Specified peak 1-hour rainfall = 0.600(In)
Computed peak 3-hour rainfall = 0.915(In)
Specified peak 6-hour rainfall = 1.194(In)
Specified peak 24-hour rainfall = 2.105(In)

Rainfall depth area reduction factors:
Using a total area of 8.80(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.222(In)
30-minute factor = 1.000 Adjusted rainfall = 0.455(In)
1-hour factor = 1.000 Adjusted rainfall = 0.600(In)
3-hour factor = 1.000 Adjusted rainfall = 0.915(In)
6-hour factor = 1.000 Adjusted rainfall = 1.194(In)
24-hour factor = 1.000 Adjusted rainfall = 2.105(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 106.43 (CFS))	
1	5.469	5.821
2	35.337	31.787
3	75.925	43.196
4	93.130	18.310
5	98.077	5.265
6	99.228	1.224
7	100.000	0.822

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2220	0.2220
2	0.2929	0.0709
3	0.3445	0.0516
4	0.3865	0.0420
5	0.4226	0.0361
6	0.4545	0.0320
7	0.4834	0.0289
8	0.5100	0.0265
9	0.5346	0.0246
10	0.5576	0.0230
11	0.5792	0.0217
12	0.5998	0.0205
13	0.6185	0.0187
14	0.6363	0.0179
15	0.6534	0.0171
16	0.6699	0.0164
17	0.6856	0.0158
18	0.7009	0.0152
19	0.7156	0.0147
20	0.7298	0.0142
21	0.7436	0.0138
22	0.7570	0.0134
23	0.7701	0.0130
24	0.7828	0.0127
25	0.7952	0.0124
26	0.8072	0.0121

27	0.8190	0.0118
28	0.8305	0.0115
29	0.8418	0.0113
30	0.8529	0.0110
31	0.8637	0.0108
32	0.8743	0.0106
33	0.8847	0.0104
34	0.8949	0.0102
35	0.9049	0.0100
36	0.9147	0.0098
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9433	0.0094
40	0.9525	0.0092
41	0.9616	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9966	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0216	0.0082
49	1.0297	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0535	0.0078
53	1.0612	0.0077
54	1.0688	0.0076
55	1.0764	0.0076
56	1.0839	0.0075
57	1.0913	0.0074
58	1.0986	0.0073
59	1.1058	0.0072
60	1.1130	0.0072
61	1.1200	0.0071
62	1.1271	0.0070
63	1.1340	0.0069
64	1.1409	0.0069
65	1.1477	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1873	0.0064
72	1.1937	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2138	0.0066
76	1.2204	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2399	0.0064
80	1.2463	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2652	0.0063
84	1.2714	0.0062
85	1.2776	0.0062
86	1.2837	0.0061
87	1.2898	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3255	0.0059
94	1.3313	0.0058
95	1.3371	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3542	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3710	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3930	0.0054
106	1.3984	0.0054
107	1.4038	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4662	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4812	0.0050
123	1.4861	0.0050
124	1.4911	0.0049
125	1.4960	0.0049
126	1.5009	0.0049
127	1.5057	0.0049
128	1.5106	0.0048
129	1.5154	0.0048
130	1.5202	0.0048
131	1.5250	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5392	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5532	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5716	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5852	0.0045
145	1.5897	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6075	0.0044
150	1.6119	0.0044
151	1.6163	0.0044
152	1.6206	0.0044
153	1.6250	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6508	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6760	0.0042
166	1.6801	0.0041
167	1.6843	0.0041
168	1.6884	0.0041
169	1.6925	0.0041
170	1.6966	0.0041
171	1.7007	0.0041
172	1.7047	0.0041
173	1.7088	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7328	0.0040
180	1.7367	0.0040
181	1.7407	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7641	0.0039
188	1.7679	0.0039
189	1.7718	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7946	0.0038
196	1.7983	0.0038
197	1.8021	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8133	0.0037
201	1.8170	0.0037
202	1.8207	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8317	0.0037
206	1.8353	0.0037
207	1.8390	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8642	0.0036
215	1.8677	0.0036
216	1.8713	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8819	0.0035
220	1.8854	0.0035
221	1.8889	0.0035
222	1.8924	0.0035
223	1.8959	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9063	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9166	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9370	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9571	0.0033
242	1.9604	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9703	0.0033
246	1.9736	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9964	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0220	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0409	0.0031
268	2.0440	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0657	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0931	0.0030
285	2.0961	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1051	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0098	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0086
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0098
177	0.0127	0.0023	0.0104
178	0.0130	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0142	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0201
188	0.0265	0.0046	0.0220
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0516	0.0046	0.0470
192	0.0709	0.0046	0.0664
193	0.2220	0.0046	0.2174
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0043	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0054
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 12.25(CFS)

++

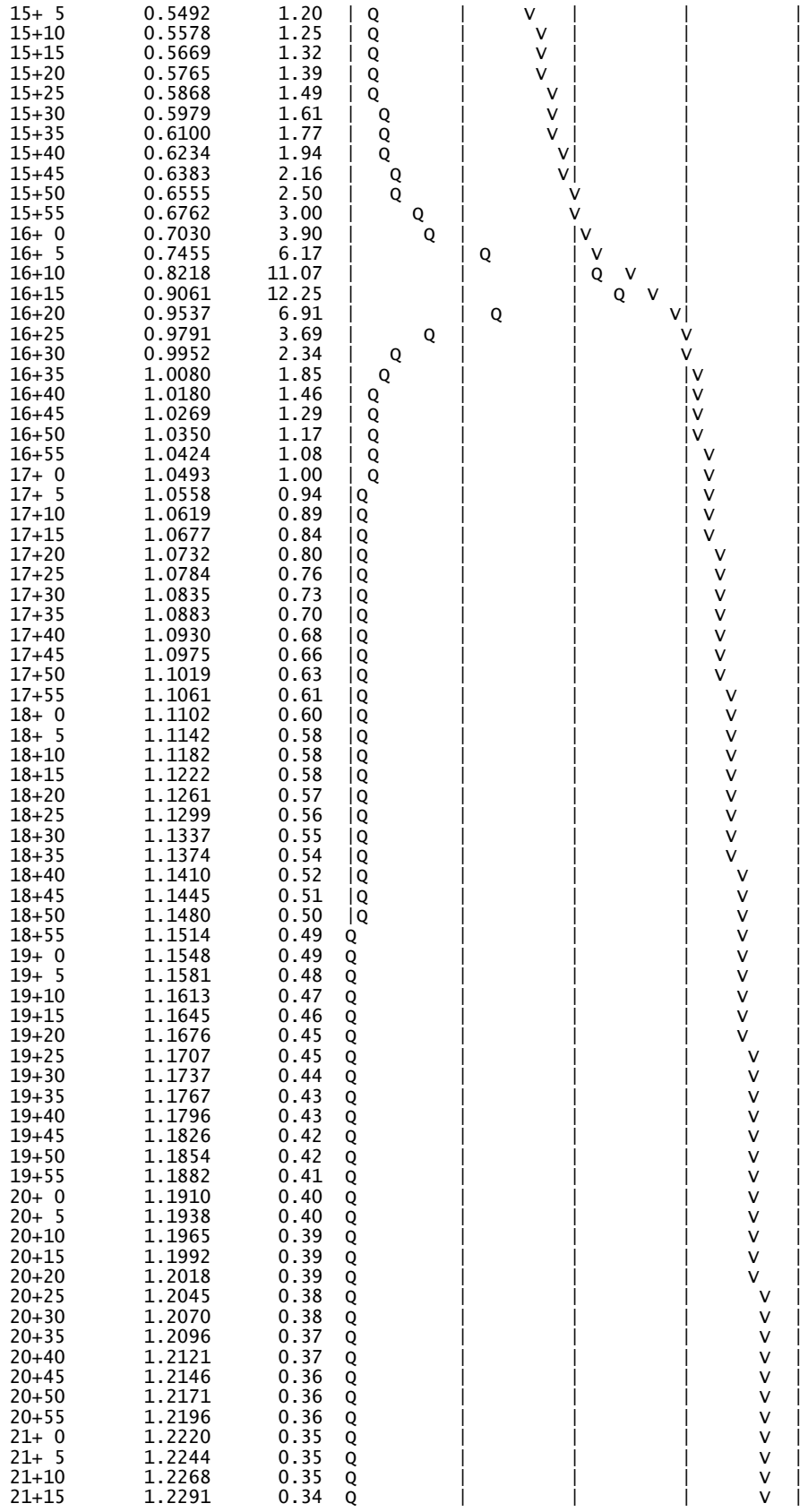
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0007	0.09	Q	|	|	|	|
0+15	0.0021	0.20	Q	|	|	|	|
0+20	0.0038	0.24	Q	|	|	|	|
0+25	0.0055	0.26	Q	|	|	|	|
0+30	0.0073	0.26	Q	|	|	|	|
0+35	0.0091	0.26	Q	|	|	|	|
0+40	0.0109	0.26	Q	|	|	|	|
0+45	0.0128	0.26	Q	|	|	|	|
0+50	0.0146	0.27	Q	|	|	|	|
0+55	0.0164	0.27	Q	|	|	|	|
1+ 0	0.0183	0.27	Q	|	|	|	|
1+ 5	0.0201	0.27	Q	|	|	|	|
1+10	0.0220	0.27	Q	|	|	|	|
1+15	0.0238	0.27	Q	|	|	|	|
1+20	0.0257	0.27	Q	|	|	|	|
1+25	0.0276	0.27	Q	|	|	|	|
1+30	0.0294	0.27	Q	|	|	|	|
1+35	0.0313	0.27	Q	|	|	|	|
1+40	0.0332	0.27	QV	|	|	|	|
1+45	0.0351	0.28	QV	|	|	|	|
1+50	0.0370	0.28	QV	|	|	|	|
1+55	0.0389	0.28	QV	|	|	|	|
2+ 0	0.0408	0.28	QV	|	|	|	|
2+ 5	0.0428	0.28	QV	|	|	|	|
2+10	0.0447	0.28	QV	|	|	|	|
2+15	0.0466	0.28	QV	|	|	|	|
2+20	0.0486	0.28	QV	|	|	|	|
2+25	0.0505	0.28	QV	|	|	|	|
2+30	0.0525	0.28	QV	|	|	|	|

2+35	0.0544	0.29	QV				
2+40	0.0564	0.29	QV				
2+45	0.0584	0.29	QV				
2+50	0.0604	0.29	QV				
2+55	0.0624	0.29	QV				
3+ 0	0.0644	0.29	QV				
3+ 5	0.0664	0.29	Q V				
3+10	0.0684	0.29	Q V				
3+15	0.0704	0.29	Q V				
3+20	0.0724	0.29	Q V				
3+25	0.0745	0.30	Q V				
3+30	0.0765	0.30	Q V				
3+35	0.0786	0.30	Q V				
3+40	0.0806	0.30	Q V				
3+45	0.0827	0.30	Q V				
3+50	0.0848	0.30	Q V				
3+55	0.0869	0.30	Q V				
4+ 0	0.0890	0.30	Q V				
4+ 5	0.0911	0.31	Q V				
4+10	0.0932	0.31	Q V				
4+15	0.0953	0.31	Q V				
4+20	0.0974	0.31	Q V				
4+25	0.0996	0.31	Q V				
4+30	0.1017	0.31	Q V				
4+35	0.1039	0.31	Q V				
4+40	0.1060	0.31	Q V				
4+45	0.1082	0.32	Q V				
4+50	0.1104	0.32	Q V				
4+55	0.1126	0.32	Q V				
5+ 0	0.1148	0.32	Q V				
5+ 5	0.1170	0.32	Q V				
5+10	0.1192	0.32	Q V				
5+15	0.1215	0.32	Q V				
5+20	0.1237	0.33	Q V				
5+25	0.1260	0.33	Q V				
5+30	0.1282	0.33	Q V				
5+35	0.1305	0.33	Q V				
5+40	0.1328	0.33	Q V				
5+45	0.1351	0.33	Q V				
5+50	0.1374	0.33	Q V				
5+55	0.1397	0.34	Q V				
6+ 0	0.1420	0.34	Q V				
6+ 5	0.1444	0.34	Q V				
6+10	0.1467	0.34	Q V				
6+15	0.1491	0.34	Q V				
6+20	0.1515	0.34	Q V				
6+25	0.1538	0.35	Q V				
6+30	0.1562	0.35	Q V				
6+35	0.1587	0.35	Q V				
6+40	0.1611	0.35	Q V				
6+45	0.1635	0.35	Q V				
6+50	0.1660	0.36	Q V				
6+55	0.1684	0.36	Q V				
7+ 0	0.1709	0.36	Q V				
7+ 5	0.1734	0.36	Q V				
7+10	0.1759	0.36	Q V				
7+15	0.1784	0.37	Q V				
7+20	0.1809	0.37	Q V				
7+25	0.1835	0.37	Q V				
7+30	0.1860	0.37	Q V				
7+35	0.1886	0.37	Q V				
7+40	0.1912	0.38	Q V				
7+45	0.1938	0.38	Q V				
7+50	0.1964	0.38	Q V				
7+55	0.1990	0.38	Q V				
8+ 0	0.2017	0.38	Q V				
8+ 5	0.2043	0.39	Q V				
8+10	0.2070	0.39	Q V				
8+15	0.2097	0.39	Q V				
8+20	0.2124	0.39	Q V				
8+25	0.2152	0.40	Q V				
8+30	0.2179	0.40	Q V				
8+35	0.2207	0.40	Q V				
8+40	0.2235	0.40	Q V				
8+45	0.2263	0.41	Q V				

8+50	0.2291	0.41	Q	V	|	|	|	|
8+55	0.2319	0.41	Q	V	|	|	|	|
9+ 0	0.2348	0.41	Q	V	|	|	|	|
9+ 5	0.2377	0.42	Q	V	|	|	|	|
9+10	0.2405	0.42	Q	V	|	|	|	|
9+15	0.2435	0.42	Q	V	|	|	|	|
9+20	0.2464	0.43	Q	V	|	|	|	|
9+25	0.2494	0.43	Q	V	|	|	|	|
9+30	0.2523	0.43	Q	V	|	|	|	|
9+35	0.2554	0.44	Q	V	|	|	|	|
9+40	0.2584	0.44	Q	V	|	|	|	|
9+45	0.2614	0.44	Q	V	|	|	|	|
9+50	0.2645	0.45	Q	V	|	|	|	|
9+55	0.2676	0.45	Q	V	|	|	|	|
10+ 0	0.2707	0.45	Q	V	|	|	|	|
10+ 5	0.2739	0.46	Q	V	|	|	|	|
10+10	0.2770	0.46	Q	V	|	|	|	|
10+15	0.2802	0.46	Q	V	|	|	|	|
10+20	0.2835	0.47	Q	V	|	|	|	|
10+25	0.2867	0.47	Q	V	|	|	|	|
10+30	0.2900	0.48	Q	V	|	|	|	|
10+35	0.2933	0.48	Q	V	|	|	|	|
10+40	0.2966	0.48	Q	V	|	|	|	|
10+45	0.3000	0.49	Q	V	|	|	|	|
10+50	0.3034	0.49	Q	V	|	|	|	|
10+55	0.3068	0.50	Q	V	|	|	|	|
11+ 0	0.3103	0.50	|Q	V	|	|	|	|
11+ 5	0.3138	0.51	|Q	V	|	|	|	|
11+10	0.3173	0.51	|Q	V	|	|	|	|
11+15	0.3209	0.52	|Q	V	|	|	|	|
11+20	0.3245	0.52	|Q	V	|	|	|	|
11+25	0.3281	0.53	|Q	V	|	|	|	|
11+30	0.3318	0.53	|Q	V	|	|	|	|
11+35	0.3355	0.54	|Q	V	|	|	|	|
11+40	0.3392	0.54	|Q	V	|	|	|	|
11+45	0.3430	0.55	|Q	V	|	|	|	|
11+50	0.3469	0.56	|Q	V	|	|	|	|
11+55	0.3507	0.56	|Q	V	|	|	|	|
12+ 0	0.3547	0.57	|Q	V	|	|	|	|
12+ 5	0.3586	0.57	|Q	|V	|	|	|	|
12+10	0.3625	0.57	|Q	|V	|	|	|	|
12+15	0.3664	0.56	|Q	|V	|	|	|	|
12+20	0.3703	0.56	|Q	|V	|	|	|	|
12+25	0.3742	0.57	|Q	|V	|	|	|	|
12+30	0.3782	0.58	|Q	|V	|	|	|	|
12+35	0.3822	0.58	|Q	|V	|	|	|	|
12+40	0.3863	0.59	|Q	|V	|	|	|	|
12+45	0.3905	0.60	|Q	| V	|	|	|	|
12+50	0.3947	0.61	|Q	| V	|	|	|	|
12+55	0.3989	0.62	|Q	| V	|	|	|	|
13+ 0	0.4033	0.63	|Q	| V	|	|	|	|
13+ 5	0.4077	0.64	|Q	| V	|	|	|	|
13+10	0.4122	0.65	|Q	| V	|	|	|	|
13+15	0.4167	0.66	|Q	| V	|	|	|	|
13+20	0.4214	0.67	|Q	| V	|	|	|	|
13+25	0.4261	0.69	|Q	| V	|	|	|	|
13+30	0.4309	0.70	|Q	| V	|	|	|	|
13+35	0.4358	0.71	|Q	| V	|	|	|	|
13+40	0.4408	0.73	|Q	| V	|	|	|	|
13+45	0.4460	0.74	|Q	| V	|	|	|	|
13+50	0.4512	0.76	|Q	| V	|	|	|	|
13+55	0.4565	0.77	|Q	| V	|	|	|	|
14+ 0	0.4620	0.79	|Q	| V	|	|	|	|
14+ 5	0.4675	0.81	|Q	| V	|	|	|	|
14+10	0.4733	0.83	|Q	| V	|	|	|	|
14+15	0.4791	0.85	|Q	| V	|	|	|	|
14+20	0.4852	0.88	|Q	| V	|	|	|	|
14+25	0.4914	0.90	|Q	| V	|	|	|	|
14+30	0.4978	0.93	|Q	| V	|	|	|	|
14+35	0.5044	0.96	|Q	| V	|	|	|	|
14+40	0.5112	0.99	|Q	| V	|	|	|	|
14+45	0.5182	1.02	| Q	| V	|	|	|	|
14+50	0.5255	1.06	| Q	| V	|	|	|	|
14+55	0.5331	1.10	| Q	| V	|	|	|	|
15+ 0	0.5410	1.15	| Q	| V	|	|	|	|



```
   21+20       1.2315      0.34  Q          |          |          |      V  |
   21+25       1.2338      0.34  Q          |          |          |      V  |
   21+30       1.2361      0.33  Q          |          |          |       V |
   21+35       1.2383      0.33  Q          |          |          |       V |
   21+40       1.2406      0.33  Q          |          |          |       V |
   21+45       1.2428      0.32  Q          |          |          |       V |
   21+50       1.2450      0.32  Q          |          |          |       V |
   21+55       1.2472      0.32  Q          |          |          |       V |
   22+ 0       1.2494      0.31  Q          |          |          |       V |
   22+ 5       1.2515      0.31  Q          |          |          |       V |
   22+10       1.2536      0.31  Q          |          |          |       V |
   22+15       1.2558      0.31  Q          |          |          |       V |
   22+20       1.2579      0.30  Q          |          |          |       V |
   22+25       1.2599      0.30  Q          |          |          |       V |
   22+30       1.2620      0.30  Q          |          |          |       V |
   22+35       1.2641      0.30  Q          |          |          |       V |
   22+40       1.2661      0.30  Q          |          |          |       V |
   22+45       1.2681      0.29  Q          |          |          |        V|
   22+50       1.2701      0.29  Q          |          |          |        V|
   22+55       1.2721      0.29  Q          |          |          |        V|
   23+ 0       1.2741      0.29  Q          |          |          |        V|
   23+ 5       1.2760      0.28  Q          |          |          |        V|
   23+10       1.2780      0.28  Q          |          |          |        V|
   23+15       1.2799      0.28  Q          |          |          |        V|
   23+20       1.2818      0.28  Q          |          |          |        V|
   23+25       1.2837      0.28  Q          |          |          |        V|
   23+30       1.2856      0.27  Q          |          |          |        V|
   23+35       1.2875      0.27  Q          |          |          |        V|
   23+40       1.2894      0.27  Q          |          |          |        V|
   23+45       1.2912      0.27  Q          |          |          |        V|
   23+50       1.2931      0.27  Q          |          |          |        V|
   23+55       1.2949      0.27  Q          |          |          |        V|
   24+ 0       1.2967      0.26  Q          |          |          |        V|
   24+ 5       1.2984      0.25  Q          |          |          |        V|
   24+10       1.2996      0.17  Q          |          |          |        V|
   24+15       1.3000      0.06  Q          |          |          |        V|
   24+20       1.3001      0.02  Q          |          |          |        V|
   24+25       1.3002      0.01  Q          |          |          |        V|
   24+30       1.3002      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

BUILDING 3

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 3A
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 3APROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
22.80	1	0.60
Rainfall data for year 2		
22.80	6	0.70
Rainfall data for year 2		
22.80	24	1.20
Rainfall data for year 100		
22.80	1	1.00
Rainfall data for year 100		
22.80	6	1.90
Rainfall data for year 100		
22.80	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	22.80	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.28	0.100	69.0	69.0	4.49	0.121
20.52	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.170 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      22.80(Ac.)
Catchment Lag time =   0.136 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 61.2745
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      22.80(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       275.74 (CFS))

  1                6.789                  18.720
  2               43.210                 100.427
  3               82.892                 109.418
  4               95.987                  36.107
  5               98.763                   7.655
  6              100.000                   3.410
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2218              0.2218
  2              0.2927              0.0709
  3              0.3442              0.0515
  4              0.3862              0.0420
  5              0.4223              0.0361
  6              0.4542              0.0319
  7              0.4831              0.0289
  8              0.5096              0.0265
  9              0.5342              0.0246
 10              0.5572              0.0230
 11              0.5789              0.0217
 12              0.5994              0.0205
 13              0.6181              0.0187
 14              0.6360              0.0179
 15              0.6531              0.0171
 16              0.6695              0.0164
 17              0.6853              0.0158
 18              0.7006              0.0152
 19              0.7153              0.0147
 20              0.7295              0.0143
 21              0.7434              0.0138
 22              0.7568              0.0134
 23              0.7698              0.0131
 24              0.7825              0.0127
 25              0.7949              0.0124
 26              0.8070              0.0121
 27              0.8188              0.0118
```

28	0.8304	0.0115
29	0.8417	0.0113
30	0.8527	0.0111
31	0.8635	0.0108
32	0.8741	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9243	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9704	0.0089
43	0.9793	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0049	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0376	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1339	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3427	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3709	0.0056
102	1.3765	0.0055

103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4249	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4761	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5624	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5985	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040
177	1.7248	0.0040

178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7755	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7907	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9199	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9335	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9503	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033
251	1.9898	0.0032
252	1.9931	0.0032

253	1.9963	0.0032
254	1.9995	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0839	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027
34	0.0033	0.0006	0.0027

35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039
109	0.0049	0.0009	0.0040

110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0111	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139
184	0.0179	0.0033	0.0146

185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0319	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031
259	0.0037	0.0007	0.0030

260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 31.81(CFS)

++

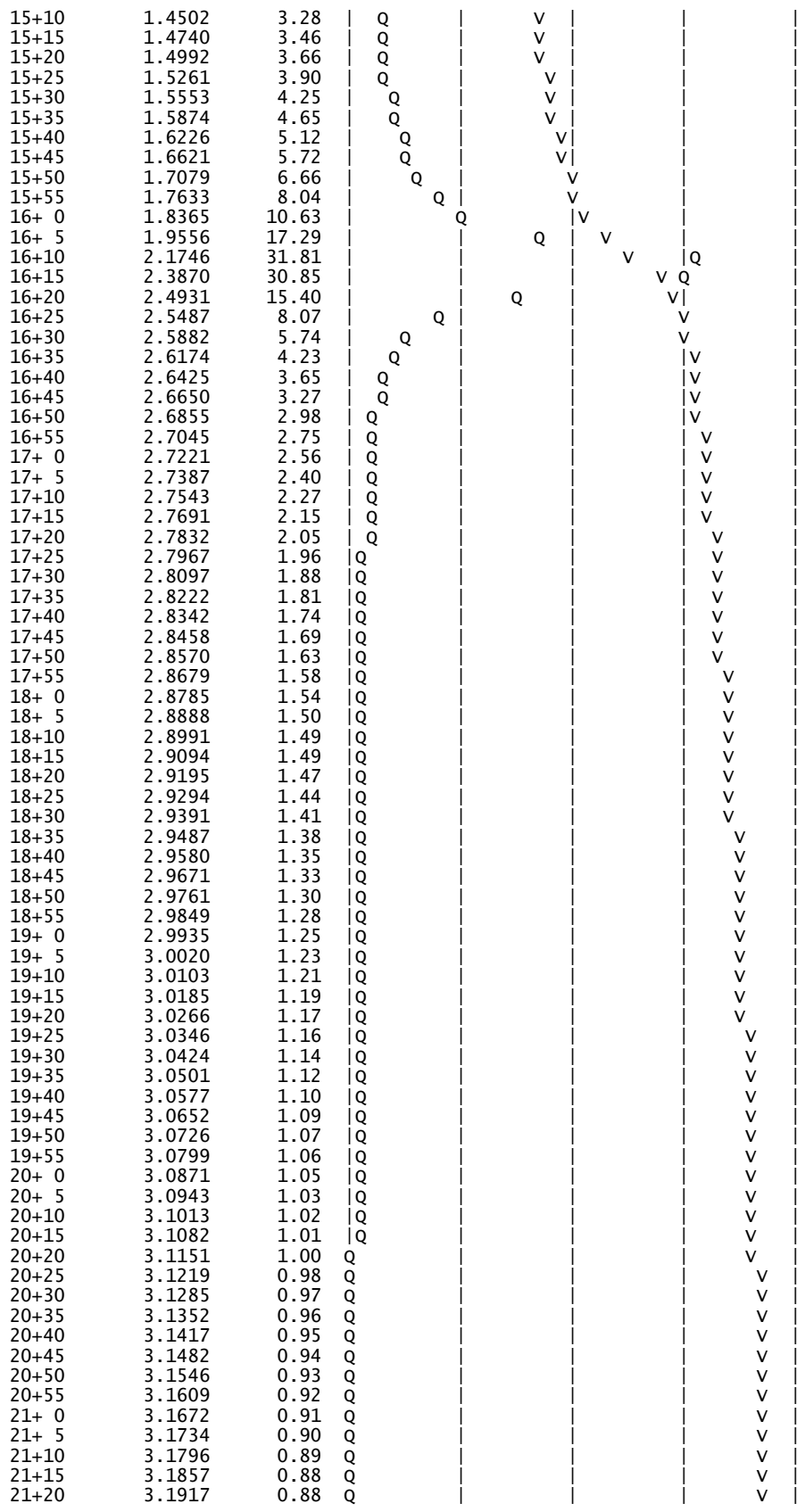
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0003	0.05	Q	|	|	|	|
0+10	0.0023	0.29	Q	|	|	|	|
0+15	0.0062	0.56	Q	|	|	|	|
0+20	0.0106	0.65	Q	|	|	|	|
0+25	0.0152	0.67	Q	|	|	|	|
0+30	0.0199	0.68	Q	|	|	|	|
0+35	0.0246	0.68	Q	|	|	|	|
0+40	0.0293	0.68	Q	|	|	|	|
0+45	0.0341	0.69	Q	|	|	|	|
0+50	0.0388	0.69	Q	|	|	|	|
0+55	0.0436	0.69	Q	|	|	|	|
1+ 0	0.0483	0.69	Q	|	|	|	|
1+ 5	0.0531	0.70	Q	|	|	|	|
1+10	0.0579	0.70	Q	|	|	|	|
1+15	0.0627	0.70	Q	|	|	|	|
1+20	0.0676	0.70	Q	|	|	|	|
1+25	0.0724	0.70	Q	|	|	|	|
1+30	0.0773	0.71	Q	|	|	|	|
1+35	0.0822	0.71	Q	|	|	|	|
1+40	0.0871	0.71	QV	|	|	|	|
1+45	0.0920	0.71	QV	|	|	|	|
1+50	0.0969	0.72	QV	|	|	|	|
1+55	0.1019	0.72	QV	|	|	|	|
2+ 0	0.1068	0.72	QV	|	|	|	|
2+ 5	0.1118	0.72	QV	|	|	|	|
2+10	0.1168	0.73	QV	|	|	|	|
2+15	0.1218	0.73	QV	|	|	|	|
2+20	0.1269	0.73	QV	|	|	|	|
2+25	0.1319	0.73	QV	|	|	|	|
2+30	0.1370	0.74	QV	|	|	|	|
2+35	0.1421	0.74	QV	|	|	|	|

```
2+40       0.1472      0.74  QV        |         |         |         |
2+45       0.1523      0.74  QV        |         |         |         |
2+50       0.1575      0.75  QV        |         |         |         |
2+55       0.1626      0.75  QV        |         |         |         |
3+ 0       0.1678      0.75  QV        |         |         |         |
3+ 5       0.1730      0.76  Q V       |         |         |         |
3+10       0.1783      0.76  Q V       |         |         |         |
3+15       0.1835      0.76  Q V       |         |         |         |
3+20       0.1888      0.76  Q V       |         |         |         |
3+25       0.1941      0.77  Q V       |         |         |         |
3+30       0.1994      0.77  Q V       |         |         |         |
3+35       0.2047      0.77  Q V       |         |         |         |
3+40       0.2100      0.78  Q V       |         |         |         |
3+45       0.2154      0.78  Q V       |         |         |         |
3+50       0.2208      0.78  Q V       |         |         |         |
3+55       0.2262      0.79  Q V       |         |         |         |
4+ 0       0.2316      0.79  Q V       |         |         |         |
4+ 5       0.2371      0.79  Q V       |         |         |         |
4+10       0.2426      0.80  Q V       |         |         |         |
4+15       0.2481      0.80  Q V       |         |         |         |
4+20       0.2536      0.80  Q  V      |         |         |         |
4+25       0.2591      0.81  Q  V      |         |         |         |
4+30       0.2647      0.81  Q  V      |         |         |         |
4+35       0.2703      0.81  Q  V      |         |         |         |
4+40       0.2759      0.82  Q  V      |         |         |         |
4+45       0.2815      0.82  Q  V      |         |         |         |
4+50       0.2872      0.82  Q  V      |         |         |         |
4+55       0.2929      0.83  Q  V      |         |         |         |
5+ 0       0.2986      0.83  Q  V      |         |         |         |
5+ 5       0.3044      0.83  Q  V      |         |         |         |
5+10       0.3101      0.84  Q  V      |         |         |         |
5+15       0.3159      0.84  Q  V      |         |         |         |
5+20       0.3217      0.84  Q  V      |         |         |         |
5+25       0.3276      0.85  Q  V      |         |         |         |
5+30       0.3334      0.85  Q  V      |         |         |         |
5+35       0.3393      0.86  Q   V     |         |         |         |
5+40       0.3453      0.86  Q   V     |         |         |         |
5+45       0.3512      0.86  Q   V     |         |         |         |
5+50       0.3572      0.87  Q   V     |         |         |         |
5+55       0.3632      0.87  Q   V     |         |         |         |
6+ 0       0.3692      0.88  Q   V     |         |         |         |
6+ 5       0.3753      0.88  Q   V     |         |         |         |
6+10       0.3814      0.89  Q   V     |         |         |         |
6+15       0.3875      0.89  Q   V     |         |         |         |
6+20       0.3937      0.89  Q   V     |         |         |         |
6+25       0.3999      0.90  Q   V     |         |         |         |
6+30       0.4061      0.90  Q   V     |         |         |         |
6+35       0.4123      0.91  Q   V     |         |         |         |
6+40       0.4186      0.91  Q   V     |         |         |         |
6+45       0.4249      0.92  Q    V    |         |         |         |
6+50       0.4313      0.92  Q    V    |         |         |         |
6+55       0.4377      0.93  Q    V    |         |         |         |
7+ 0       0.4441      0.93  Q    V    |         |         |         |
7+ 5       0.4505      0.94  Q    V    |         |         |         |
7+10       0.4570      0.94  Q    V    |         |         |         |
7+15       0.4636      0.95  Q    V    |         |         |         |
7+20       0.4701      0.95  Q    V    |         |         |         |
7+25       0.4767      0.96  Q    V    |         |         |         |
7+30       0.4833      0.96  Q    V    |         |         |         |
7+35       0.4900      0.97  Q    V    |         |         |         |
7+40       0.4967      0.97  Q    V    |         |         |         |
7+45       0.5035      0.98  Q    V    |         |         |         |
7+50       0.5103      0.99  Q     V   |         |         |         |
7+55       0.5171      0.99  Q     V   |         |         |         |
8+ 0       0.5239      1.00  Q     V   |         |         |         |
8+ 5       0.5309      1.00  |Q    V   |         |         |         |
8+10       0.5378      1.01  |Q    V   |         |         |         |
8+15       0.5448      1.02  |Q    V   |         |         |         |
8+20       0.5518      1.02  |Q    V   |         |         |         |
8+25       0.5589      1.03  |Q    V   |         |         |         |
8+30       0.5661      1.03  |Q    V   |         |         |         |
8+35       0.5732      1.04  |Q    V   |         |         |         |
8+40       0.5804      1.05  |Q    V   |         |         |         |
8+45       0.5877      1.06  |Q    V   |         |         |         |
8+50       0.5950      1.06  |Q     V  |         |         |         |
```

8+55	0.6024	1.07	Q V				
9+ 0	0.6098	1.08	Q V				
9+ 5	0.6173	1.08	Q V				
9+10	0.6248	1.09	Q V				
9+15	0.6324	1.10	Q V				
9+20	0.6400	1.11	Q V				
9+25	0.6477	1.12	Q V				
9+30	0.6554	1.12	Q V				
9+35	0.6632	1.13	Q V				
9+40	0.6711	1.14	Q V				
9+45	0.6790	1.15	Q V				
9+50	0.6869	1.16	Q V				
9+55	0.6950	1.17	Q V				
10+ 0	0.7031	1.18	Q V				
10+ 5	0.7112	1.19	Q V				
10+10	0.7195	1.20	Q V				
10+15	0.7278	1.20	Q V				
10+20	0.7361	1.21	Q V				
10+25	0.7446	1.23	Q V				
10+30	0.7531	1.24	Q V				
10+35	0.7617	1.25	Q V				
10+40	0.7703	1.26	Q V				
10+45	0.7791	1.27	Q V				
10+50	0.7879	1.28	Q V				
10+55	0.7968	1.29	Q V				
11+ 0	0.8058	1.30	Q V				
11+ 5	0.8148	1.32	Q V				
11+10	0.8240	1.33	Q V				
11+15	0.8332	1.34	Q V				
11+20	0.8426	1.36	Q V				
11+25	0.8520	1.37	Q V				
11+30	0.8616	1.38	Q V				
11+35	0.8712	1.40	Q V				
11+40	0.8809	1.41	Q V				
11+45	0.8908	1.43	Q V				
11+50	0.9007	1.45	Q V				
11+55	0.9108	1.46	Q V				
12+ 0	0.9210	1.48	Q V				
12+ 5	0.9313	1.49	Q V				
12+10	0.9414	1.47	Q V				
12+15	0.9514	1.46	Q V				
12+20	0.9615	1.46	Q V				
12+25	0.9717	1.48	Q V				
12+30	0.9820	1.50	Q V				
12+35	0.9925	1.52	Q V				
12+40	1.0031	1.54	Q V				
12+45	1.0139	1.56	Q V				
12+50	1.0248	1.59	Q V				
12+55	1.0359	1.61	Q V				
13+ 0	1.0472	1.64	Q V				
13+ 5	1.0587	1.67	Q V				
13+10	1.0703	1.69	Q V				
13+15	1.0822	1.72	Q V				
13+20	1.0943	1.75	Q V				
13+25	1.1066	1.78	Q V				
13+30	1.1191	1.82	Q V				
13+35	1.1319	1.85	Q V				
13+40	1.1449	1.89	Q V				
13+45	1.1582	1.93	Q V				
13+50	1.1718	1.97	Q V				
13+55	1.1856	2.02	Q V				
14+ 0	1.1998	2.06	Q V				
14+ 5	1.2144	2.11	Q V				
14+10	1.2293	2.17	Q V				
14+15	1.2446	2.22	Q V				
14+20	1.2604	2.29	Q V				
14+25	1.2765	2.35	Q V				
14+30	1.2932	2.42	Q V				
14+35	1.3104	2.50	Q V				
14+40	1.3282	2.58	Q V				
14+45	1.3465	2.67	Q V				
14+50	1.3656	2.77	Q V				
14+55	1.3854	2.87	Q V				
15+ 0	1.4060	3.00	Q V				
15+ 5	1.4276	3.13	Q V				



```
   21+25       3.1977      0.87  Q          |          |          |      V  |
   21+30       3.2036      0.86  Q          |          |          |       V |
   21+35       3.2094      0.85  Q          |          |          |       V |
   21+40       3.2152      0.84  Q          |          |          |       V |
   21+45       3.2210      0.84  Q          |          |          |       V |
   21+50       3.2267      0.83  Q          |          |          |       V |
   21+55       3.2324      0.82  Q          |          |          |       V |
   22+ 0       3.2380      0.81  Q          |          |          |       V |
   22+ 5       3.2435      0.81  Q          |          |          |       V |
   22+10       3.2490      0.80  Q          |          |          |       V |
   22+15       3.2545      0.79  Q          |          |          |       V |
   22+20       3.2599      0.79  Q          |          |          |       V |
   22+25       3.2653      0.78  Q          |          |          |       V |
   22+30       3.2707      0.78  Q          |          |          |       V |
   22+35       3.2760      0.77  Q          |          |          |       V |
   22+40       3.2812      0.76  Q          |          |          |       V |
   22+45       3.2864      0.76  Q          |          |          |        V|
   22+50       3.2916      0.75  Q          |          |          |        V|
   22+55       3.2968      0.75  Q          |          |          |        V|
   23+ 0       3.3019      0.74  Q          |          |          |        V|
   23+ 5       3.3069      0.74  Q          |          |          |        V|
   23+10       3.3120      0.73  Q          |          |          |        V|
   23+15       3.3170      0.73  Q          |          |          |        V|
   23+20       3.3219      0.72  Q          |          |          |        V|
   23+25       3.3268      0.72  Q          |          |          |        V|
   23+30       3.3317      0.71  Q          |          |          |        V|
   23+35       3.3366      0.71  Q          |          |          |        V|
   23+40       3.3414      0.70  Q          |          |          |        V|
   23+45       3.3462      0.70  Q          |          |          |        V|
   23+50       3.3510      0.69  Q          |          |          |        V|
   23+55       3.3557      0.69  Q          |          |          |        V|
   24+ 0       3.3604      0.68  Q          |          |          |        V|
   24+ 5       3.3648      0.63  Q          |          |          |        V|
   24+10       3.3675      0.38  Q          |          |          |        V|
   24+15       3.3683      0.12  Q          |          |          |        V|
   24+20       3.3684      0.03  Q          |          |          |        V|
   24+25       3.3685      0.01  Q          |          |          |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 3B
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 3BPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
20.90	1	0.60
Rainfall data for year 2		
20.90	6	0.70
Rainfall data for year 2		
20.90	24	1.20
Rainfall data for year 100		
20.90	1	1.00
Rainfall data for year 100		
20.90	6	1.90
Rainfall data for year 100		
20.90	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	20.90	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.09	0.100	69.0	69.0	4.49	0.121
18.81	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.170 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      20.90(Ac.)
Catchment Lag time =   0.136 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 61.2745
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      20.90(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       252.76 (CFS))

  1                6.789                  17.160
  2               43.210                  92.058
  3               82.892                 100.300
  4               95.987                  33.098
  5               98.763                   7.017
  6              100.000                   3.126
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2218              0.2218
  2              0.2927              0.0709
  3              0.3443              0.0515
  4              0.3863              0.0420
  5              0.4223              0.0361
  6              0.4543              0.0320
  7              0.4832              0.0289
  8              0.5097              0.0265
  9              0.5343              0.0246
 10              0.5573              0.0230
 11              0.5789              0.0217
 12              0.5994              0.0205
 13              0.6182              0.0187
 14              0.6360              0.0179
 15              0.6531              0.0171
 16              0.6696              0.0164
 17              0.6854              0.0158
 18              0.7006              0.0152
 19              0.7153              0.0147
 20              0.7296              0.0143
 21              0.7434              0.0138
 22              0.7568              0.0134
 23              0.7699              0.0131
 24              0.7826              0.0127
 25              0.7950              0.0124
 26              0.8071              0.0121
 27              0.8189              0.0118
```

28	0.8304	0.0115
29	0.8417	0.0113
30	0.8527	0.0110
31	0.8635	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3709	0.0056
102	1.3765	0.0055

103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5624	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040
177	1.7248	0.0040

178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033
251	1.9899	0.0032
252	1.9931	0.0032

253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027
34	0.0033	0.0006	0.0027

35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039
109	0.0049	0.0009	0.0040

110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139
184	0.0179	0.0033	0.0146

185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031
259	0.0037	0.0007	0.0030

260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 29.16(CFS)

++

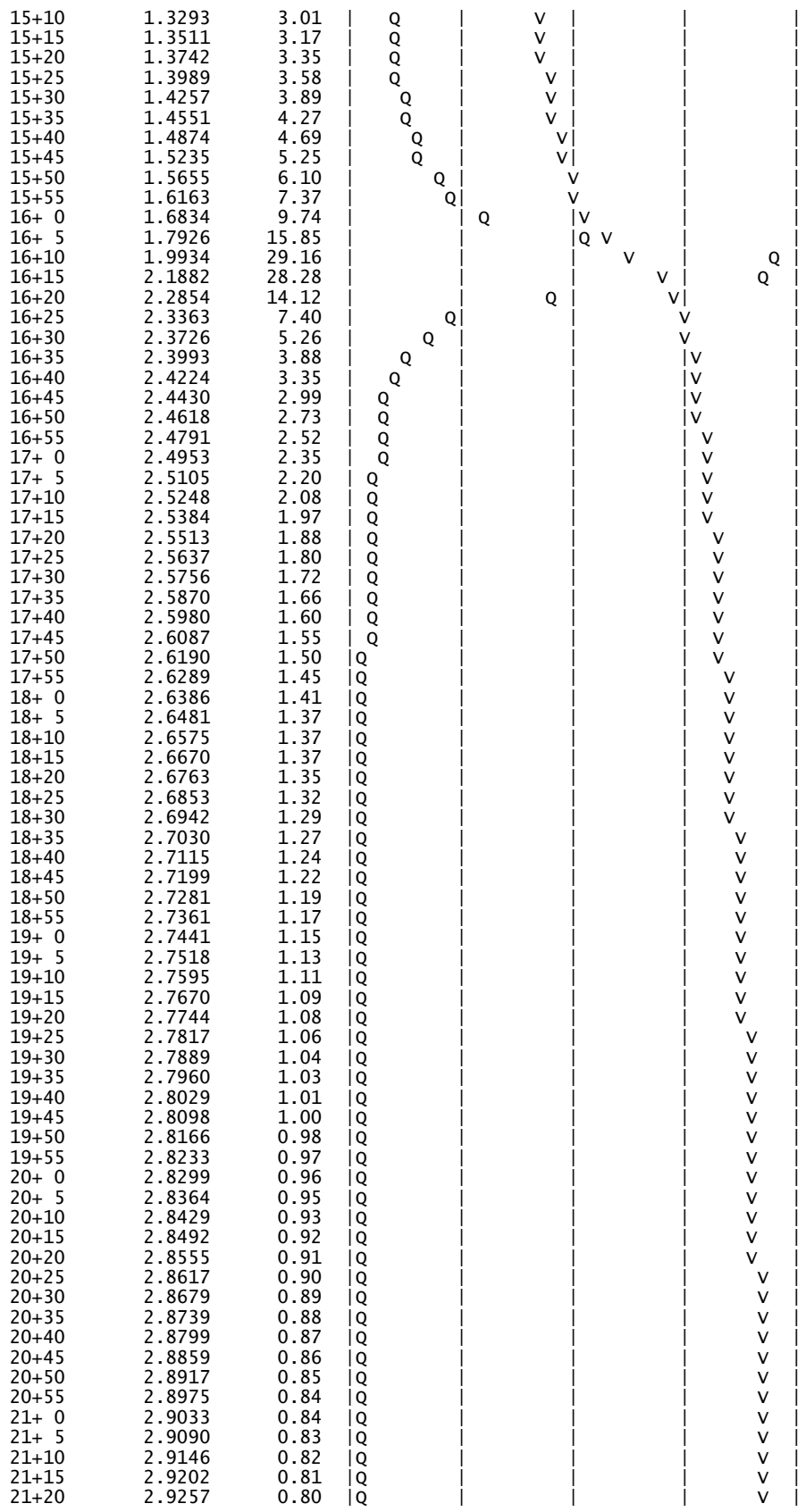
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0003	0.04	Q	|	|	|	|
0+10	0.0021	0.27	Q	|	|	|	|
0+15	0.0057	0.51	Q	|	|	|	|
0+20	0.0097	0.59	Q	|	|	|	|
0+25	0.0140	0.61	Q	|	|	|	|
0+30	0.0183	0.62	Q	|	|	|	|
0+35	0.0226	0.63	Q	|	|	|	|
0+40	0.0269	0.63	Q	|	|	|	|
0+45	0.0312	0.63	Q	|	|	|	|
0+50	0.0356	0.63	Q	|	|	|	|
0+55	0.0399	0.63	Q	|	|	|	|
1+ 0	0.0443	0.64	Q	|	|	|	|
1+ 5	0.0487	0.64	Q	|	|	|	|
1+10	0.0531	0.64	Q	|	|	|	|
1+15	0.0575	0.64	Q	|	|	|	|
1+20	0.0619	0.64	Q	|	|	|	|
1+25	0.0664	0.65	Q	|	|	|	|
1+30	0.0708	0.65	Q	|	|	|	|
1+35	0.0753	0.65	Q	|	|	|	|
1+40	0.0798	0.65	QV	|	|	|	|
1+45	0.0843	0.65	QV	|	|	|	|
1+50	0.0888	0.66	QV	|	|	|	|
1+55	0.0934	0.66	QV	|	|	|	|
2+ 0	0.0979	0.66	QV	|	|	|	|
2+ 5	0.1025	0.66	QV	|	|	|	|
2+10	0.1071	0.67	QV	|	|	|	|
2+15	0.1117	0.67	QV	|	|	|	|
2+20	0.1163	0.67	QV	|	|	|	|
2+25	0.1209	0.67	QV	|	|	|	|
2+30	0.1256	0.68	QV	|	|	|	|
2+35	0.1303	0.68	QV	|	|	|	|

2+40	0.1349	0.68	QV	|	|	|	|
2+45	0.1396	0.68	QV	|	|	|	|
2+50	0.1444	0.69	QV	|	|	|	|
2+55	0.1491	0.69	QV	|	|	|	|
3+ 0	0.1538	0.69	QV	|	|	|	|
3+ 5	0.1586	0.69	Q V	|	|	|	|
3+10	0.1634	0.70	Q V	|	|	|	|
3+15	0.1682	0.70	Q V	|	|	|	|
3+20	0.1730	0.70	Q V	|	|	|	|
3+25	0.1779	0.70	Q V	|	|	|	|
3+30	0.1827	0.71	Q V	|	|	|	|
3+35	0.1876	0.71	Q V	|	|	|	|
3+40	0.1925	0.71	Q V	|	|	|	|
3+45	0.1975	0.71	Q V	|	|	|	|
3+50	0.2024	0.72	Q V	|	|	|	|
3+55	0.2074	0.72	Q V	|	|	|	|
4+ 0	0.2123	0.72	Q V	|	|	|	|
4+ 5	0.2173	0.73	Q V	|	|	|	|
4+10	0.2224	0.73	Q V	|	|	|	|
4+15	0.2274	0.73	Q V	|	|	|	|
4+20	0.2325	0.73	Q V	|	|	|	|
4+25	0.2375	0.74	Q V	|	|	|	|
4+30	0.2426	0.74	Q V	|	|	|	|
4+35	0.2478	0.74	Q V	|	|	|	|
4+40	0.2529	0.75	Q V	|	|	|	|
4+45	0.2581	0.75	|Q V	|	|	|	|
4+50	0.2633	0.75	|Q V	|	|	|	|
4+55	0.2685	0.76	|Q V	|	|	|	|
5+ 0	0.2737	0.76	|Q V	|	|	|	|
5+ 5	0.2790	0.76	|Q V	|	|	|	|
5+10	0.2843	0.77	|Q V	|	|	|	|
5+15	0.2896	0.77	|Q V	|	|	|	|
5+20	0.2949	0.77	|Q V	|	|	|	|
5+25	0.3003	0.78	|Q V	|	|	|	|
5+30	0.3057	0.78	|Q V	|	|	|	|
5+35	0.3111	0.78	|Q V	|	|	|	|
5+40	0.3165	0.79	|Q V	|	|	|	|
5+45	0.3219	0.79	|Q V	|	|	|	|
5+50	0.3274	0.80	|Q V	|	|	|	|
5+55	0.3329	0.80	|Q V	|	|	|	|
6+ 0	0.3385	0.80	|Q V	|	|	|	|
6+ 5	0.3440	0.81	|Q V	|	|	|	|
6+10	0.3496	0.81	|Q V	|	|	|	|
6+15	0.3552	0.82	|Q V	|	|	|	|
6+20	0.3609	0.82	|Q V	|	|	|	|
6+25	0.3666	0.82	|Q V	|	|	|	|
6+30	0.3723	0.83	|Q V	|	|	|	|
6+35	0.3780	0.83	|Q V	|	|	|	|
6+40	0.3837	0.84	|Q V	|	|	|	|
6+45	0.3895	0.84	|Q V	|	|	|	|
6+50	0.3954	0.85	|Q V	|	|	|	|
6+55	0.4012	0.85	|Q V	|	|	|	|
7+ 0	0.4071	0.85	|Q V	|	|	|	|
7+ 5	0.4130	0.86	|Q V	|	|	|	|
7+10	0.4189	0.86	|Q V	|	|	|	|
7+15	0.4249	0.87	|Q V	|	|	|	|
7+20	0.4309	0.87	|Q V	|	|	|	|
7+25	0.4370	0.88	|Q V	|	|	|	|
7+30	0.4431	0.88	|Q V	|	|	|	|
7+35	0.4492	0.89	|Q V	|	|	|	|
7+40	0.4553	0.89	|Q V	|	|	|	|
7+45	0.4615	0.90	|Q V	|	|	|	|
7+50	0.4677	0.90	|Q V	|	|	|	|
7+55	0.4740	0.91	|Q V	|	|	|	|
8+ 0	0.4803	0.91	|Q V	|	|	|	|
8+ 5	0.4866	0.92	|Q V	|	|	|	|
8+10	0.4930	0.93	|Q V	|	|	|	|
8+15	0.4994	0.93	|Q V	|	|	|	|
8+20	0.5059	0.94	|Q V	|	|	|	|
8+25	0.5123	0.94	|Q V	|	|	|	|
8+30	0.5189	0.95	|Q V	|	|	|	|
8+35	0.5255	0.95	|Q V	|	|	|	|
8+40	0.5321	0.96	|Q V	|	|	|	|
8+45	0.5387	0.97	|Q V	|	|	|	|
8+50	0.5454	0.97	|Q V	|	|	|	|

8+55	0.5522	0.98	|Q V |	|	|	|
9+ 0	0.5590	0.99	|Q V |	|	|	|
9+ 5	0.5658	0.99	|Q V |	|	|	|
9+10	0.5727	1.00	|Q V |	|	|	|
9+15	0.5797	1.01	|Q V |	|	|	|
9+20	0.5867	1.01	|Q V |	|	|	|
9+25	0.5937	1.02	|Q V |	|	|	|
9+30	0.6008	1.03	|Q V |	|	|	|
9+35	0.6079	1.04	|Q V |	|	|	|
9+40	0.6151	1.05	|Q V |	|	|	|
9+45	0.6224	1.05	|Q V |	|	|	|
9+50	0.6297	1.06	|Q V |	|	|	|
9+55	0.6371	1.07	|Q V |	|	|	|
10+ 0	0.6445	1.08	|Q V |	|	|	|
10+ 5	0.6520	1.09	|Q V |	|	|	|
10+10	0.6595	1.10	|Q V |	|	|	|
10+15	0.6671	1.10	|Q V |	|	|	|
10+20	0.6748	1.11	|Q V |	|	|	|
10+25	0.6825	1.12	|Q V |	|	|	|
10+30	0.6903	1.13	|Q V |	|	|	|
10+35	0.6982	1.14	|Q V|	|	|	|
10+40	0.7061	1.15	|Q V|	|	|	|
10+45	0.7141	1.16	|Q V|	|	|	|
10+50	0.7222	1.17	|Q V|	|	|	|
10+55	0.7304	1.18	|Q V|	|	|	|
11+ 0	0.7386	1.20	|Q V|	|	|	|
11+ 5	0.7469	1.21	|Q V|	|	|	|
11+10	0.7553	1.22	|Q V|	|	|	|
11+15	0.7638	1.23	|Q V|	|	|	|
11+20	0.7724	1.24	|Q V |	|	|	|
11+25	0.7810	1.26	|Q V |	|	|	|
11+30	0.7898	1.27	|Q V |	|	|	|
11+35	0.7986	1.28	|Q V |	|	|	|
11+40	0.8075	1.30	|Q V |	|	|	|
11+45	0.8165	1.31	|Q V |	|	|	|
11+50	0.8257	1.33	|Q V |	|	|	|
11+55	0.8349	1.34	|Q V |	|	|	|
12+ 0	0.8442	1.36	|Q V |	|	|	|
12+ 5	0.8537	1.37	|Q |V |	|	|	|
12+10	0.8630	1.35	|Q |V |	|	|	|
12+15	0.8722	1.33	|Q |V |	|	|	|
12+20	0.8814	1.34	|Q |V |	|	|	|
12+25	0.8907	1.36	|Q |V |	|	|	|
12+30	0.9002	1.37	|Q |V |	|	|	|
12+35	0.9098	1.39	|Q |V |	|	|	|
12+40	0.9195	1.41	|Q |V |	|	|	|
12+45	0.9294	1.43	|Q | V |	|	|	|
12+50	0.9394	1.46	|Q | V |	|	|	|
12+55	0.9496	1.48	|Q | V |	|	|	|
13+ 0	0.9599	1.50	| Q | V |	|	|	|
13+ 5	0.9705	1.53	| Q | V |	|	|	|
13+10	0.9811	1.55	| Q | V |	|	|	|
13+15	0.9920	1.58	| Q | V |	|	|	|
13+20	1.0031	1.61	| Q | V |	|	|	|
13+25	1.0143	1.64	| Q | V |	|	|	|
13+30	1.0258	1.67	| Q | V |	|	|	|
13+35	1.0375	1.70	| Q | V |	|	|	|
13+40	1.0495	1.73	| Q | V |	|	|	|
13+45	1.0617	1.77	| Q | V |	|	|	|
13+50	1.0741	1.81	| Q | V |	|	|	|
13+55	1.0868	1.85	| Q | V |	|	|	|
14+ 0	1.0998	1.89	| Q | V |	|	|	|
14+ 5	1.1132	1.94	| Q | V |	|	|	|
14+10	1.1269	1.99	| Q | V |	|	|	|
14+15	1.1409	2.04	| Q | V |	|	|	|
14+20	1.1553	2.09	| Q | V |	|	|	|
14+25	1.1701	2.15	| Q | V |	|	|	|
14+30	1.1854	2.22	| Q | V |	|	|	|
14+35	1.2012	2.29	| Q | V |	|	|	|
14+40	1.2175	2.36	| Q | V |	|	|	|
14+45	1.2343	2.44	| Q | V |	|	|	|
14+50	1.2518	2.54	| Q | V |	|	|	|
14+55	1.2699	2.63	| Q | V |	|	|	|
15+ 0	1.2888	2.75	| Q | V |	|	|	|
15+ 5	1.3086	2.87	| Q | V |	|	|	|



```
   21+25       2.9312      0.79  |Q        |         |         |      V  |
   21+30       2.9366      0.79  |Q        |         |         |       V |
   21+35       2.9420      0.78  |Q        |         |         |       V |
   21+40       2.9473      0.77  |Q        |         |         |       V |
   21+45       2.9526      0.77  |Q        |         |         |       V |
   21+50       2.9578      0.76  |Q        |         |         |       V |
   21+55       2.9630      0.75  |Q        |         |         |       V |
   22+ 0       2.9682      0.75  Q         |         |         |       V |
   22+ 5       2.9733      0.74  Q         |         |         |       V |
   22+10       2.9783      0.73  Q         |         |         |       V |
   22+15       2.9833      0.73  Q         |         |         |       V |
   22+20       2.9883      0.72  Q         |         |         |       V |
   22+25       2.9932      0.72  Q         |         |         |       V |
   22+30       2.9981      0.71  Q         |         |         |       V |
   22+35       3.0030      0.71  Q         |         |         |       V |
   22+40       3.0078      0.70  Q         |         |         |       V |
   22+45       3.0126      0.69  Q         |         |         |        V|
   22+50       3.0173      0.69  Q         |         |         |        V|
   22+55       3.0221      0.68  Q         |         |         |        V|
   23+ 0       3.0267      0.68  Q         |         |         |        V|
   23+ 5       3.0314      0.67  Q         |         |         |        V|
   23+10       3.0360      0.67  Q         |         |         |        V|
   23+15       3.0406      0.66  Q         |         |         |        V|
   23+20       3.0451      0.66  Q         |         |         |        V|
   23+25       3.0496      0.66  Q         |         |         |        V|
   23+30       3.0541      0.65  Q         |         |         |        V|
   23+35       3.0586      0.65  Q         |         |         |        V|
   23+40       3.0630      0.64  Q         |         |         |        V|
   23+45       3.0674      0.64  Q         |         |         |        V|
   23+50       3.0718      0.63  Q         |         |         |        V|
   23+55       3.0761      0.63  Q         |         |         |        V|
   24+ 0       3.0804      0.63  Q         |         |         |        V|
   24+ 5       3.0844      0.58  Q         |         |         |        V|
   24+10       3.0869      0.35  Q         |         |         |        V|
   24+15       3.0876      0.11  Q         |         |         |        V|
   24+20       3.0878      0.02  Q         |         |         |        V|
   24+25       3.0878      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 3C
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 3CPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
20.90	1	0.60
Rainfall data for year 2		
20.90	6	0.70
Rainfall data for year 2		
20.90	24	1.20
Rainfall data for year 100		
20.90	1	1.00
Rainfall data for year 100		
20.90	6	1.90
Rainfall data for year 100		
20.90	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	20.90	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.09	0.100	69.0	69.0	4.49	0.121
18.81	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      20.90(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      20.90(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       252.76 (CFS))

  1                5.469                  13.824
  2               35.337                  75.493
  3               75.925                 102.592
  4               93.130                  43.487
  5               98.077                  12.504
  6               99.228                   2.907
  7              100.000                   1.952
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2218              0.2218
  2              0.2927              0.0709
  3              0.3443              0.0515
  4              0.3863              0.0420
  5              0.4223              0.0361
  6              0.4543              0.0320
  7              0.4832              0.0289
  8              0.5097              0.0265
  9              0.5343              0.0246
 10              0.5573              0.0230
 11              0.5789              0.0217
 12              0.5994              0.0205
 13              0.6182              0.0187
 14              0.6360              0.0179
 15              0.6531              0.0171
 16              0.6696              0.0164
 17              0.6854              0.0158
 18              0.7006              0.0152
 19              0.7153              0.0147
 20              0.7296              0.0143
 21              0.7434              0.0138
 22              0.7568              0.0134
 23              0.7699              0.0131
 24              0.7826              0.0127
 25              0.7950              0.0124
 26              0.8071              0.0121
```

27	0.8189	0.0118
28	0.8304	0.0115
29	0.8417	0.0113
30	0.8527	0.0110
31	0.8635	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3709	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5624	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 29.07(CFS)

++

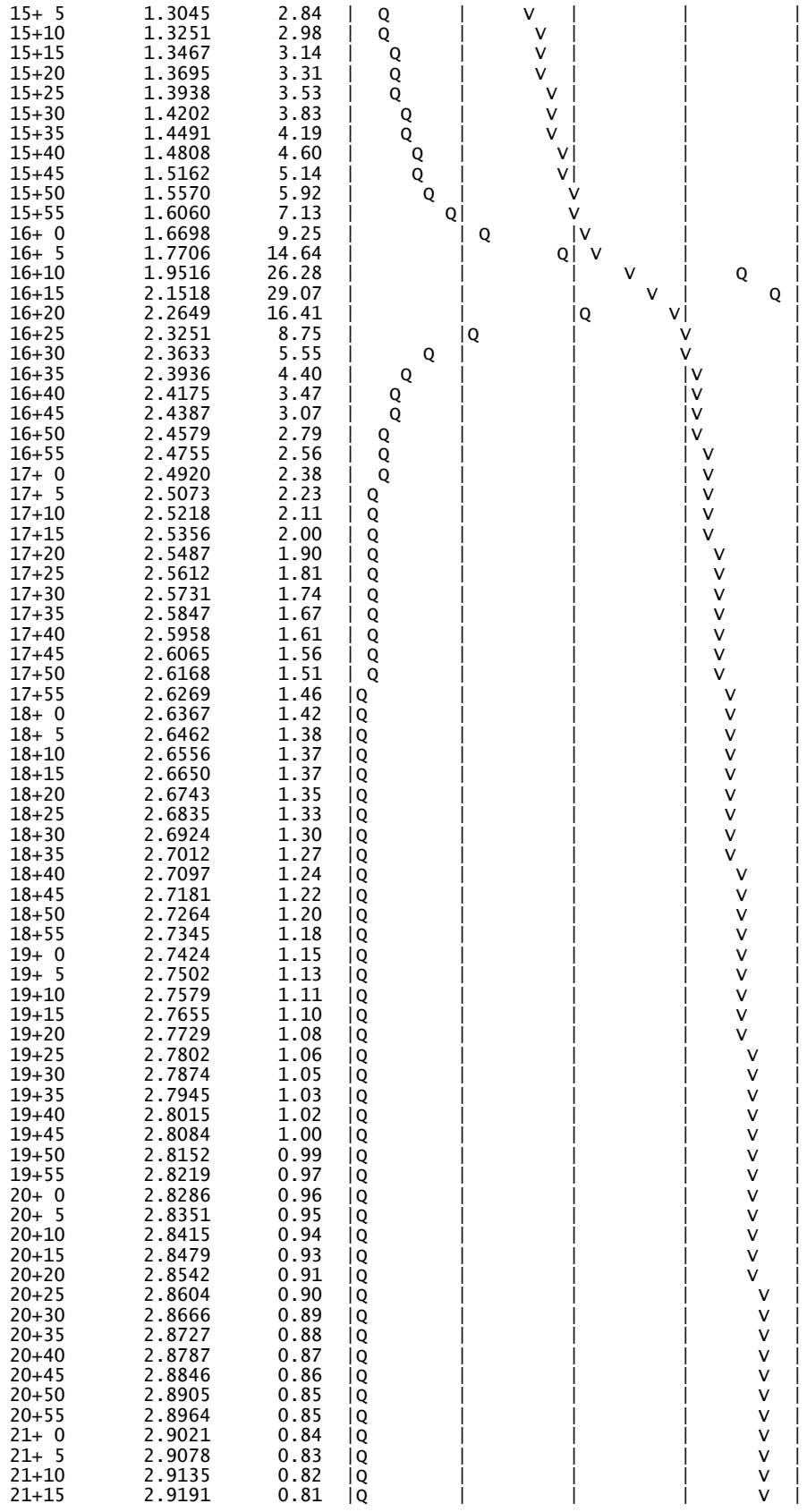
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q	|	|	|	|
0+10	0.0017	0.22	Q	|	|	|	|
0+15	0.0050	0.47	Q	|	|	|	|
0+20	0.0089	0.58	Q	|	|	|	|
0+25	0.0131	0.61	Q	|	|	|	|
0+30	0.0174	0.62	Q	|	|	|	|
0+35	0.0217	0.62	Q	|	|	|	|
0+40	0.0260	0.63	Q	|	|	|	|
0+45	0.0303	0.63	Q	|	|	|	|
0+50	0.0347	0.63	Q	|	|	|	|
0+55	0.0390	0.63	Q	|	|	|	|
1+ 0	0.0434	0.63	Q	|	|	|	|
1+ 5	0.0478	0.64	Q	|	|	|	|
1+10	0.0522	0.64	Q	|	|	|	|
1+15	0.0566	0.64	Q	|	|	|	|
1+20	0.0610	0.64	Q	|	|	|	|
1+25	0.0655	0.65	Q	|	|	|	|
1+30	0.0699	0.65	Q	|	|	|	|
1+35	0.0744	0.65	Q	|	|	|	|
1+40	0.0789	0.65	QV	|	|	|	|
1+45	0.0834	0.65	QV	|	|	|	|
1+50	0.0879	0.66	QV	|	|	|	|
1+55	0.0924	0.66	QV	|	|	|	|
2+ 0	0.0970	0.66	QV	|	|	|	|
2+ 5	0.1016	0.66	QV	|	|	|	|
2+10	0.1061	0.67	QV	|	|	|	|
2+15	0.1107	0.67	QV	|	|	|	|
2+20	0.1154	0.67	QV	|	|	|	|
2+25	0.1200	0.67	QV	|	|	|	|
2+30	0.1246	0.67	QV	|	|	|	|

2+35	0.1293	0.68	QV	|	|	|	|
2+40	0.1340	0.68	QV	|	|	|	|
2+45	0.1387	0.68	QV	|	|	|	|
2+50	0.1434	0.68	QV	|	|	|	|
2+55	0.1481	0.69	QV	|	|	|	|
3+ 0	0.1529	0.69	QV	|	|	|	|
3+ 5	0.1576	0.69	Q V	|	|	|	|
3+10	0.1624	0.69	Q V	|	|	|	|
3+15	0.1672	0.70	Q V	|	|	|	|
3+20	0.1721	0.70	Q V	|	|	|	|
3+25	0.1769	0.70	Q V	|	|	|	|
3+30	0.1818	0.71	Q V	|	|	|	|
3+35	0.1866	0.71	Q V	|	|	|	|
3+40	0.1915	0.71	Q V	|	|	|	|
3+45	0.1964	0.71	Q V	|	|	|	|
3+50	0.2014	0.72	Q V	|	|	|	|
3+55	0.2063	0.72	Q V	|	|	|	|
4+ 0	0.2113	0.72	Q V	|	|	|	|
4+ 5	0.2163	0.73	Q V	|	|	|	|
4+10	0.2213	0.73	Q V	|	|	|	|
4+15	0.2264	0.73	Q V	|	|	|	|
4+20	0.2314	0.73	Q V	|	|	|	|
4+25	0.2365	0.74	Q V	|	|	|	|
4+30	0.2416	0.74	Q V	|	|	|	|
4+35	0.2467	0.74	Q V	|	|	|	|
4+40	0.2519	0.75	Q V	|	|	|	|
4+45	0.2570	0.75	|Q V	|	|	|	|
4+50	0.2622	0.75	|Q V	|	|	|	|
4+55	0.2674	0.76	|Q V	|	|	|	|
5+ 0	0.2727	0.76	|Q V	|	|	|	|
5+ 5	0.2779	0.76	|Q V	|	|	|	|
5+10	0.2832	0.77	|Q V	|	|	|	|
5+15	0.2885	0.77	|Q V	|	|	|	|
5+20	0.2938	0.77	|Q V	|	|	|	|
5+25	0.2992	0.78	|Q V	|	|	|	|
5+30	0.3046	0.78	|Q V	|	|	|	|
5+35	0.3100	0.78	|Q V	|	|	|	|
5+40	0.3154	0.79	|Q V	|	|	|	|
5+45	0.3208	0.79	|Q V	|	|	|	|
5+50	0.3263	0.80	|Q V	|	|	|	|
5+55	0.3318	0.80	|Q V	|	|	|	|
6+ 0	0.3373	0.80	|Q V	|	|	|	|
6+ 5	0.3429	0.81	|Q V	|	|	|	|
6+10	0.3485	0.81	|Q V	|	|	|	|
6+15	0.3541	0.81	|Q V	|	|	|	|
6+20	0.3597	0.82	|Q V	|	|	|	|
6+25	0.3654	0.82	|Q V	|	|	|	|
6+30	0.3711	0.83	|Q V	|	|	|	|
6+35	0.3768	0.83	|Q V	|	|	|	|
6+40	0.3826	0.84	|Q V	|	|	|	|
6+45	0.3884	0.84	|Q V	|	|	|	|
6+50	0.3942	0.84	|Q V	|	|	|	|
6+55	0.4000	0.85	|Q V	|	|	|	|
7+ 0	0.4059	0.85	|Q V	|	|	|	|
7+ 5	0.4118	0.86	|Q V	|	|	|	|
7+10	0.4177	0.86	|Q V	|	|	|	|
7+15	0.4237	0.87	|Q V	|	|	|	|
7+20	0.4297	0.87	|Q V	|	|	|	|
7+25	0.4357	0.88	|Q V	|	|	|	|
7+30	0.4418	0.88	|Q V	|	|	|	|
7+35	0.4479	0.89	|Q V	|	|	|	|
7+40	0.4541	0.89	|Q V	|	|	|	|
7+45	0.4602	0.90	|Q V	|	|	|	|
7+50	0.4665	0.90	|Q V	|	|	|	|
7+55	0.4727	0.91	|Q V	|	|	|	|
8+ 0	0.4790	0.91	|Q V	|	|	|	|
8+ 5	0.4853	0.92	|Q V	|	|	|	|
8+10	0.4917	0.92	|Q V	|	|	|	|
8+15	0.4981	0.93	|Q V	|	|	|	|
8+20	0.5045	0.94	|Q V	|	|	|	|
8+25	0.5110	0.94	|Q V	|	|	|	|
8+30	0.5175	0.95	|Q V	|	|	|	|
8+35	0.5241	0.95	|Q V	|	|	|	|
8+40	0.5307	0.96	|Q V	|	|	|	|
8+45	0.5374	0.97	|Q V	|	|	|	|

```
 8+50       0.5441      0.97  |Q     V  |          |          |          |
 8+55       0.5508      0.98  |Q     V  |          |          |          |
 9+ 0       0.5576      0.99  |Q     V  |          |          |          |
 9+ 5       0.5644      0.99  |Q     V  |          |          |          |
 9+10       0.5713      1.00  |Q     V  |          |          |          |
 9+15       0.5782      1.01  |Q     V  |          |          |          |
 9+20       0.5852      1.01  |Q     V  |          |          |          |
 9+25       0.5923      1.02  |Q     V  |          |          |          |
 9+30       0.5993      1.03  |Q     V  |          |          |          |
 9+35       0.6065      1.04  |Q     V  |          |          |          |
 9+40       0.6137      1.04  |Q     V  |          |          |          |
 9+45       0.6209      1.05  |Q      V |          |          |          |
 9+50       0.6282      1.06  |Q      V |          |          |          |
 9+55       0.6356      1.07  |Q      V |          |          |          |
10+ 0       0.6430      1.08  |Q      V |          |          |          |
10+ 5       0.6504      1.08  |Q      V |          |          |          |
10+10       0.6580      1.09  |Q      V |          |          |          |
10+15       0.6656      1.10  |Q      V |          |          |          |
10+20       0.6732      1.11  |Q      V |          |          |          |
10+25       0.6809      1.12  |Q      V |          |          |          |
10+30       0.6887      1.13  |Q      V |          |          |          |
10+35       0.6966      1.14  |Q       V|          |          |          |
10+40       0.7045      1.15  |Q       V|          |          |          |
10+45       0.7125      1.16  |Q       V|          |          |          |
10+50       0.7206      1.17  |Q       V|          |          |          |
10+55       0.7287      1.18  |Q       V|          |          |          |
11+ 0       0.7369      1.19  |Q       V|          |          |          |
11+ 5       0.7452      1.20  |Q       V|          |          |          |
11+10       0.7536      1.22  |Q       V|          |          |          |
11+15       0.7621      1.23  |Q       V|          |          |          |
11+20       0.7706      1.24  |Q       V|          |          |          |
11+25       0.7792      1.25  |Q        V          |          |          |
11+30       0.7880      1.27  |Q        V          |          |          |
11+35       0.7968      1.28  |Q        V          |          |          |
11+40       0.8057      1.29  |Q        V          |          |          |
11+45       0.8147      1.31  |Q        V          |          |          |
11+50       0.8238      1.32  |Q        V          |          |          |
11+55       0.8330      1.34  |Q        V          |          |          |
12+ 0       0.8423      1.35  |Q        V          |          |          |
12+ 5       0.8517      1.36  |Q         |V         |          |          |
12+10       0.8611      1.35  |Q         |V         |          |          |
12+15       0.8703      1.34  |Q         |V         |          |          |
12+20       0.8795      1.34  |Q         |V         |          |          |
12+25       0.8888      1.35  |Q         |V         |          |          |
12+30       0.8983      1.37  |Q         |V         |          |          |
12+35       0.9078      1.39  |Q         |V         |          |          |
12+40       0.9175      1.41  |Q         |V         |          |          |
12+45       0.9274      1.43  |Q         | V        |          |          |
12+50       0.9374      1.45  |Q         | V        |          |          |
12+55       0.9475      1.47  |Q         | V        |          |          |
13+ 0       0.9578      1.50  |Q         | V        |          |          |
13+ 5       0.9683      1.52  | Q        | V        |          |          |
13+10       0.9790      1.55  | Q        | V        |          |          |
13+15       0.9898      1.57  | Q        | V        |          |          |
13+20       1.0008      1.60  | Q        | V        |          |          |
13+25       1.0120      1.63  | Q        |  V       |          |          |
13+30       1.0235      1.66  | Q        |  V       |          |          |
13+35       1.0351      1.69  | Q        |  V       |          |          |
13+40       1.0470      1.73  | Q        |  V       |          |          |
13+45       1.0592      1.76  | Q        |  V       |          |          |
13+50       1.0716      1.80  | Q        |  V       |          |          |
13+55       1.0842      1.84  | Q        |   V      |          |          |
14+ 0       1.0972      1.88  | Q        |   V      |          |          |
14+ 5       1.1105      1.93  | Q        |   V      |          |          |
14+10       1.1241      1.98  | Q        |   V      |          |          |
14+15       1.1380      2.03  | Q        |   V      |          |          |
14+20       1.1524      2.08  | Q        |   V      |          |          |
14+25       1.1671      2.14  | Q        |    V     |          |          |
14+30       1.1823      2.20  | Q        |    V     |          |          |
14+35       1.1980      2.27  |  Q       |    V     |          |          |
14+40       1.2141      2.35  |  Q       |    V     |          |          |
14+45       1.2309      2.43  |  Q       |    V     |          |          |
14+50       1.2482      2.52  |  Q       |     V    |          |          |
14+55       1.2662      2.62  |  Q       |     V    |          |          |
15+ 0       1.2849      2.72  |  Q       |     V    |          |          |
```



```
   21+20       2.9246      0.80  |Q        |         |         |      V  |
   21+25       2.9301      0.80  |Q        |         |         |      V  |
   21+30       2.9355      0.79  |Q        |         |         |       V |
   21+35       2.9409      0.78  |Q        |         |         |       V |
   21+40       2.9462      0.77  |Q        |         |         |       V |
   21+45       2.9515      0.77  |Q        |         |         |       V |
   21+50       2.9568      0.76  |Q        |         |         |       V |
   21+55       2.9620      0.75  |Q        |         |         |       V |
   22+ 0       2.9671      0.75  Q         |         |         |       V |
   22+ 5       2.9722      0.74  Q         |         |         |       V |
   22+10       2.9773      0.74  Q         |         |         |       V |
   22+15       2.9823      0.73  Q         |         |         |       V |
   22+20       2.9873      0.72  Q         |         |         |       V |
   22+25       2.9922      0.72  Q         |         |         |       V |
   22+30       2.9971      0.71  Q         |         |         |       V |
   22+35       3.0020      0.71  Q         |         |         |       V |
   22+40       3.0068      0.70  Q         |         |         |       V |
   22+45       3.0116      0.70  Q         |         |         |        V|
   22+50       3.0164      0.69  Q         |         |         |        V|
   22+55       3.0211      0.69  Q         |         |         |        V|
   23+ 0       3.0258      0.68  Q         |         |         |        V|
   23+ 5       3.0304      0.68  Q         |         |         |        V|
   23+10       3.0350      0.67  Q         |         |         |        V|
   23+15       3.0396      0.67  Q         |         |         |        V|
   23+20       3.0442      0.66  Q         |         |         |        V|
   23+25       3.0487      0.66  Q         |         |         |        V|
   23+30       3.0532      0.65  Q         |         |         |        V|
   23+35       3.0577      0.65  Q         |         |         |        V|
   23+40       3.0621      0.64  Q         |         |         |        V|
   23+45       3.0665      0.64  Q         |         |         |        V|
   23+50       3.0709      0.64  Q         |         |         |        V|
   23+55       3.0752      0.63  Q         |         |         |        V|
   24+ 0       3.0795      0.63  Q         |         |         |        V|
   24+ 5       3.0836      0.59  Q         |         |         |        V|
   24+10       3.0864      0.40  Q         |         |         |        V|
   24+15       3.0874      0.15  Q         |         |         |        V|
   24+20       3.0877      0.04  Q         |         |         |        V|
   24+25       3.0878      0.01  Q         |         |         |        V|
   24+30       3.0878      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 3D
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 3DPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
19.50	1	0.60
Rainfall data for year 2		
19.50	6	0.70
Rainfall data for year 2		
19.50	24	1.20
Rainfall data for year 100		
19.50	1	1.00
Rainfall data for year 100		
19.50	6	1.90
Rainfall data for year 100		
19.50	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	19.50	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.95	0.100	69.0	69.0	4.49	0.121
17.55	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.180 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      19.50(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.8704
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      19.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       235.83 (CFS))

  1                6.077                  14.331
  2               39.009                  77.664
  3               79.564                  95.639
  4               94.634                  35.541
  5               98.466                   9.036
  6               99.524                   2.494
  7              100.000                   1.123
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2219              0.2219
  2              0.2927              0.0709
  3              0.3443              0.0515
  4              0.3863              0.0420
  5              0.4223              0.0361
  6              0.4543              0.0320
  7              0.4832              0.0289
  8              0.5097              0.0265
  9              0.5343              0.0246
 10              0.5573              0.0230
 11              0.5789              0.0217
 12              0.5995              0.0205
 13              0.6182              0.0187
 14              0.6361              0.0179
 15              0.6532              0.0171
 16              0.6696              0.0164
 17              0.6854              0.0158
 18              0.7006              0.0152
 19              0.7153              0.0147
 20              0.7296              0.0143
 21              0.7434              0.0138
 22              0.7568              0.0134
 23              0.7699              0.0131
 24              0.7826              0.0127
 25              0.7950              0.0124
 26              0.8071              0.0121
```

27	0.8189	0.0118
28	0.8304	0.0115
29	0.8417	0.0113
30	0.8527	0.0110
31	0.8636	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9525	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1058	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3709	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6925	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2219	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 26.93(CFS)

++

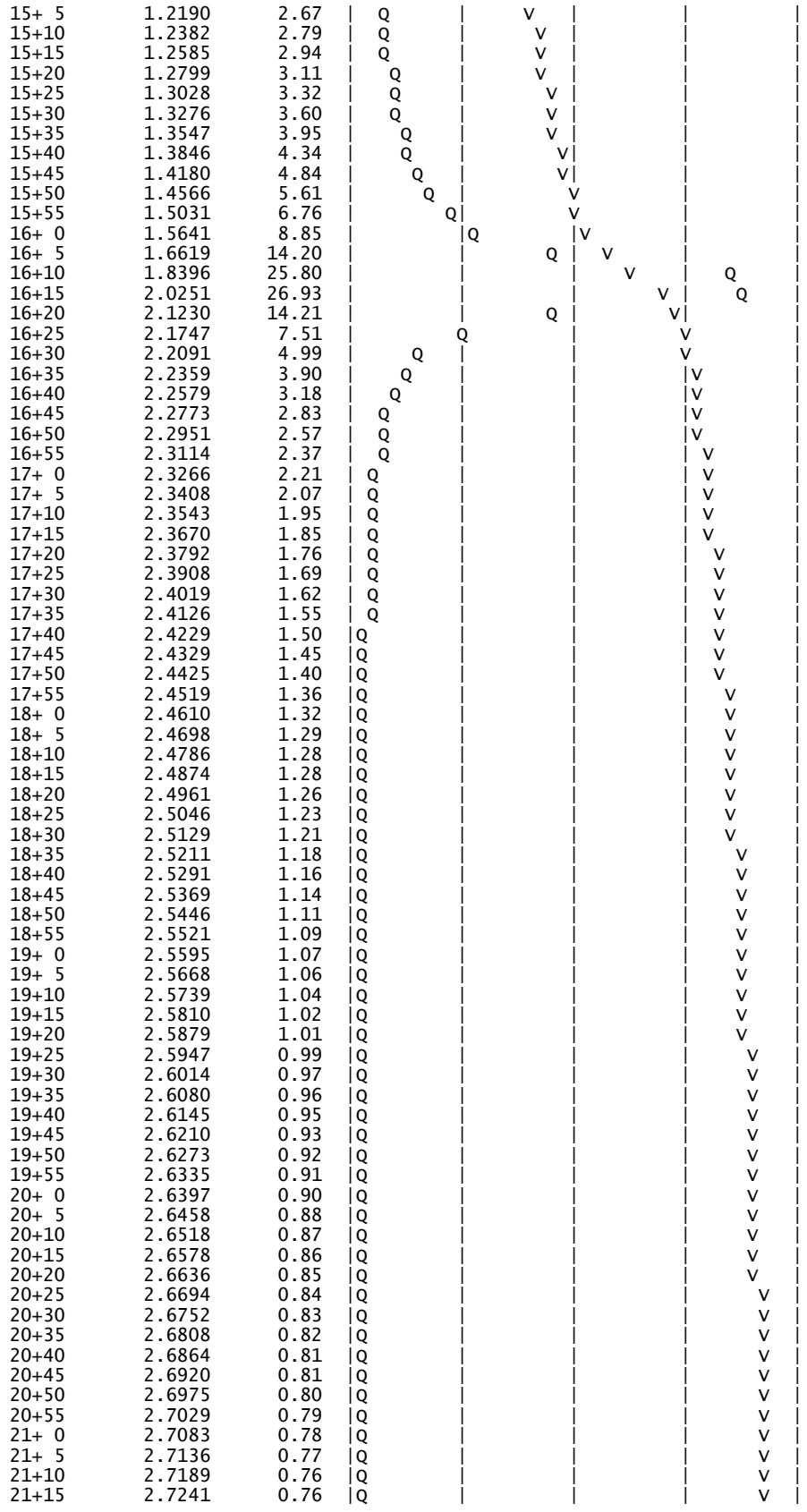
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q	|	|	|	|
0+10	0.0018	0.22	Q	|	|	|	|
0+15	0.0049	0.46	Q	|	|	|	|
0+20	0.0087	0.55	Q	|	|	|	|
0+25	0.0126	0.57	Q	|	|	|	|
0+30	0.0166	0.58	Q	|	|	|	|
0+35	0.0206	0.58	Q	|	|	|	|
0+40	0.0247	0.58	Q	|	|	|	|
0+45	0.0287	0.59	Q	|	|	|	|
0+50	0.0328	0.59	Q	|	|	|	|
0+55	0.0368	0.59	Q	|	|	|	|
1+ 0	0.0409	0.59	Q	|	|	|	|
1+ 5	0.0450	0.59	Q	|	|	|	|
1+10	0.0491	0.60	Q	|	|	|	|
1+15	0.0532	0.60	Q	|	|	|	|
1+20	0.0574	0.60	Q	|	|	|	|
1+25	0.0615	0.60	Q	|	|	|	|
1+30	0.0657	0.60	Q	|	|	|	|
1+35	0.0698	0.61	Q	|	|	|	|
1+40	0.0740	0.61	QV	|	|	|	|
1+45	0.0782	0.61	QV	|	|	|	|
1+50	0.0825	0.61	QV	|	|	|	|
1+55	0.0867	0.61	QV	|	|	|	|
2+ 0	0.0909	0.62	QV	|	|	|	|
2+ 5	0.0952	0.62	QV	|	|	|	|
2+10	0.0995	0.62	QV	|	|	|	|
2+15	0.1038	0.62	QV	|	|	|	|
2+20	0.1081	0.63	QV	|	|	|	|
2+25	0.1124	0.63	QV	|	|	|	|
2+30	0.1167	0.63	QV	|	|	|	|

2+35	0.1211	0.63	QV	|	|	|	|
2+40	0.1254	0.63	QV	|	|	|	|
2+45	0.1298	0.64	QV	|	|	|	|
2+50	0.1342	0.64	QV	|	|	|	|
2+55	0.1386	0.64	QV	|	|	|	|
3+ 0	0.1431	0.64	QV	|	|	|	|
3+ 5	0.1475	0.65	Q V	|	|	|	|
3+10	0.1520	0.65	Q V	|	|	|	|
3+15	0.1565	0.65	Q V	|	|	|	|
3+20	0.1610	0.65	Q V	|	|	|	|
3+25	0.1655	0.66	Q V	|	|	|	|
3+30	0.1700	0.66	Q V	|	|	|	|
3+35	0.1746	0.66	Q V	|	|	|	|
3+40	0.1792	0.66	Q V	|	|	|	|
3+45	0.1837	0.67	Q V	|	|	|	|
3+50	0.1884	0.67	Q V	|	|	|	|
3+55	0.1930	0.67	Q V	|	|	|	|
4+ 0	0.1976	0.67	Q V	|	|	|	|
4+ 5	0.2023	0.68	Q V	|	|	|	|
4+10	0.2070	0.68	Q V	|	|	|	|
4+15	0.2117	0.68	Q V	|	|	|	|
4+20	0.2164	0.69	Q V	|	|	|	|
4+25	0.2211	0.69	Q V	|	|	|	|
4+30	0.2259	0.69	Q V	|	|	|	|
4+35	0.2307	0.69	Q V	|	|	|	|
4+40	0.2355	0.70	Q V	|	|	|	|
4+45	0.2403	0.70	Q V	|	|	|	|
4+50	0.2451	0.70	Q V	|	|	|	|
4+55	0.2500	0.71	Q V	|	|	|	|
5+ 0	0.2549	0.71	Q V	|	|	|	|
5+ 5	0.2598	0.71	Q V	|	|	|	|
5+10	0.2647	0.72	Q V	|	|	|	|
5+15	0.2697	0.72	Q V	|	|	|	|
5+20	0.2746	0.72	Q V	|	|	|	|
5+25	0.2796	0.73	Q V	|	|	|	|
5+30	0.2847	0.73	Q V	|	|	|	|
5+35	0.2897	0.73	Q V	|	|	|	|
5+40	0.2948	0.74	Q V	|	|	|	|
5+45	0.2999	0.74	Q V	|	|	|	|
5+50	0.3050	0.74	Q V	|	|	|	|
5+55	0.3101	0.75	Q V	|	|	|	|
6+ 0	0.3153	0.75	Q V	|	|	|	|
6+ 5	0.3204	0.75	|Q V	|	|	|	|
6+10	0.3257	0.76	|Q V	|	|	|	|
6+15	0.3309	0.76	|Q V	|	|	|	|
6+20	0.3362	0.76	|Q V	|	|	|	|
6+25	0.3415	0.77	|Q V	|	|	|	|
6+30	0.3468	0.77	|Q V	|	|	|	|
6+35	0.3521	0.78	|Q V	|	|	|	|
6+40	0.3575	0.78	|Q V	|	|	|	|
6+45	0.3629	0.78	|Q V	|	|	|	|
6+50	0.3683	0.79	|Q V	|	|	|	|
6+55	0.3738	0.79	|Q V	|	|	|	|
7+ 0	0.3792	0.80	|Q V	|	|	|	|
7+ 5	0.3848	0.80	|Q V	|	|	|	|
7+10	0.3903	0.81	|Q V	|	|	|	|
7+15	0.3959	0.81	|Q V	|	|	|	|
7+20	0.4015	0.81	|Q V	|	|	|	|
7+25	0.4071	0.82	|Q V	|	|	|	|
7+30	0.4128	0.82	|Q V	|	|	|	|
7+35	0.4185	0.83	|Q V	|	|	|	|
7+40	0.4242	0.83	|Q V	|	|	|	|
7+45	0.4300	0.84	|Q V	|	|	|	|
7+50	0.4358	0.84	|Q V	|	|	|	|
7+55	0.4416	0.85	|Q V	|	|	|	|
8+ 0	0.4475	0.85	|Q V	|	|	|	|
8+ 5	0.4534	0.86	|Q V	|	|	|	|
8+10	0.4594	0.86	|Q V	|	|	|	|
8+15	0.4653	0.87	|Q V	|	|	|	|
8+20	0.4713	0.87	|Q V	|	|	|	|
8+25	0.4774	0.88	|Q V	|	|	|	|
8+30	0.4835	0.88	|Q V	|	|	|	|
8+35	0.4896	0.89	|Q V	|	|	|	|
8+40	0.4958	0.90	|Q V	|	|	|	|
8+45	0.5020	0.90	|Q V	|	|	|	|

```
 8+50       0.5083      0.91  |Q     V  |          |          |          |
 8+55       0.5145      0.91  |Q     V  |          |          |          |
 9+ 0       0.5209      0.92  |Q     V  |          |          |          |
 9+ 5       0.5273      0.93  |Q     V  |          |          |          |
 9+10       0.5337      0.93  |Q     V  |          |          |          |
 9+15       0.5402      0.94  |Q     V  |          |          |          |
 9+20       0.5467      0.95  |Q     V  |          |          |          |
 9+25       0.5532      0.95  |Q     V  |          |          |          |
 9+30       0.5599      0.96  |Q     V  |          |          |          |
 9+35       0.5665      0.97  |Q     V  |          |          |          |
 9+40       0.5732      0.97  |Q     V  |          |          |          |
 9+45       0.5800      0.98  |Q      V |          |          |          |
 9+50       0.5868      0.99  |Q      V |          |          |          |
 9+55       0.5937      1.00  |Q      V |          |          |          |
10+ 0       0.6006      1.00  |Q      V |          |          |          |
10+ 5       0.6076      1.01  |Q      V |          |          |          |
10+10       0.6146      1.02  |Q      V |          |          |          |
10+15       0.6217      1.03  |Q      V |          |          |          |
10+20       0.6288      1.04  |Q      V |          |          |          |
10+25       0.6361      1.05  |Q      V |          |          |          |
10+30       0.6433      1.06  |Q      V |          |          |          |
10+35       0.6507      1.07  |Q       V|          |          |          |
10+40       0.6581      1.07  |Q       V|          |          |          |
10+45       0.6655      1.08  |Q       V|          |          |          |
10+50       0.6731      1.09  |Q       V|          |          |          |
10+55       0.6807      1.10  |Q       V|          |          |          |
11+ 0       0.6883      1.11  |Q       V|          |          |          |
11+ 5       0.6961      1.13  |Q       V|          |          |          |
11+10       0.7039      1.14  |Q       V|          |          |          |
11+15       0.7118      1.15  |Q       V|          |          |          |
11+20       0.7198      1.16  |Q       V|          |          |          |
11+25       0.7279      1.17  |Q        V          |          |          |
11+30       0.7360      1.18  |Q        V          |          |          |
11+35       0.7442      1.20  |Q        V          |          |          |
11+40       0.7526      1.21  |Q        V          |          |          |
11+45       0.7610      1.22  |Q        V          |          |          |
11+50       0.7695      1.24  |Q        V          |          |          |
11+55       0.7781      1.25  |Q        V          |          |          |
12+ 0       0.7868      1.26  |Q        V          |          |          |
12+ 5       0.7956      1.27  |Q        |V         |          |          |
12+10       0.8043      1.26  |Q        |V         |          |          |
12+15       0.8128      1.25  |Q        |V         |          |          |
12+20       0.8215      1.25  |Q        |V         |          |          |
12+25       0.8302      1.26  |Q        |V         |          |          |
12+30       0.8390      1.28  |Q        |V         |          |          |
12+35       0.8479      1.30  |Q        |V         |          |          |
12+40       0.8570      1.32  |Q        |V         |          |          |
12+45       0.8662      1.34  |Q        | V        |          |          |
12+50       0.8755      1.36  |Q        | V        |          |          |
12+55       0.8850      1.38  |Q        | V        |          |          |
13+ 0       0.8946      1.40  |Q        | V        |          |          |
13+ 5       0.9044      1.42  |Q        | V        |          |          |
13+10       0.9144      1.45  |Q        | V        |          |          |
13+15       0.9245      1.47  |Q        | V        |          |          |
13+20       0.9348      1.50  |Q        | V        |          |          |
13+25       0.9453      1.52  | Q       |  V       |          |          |
13+30       0.9560      1.55  | Q       |  V       |          |          |
13+35       0.9669      1.58  | Q       |  V       |          |          |
13+40       0.9780      1.61  | Q       |  V       |          |          |
13+45       0.9894      1.65  | Q       |  V       |          |          |
13+50       1.0009      1.68  | Q       |  V       |          |          |
13+55       1.0128      1.72  | Q       |   V      |          |          |
14+ 0       1.0249      1.76  | Q       |   V      |          |          |
14+ 5       1.0373      1.80  | Q       |   V      |          |          |
14+10       1.0500      1.85  | Q       |   V      |          |          |
14+15       1.0631      1.90  | Q       |   V      |          |          |
14+20       1.0765      1.95  | Q       |   V      |          |          |
14+25       1.0903      2.00  | Q       |    V     |          |          |
14+30       1.1045      2.06  | Q       |    V     |          |          |
14+35       1.1192      2.13  | Q       |    V     |          |          |
14+40       1.1343      2.20  | Q       |    V     |          |          |
14+45       1.1500      2.27  |  Q      |    V     |          |          |
14+50       1.1662      2.36  |  Q      |     V    |          |          |
14+55       1.1831      2.45  |  Q      |     V    |          |          |
15+ 0       1.2006      2.55  |  Q      |     V    |          |          |
```



```
   21+20       2.7292      0.75  Q          |          |          |      V  |
   21+25       2.7343      0.74  Q          |          |          |      V  |
   21+30       2.7394      0.74  Q          |          |          |       V |
   21+35       2.7444      0.73  Q          |          |          |       V |
   21+40       2.7494      0.72  Q          |          |          |       V |
   21+45       2.7543      0.72  Q          |          |          |       V |
   21+50       2.7592      0.71  Q          |          |          |       V |
   21+55       2.7641      0.70  Q          |          |          |       V |
   22+ 0       2.7689      0.70  Q          |          |          |       V |
   22+ 5       2.7736      0.69  Q          |          |          |       V |
   22+10       2.7783      0.69  Q          |          |          |       V |
   22+15       2.7830      0.68  Q          |          |          |       V |
   22+20       2.7877      0.67  Q          |          |          |       V |
   22+25       2.7923      0.67  Q          |          |          |       V |
   22+30       2.7968      0.66  Q          |          |          |       V |
   22+35       2.8014      0.66  Q          |          |          |       V |
   22+40       2.8059      0.65  Q          |          |          |       V |
   22+45       2.8103      0.65  Q          |          |          |        V|
   22+50       2.8148      0.64  Q          |          |          |        V|
   22+55       2.8192      0.64  Q          |          |          |        V|
   23+ 0       2.8235      0.63  Q          |          |          |        V|
   23+ 5       2.8279      0.63  Q          |          |          |        V|
   23+10       2.8322      0.63  Q          |          |          |        V|
   23+15       2.8365      0.62  Q          |          |          |        V|
   23+20       2.8407      0.62  Q          |          |          |        V|
   23+25       2.8449      0.61  Q          |          |          |        V|
   23+30       2.8491      0.61  Q          |          |          |        V|
   23+35       2.8533      0.60  Q          |          |          |        V|
   23+40       2.8574      0.60  Q          |          |          |        V|
   23+45       2.8615      0.60  Q          |          |          |        V|
   23+50       2.8656      0.59  Q          |          |          |        V|
   23+55       2.8697      0.59  Q          |          |          |        V|
   24+ 0       2.8737      0.58  Q          |          |          |        V|
   24+ 5       2.8774      0.55  Q          |          |          |        V|
   24+10       2.8799      0.35  Q          |          |          |        V|
   24+15       2.8807      0.12  Q          |          |          |        V|
   24+20       2.8809      0.03  Q          |          |          |        V|
   24+25       2.8810      0.01  Q          |          |          |        V|
   24+30       2.8810      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

BUILDING 4

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 4A
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 4APROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
21.40	1	0.60
Rainfall data for year 2		
21.40	6	0.70
Rainfall data for year 2		
21.40	24	1.20
Rainfall data for year 100		
21.40	1	1.00
Rainfall data for year 100		
21.40	6	1.90
Rainfall data for year 100		
21.40	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	21.40	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.14	0.100	69.0	69.0	4.49	0.121
19.26	0.900	98.0	98.0	0.20	0.892

Area-averaged catchment yield fraction, Y = 0.815
Area-averaged low loss fraction, Yb = 0.185
User entry of time of concentration = 0.110 (hours)
++
Watershed area = 21.40(Ac.)
Catchment Lag time = 0.088 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 94.6970
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.222(In)
Computed peak 30-minute rainfall = 0.455(In)
Specified peak 1-hour rainfall = 0.600(In)
Computed peak 3-hour rainfall = 0.915(In)
Specified peak 6-hour rainfall = 1.194(In)
Specified peak 24-hour rainfall = 2.105(In)

Rainfall depth area reduction factors:
Using a total area of 21.40(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.222(In)
30-minute factor = 0.999 Adjusted rainfall = 0.454(In)
1-hour factor = 0.999 Adjusted rainfall = 0.599(In)
3-hour factor = 1.000 Adjusted rainfall = 0.915(In)
6-hour factor = 1.000 Adjusted rainfall = 1.194(In)
24-hour factor = 1.000 Adjusted rainfall = 2.105(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 258.81 (CFS))	
1	15.507	40.133
2	75.928	156.374
3	97.248	55.175
4	100.000	7.124

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2218	0.2218
2	0.2927	0.0709
3	0.3443	0.0515
4	0.3862	0.0420
5	0.4223	0.0361
6	0.4543	0.0319
7	0.4832	0.0289
8	0.5097	0.0265
9	0.5342	0.0246
10	0.5572	0.0230
11	0.5789	0.0217
12	0.5994	0.0205
13	0.6181	0.0187
14	0.6360	0.0179
15	0.6531	0.0171
16	0.6695	0.0164
17	0.6853	0.0158
18	0.7006	0.0152
19	0.7153	0.0147
20	0.7296	0.0143
21	0.7434	0.0138
22	0.7568	0.0134
23	0.7699	0.0131
24	0.7826	0.0127
25	0.7950	0.0124
26	0.8070	0.0121
27	0.8188	0.0118
28	0.8304	0.0115
29	0.8417	0.0113

30	0.8527	0.0110
31	0.8635	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1339	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3427	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3709	0.0056
102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055

105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4249	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5624	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040
177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040

180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7755	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9335	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033
251	1.9898	0.0032
252	1.9931	0.0032
253	1.9963	0.0032
254	1.9995	0.0032

255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0839	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027
34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027

37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039
109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040

112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139
184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177

187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0319	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031
259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030

262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 39.47(CFS)

++

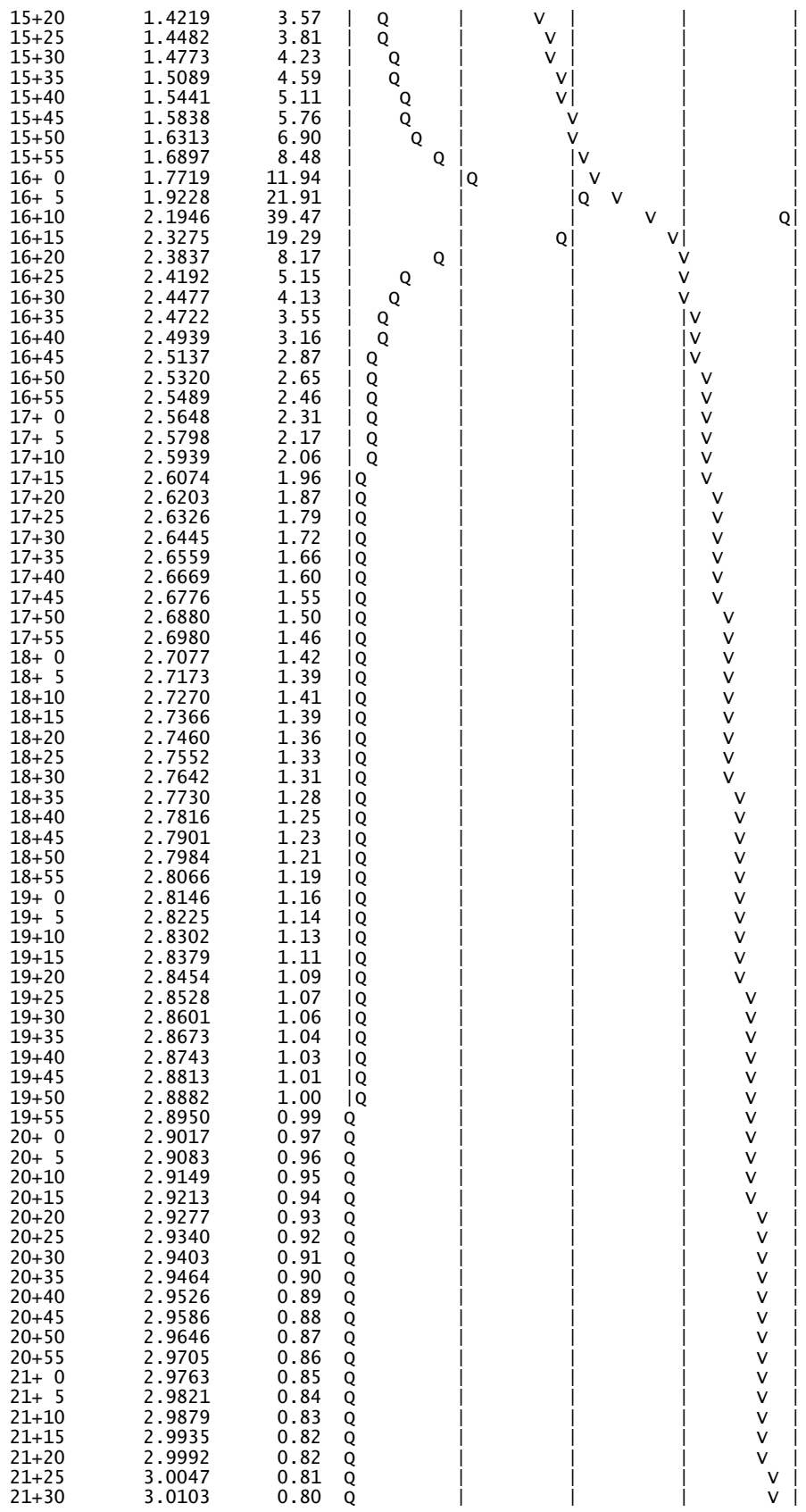
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0007	0.10	Q				
0+10	0.0040	0.48	Q				
0+15	0.0082	0.62	Q				
0+20	0.0126	0.64	Q				
0+25	0.0170	0.64	Q				
0+30	0.0214	0.64	Q				
0+35	0.0258	0.64	Q				
0+40	0.0302	0.64	Q				
0+45	0.0347	0.65	Q				
0+50	0.0391	0.65	Q				
0+55	0.0436	0.65	Q				
1+ 0	0.0481	0.65	Q				
1+ 5	0.0526	0.65	Q				
1+10	0.0571	0.66	Q				
1+15	0.0616	0.66	Q				
1+20	0.0662	0.66	Q				
1+25	0.0708	0.66	Q				
1+30	0.0753	0.66	Q				
1+35	0.0799	0.67	QV				
1+40	0.0845	0.67	QV				
1+45	0.0892	0.67	QV				
1+50	0.0938	0.67	QV				
1+55	0.0985	0.68	QV				
2+ 0	0.1031	0.68	QV				
2+ 5	0.1078	0.68	QV				
2+10	0.1125	0.68	QV				
2+15	0.1172	0.69	QV				
2+20	0.1220	0.69	QV				
2+25	0.1267	0.69	QV				
2+30	0.1315	0.69	QV				
2+35	0.1363	0.70	QV				
2+40	0.1411	0.70	QV				
2+45	0.1459	0.70	QV				

```
2+50       0.1508      0.70  QV         |          |          |          |
2+55       0.1556      0.71  QV         |          |          |          |
3+ 0       0.1605      0.71  Q V        |          |          |          |
3+ 5       0.1654      0.71  Q V        |          |          |          |
3+10       0.1703      0.71  Q V        |          |          |          |
3+15       0.1752      0.72  Q V        |          |          |          |
3+20       0.1802      0.72  Q V        |          |          |          |
3+25       0.1852      0.72  Q V        |          |          |          |
3+30       0.1902      0.72  Q V        |          |          |          |
3+35       0.1952      0.73  Q V        |          |          |          |
3+40       0.2002      0.73  Q V        |          |          |          |
3+45       0.2053      0.73  Q V        |          |          |          |
3+50       0.2103      0.74  Q V        |          |          |          |
3+55       0.2154      0.74  Q V        |          |          |          |
4+ 0       0.2205      0.74  Q V        |          |          |          |
4+ 5       0.2257      0.75  Q V        |          |          |          |
4+10       0.2308      0.75  Q V        |          |          |          |
4+15       0.2360      0.75  Q V        |          |          |          |
4+20       0.2412      0.75  Q  V       |          |          |          |
4+25       0.2464      0.76  Q  V       |          |          |          |
4+30       0.2516      0.76  Q  V       |          |          |          |
4+35       0.2569      0.76  Q  V       |          |          |          |
4+40       0.2622      0.77  Q  V       |          |          |          |
4+45       0.2675      0.77  Q  V       |          |          |          |
4+50       0.2728      0.77  Q  V       |          |          |          |
4+55       0.2782      0.78  Q  V       |          |          |          |
5+ 0       0.2836      0.78  Q  V       |          |          |          |
5+ 5       0.2890      0.78  Q  V       |          |          |          |
5+10       0.2944      0.79  Q  V       |          |          |          |
5+15       0.2998      0.79  Q  V       |          |          |          |
5+20       0.3053      0.80  Q  V       |          |          |          |
5+25       0.3108      0.80  Q  V       |          |          |          |
5+30       0.3163      0.80  Q   V      |          |          |          |
5+35       0.3219      0.81  Q   V      |          |          |          |
5+40       0.3275      0.81  Q   V      |          |          |          |
5+45       0.3331      0.81  Q   V      |          |          |          |
5+50       0.3387      0.82  Q   V      |          |          |          |
5+55       0.3443      0.82  Q   V      |          |          |          |
6+ 0       0.3500      0.83  Q   V      |          |          |          |
6+ 5       0.3557      0.83  Q   V      |          |          |          |
6+10       0.3615      0.83  Q   V      |          |          |          |
6+15       0.3673      0.84  Q   V      |          |          |          |
6+20       0.3731      0.84  Q   V      |          |          |          |
6+25       0.3789      0.85  Q   V      |          |          |          |
6+30       0.3847      0.85  Q   V      |          |          |          |
6+35       0.3906      0.85  Q   V      |          |          |          |
6+40       0.3965      0.86  Q    V     |          |          |          |
6+45       0.4025      0.86  Q    V     |          |          |          |
6+50       0.4085      0.87  Q    V     |          |          |          |
6+55       0.4145      0.87  Q    V     |          |          |          |
7+ 0       0.4205      0.88  Q    V     |          |          |          |
7+ 5       0.4266      0.88  Q    V     |          |          |          |
7+10       0.4327      0.89  Q    V     |          |          |          |
7+15       0.4388      0.89  Q    V     |          |          |          |
7+20       0.4450      0.90  Q    V     |          |          |          |
7+25       0.4512      0.90  Q    V     |          |          |          |
7+30       0.4575      0.91  Q    V     |          |          |          |
7+35       0.4638      0.91  Q    V     |          |          |          |
7+40       0.4701      0.92  Q    V     |          |          |          |
7+45       0.4764      0.92  Q     V    |          |          |          |
7+50       0.4828      0.93  Q     V    |          |          |          |
7+55       0.4893      0.93  Q     V    |          |          |          |
8+ 0       0.4957      0.94  Q     V    |          |          |          |
8+ 5       0.5022      0.94  Q     V    |          |          |          |
8+10       0.5088      0.95  Q     V    |          |          |          |
8+15       0.5154      0.96  Q     V    |          |          |          |
8+20       0.5220      0.96  Q     V    |          |          |          |
8+25       0.5287      0.97  Q     V    |          |          |          |
8+30       0.5354      0.98  Q     V    |          |          |          |
8+35       0.5421      0.98  Q     V    |          |          |          |
8+40       0.5490      0.99  Q     V    |          |          |          |
8+45       0.5558      0.99  Q      V   |          |          |          |
8+50       0.5627      1.00  |Q     V   |          |          |          |
8+55       0.5696      1.01  |Q     V   |          |          |          |
9+ 0       0.5766      1.02  |Q     V   |          |          |          |
```

```
 9+ 5       0.5837      1.02  |Q     V  |          |          |          |
 9+10       0.5907      1.03  |Q     V  |          |          |          |
 9+15       0.5979      1.04  |Q     V  |          |          |          |
 9+20       0.6051      1.04  |Q     V  |          |          |          |
 9+25       0.6123      1.05  |Q     V  |          |          |          |
 9+30       0.6196      1.06  |Q     V  |          |          |          |
 9+35       0.6270      1.07  |Q     V  |          |          |          |
 9+40       0.6344      1.08  |Q      V |          |          |          |
 9+45       0.6418      1.08  |Q      V |          |          |          |
 9+50       0.6493      1.09  |Q      V |          |          |          |
 9+55       0.6569      1.10  |Q      V |          |          |          |
10+ 0       0.6646      1.11  |Q      V |          |          |          |
10+ 5       0.6723      1.12  |Q      V |          |          |          |
10+10       0.6800      1.13  |Q      V |          |          |          |
10+15       0.6878      1.14  |Q      V |          |          |          |
10+20       0.6957      1.15  |Q      V |          |          |          |
10+25       0.7037      1.16  |Q      V |          |          |          |
10+30       0.7117      1.17  |Q       V|          |          |          |
10+35       0.7198      1.18  |Q       V|          |          |          |
10+40       0.7280      1.19  |Q       V|          |          |          |
10+45       0.7363      1.20  |Q       V|          |          |          |
10+50       0.7446      1.21  |Q       V|          |          |          |
10+55       0.7530      1.22  |Q       V|          |          |          |
11+ 0       0.7615      1.23  |Q       V|          |          |          |
11+ 5       0.7700      1.24  |Q       V|          |          |          |
11+10       0.7787      1.26  |Q       V|          |          |          |
11+15       0.7874      1.27  |Q       V|          |          |          |
11+20       0.7962      1.28  |Q        V          |          |          |
11+25       0.8051      1.29  |Q        V          |          |          |
11+30       0.8141      1.31  |Q        V          |          |          |
11+35       0.8232      1.32  |Q        V          |          |          |
11+40       0.8325      1.34  |Q        V          |          |          |
11+45       0.8418      1.35  |Q        V          |          |          |
11+50       0.8512      1.37  |Q        V          |          |          |
11+55       0.8607      1.38  |Q        V          |          |          |
12+ 0       0.8703      1.40  |Q        |V         |          |          |
12+ 5       0.8800      1.40  |Q        |V         |          |          |
12+10       0.8894      1.37  |Q        |V         |          |          |
12+15       0.8988      1.36  |Q        |V         |          |          |
12+20       0.9083      1.38  |Q        |V         |          |          |
12+25       0.9179      1.40  |Q        |V         |          |          |
12+30       0.9277      1.42  |Q        |V         |          |          |
12+35       0.9376      1.44  |Q        |V         |          |          |
12+40       0.9476      1.46  |Q        |V         |          |          |
12+45       0.9578      1.48  |Q        | V        |          |          |
12+50       0.9682      1.51  |Q        | V        |          |          |
12+55       0.9787      1.53  |Q        | V        |          |          |
13+ 0       0.9894      1.55  |Q        | V        |          |          |
13+ 5       1.0003      1.58  |Q        | V        |          |          |
13+10       1.0113      1.61  |Q        | V        |          |          |
13+15       1.0226      1.63  |Q        | V        |          |          |
13+20       1.0341      1.66  |Q        |  V       |          |          |
13+25       1.0457      1.69  |Q        |  V       |          |          |
13+30       1.0576      1.73  |Q        |  V       |          |          |
13+35       1.0697      1.76  |Q        |  V       |          |          |
13+40       1.0821      1.80  |Q        |  V       |          |          |
13+45       1.0947      1.83  |Q        |  V       |          |          |
13+50       1.1077      1.88  |Q        |   V      |          |          |
13+55       1.1209      1.92  |Q        |   V      |          |          |
14+ 0       1.1344      1.96  |Q        |   V      |          |          |
14+ 5       1.1482      2.01  | Q       |   V      |          |          |
14+10       1.1625      2.07  | Q       |   V      |          |          |
14+15       1.1771      2.12  | Q       |   V      |          |          |
14+20       1.1921      2.18  | Q       |    V     |          |          |
14+25       1.2075      2.24  | Q       |    V     |          |          |
14+30       1.2235      2.32  | Q       |    V     |          |          |
14+35       1.2399      2.38  | Q       |    V     |          |          |
14+40       1.2569      2.47  | Q       |    V     |          |          |
14+45       1.2745      2.55  | Q       |     V    |          |          |
14+50       1.2928      2.66  | Q       |     V    |          |          |
14+55       1.3118      2.76  | Q       |     V    |          |          |
15+ 0       1.3317      2.89  | Q       |     V    |          |          |
15+ 5       1.3525      3.01  |  Q      |      V   |          |          |
15+10       1.3744      3.18  |  Q      |      V   |          |          |
15+15       1.3974      3.34  |  Q      |      V   |          |          |
```



```
   21+35       3.0157      0.79  Q          |          |          |       V |
   21+40       3.0211      0.79  Q          |          |          |       V |
   21+45       3.0265      0.78  Q          |          |          |       V |
   21+50       3.0318      0.77  Q          |          |          |       V |
   21+55       3.0371      0.77  Q          |          |          |       V |
   22+ 0       3.0424      0.76  Q          |          |          |       V |
   22+ 5       3.0476      0.75  Q          |          |          |       V |
   22+10       3.0527      0.75  Q          |          |          |       V |
   22+15       3.0578      0.74  Q          |          |          |       V |
   22+20       3.0629      0.74  Q          |          |          |       V |
   22+25       3.0679      0.73  Q          |          |          |       V |
   22+30       3.0729      0.72  Q          |          |          |       V |
   22+35       3.0778      0.72  Q          |          |          |       V |
   22+40       3.0828      0.71  Q          |          |          |        V|
   22+45       3.0876      0.71  Q          |          |          |        V|
   22+50       3.0925      0.70  Q          |          |          |        V|
   22+55       3.0973      0.70  Q          |          |          |        V|
   23+ 0       3.1020      0.69  Q          |          |          |        V|
   23+ 5       3.1068      0.69  Q          |          |          |        V|
   23+10       3.1115      0.68  Q          |          |          |        V|
   23+15       3.1162      0.68  Q          |          |          |        V|
   23+20       3.1208      0.67  Q          |          |          |        V|
   23+25       3.1254      0.67  Q          |          |          |        V|
   23+30       3.1300      0.66  Q          |          |          |        V|
   23+35       3.1345      0.66  Q          |          |          |        V|
   23+40       3.1390      0.66  Q          |          |          |        V|
   23+45       3.1435      0.65  Q          |          |          |        V|
   23+50       3.1480      0.65  Q          |          |          |        V|
   23+55       3.1524      0.64  Q          |          |          |        V|
   24+ 0       3.1568      0.64  Q          |          |          |        V|
   24+ 5       3.1605      0.54  Q          |          |          |        V|
   24+10       3.1616      0.15  Q          |          |          |        V|
   24+15       3.1617      0.02  Q          |          |          |         V
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 4B
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 4BPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
20.70	1	0.60
Rainfall data for year 2		
20.70	6	0.70
Rainfall data for year 2		
20.70	24	1.20
Rainfall data for year 100		
20.70	1	1.00
Rainfall data for year 100		
20.70	6	1.90
Rainfall data for year 100		
20.70	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	20.70	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.07	0.100	69.0	69.0	4.49	0.121
18.63	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      20.70(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      20.70(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       250.34 (CFS))

  1                5.469                  13.691
  2               35.337                  74.771
  3               75.925                 101.610
  4               93.130                  43.071
  5               98.077                  12.384
  6               99.228                   2.880
  7              100.000                   1.934
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2218              0.2218
  2              0.2927              0.0709
  3              0.3443              0.0515
  4              0.3863              0.0420
  5              0.4223              0.0361
  6              0.4543              0.0320
  7              0.4832              0.0289
  8              0.5097              0.0265
  9              0.5343              0.0246
 10              0.5573              0.0230
 11              0.5789              0.0217
 12              0.5994              0.0205
 13              0.6182              0.0187
 14              0.6360              0.0179
 15              0.6531              0.0171
 16              0.6696              0.0164
 17              0.6854              0.0158
 18              0.7006              0.0152
 19              0.7153              0.0147
 20              0.7296              0.0143
 21              0.7434              0.0138
 22              0.7568              0.0134
 23              0.7699              0.0131
 24              0.7826              0.0127
 25              0.7950              0.0124
 26              0.8071              0.0121
```

27	0.8189	0.0118
28	0.8304	0.0115
29	0.8417	0.0113
30	0.8527	0.0110
31	0.8636	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3709	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9670	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 28.79(CFS)

++

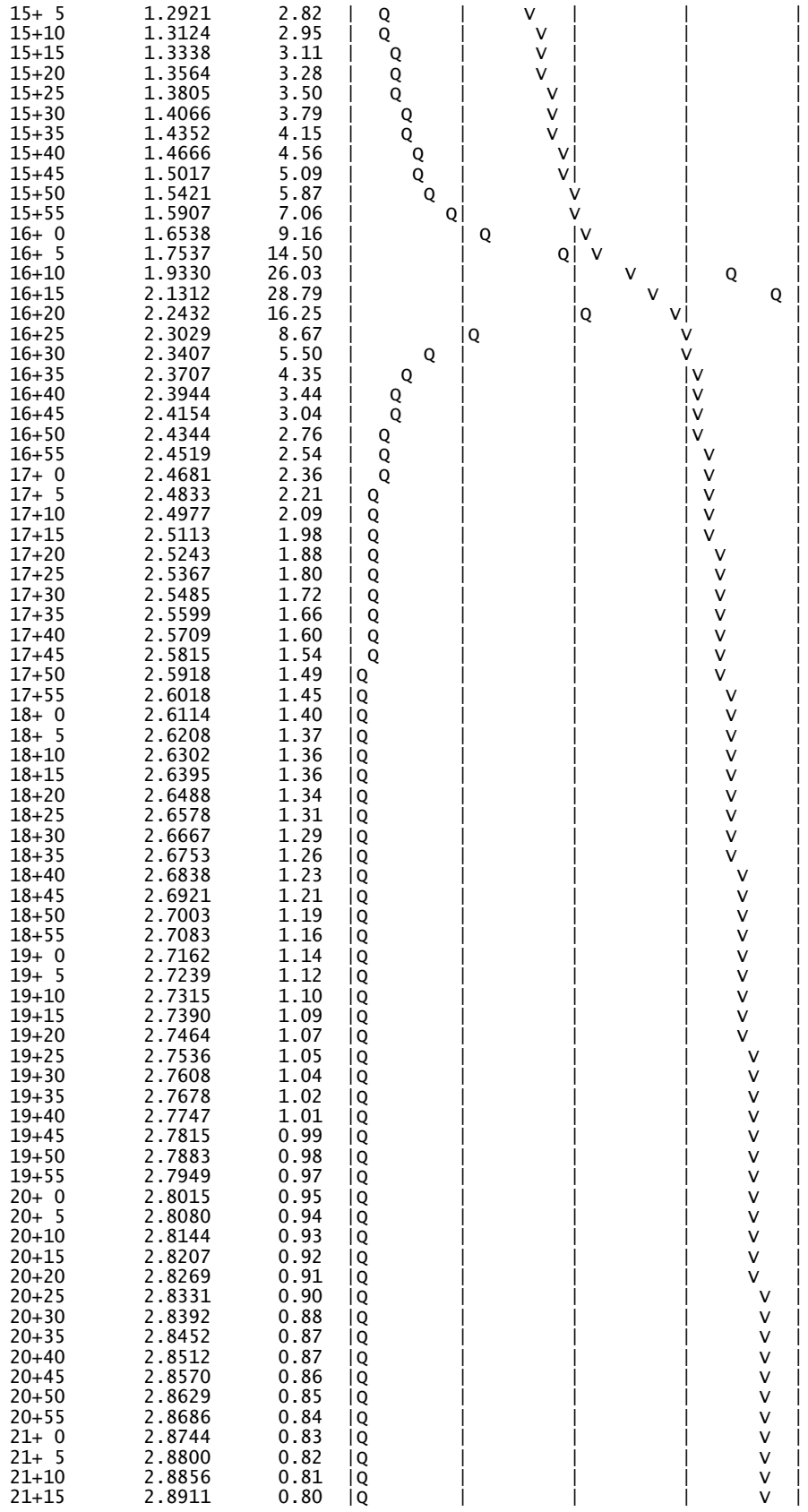
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q				
0+10	0.0017	0.22	Q				
0+15	0.0049	0.46	Q				
0+20	0.0089	0.57	Q				
0+25	0.0130	0.60	Q				
0+30	0.0172	0.61	Q				
0+35	0.0215	0.62	Q				
0+40	0.0258	0.62	Q				
0+45	0.0300	0.62	Q				
0+50	0.0343	0.62	Q				
0+55	0.0387	0.63	Q				
1+ 0	0.0430	0.63	Q				
1+ 5	0.0473	0.63	Q				
1+10	0.0517	0.63	Q				
1+15	0.0561	0.63	Q				
1+20	0.0604	0.64	Q				
1+25	0.0648	0.64	Q				
1+30	0.0693	0.64	Q				
1+35	0.0737	0.64	Q				
1+40	0.0781	0.65	QV				
1+45	0.0826	0.65	QV				
1+50	0.0871	0.65	QV				
1+55	0.0916	0.65	QV				
2+ 0	0.0961	0.65	QV				
2+ 5	0.1006	0.66	QV				
2+10	0.1051	0.66	QV				
2+15	0.1097	0.66	QV				
2+20	0.1143	0.66	QV				
2+25	0.1188	0.67	QV				
2+30	0.1234	0.67	QV				

```
2+35       0.1281      0.67  QV        |         |         |         |
2+40       0.1327      0.67  QV        |         |         |         |
2+45       0.1373      0.68  QV        |         |         |         |
2+50       0.1420      0.68  QV        |         |         |         |
2+55       0.1467      0.68  QV        |         |         |         |
3+ 0       0.1514      0.68  QV        |         |         |         |
3+ 5       0.1561      0.69  Q V       |         |         |         |
3+10       0.1609      0.69  Q V       |         |         |         |
3+15       0.1656      0.69  Q V       |         |         |         |
3+20       0.1704      0.69  Q V       |         |         |         |
3+25       0.1752      0.70  Q V       |         |         |         |
3+30       0.1800      0.70  Q V       |         |         |         |
3+35       0.1848      0.70  Q V       |         |         |         |
3+40       0.1897      0.70  Q V       |         |         |         |
3+45       0.1946      0.71  Q V       |         |         |         |
3+50       0.1995      0.71  Q V       |         |         |         |
3+55       0.2044      0.71  Q V       |         |         |         |
4+ 0       0.2093      0.72  Q V       |         |         |         |
4+ 5       0.2142      0.72  Q V       |         |         |         |
4+10       0.2192      0.72  Q V       |         |         |         |
4+15       0.2242      0.72  Q V       |         |         |         |
4+20       0.2292      0.73  Q V       |         |         |         |
4+25       0.2342      0.73  Q  V      |         |         |         |
4+30       0.2393      0.73  Q  V      |         |         |         |
4+35       0.2444      0.74  Q  V      |         |         |         |
4+40       0.2495      0.74  Q  V      |         |         |         |
4+45       0.2546      0.74  Q  V      |         |         |         |
4+50       0.2597      0.75  Q  V      |         |         |         |
4+55       0.2649      0.75  Q  V      |         |         |         |
5+ 0       0.2700      0.75  |Q V      |         |         |         |
5+ 5       0.2753      0.76  |Q V      |         |         |         |
5+10       0.2805      0.76  |Q V      |         |         |         |
5+15       0.2857      0.76  |Q V      |         |         |         |
5+20       0.2910      0.77  |Q V      |         |         |         |
5+25       0.2963      0.77  |Q V      |         |         |         |
5+30       0.3016      0.77  |Q V      |         |         |         |
5+35       0.3070      0.78  |Q  V     |         |         |         |
5+40       0.3124      0.78  |Q  V     |         |         |         |
5+45       0.3178      0.78  |Q  V     |         |         |         |
5+50       0.3232      0.79  |Q  V     |         |         |         |
5+55       0.3286      0.79  |Q  V     |         |         |         |
6+ 0       0.3341      0.80  |Q  V     |         |         |         |
6+ 5       0.3396      0.80  |Q  V     |         |         |         |
6+10       0.3451      0.80  |Q  V     |         |         |         |
6+15       0.3507      0.81  |Q  V     |         |         |         |
6+20       0.3563      0.81  |Q  V     |         |         |         |
6+25       0.3619      0.81  |Q  V     |         |         |         |
6+30       0.3675      0.82  |Q  V     |         |         |         |
6+35       0.3732      0.82  |Q  V     |         |         |         |
6+40       0.3789      0.83  |Q  V     |         |         |         |
6+45       0.3846      0.83  |Q   V    |         |         |         |
6+50       0.3904      0.84  |Q   V    |         |         |         |
6+55       0.3962      0.84  |Q   V    |         |         |         |
7+ 0       0.4020      0.84  |Q   V    |         |         |         |
7+ 5       0.4079      0.85  |Q   V    |         |         |         |
7+10       0.4137      0.85  |Q   V    |         |         |         |
7+15       0.4196      0.86  |Q   V    |         |         |         |
7+20       0.4256      0.86  |Q   V    |         |         |         |
7+25       0.4316      0.87  |Q   V    |         |         |         |
7+30       0.4376      0.87  |Q   V    |         |         |         |
7+35       0.4436      0.88  |Q   V    |         |         |         |
7+40       0.4497      0.88  |Q   V    |         |         |         |
7+45       0.4558      0.89  |Q   V    |         |         |         |
7+50       0.4620      0.89  |Q    V   |         |         |         |
7+55       0.4682      0.90  |Q    V   |         |         |         |
8+ 0       0.4744      0.90  |Q    V   |         |         |         |
8+ 5       0.4807      0.91  |Q    V   |         |         |         |
8+10       0.4870      0.92  |Q    V   |         |         |         |
8+15       0.4933      0.92  |Q    V   |         |         |         |
8+20       0.4997      0.93  |Q    V   |         |         |         |
8+25       0.5061      0.93  |Q    V   |         |         |         |
8+30       0.5126      0.94  |Q    V   |         |         |         |
8+35       0.5191      0.94  |Q    V   |         |         |         |
8+40       0.5256      0.95  |Q    V   |         |         |         |
8+45       0.5322      0.96  |Q    V   |         |         |         |
```

```
 8+50       0.5389      0.96  |Q     V  |          |          |          |
 8+55       0.5455      0.97  |Q     V  |          |          |          |
 9+ 0       0.5523      0.98  |Q     V  |          |          |          |
 9+ 5       0.5590      0.98  |Q     V  |          |          |          |
 9+10       0.5658      0.99  |Q     V  |          |          |          |
 9+15       0.5727      1.00  |Q     V  |          |          |          |
 9+20       0.5796      1.00  |Q     V  |          |          |          |
 9+25       0.5866      1.01  |Q     V  |          |          |          |
 9+30       0.5936      1.02  |Q     V  |          |          |          |
 9+35       0.6007      1.03  |Q     V  |          |          |          |
 9+40       0.6078      1.03  |Q     V  |          |          |          |
 9+45       0.6150      1.04  |Q      V |          |          |          |
 9+50       0.6222      1.05  |Q      V |          |          |          |
 9+55       0.6295      1.06  |Q      V |          |          |          |
10+ 0       0.6368      1.07  |Q      V |          |          |          |
10+ 5       0.6442      1.07  |Q      V |          |          |          |
10+10       0.6517      1.08  |Q      V |          |          |          |
10+15       0.6592      1.09  |Q      V |          |          |          |
10+20       0.6668      1.10  |Q      V |          |          |          |
10+25       0.6744      1.11  |Q      V |          |          |          |
10+30       0.6821      1.12  |Q      V |          |          |          |
10+35       0.6899      1.13  |Q       V|          |          |          |
10+40       0.6978      1.14  |Q       V|          |          |          |
10+45       0.7057      1.15  |Q       V|          |          |          |
10+50       0.7137      1.16  |Q       V|          |          |          |
10+55       0.7217      1.17  |Q       V|          |          |          |
11+ 0       0.7299      1.18  |Q       V|          |          |          |
11+ 5       0.7381      1.19  |Q       V|          |          |          |
11+10       0.7464      1.20  |Q       V|          |          |          |
11+15       0.7548      1.22  |Q       V|          |          |          |
11+20       0.7632      1.23  |Q       V|          |          |          |
11+25       0.7718      1.24  |Q        V          |          |          |
11+30       0.7804      1.25  |Q        V          |          |          |
11+35       0.7892      1.27  |Q        V          |          |          |
11+40       0.7980      1.28  |Q        V          |          |          |
11+45       0.8069      1.30  |Q        V          |          |          |
11+50       0.8159      1.31  |Q        V          |          |          |
11+55       0.8250      1.32  |Q        V          |          |          |
12+ 0       0.8343      1.34  |Q        V          |          |          |
12+ 5       0.8436      1.35  |Q        |V         |          |          |
12+10       0.8528      1.34  |Q        |V         |          |          |
12+15       0.8619      1.32  |Q        |V         |          |          |
12+20       0.8711      1.33  |Q        |V         |          |          |
12+25       0.8803      1.34  |Q        |V         |          |          |
12+30       0.8897      1.36  |Q        |V         |          |          |
12+35       0.8991      1.38  |Q        |V         |          |          |
12+40       0.9087      1.40  |Q        |V         |          |          |
12+45       0.9185      1.42  |Q        | V        |          |          |
12+50       0.9284      1.44  |Q        | V        |          |          |
12+55       0.9384      1.46  |Q        | V        |          |          |
13+ 0       0.9487      1.48  |Q        | V        |          |          |
13+ 5       0.9590      1.51  | Q       | V        |          |          |
13+10       0.9696      1.53  | Q       | V        |          |          |
13+15       0.9803      1.56  | Q       | V        |          |          |
13+20       0.9912      1.59  | Q       | V        |          |          |
13+25       1.0024      1.61  | Q       |  V       |          |          |
13+30       1.0137      1.64  | Q       |  V       |          |          |
13+35       1.0252      1.68  | Q       |  V       |          |          |
13+40       1.0370      1.71  | Q       |  V       |          |          |
13+45       1.0490      1.75  | Q       |  V       |          |          |
13+50       1.0613      1.78  | Q       |  V       |          |          |
13+55       1.0739      1.82  | Q       |   V      |          |          |
14+ 0       1.0867      1.86  | Q       |   V      |          |          |
14+ 5       1.0998      1.91  | Q       |   V      |          |          |
14+10       1.1133      1.96  | Q       |   V      |          |          |
14+15       1.1271      2.01  | Q       |   V      |          |          |
14+20       1.1413      2.06  | Q       |   V      |          |          |
14+25       1.1560      2.12  | Q       |    V     |          |          |
14+30       1.1710      2.18  | Q       |    V     |          |          |
14+35       1.1865      2.25  |  Q      |    V     |          |          |
14+40       1.2025      2.32  |  Q      |    V     |          |          |
14+45       1.2191      2.41  |  Q      |    V     |          |          |
14+50       1.2362      2.49  |  Q      |     V    |          |          |
14+55       1.2541      2.59  |  Q      |     V    |          |          |
15+ 0       1.2726      2.70  |  Q      |     V    |          |          |
```



```
   21+20       2.8966      0.80  |Q        |         |         |      V  |
   21+25       2.9020      0.79  |Q        |         |         |      V  |
   21+30       2.9074      0.78  |Q        |         |         |       V |
   21+35       2.9128      0.77  |Q        |         |         |       V |
   21+40       2.9180      0.77  |Q        |         |         |       V |
   21+45       2.9233      0.76  |Q        |         |         |       V |
   21+50       2.9285      0.75  |Q        |         |         |       V |
   21+55       2.9336      0.75  Q         |         |         |       V |
   22+ 0       2.9387      0.74  Q         |         |         |       V |
   22+ 5       2.9438      0.73  Q         |         |         |       V |
   22+10       2.9488      0.73  Q         |         |         |       V |
   22+15       2.9538      0.72  Q         |         |         |       V |
   22+20       2.9587      0.72  Q         |         |         |       V |
   22+25       2.9636      0.71  Q         |         |         |       V |
   22+30       2.9684      0.71  Q         |         |         |       V |
   22+35       2.9733      0.70  Q         |         |         |       V |
   22+40       2.9780      0.69  Q         |         |         |       V |
   22+45       2.9828      0.69  Q         |         |         |        V|
   22+50       2.9875      0.68  Q         |         |         |        V|
   22+55       2.9922      0.68  Q         |         |         |        V|
   23+ 0       2.9968      0.67  Q         |         |         |        V|
   23+ 5       3.0014      0.67  Q         |         |         |        V|
   23+10       3.0060      0.66  Q         |         |         |        V|
   23+15       3.0105      0.66  Q         |         |         |        V|
   23+20       3.0151      0.65  Q         |         |         |        V|
   23+25       3.0195      0.65  Q         |         |         |        V|
   23+30       3.0240      0.65  Q         |         |         |        V|
   23+35       3.0284      0.64  Q         |         |         |        V|
   23+40       3.0328      0.64  Q         |         |         |        V|
   23+45       3.0372      0.63  Q         |         |         |        V|
   23+50       3.0415      0.63  Q         |         |         |        V|
   23+55       3.0458      0.63  Q         |         |         |        V|
   24+ 0       3.0501      0.62  Q         |         |         |        V|
   24+ 5       3.0541      0.58  Q         |         |         |        V|
   24+10       3.0568      0.40  Q         |         |         |        V|
   24+15       3.0579      0.15  Q         |         |         |        V|
   24+20       3.0581      0.04  Q         |         |         |        V|
   24+25       3.0582      0.01  Q         |         |         |        V|
   24+30       3.0583      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 4C
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 4CPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
21.60	1	0.60
Rainfall data for year 2		
21.60	6	0.70
Rainfall data for year 2		
21.60	24	1.20
Rainfall data for year 100		
21.60	1	1.00
Rainfall data for year 100		
21.60	6	1.90
Rainfall data for year 100		
21.60	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	21.60	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.16	0.100	69.0	69.0	4.49	0.121
19.44	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.180 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      21.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.8704
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      21.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       261.23 (CFS))

  1                6.077                  15.874
  2               39.009                  86.028
  3               79.564                 105.938
  4               94.634                  39.368
  5               98.466                  10.010
  6               99.524                   2.763
  7              100.000                   1.244
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2218              0.2218
  2              0.2927              0.0709
  3              0.3443              0.0515
  4              0.3862              0.0420
  5              0.4223              0.0361
  6              0.4543              0.0319
  7              0.4831              0.0289
  8              0.5097              0.0265
  9              0.5342              0.0246
 10              0.5572              0.0230
 11              0.5789              0.0217
 12              0.5994              0.0205
 13              0.6181              0.0187
 14              0.6360              0.0179
 15              0.6531              0.0171
 16              0.6695              0.0164
 17              0.6853              0.0158
 18              0.7006              0.0152
 19              0.7153              0.0147
 20              0.7296              0.0143
 21              0.7434              0.0138
 22              0.7568              0.0134
 23              0.7699              0.0131
 24              0.7826              0.0127
 25              0.7950              0.0124
 26              0.8070              0.0121
```

27	0.8188	0.0118
28	0.8304	0.0115
29	0.8417	0.0113
30	0.8527	0.0110
31	0.8635	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1339	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3427	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3709	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4249	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5624	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5985	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7755	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9335	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033
251	1.9898	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9995	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0839	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0319	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 29.82(CFS)

++

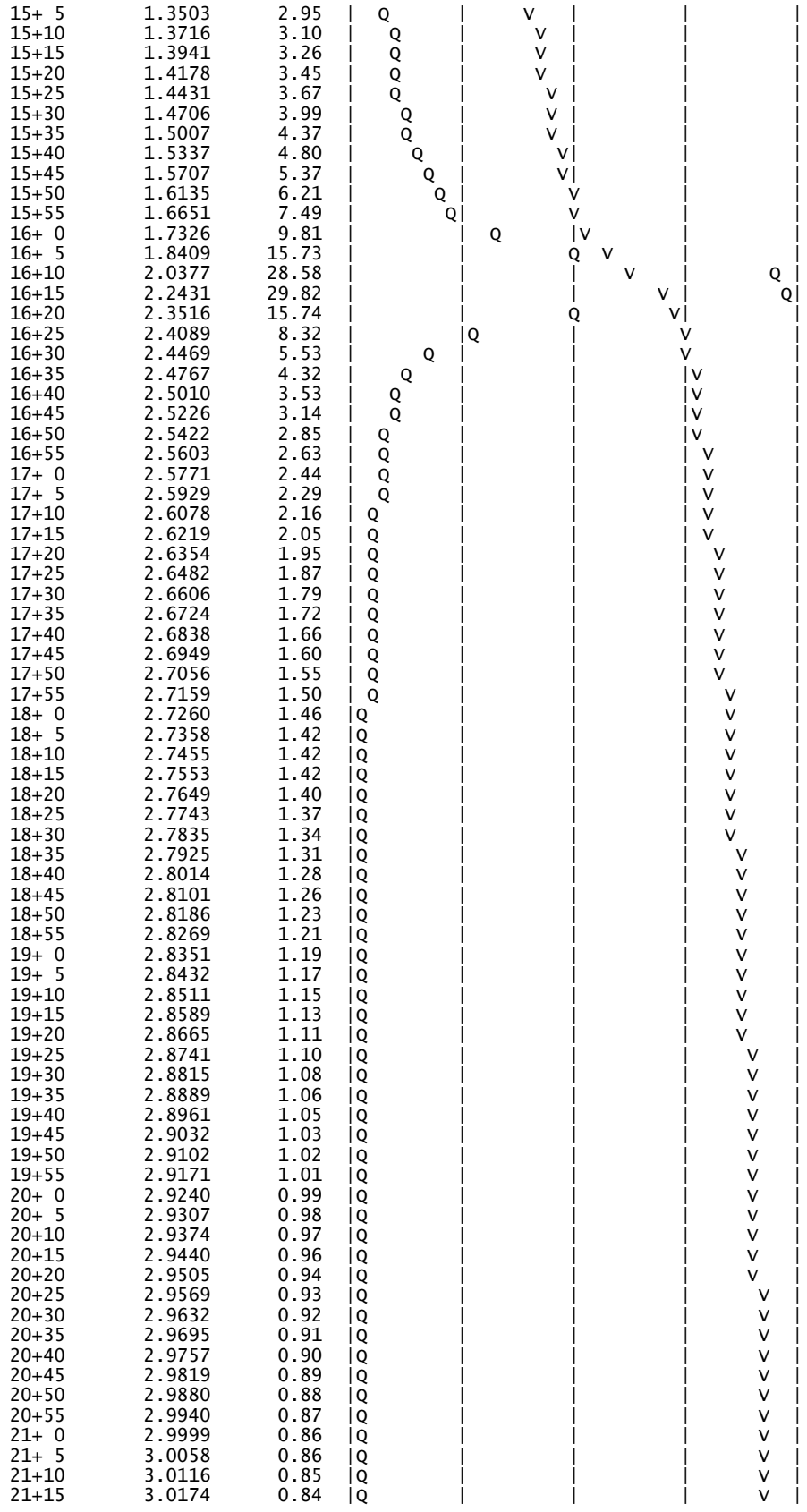
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0003	0.04	Q	|	|	|	|
0+10	0.0020	0.25	Q	|	|	|	|
0+15	0.0055	0.51	Q	|	|	|	|
0+20	0.0097	0.61	Q	|	|	|	|
0+25	0.0140	0.63	Q	|	|	|	|
0+30	0.0184	0.64	Q	|	|	|	|
0+35	0.0229	0.65	Q	|	|	|	|
0+40	0.0273	0.65	Q	|	|	|	|
0+45	0.0318	0.65	Q	|	|	|	|
0+50	0.0363	0.65	Q	|	|	|	|
0+55	0.0408	0.65	Q	|	|	|	|
1+ 0	0.0453	0.66	Q	|	|	|	|
1+ 5	0.0498	0.66	Q	|	|	|	|
1+10	0.0544	0.66	Q	|	|	|	|
1+15	0.0590	0.66	Q	|	|	|	|
1+20	0.0635	0.66	Q	|	|	|	|
1+25	0.0681	0.67	Q	|	|	|	|
1+30	0.0727	0.67	Q	|	|	|	|
1+35	0.0774	0.67	Q	|	|	|	|
1+40	0.0820	0.67	QV	|	|	|	|
1+45	0.0867	0.68	QV	|	|	|	|
1+50	0.0913	0.68	QV	|	|	|	|
1+55	0.0960	0.68	QV	|	|	|	|
2+ 0	0.1007	0.68	QV	|	|	|	|
2+ 5	0.1054	0.69	QV	|	|	|	|
2+10	0.1102	0.69	QV	|	|	|	|
2+15	0.1149	0.69	QV	|	|	|	|
2+20	0.1197	0.69	QV	|	|	|	|
2+25	0.1245	0.70	QV	|	|	|	|
2+30	0.1293	0.70	QV	|	|	|	|

```
2+35       0.1341      0.70  QV        |         |         |         |
2+40       0.1390      0.70  QV        |         |         |         |
2+45       0.1438      0.71  QV        |         |         |         |
2+50       0.1487      0.71  QV        |         |         |         |
2+55       0.1536      0.71  QV        |         |         |         |
3+ 0       0.1585      0.71  QV        |         |         |         |
3+ 5       0.1634      0.72  Q V       |         |         |         |
3+10       0.1684      0.72  Q V       |         |         |         |
3+15       0.1733      0.72  Q V       |         |         |         |
3+20       0.1783      0.72  Q V       |         |         |         |
3+25       0.1833      0.73  Q V       |         |         |         |
3+30       0.1883      0.73  Q V       |         |         |         |
3+35       0.1934      0.73  Q V       |         |         |         |
3+40       0.1985      0.74  Q V       |         |         |         |
3+45       0.2035      0.74  Q V       |         |         |         |
3+50       0.2086      0.74  Q V       |         |         |         |
3+55       0.2138      0.74  Q V       |         |         |         |
4+ 0       0.2189      0.75  Q V       |         |         |         |
4+ 5       0.2241      0.75  |QV       |         |         |         |
4+10       0.2293      0.75  |QV       |         |         |         |
4+15       0.2345      0.76  |QV       |         |         |         |
4+20       0.2397      0.76  |Q V       |         |         |         |
4+25       0.2450      0.76  |Q V       |         |         |         |
4+30       0.2502      0.77  |Q V       |         |         |         |
4+35       0.2555      0.77  |Q V       |         |         |         |
4+40       0.2608      0.77  |Q V       |         |         |         |
4+45       0.2662      0.78  |Q V       |         |         |         |
4+50       0.2715      0.78  |Q V       |         |         |         |
4+55       0.2769      0.78  |Q V       |         |         |         |
5+ 0       0.2823      0.79  |Q V       |         |         |         |
5+ 5       0.2878      0.79  |Q V       |         |         |         |
5+10       0.2932      0.79  |Q V       |         |         |         |
5+15       0.2987      0.80  |Q V       |         |         |         |
5+20       0.3042      0.80  |Q V       |         |         |         |
5+25       0.3098      0.80  |Q V       |         |         |         |
5+30       0.3153      0.81  |Q V       |         |         |         |
5+35       0.3209      0.81  |Q  V      |         |         |         |
5+40       0.3265      0.81  |Q  V      |         |         |         |
5+45       0.3321      0.82  |Q  V      |         |         |         |
5+50       0.3378      0.82  |Q  V      |         |         |         |
5+55       0.3435      0.83  |Q  V      |         |         |         |
6+ 0       0.3492      0.83  |Q  V      |         |         |         |
6+ 5       0.3550      0.83  |Q  V      |         |         |         |
6+10       0.3607      0.84  |Q  V      |         |         |         |
6+15       0.3665      0.84  |Q  V      |         |         |         |
6+20       0.3724      0.85  |Q  V      |         |         |         |
6+25       0.3782      0.85  |Q  V      |         |         |         |
6+30       0.3841      0.86  |Q  V      |         |         |         |
6+35       0.3900      0.86  |Q  V      |         |         |         |
6+40       0.3960      0.86  |Q  V      |         |         |         |
6+45       0.4020      0.87  |Q   V     |         |         |         |
6+50       0.4080      0.87  |Q   V     |         |         |         |
6+55       0.4140      0.88  |Q   V     |         |         |         |
7+ 0       0.4201      0.88  |Q   V     |         |         |         |
7+ 5       0.4262      0.89  |Q   V     |         |         |         |
7+10       0.4323      0.89  |Q   V     |         |         |         |
7+15       0.4385      0.90  |Q   V     |         |         |         |
7+20       0.4447      0.90  |Q   V     |         |         |         |
7+25       0.4510      0.91  |Q   V     |         |         |         |
7+30       0.4573      0.91  |Q   V     |         |         |         |
7+35       0.4636      0.92  |Q   V     |         |         |         |
7+40       0.4699      0.92  |Q   V     |         |         |         |
7+45       0.4763      0.93  |Q   V     |         |         |         |
7+50       0.4827      0.93  |Q    V    |         |         |         |
7+55       0.4892      0.94  |Q    V    |         |         |         |
8+ 0       0.4957      0.94  |Q    V    |         |         |         |
8+ 5       0.5022      0.95  |Q    V    |         |         |         |
8+10       0.5088      0.96  |Q    V    |         |         |         |
8+15       0.5154      0.96  |Q    V    |         |         |         |
8+20       0.5221      0.97  |Q    V    |         |         |         |
8+25       0.5288      0.97  |Q    V    |         |         |         |
8+30       0.5356      0.98  |Q    V    |         |         |         |
8+35       0.5424      0.99  |Q    V    |         |         |         |
8+40       0.5492      0.99  |Q    V    |         |         |         |
8+45       0.5561      1.00  |Q    V    |         |         |         |
```

8+50	0.5630	1.01	Q	V			
8+55	0.5700	1.01	Q	V			
9+ 0	0.5770	1.02	Q	V			
9+ 5	0.5841	1.03	Q	V			
9+10	0.5912	1.03	Q	V			
9+15	0.5983	1.04	Q	V			
9+20	0.6056	1.05	Q	V			
9+25	0.6128	1.06	Q	V			
9+30	0.6202	1.06	Q	V			
9+35	0.6275	1.07	Q	V			
9+40	0.6350	1.08	Q	V			
9+45	0.6425	1.09	Q	V			
9+50	0.6500	1.10	Q	V			
9+55	0.6576	1.10	Q	V			
10+ 0	0.6653	1.11	Q	V			
10+ 5	0.6730	1.12	Q	V			
10+10	0.6808	1.13	Q	V			
10+15	0.6886	1.14	Q	V			
10+20	0.6966	1.15	Q	V			
10+25	0.7046	1.16	Q	V			
10+30	0.7126	1.17	Q	V			
10+35	0.7207	1.18	Q	V			
10+40	0.7289	1.19	Q	V			
10+45	0.7372	1.20	Q	V			
10+50	0.7455	1.21	Q	V			
10+55	0.7540	1.22	Q	V			
11+ 0	0.7625	1.23	Q	V			
11+ 5	0.7711	1.25	Q	V			
11+10	0.7797	1.26	Q	V			
11+15	0.7885	1.27	Q	V			
11+20	0.7973	1.28	Q	V			
11+25	0.8063	1.30	Q	V			
11+30	0.8153	1.31	Q	V			
11+35	0.8244	1.32	Q	V			
11+40	0.8336	1.34	Q	V			
11+45	0.8429	1.35	Q	V			
11+50	0.8524	1.37	Q	V			
11+55	0.8619	1.38	Q	V			
12+ 0	0.8715	1.40	Q	V			
12+ 5	0.8812	1.41	Q	V			
12+10	0.8909	1.40	Q	V			
12+15	0.9004	1.38	Q	V			
12+20	0.9099	1.38	Q	V			
12+25	0.9196	1.40	Q	V			
12+30	0.9293	1.42	Q	V			
12+35	0.9392	1.44	Q	V			
12+40	0.9493	1.46	Q	V			
12+45	0.9595	1.48	Q	V			
12+50	0.9698	1.50	Q	V			
12+55	0.9803	1.53	Q	V			
13+ 0	0.9910	1.55	Q	V			
13+ 5	1.0018	1.57	Q	V			
13+10	1.0129	1.60	Q	V			
13+15	1.0241	1.63	Q	V			
13+20	1.0355	1.66	Q	V			
13+25	1.0471	1.69	Q	V			
13+30	1.0590	1.72	Q	V			
13+35	1.0710	1.75	Q	V			
13+40	1.0833	1.79	Q	V			
13+45	1.0959	1.82	Q	V			
13+50	1.1087	1.86	Q	V			
13+55	1.1219	1.91	Q	V			
14+ 0	1.1353	1.95	Q	V			
14+ 5	1.1490	2.00	Q	V			
14+10	1.1631	2.05	Q	V			
14+15	1.1776	2.10	Q	V			
14+20	1.1925	2.16	Q	V			
14+25	1.2078	2.22	Q	V			
14+30	1.2235	2.29	Q	V			
14+35	1.2397	2.36	Q	V			
14+40	1.2565	2.43	Q	V			
14+45	1.2738	2.52	Q	V			
14+50	1.2918	2.61	Q	V			
14+55	1.3105	2.71	Q	V			
15+ 0	1.3300	2.83	Q	V			



```
   21+20       3.0231      0.83  |Q        |         |         |      V  |
   21+25       3.0288      0.82  |Q        |         |         |      V  |
   21+30       3.0344      0.81  |Q        |         |         |       V |
   21+35       3.0400      0.81  |Q        |         |         |       V |
   21+40       3.0455      0.80  |Q        |         |         |       V |
   21+45       3.0509      0.79  |Q        |         |         |       V |
   21+50       3.0563      0.79  |Q        |         |         |       V |
   21+55       3.0617      0.78  |Q        |         |         |       V |
   22+ 0       3.0670      0.77  |Q        |         |         |       V |
   22+ 5       3.0723      0.77  |Q        |         |         |       V |
   22+10       3.0775      0.76  |Q        |         |         |       V |
   22+15       3.0827      0.75  |Q        |         |         |       V |
   22+20       3.0878      0.75  Q         |         |         |       V |
   22+25       3.0929      0.74  Q         |         |         |       V |
   22+30       3.0980      0.74  Q         |         |         |       V |
   22+35       3.1030      0.73  Q         |         |         |       V |
   22+40       3.1080      0.72  Q         |         |         |       V |
   22+45       3.1130      0.72  Q         |         |         |        V|
   22+50       3.1179      0.71  Q         |         |         |        V|
   22+55       3.1228      0.71  Q         |         |         |        V|
   23+ 0       3.1276      0.70  Q         |         |         |        V|
   23+ 5       3.1324      0.70  Q         |         |         |        V|
   23+10       3.1372      0.69  Q         |         |         |        V|
   23+15       3.1419      0.69  Q         |         |         |        V|
   23+20       3.1466      0.68  Q         |         |         |        V|
   23+25       3.1513      0.68  Q         |         |         |        V|
   23+30       3.1559      0.67  Q         |         |         |        V|
   23+35       3.1605      0.67  Q         |         |         |        V|
   23+40       3.1651      0.66  Q         |         |         |        V|
   23+45       3.1697      0.66  Q         |         |         |        V|
   23+50       3.1742      0.66  Q         |         |         |        V|
   23+55       3.1787      0.65  Q         |         |         |        V|
   24+ 0       3.1831      0.65  Q         |         |         |        V|
   24+ 5       3.1873      0.61  Q         |         |         |        V|
   24+10       3.1900      0.39  Q         |         |         |        V|
   24+15       3.1909      0.13  Q         |         |         |        V|
   24+20       3.1911      0.03  Q         |         |         |        V|
   24+25       3.1912      0.01  Q         |         |         |        V|
   24+30       3.1912      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 4D
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 4DPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
18.10	1	0.60
Rainfall data for year 2		
18.10	6	0.70
Rainfall data for year 2		
18.10	24	1.20
Rainfall data for year 100		
18.10	1	1.00
Rainfall data for year 100		
18.10	6	1.90
Rainfall data for year 100		
18.10	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	18.10	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.81	0.100	69.0	69.0	4.49	0.121
16.29	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.200 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      18.10(Ac.)
Catchment Lag time =   0.160 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 52.0833
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      18.10(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       218.90 (CFS))

  1                4.951                  10.837
  2               32.173                  59.589
  3               71.993                  87.165
  4               91.514                  42.730
  5               97.565                  13.244
  6               98.956                   3.046
  7              100.000                   2.285
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2219              0.2219
  2              0.2928              0.0709
  3              0.3443              0.0516
  4              0.3863              0.0420
  5              0.4224              0.0361
  6              0.4543              0.0320
  7              0.4832              0.0289
  8              0.5097              0.0265
  9              0.5343              0.0246
 10              0.5573              0.0230
 11              0.5790              0.0217
 12              0.5995              0.0205
 13              0.6182              0.0187
 14              0.6361              0.0179
 15              0.6532              0.0171
 16              0.6696              0.0164
 17              0.6854              0.0158
 18              0.7007              0.0152
 19              0.7154              0.0147
 20              0.7296              0.0143
 21              0.7434              0.0138
 22              0.7569              0.0134
 23              0.7699              0.0131
 24              0.7826              0.0127
 25              0.7950              0.0124
 26              0.8071              0.0121
```

27	0.8189	0.0118
28	0.8304	0.0115
29	0.8417	0.0113
30	0.8528	0.0110
31	0.8636	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9525	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1058	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1408	0.0069
65	1.1477	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2714	0.0062
85	1.2775	0.0062
86	1.2837	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3710	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5154	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6884	0.0041
169	1.6925	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8854	0.0035
221	1.8889	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9703	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1051	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0086
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0516	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2219	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 25.05(CFS)

++

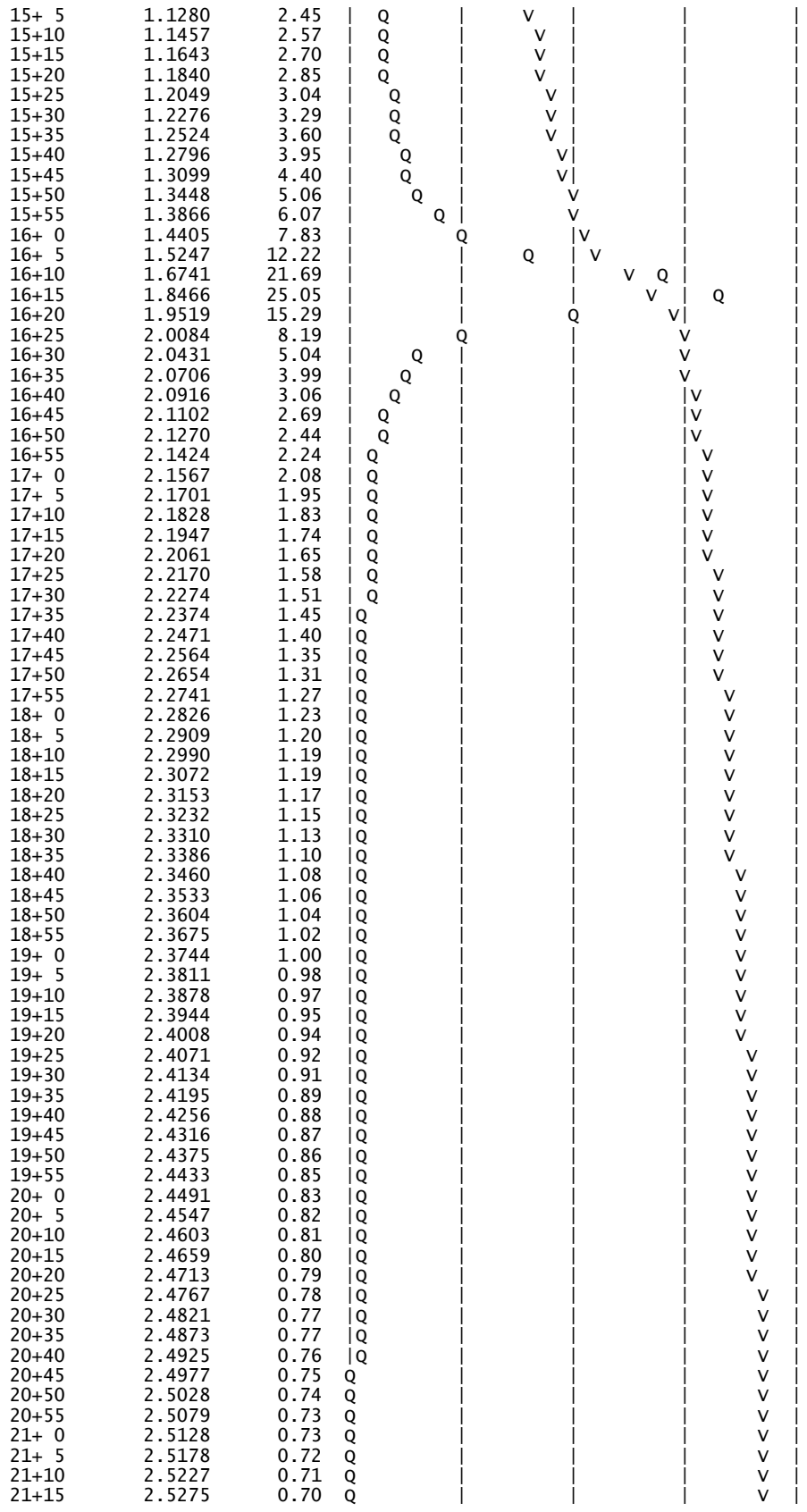
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q				
0+10	0.0014	0.17	Q				
0+15	0.0040	0.39	Q				
0+20	0.0074	0.49	Q				
0+25	0.0110	0.52	Q				
0+30	0.0147	0.53	Q				
0+35	0.0184	0.54	Q				
0+40	0.0221	0.54	Q				
0+45	0.0259	0.54	Q				
0+50	0.0297	0.55	Q				
0+55	0.0334	0.55	Q				
1+ 0	0.0372	0.55	Q				
1+ 5	0.0410	0.55	Q				
1+10	0.0448	0.55	Q				
1+15	0.0486	0.55	Q				
1+20	0.0525	0.56	Q				
1+25	0.0563	0.56	Q				
1+30	0.0602	0.56	Q				
1+35	0.0640	0.56	Q				
1+40	0.0679	0.56	QV				
1+45	0.0718	0.57	QV				
1+50	0.0757	0.57	QV				
1+55	0.0797	0.57	QV				
2+ 0	0.0836	0.57	QV				
2+ 5	0.0876	0.57	QV				
2+10	0.0915	0.58	QV				
2+15	0.0955	0.58	QV				
2+20	0.0995	0.58	QV				
2+25	0.1035	0.58	QV				
2+30	0.1075	0.58	QV				

2+35	0.1116	0.59	QV	|	|	|	|
2+40	0.1156	0.59	QV	|	|	|	|
2+45	0.1197	0.59	QV	|	|	|	|
2+50	0.1238	0.59	QV	|	|	|	|
2+55	0.1279	0.59	QV	|	|	|	|
3+ 0	0.1320	0.60	QV	|	|	|	|
3+ 5	0.1361	0.60	Q V	|	|	|	|
3+10	0.1403	0.60	Q V	|	|	|	|
3+15	0.1444	0.60	Q V	|	|	|	|
3+20	0.1486	0.61	Q V	|	|	|	|
3+25	0.1528	0.61	Q V	|	|	|	|
3+30	0.1570	0.61	Q V	|	|	|	|
3+35	0.1612	0.61	Q V	|	|	|	|
3+40	0.1654	0.62	Q V	|	|	|	|
3+45	0.1697	0.62	Q V	|	|	|	|
3+50	0.1740	0.62	Q V	|	|	|	|
3+55	0.1783	0.62	Q V	|	|	|	|
4+ 0	0.1826	0.63	Q V	|	|	|	|
4+ 5	0.1869	0.63	Q V	|	|	|	|
4+10	0.1912	0.63	Q V	|	|	|	|
4+15	0.1956	0.63	Q V	|	|	|	|
4+20	0.2000	0.64	Q V	|	|	|	|
4+25	0.2044	0.64	Q V	|	|	|	|
4+30	0.2088	0.64	Q V	|	|	|	|
4+35	0.2132	0.64	Q V	|	|	|	|
4+40	0.2177	0.65	Q V	|	|	|	|
4+45	0.2221	0.65	Q V	|	|	|	|
4+50	0.2266	0.65	Q V	|	|	|	|
4+55	0.2311	0.65	Q V	|	|	|	|
5+ 0	0.2357	0.66	Q V	|	|	|	|
5+ 5	0.2402	0.66	Q V	|	|	|	|
5+10	0.2448	0.66	Q V	|	|	|	|
5+15	0.2494	0.67	Q V	|	|	|	|
5+20	0.2540	0.67	Q V	|	|	|	|
5+25	0.2586	0.67	Q V	|	|	|	|
5+30	0.2633	0.68	Q V	|	|	|	|
5+35	0.2680	0.68	Q V	|	|	|	|
5+40	0.2727	0.68	Q V	|	|	|	|
5+45	0.2774	0.69	Q V	|	|	|	|
5+50	0.2821	0.69	Q V	|	|	|	|
5+55	0.2869	0.69	Q V	|	|	|	|
6+ 0	0.2917	0.69	Q V	|	|	|	|
6+ 5	0.2965	0.70	Q V	|	|	|	|
6+10	0.3013	0.70	Q V	|	|	|	|
6+15	0.3062	0.71	Q V	|	|	|	|
6+20	0.3110	0.71	Q V	|	|	|	|
6+25	0.3159	0.71	Q V	|	|	|	|
6+30	0.3209	0.72	Q V	|	|	|	|
6+35	0.3258	0.72	Q V	|	|	|	|
6+40	0.3308	0.72	Q V	|	|	|	|
6+45	0.3358	0.73	Q V	|	|	|	|
6+50	0.3409	0.73	Q V	|	|	|	|
6+55	0.3459	0.73	Q V	|	|	|	|
7+ 0	0.3510	0.74	Q V	|	|	|	|
7+ 5	0.3561	0.74	Q V	|	|	|	|
7+10	0.3613	0.75	Q V	|	|	|	|
7+15	0.3664	0.75	|Q V	|	|	|	|
7+20	0.3716	0.75	|Q V	|	|	|	|
7+25	0.3768	0.76	|Q V	|	|	|	|
7+30	0.3821	0.76	|Q V	|	|	|	|
7+35	0.3874	0.77	|Q V	|	|	|	|
7+40	0.3927	0.77	|Q V	|	|	|	|
7+45	0.3980	0.78	|Q V	|	|	|	|
7+50	0.4034	0.78	|Q V	|	|	|	|
7+55	0.4088	0.79	|Q V	|	|	|	|
8+ 0	0.4143	0.79	|Q V	|	|	|	|
8+ 5	0.4198	0.79	|Q V	|	|	|	|
8+10	0.4253	0.80	|Q V	|	|	|	|
8+15	0.4308	0.80	|Q V	|	|	|	|
8+20	0.4364	0.81	|Q V	|	|	|	|
8+25	0.4420	0.81	|Q V	|	|	|	|
8+30	0.4476	0.82	|Q V	|	|	|	|
8+35	0.4533	0.83	|Q V	|	|	|	|
8+40	0.4590	0.83	|Q V	|	|	|	|
8+45	0.4648	0.84	|Q V	|	|	|	|

8+50	0.4706	0.84	Q	V			
8+55	0.4764	0.85	Q	V			
9+ 0	0.4823	0.85	Q	V			
9+ 5	0.4882	0.86	Q	V			
9+10	0.4942	0.86	Q	V			
9+15	0.5002	0.87	Q	V			
9+20	0.5062	0.88	Q	V			
9+25	0.5123	0.88	Q	V			
9+30	0.5184	0.89	Q	V			
9+35	0.5246	0.90	Q	V			
9+40	0.5308	0.90	Q	V			
9+45	0.5371	0.91	Q	V			
9+50	0.5434	0.92	Q	V			
9+55	0.5498	0.92	Q	V			
10+ 0	0.5562	0.93	Q	V			
10+ 5	0.5626	0.94	Q	V			
10+10	0.5692	0.95	Q	V			
10+15	0.5757	0.95	Q	V			
10+20	0.5824	0.96	Q	V			
10+25	0.5890	0.97	Q	V			
10+30	0.5958	0.98	Q	V			
10+35	0.6026	0.99	Q	V			
10+40	0.6094	1.00	Q	V			
10+45	0.6164	1.00	Q	V			
10+50	0.6233	1.01	Q	V			
10+55	0.6304	1.02	Q	V			
11+ 0	0.6375	1.03	Q	V			
11+ 5	0.6447	1.04	Q	V			
11+10	0.6519	1.05	Q	V			
11+15	0.6592	1.06	Q	V			
11+20	0.6666	1.07	Q	V			
11+25	0.6741	1.08	Q	V			
11+30	0.6816	1.10	Q	V			
11+35	0.6893	1.11	Q	V			
11+40	0.6970	1.12	Q	V			
11+45	0.7048	1.13	Q	V			
11+50	0.7126	1.14	Q	V			
11+55	0.7206	1.16	Q	V			
12+ 0	0.7287	1.17	Q	V			
12+ 5	0.7368	1.18	Q	V			
12+10	0.7449	1.17	Q	V			
12+15	0.7529	1.16	Q	V			
12+20	0.7609	1.16	Q	V			
12+25	0.7689	1.17	Q	V			
12+30	0.7771	1.19	Q	V			
12+35	0.7854	1.20	Q	V			
12+40	0.7938	1.22	Q	V			
12+45	0.8023	1.24	Q	V			
12+50	0.8109	1.25	Q	V			
12+55	0.8197	1.27	Q	V			
13+ 0	0.8286	1.29	Q	V			
13+ 5	0.8377	1.32	Q	V			
13+10	0.8469	1.34	Q	V			
13+15	0.8562	1.36	Q	V			
13+20	0.8658	1.38	Q	V			
13+25	0.8755	1.41	Q	V			
13+30	0.8854	1.44	Q	V			
13+35	0.8954	1.46	Q	V			
13+40	0.9057	1.49	Q	V			
13+45	0.9162	1.52	Q	V			
13+50	0.9269	1.56	Q	V			
13+55	0.9379	1.59	Q	V			
14+ 0	0.9491	1.63	Q	V			
14+ 5	0.9605	1.66	Q	V			
14+10	0.9723	1.71	Q	V			
14+15	0.9843	1.75	Q	V			
14+20	0.9967	1.80	Q	V			
14+25	1.0095	1.85	Q	V			
14+30	1.0226	1.90	Q	V			
14+35	1.0361	1.96	Q	V			
14+40	1.0500	2.03	Q	V			
14+45	1.0645	2.10	Q	V			
14+50	1.0794	2.17	Q	V			
14+55	1.0950	2.26	Q	V			
15+ 0	1.1111	2.35	Q	V			



```
   21+20       2.5323      0.70  Q          |          |          |      V  |
   21+25       2.5371      0.69  Q          |          |          |      V  |
   21+30       2.5418      0.68  Q          |          |          |       V |
   21+35       2.5465      0.68  Q          |          |          |       V |
   21+40       2.5511      0.67  Q          |          |          |       V |
   21+45       2.5557      0.67  Q          |          |          |       V |
   21+50       2.5602      0.66  Q          |          |          |       V |
   21+55       2.5647      0.65  Q          |          |          |       V |
   22+ 0       2.5692      0.65  Q          |          |          |       V |
   22+ 5       2.5736      0.64  Q          |          |          |       V |
   22+10       2.5780      0.64  Q          |          |          |       V |
   22+15       2.5824      0.63  Q          |          |          |       V |
   22+20       2.5867      0.63  Q          |          |          |       V |
   22+25       2.5910      0.62  Q          |          |          |       V |
   22+30       2.5952      0.62  Q          |          |          |       V |
   22+35       2.5994      0.61  Q          |          |          |       V |
   22+40       2.6036      0.61  Q          |          |          |       V |
   22+45       2.6078      0.60  Q          |          |          |        V|
   22+50       2.6119      0.60  Q          |          |          |        V|
   22+55       2.6160      0.59  Q          |          |          |        V|
   23+ 0       2.6200      0.59  Q          |          |          |        V|
   23+ 5       2.6241      0.59  Q          |          |          |        V|
   23+10       2.6281      0.58  Q          |          |          |        V|
   23+15       2.6320      0.58  Q          |          |          |        V|
   23+20       2.6360      0.57  Q          |          |          |        V|
   23+25       2.6399      0.57  Q          |          |          |        V|
   23+30       2.6438      0.57  Q          |          |          |        V|
   23+35       2.6477      0.56  Q          |          |          |        V|
   23+40       2.6515      0.56  Q          |          |          |        V|
   23+45       2.6553      0.55  Q          |          |          |        V|
   23+50       2.6591      0.55  Q          |          |          |        V|
   23+55       2.6629      0.55  Q          |          |          |        V|
   24+ 0       2.6666      0.54  Q          |          |          |        V|
   24+ 5       2.6702      0.51  Q          |          |          |        V|
   24+10       2.6727      0.37  Q          |          |          |        V|
   24+15       2.6737      0.15  Q          |          |          |        V|
   24+20       2.6740      0.05  Q          |          |          |        V|
   24+25       2.6741      0.01  Q          |          |          |        V|
   24+30       2.6742      0.01  Q          |          |          |         V
-------------------------------------------------------------------------
```

BUILDING 5

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/15/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 5A
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 5APROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
23.30	1	0.60
Rainfall data for year 2		
23.30	6	0.70
Rainfall data for year 2		
23.30	24	1.20
Rainfall data for year 100		
23.30	1	1.00
Rainfall data for year 100		
23.30	6	1.90
Rainfall data for year 100		
23.30	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	23.30	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.33	0.100	69.0	69.0	4.49	0.121
20.97	0.900	98.0	98.0	0.20	0.892

Area-averaged catchment yield fraction, Y = 0.815
Area-averaged low loss fraction, Yb = 0.185
User entry of time of concentration = 0.210 (hours)
++
Watershed area = 23.30(Ac.)
Catchment Lag time = 0.168 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 49.6032
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.222(In)
Computed peak 30-minute rainfall = 0.455(In)
Specified peak 1-hour rainfall = 0.600(In)
Computed peak 3-hour rainfall = 0.915(In)
Specified peak 6-hour rainfall = 1.194(In)
Specified peak 24-hour rainfall = 2.105(In)

Rainfall depth area reduction factors:
Using a total area of 23.30(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.222(In)
30-minute factor = 0.999 Adjusted rainfall = 0.454(In)
1-hour factor = 0.999 Adjusted rainfall = 0.599(In)
3-hour factor = 1.000 Adjusted rainfall = 0.915(In)
6-hour factor = 1.000 Adjusted rainfall = 1.194(In)
24-hour factor = 1.000 Adjusted rainfall = 2.105(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 281.78 (CFS))	
1	4.508	12.704
2	29.352	70.006
3	68.171	109.385
4	89.593	60.364
5	96.887	20.554
6	98.711	5.139
7	99.597	2.498
8	100.000	1.135

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2218	0.2218
2	0.2927	0.0709
3	0.3442	0.0515
4	0.3862	0.0420
5	0.4223	0.0361
6	0.4542	0.0319
7	0.4831	0.0289
8	0.5096	0.0265
9	0.5342	0.0246
10	0.5572	0.0230
11	0.5788	0.0217
12	0.5993	0.0205
13	0.6181	0.0187
14	0.6360	0.0179
15	0.6531	0.0171
16	0.6695	0.0164
17	0.6853	0.0158
18	0.7005	0.0152
19	0.7153	0.0147
20	0.7295	0.0143
21	0.7433	0.0138
22	0.7568	0.0134
23	0.7698	0.0131
24	0.7825	0.0127
25	0.7949	0.0124

26	0.8070	0.0121
27	0.8188	0.0118
28	0.8304	0.0115
29	0.8416	0.0113
30	0.8527	0.0111
31	0.8635	0.0108
32	0.8741	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9243	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9704	0.0089
43	0.9793	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0049	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0376	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1339	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2525	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3427	0.0057
97	1.3484	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056

101	1.3709	0.0056
102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4249	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4761	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5624	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5985	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040

176	1.7208	0.0040
177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7601	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7755	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7907	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8425	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8605	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9199	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9335	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9503	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033

251	1.9898	0.0032
252	1.9931	0.0032
253	1.9963	0.0032
254	1.9995	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0839	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027

33	0.0033	0.0006	0.0027
34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039

108	0.0048	0.0009	0.0039
109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0111	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129

183	0.0171	0.0032	0.0139
184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0319	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031

258	0.0038	0.0007	0.0031
259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 31.92(CFS)

++

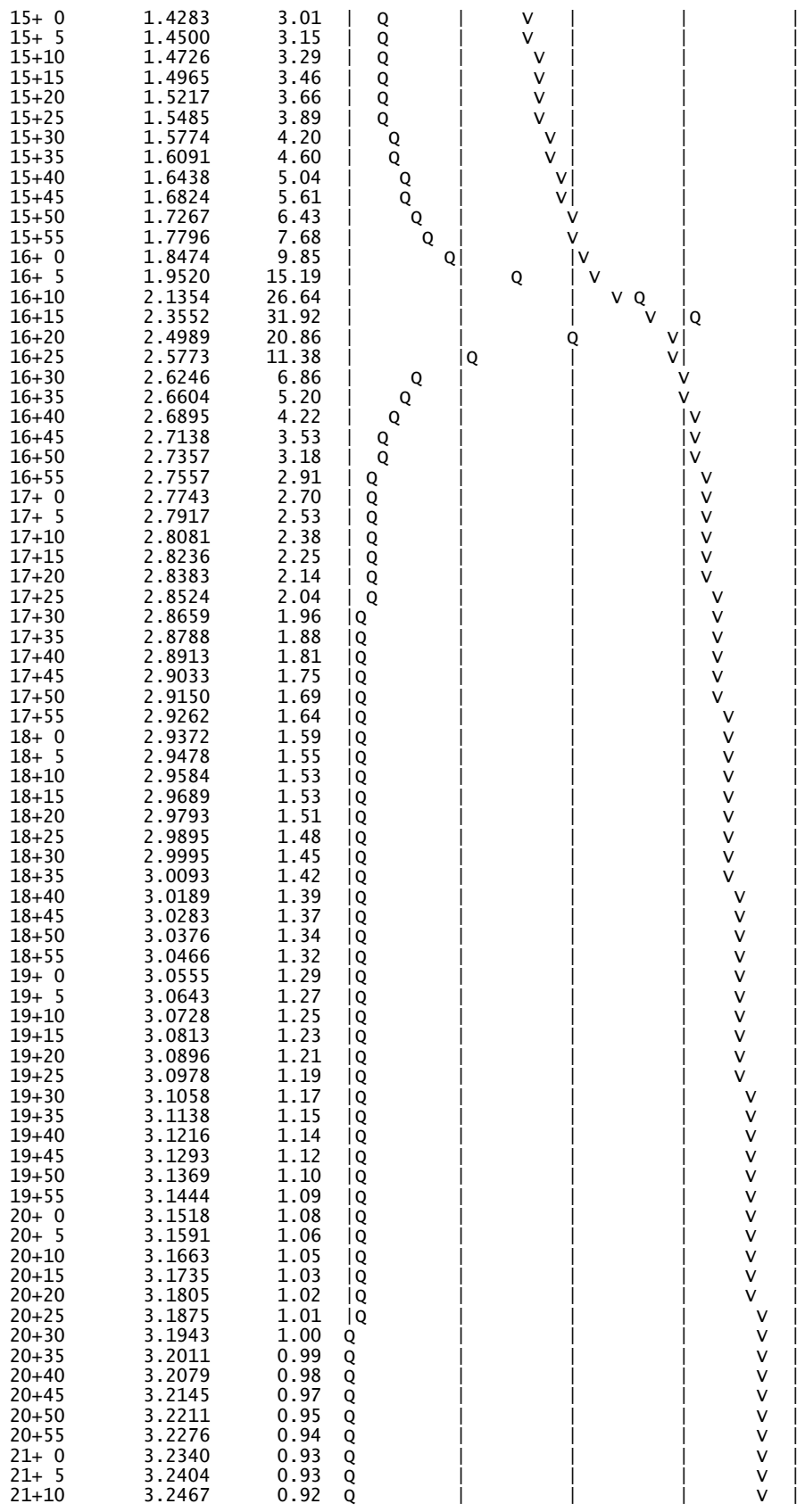
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0002	0.03	Q	|	|	|	|
0+10	0.0016	0.20	Q	|	|	|	|
0+15	0.0048	0.47	Q	|	|	|	|
0+20	0.0091	0.62	Q	|	|	|	|
0+25	0.0137	0.67	Q	|	|	|	|
0+30	0.0184	0.68	Q	|	|	|	|
0+35	0.0232	0.69	Q	|	|	|	|
0+40	0.0280	0.70	Q	|	|	|	|
0+45	0.0328	0.70	Q	|	|	|	|
0+50	0.0377	0.70	Q	|	|	|	|
0+55	0.0425	0.70	Q	|	|	|	|
1+ 0	0.0474	0.71	Q	|	|	|	|
1+ 5	0.0523	0.71	Q	|	|	|	|
1+10	0.0572	0.71	Q	|	|	|	|
1+15	0.0621	0.71	Q	|	|	|	|
1+20	0.0670	0.72	Q	|	|	|	|
1+25	0.0720	0.72	Q	|	|	|	|
1+30	0.0770	0.72	Q	|	|	|	|
1+35	0.0819	0.72	Q	|	|	|	|
1+40	0.0869	0.73	QV	|	|	|	|
1+45	0.0920	0.73	QV	|	|	|	|
1+50	0.0970	0.73	QV	|	|	|	|
1+55	0.1020	0.73	QV	|	|	|	|
2+ 0	0.1071	0.74	QV	|	|	|	|
2+ 5	0.1122	0.74	QV	|	|	|	|
2+10	0.1173	0.74	QV	|	|	|	|
2+15	0.1224	0.74	QV	|	|	|	|
2+20	0.1276	0.75	QV	|	|	|	|
2+25	0.1327	0.75	QV	|	|	|	|

2+30	0.1379	0.75	QV	|	|	|	|
2+35	0.1431	0.75	QV	|	|	|	|
2+40	0.1483	0.76	QV	|	|	|	|
2+45	0.1535	0.76	QV	|	|	|	|
2+50	0.1588	0.76	QV	|	|	|	|
2+55	0.1641	0.77	QV	|	|	|	|
3+ 0	0.1694	0.77	QV	|	|	|	|
3+ 5	0.1747	0.77	Q V	|	|	|	|
3+10	0.1800	0.77	Q V	|	|	|	|
3+15	0.1853	0.78	Q V	|	|	|	|
3+20	0.1907	0.78	Q V	|	|	|	|
3+25	0.1961	0.78	Q V	|	|	|	|
3+30	0.2015	0.79	Q V	|	|	|	|
3+35	0.2070	0.79	Q V	|	|	|	|
3+40	0.2124	0.79	Q V	|	|	|	|
3+45	0.2179	0.80	Q V	|	|	|	|
3+50	0.2234	0.80	Q V	|	|	|	|
3+55	0.2289	0.80	Q V	|	|	|	|
4+ 0	0.2345	0.80	Q V	|	|	|	|
4+ 5	0.2400	0.81	Q V	|	|	|	|
4+10	0.2456	0.81	Q V	|	|	|	|
4+15	0.2512	0.81	Q V	|	|	|	|
4+20	0.2568	0.82	Q V	|	|	|	|
4+25	0.2625	0.82	Q V	|	|	|	|
4+30	0.2682	0.82	Q V	|	|	|	|
4+35	0.2739	0.83	Q V	|	|	|	|
4+40	0.2796	0.83	Q V	|	|	|	|
4+45	0.2854	0.84	Q V	|	|	|	|
4+50	0.2912	0.84	Q V	|	|	|	|
4+55	0.2970	0.84	Q V	|	|	|	|
5+ 0	0.3028	0.85	Q V	|	|	|	|
5+ 5	0.3086	0.85	Q V	|	|	|	|
5+10	0.3145	0.85	Q V	|	|	|	|
5+15	0.3204	0.86	Q V	|	|	|	|
5+20	0.3264	0.86	Q V	|	|	|	|
5+25	0.3323	0.87	Q V	|	|	|	|
5+30	0.3383	0.87	Q V	|	|	|	|
5+35	0.3443	0.87	Q V	|	|	|	|
5+40	0.3504	0.88	Q V	|	|	|	|
5+45	0.3564	0.88	Q V	|	|	|	|
5+50	0.3625	0.89	Q V	|	|	|	|
5+55	0.3687	0.89	Q V	|	|	|	|
6+ 0	0.3748	0.89	Q V	|	|	|	|
6+ 5	0.3810	0.90	Q V	|	|	|	|
6+10	0.3872	0.90	Q V	|	|	|	|
6+15	0.3935	0.91	Q V	|	|	|	|
6+20	0.3998	0.91	Q V	|	|	|	|
6+25	0.4061	0.92	Q V	|	|	|	|
6+30	0.4124	0.92	Q V	|	|	|	|
6+35	0.4188	0.93	Q V	|	|	|	|
6+40	0.4252	0.93	Q V	|	|	|	|
6+45	0.4316	0.94	Q V	|	|	|	|
6+50	0.4381	0.94	Q V	|	|	|	|
6+55	0.4446	0.95	Q V	|	|	|	|
7+ 0	0.4512	0.95	Q V	|	|	|	|
7+ 5	0.4577	0.96	Q V	|	|	|	|
7+10	0.4644	0.96	Q V	|	|	|	|
7+15	0.4710	0.97	Q V	|	|	|	|
7+20	0.4777	0.97	Q V	|	|	|	|
7+25	0.4844	0.98	Q V	|	|	|	|
7+30	0.4912	0.98	Q V	|	|	|	|
7+35	0.4980	0.99	Q V	|	|	|	|
7+40	0.5048	0.99	Q V	|	|	|	|
7+45	0.5117	1.00	Q V	|	|	|	|
7+50	0.5186	1.00	|Q V	|	|	|	|
7+55	0.5256	1.01	|Q V	|	|	|	|
8+ 0	0.5326	1.02	|Q V	|	|	|	|
8+ 5	0.5396	1.02	|Q V	|	|	|	|
8+10	0.5467	1.03	|Q V	|	|	|	|
8+15	0.5538	1.04	|Q V	|	|	|	|
8+20	0.5610	1.04	|Q V	|	|	|	|
8+25	0.5682	1.05	|Q V	|	|	|	|
8+30	0.5755	1.05	|Q V	|	|	|	|
8+35	0.5828	1.06	|Q V	|	|	|	|
8+40	0.5902	1.07	|Q V	|	|	|	|

8+45	0.5976	1.08	Q V				
8+50	0.6050	1.08	Q V				
8+55	0.6125	1.09	Q V				
9+ 0	0.6201	1.10	Q V				
9+ 5	0.6277	1.10	Q V				
9+10	0.6354	1.11	Q V				
9+15	0.6431	1.12	Q V				
9+20	0.6508	1.13	Q V				
9+25	0.6587	1.14	Q V				
9+30	0.6666	1.14	Q V				
9+35	0.6745	1.15	Q V				
9+40	0.6825	1.16	Q V				
9+45	0.6906	1.17	Q V				
9+50	0.6987	1.18	Q V				
9+55	0.7069	1.19	Q V				
10+ 0	0.7151	1.20	Q V				
10+ 5	0.7234	1.21	Q V				
10+10	0.7318	1.22	Q V				
10+15	0.7403	1.23	Q V				
10+20	0.7488	1.24	Q V				
10+25	0.7574	1.25	Q V				
10+30	0.7661	1.26	Q V				
10+35	0.7748	1.27	Q V				
10+40	0.7836	1.28	Q V				
10+45	0.7925	1.29	Q V				
10+50	0.8015	1.30	Q V				
10+55	0.8106	1.32	Q V				
11+ 0	0.8197	1.33	Q V				
11+ 5	0.8289	1.34	Q V				
11+10	0.8383	1.35	Q V				
11+15	0.8477	1.37	Q V				
11+20	0.8572	1.38	Q V				
11+25	0.8668	1.39	Q V				
11+30	0.8765	1.41	Q V				
11+35	0.8863	1.42	Q V				
11+40	0.8962	1.44	Q V				
11+45	0.9062	1.45	Q V				
11+50	0.9163	1.47	Q V				
11+55	0.9266	1.49	Q V				
12+ 0	0.9370	1.50	Q V				
12+ 5	0.9474	1.52	Q V				
12+10	0.9578	1.51	Q V				
12+15	0.9681	1.49	Q V				
12+20	0.9784	1.49	Q V				
12+25	0.9888	1.51	Q V				
12+30	0.9993	1.52	Q V				
12+35	1.0099	1.54	Q V				
12+40	1.0207	1.57	Q V				
12+45	1.0316	1.59	Q V				
12+50	1.0427	1.61	Q V				
12+55	1.0540	1.64	Q V				
13+ 0	1.0655	1.66	Q V				
13+ 5	1.0771	1.69	Q V				
13+10	1.0890	1.72	Q V				
13+15	1.1010	1.75	Q V				
13+20	1.1133	1.78	Q V				
13+25	1.1257	1.81	Q V				
13+30	1.1384	1.84	Q V				
13+35	1.1514	1.88	Q V				
13+40	1.1646	1.92	Q V				
13+45	1.1781	1.96	Q V				
13+50	1.1918	2.00	Q V				
13+55	1.2059	2.04	Q V				
14+ 0	1.2203	2.09	Q V				
14+ 5	1.2350	2.14	Q V				
14+10	1.2501	2.19	Q V				
14+15	1.2656	2.25	Q V				
14+20	1.2815	2.31	Q V				
14+25	1.2978	2.38	Q V				
14+30	1.3147	2.44	Q V				
14+35	1.3320	2.52	Q V				
14+40	1.3499	2.60	Q V				
14+45	1.3684	2.69	Q V				
14+50	1.3876	2.79	Q V				
14+55	1.4076	2.89	Q V				



```
  21+15       3.2530      0.91  Q          |          |          |      V  |
  21+20       3.2592      0.90  Q          |          |          |      V  |
  21+25       3.2653      0.89  Q          |          |          |      V  |
  21+30       3.2713      0.88  Q          |          |          |       V |
  21+35       3.2774      0.87  Q          |          |          |       V |
  21+40       3.2833      0.87  Q          |          |          |       V |
  21+45       3.2892      0.86  Q          |          |          |       V |
  21+50       3.2951      0.85  Q          |          |          |       V |
  21+55       3.3009      0.84  Q          |          |          |       V |
  22+ 0       3.3066      0.84  Q          |          |          |       V |
  22+ 5       3.3123      0.83  Q          |          |          |       V |
  22+10       3.3180      0.82  Q          |          |          |       V |
  22+15       3.3236      0.81  Q          |          |          |       V |
  22+20       3.3292      0.81  Q          |          |          |       V |
  22+25       3.3347      0.80  Q          |          |          |       V |
  22+30       3.3402      0.79  Q          |          |          |       V |
  22+35       3.3456      0.79  Q          |          |          |       V |
  22+40       3.3510      0.78  Q          |          |          |       V |
  22+45       3.3563      0.78  Q          |          |          |        V|
  22+50       3.3616      0.77  Q          |          |          |        V|
  22+55       3.3669      0.77  Q          |          |          |        V|
  23+ 0       3.3721      0.76  Q          |          |          |        V|
  23+ 5       3.3773      0.75  Q          |          |          |        V|
  23+10       3.3825      0.75  Q          |          |          |        V|
  23+15       3.3876      0.74  Q          |          |          |        V|
  23+20       3.3927      0.74  Q          |          |          |        V|
  23+25       3.3977      0.73  Q          |          |          |        V|
  23+30       3.4028      0.73  Q          |          |          |        V|
  23+35       3.4077      0.72  Q          |          |          |        V|
  23+40       3.4127      0.72  Q          |          |          |        V|
  23+45       3.4176      0.71  Q          |          |          |        V|
  23+50       3.4225      0.71  Q          |          |          |        V|
  23+55       3.4273      0.70  Q          |          |          |        V|
  24+ 0       3.4322      0.70  Q          |          |          |        V|
  24+ 5       3.4367      0.66  Q          |          |          |        V|
  24+10       3.4401      0.49  Q          |          |          |        V|
  24+15       3.4416      0.22  Q          |          |          |        V|
  24+20       3.4421      0.07  Q          |          |          |        V|
  24+25       3.4423      0.02  Q          |          |          |        V|
  24+30       3.4423      0.01  Q          |          |          |        V|
  24+35       3.4424      0.00  Q          |          |          |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/15/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 5B
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 5BPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
37.00	1	0.60
Rainfall data for year 2		
37.00	6	0.70
Rainfall data for year 2		
37.00	24	1.20
Rainfall data for year 100		
37.00	1	1.00
Rainfall data for year 100		
37.00	6	1.90
Rainfall data for year 100		
37.00	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	37.00	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
3.70	0.100	69.0	69.0	4.49	0.121
33.30	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.210 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      37.00(Ac.)
Catchment Lag time =   0.168 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 49.6032
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      37.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998     Adjusted rainfall =  0.222(In)
30-minute factor = 0.998    Adjusted rainfall =  0.454(In)
1-hour factor = 0.998       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       447.47 (CFS))

  1                4.508                  20.174
  2               29.352                 111.169
  3               68.171                 173.701
  4               89.593                  95.857
  5               96.887                  32.639
  6               98.711                   8.160
  7               99.597                   3.967
  8              100.000                   1.802
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2217              0.2217
  2              0.2925              0.0708
  3              0.3440              0.0515
  4              0.3860              0.0420
  5              0.4220              0.0360
  6              0.4539              0.0319
  7              0.4828              0.0289
  8              0.5093              0.0265
  9              0.5339              0.0246
 10              0.5568              0.0230
 11              0.5785              0.0216
 12              0.5990              0.0205
 13              0.6177              0.0188
 14              0.6356              0.0179
 15              0.6527              0.0171
 16              0.6692              0.0164
 17              0.6850              0.0158
 18              0.7002              0.0153
 19              0.7150              0.0147
 20              0.7292              0.0143
 21              0.7431              0.0138
 22              0.7565              0.0134
 23              0.7696              0.0131
 24              0.7823              0.0127
 25              0.7947              0.0124
```

26	0.8068	0.0121
27	0.8186	0.0118
28	0.8302	0.0116
29	0.8415	0.0113
30	0.8525	0.0111
31	0.8634	0.0108
32	0.8740	0.0106
33	0.8844	0.0104
34	0.8947	0.0102
35	0.9047	0.0100
36	0.9146	0.0099
37	0.9243	0.0097
38	0.9338	0.0095
39	0.9431	0.0094
40	0.9524	0.0092
41	0.9614	0.0091
42	0.9704	0.0089
43	0.9792	0.0088
44	0.9879	0.0087
45	0.9964	0.0086
46	1.0049	0.0084
47	1.0132	0.0083
48	1.0214	0.0082
49	1.0296	0.0081
50	1.0376	0.0080
51	1.0455	0.0079
52	1.0533	0.0078
53	1.0611	0.0077
54	1.0687	0.0076
55	1.0763	0.0076
56	1.0837	0.0075
57	1.0911	0.0074
58	1.0984	0.0073
59	1.1057	0.0072
60	1.1128	0.0072
61	1.1199	0.0071
62	1.1269	0.0070
63	1.1339	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1543	0.0067
67	1.1610	0.0067
68	1.1676	0.0066
69	1.1742	0.0066
70	1.1807	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2003	0.0068
74	1.2070	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2268	0.0065
78	1.2333	0.0065
79	1.2397	0.0064
80	1.2461	0.0064
81	1.2525	0.0064
82	1.2588	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2957	0.0060
89	1.3017	0.0060
90	1.3077	0.0060
91	1.3136	0.0059
92	1.3195	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3369	0.0058
96	1.3427	0.0057
97	1.3484	0.0057
98	1.3541	0.0057
99	1.3597	0.0056
100	1.3653	0.0056

101	1.3709	0.0056
102	1.3764	0.0055
103	1.3819	0.0055
104	1.3874	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4036	0.0054
108	1.4090	0.0054
109	1.4143	0.0053
110	1.4196	0.0053
111	1.4249	0.0053
112	1.4301	0.0052
113	1.4353	0.0052
114	1.4405	0.0052
115	1.4457	0.0052
116	1.4508	0.0051
117	1.4559	0.0051
118	1.4610	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4761	0.0050
122	1.4811	0.0050
123	1.4860	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5056	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5296	0.0048
133	1.5343	0.0047
134	1.5391	0.0047
135	1.5437	0.0047
136	1.5484	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5623	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5760	0.0046
143	1.5805	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5940	0.0045
147	1.5985	0.0045
148	1.6029	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6205	0.0044
153	1.6249	0.0044
154	1.6292	0.0043
155	1.6335	0.0043
156	1.6379	0.0043
157	1.6421	0.0043
158	1.6464	0.0043
159	1.6507	0.0043
160	1.6549	0.0042
161	1.6591	0.0042
162	1.6633	0.0042
163	1.6675	0.0042
164	1.6717	0.0042
165	1.6759	0.0042
166	1.6800	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7046	0.0041
173	1.7087	0.0040
174	1.7127	0.0040
175	1.7167	0.0040

176	1.7207	0.0040
177	1.7247	0.0040
178	1.7287	0.0040
179	1.7327	0.0040
180	1.7366	0.0040
181	1.7406	0.0039
182	1.7445	0.0039
183	1.7484	0.0039
184	1.7523	0.0039
185	1.7562	0.0039
186	1.7601	0.0039
187	1.7640	0.0039
188	1.7678	0.0039
189	1.7717	0.0038
190	1.7755	0.0038
191	1.7793	0.0038
192	1.7831	0.0038
193	1.7869	0.0038
194	1.7907	0.0038
195	1.7945	0.0038
196	1.7982	0.0038
197	1.8020	0.0037
198	1.8057	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8242	0.0037
204	1.8279	0.0037
205	1.8316	0.0037
206	1.8352	0.0037
207	1.8389	0.0036
208	1.8425	0.0036
209	1.8461	0.0036
210	1.8497	0.0036
211	1.8533	0.0036
212	1.8569	0.0036
213	1.8605	0.0036
214	1.8641	0.0036
215	1.8676	0.0036
216	1.8712	0.0036
217	1.8747	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8992	0.0035
225	1.9027	0.0035
226	1.9062	0.0035
227	1.9096	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9199	0.0034
231	1.9233	0.0034
232	1.9267	0.0034
233	1.9301	0.0034
234	1.9335	0.0034
235	1.9369	0.0034
236	1.9402	0.0034
237	1.9436	0.0034
238	1.9470	0.0034
239	1.9503	0.0033
240	1.9536	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9800	0.0033
249	1.9833	0.0033
250	1.9866	0.0033

251	1.9898	0.0032
252	1.9930	0.0032
253	1.9963	0.0032
254	1.9995	0.0032
255	2.0027	0.0032
256	2.0059	0.0032
257	2.0091	0.0032
258	2.0123	0.0032
259	2.0155	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0250	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0376	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0470	0.0031
270	2.0501	0.0031
271	2.0532	0.0031
272	2.0563	0.0031
273	2.0594	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0717	0.0031
278	2.0748	0.0031
279	2.0778	0.0031
280	2.0809	0.0030
281	2.0839	0.0030
282	2.0869	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027

33	0.0033	0.0006	0.0027
34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039

108	0.0048	0.0009	0.0039
109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0111	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0024	0.0104
178	0.0131	0.0024	0.0107
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0153	0.0028	0.0124
182	0.0158	0.0029	0.0129

183	0.0171	0.0032	0.0140
184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0216	0.0040	0.0176
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0319	0.0046	0.0274
190	0.0360	0.0046	0.0315
191	0.0515	0.0046	0.0469
192	0.0708	0.0046	0.0663
193	0.2217	0.0046	0.2171
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0188	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0110
201	0.0124	0.0023	0.0101
202	0.0116	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031

258	0.0038	0.0007	0.0031
259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 50.65(CFS)

++

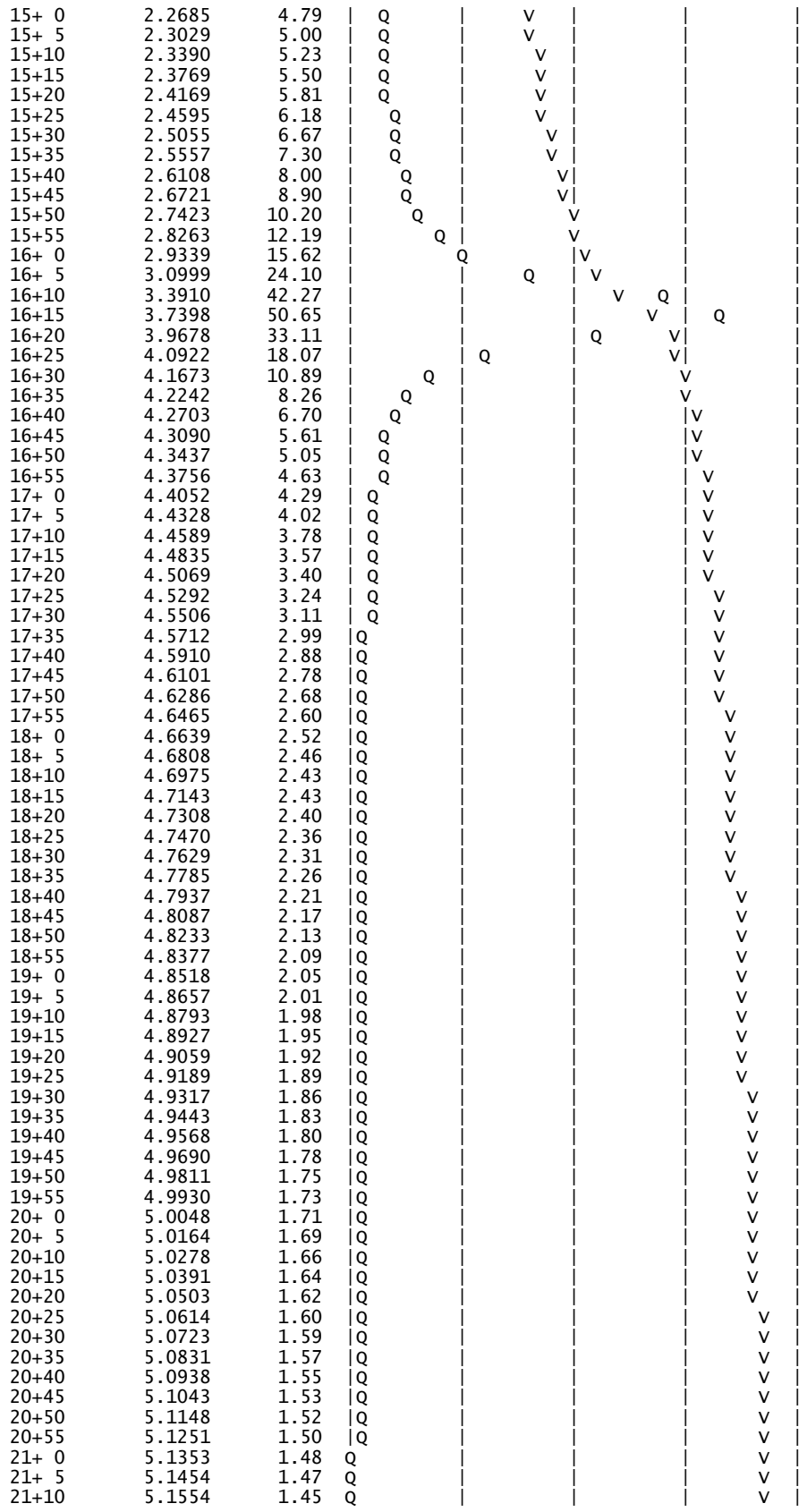
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0003	0.05	Q	|	|	|	|
0+10	0.0025	0.32	Q	|	|	|	|
0+15	0.0077	0.75	Q	|	|	|	|
0+20	0.0144	0.98	Q	|	|	|	|
0+25	0.0218	1.06	Q	|	|	|	|
0+30	0.0293	1.09	Q	|	|	|	|
0+35	0.0368	1.10	Q	|	|	|	|
0+40	0.0445	1.11	Q	|	|	|	|
0+45	0.0521	1.11	Q	|	|	|	|
0+50	0.0598	1.12	Q	|	|	|	|
0+55	0.0675	1.12	Q	|	|	|	|
1+ 0	0.0753	1.12	Q	|	|	|	|
1+ 5	0.0830	1.13	Q	|	|	|	|
1+10	0.0908	1.13	Q	|	|	|	|
1+15	0.0986	1.13	Q	|	|	|	|
1+20	0.1065	1.14	Q	|	|	|	|
1+25	0.1143	1.14	Q	|	|	|	|
1+30	0.1222	1.15	Q	|	|	|	|
1+35	0.1301	1.15	Q	|	|	|	|
1+40	0.1381	1.15	QV	|	|	|	|
1+45	0.1460	1.16	QV	|	|	|	|
1+50	0.1540	1.16	QV	|	|	|	|
1+55	0.1620	1.16	QV	|	|	|	|
2+ 0	0.1701	1.17	QV	|	|	|	|
2+ 5	0.1782	1.17	QV	|	|	|	|
2+10	0.1863	1.18	QV	|	|	|	|
2+15	0.1944	1.18	QV	|	|	|	|
2+20	0.2026	1.19	QV	|	|	|	|
2+25	0.2108	1.19	QV	|	|	|	|

```
2+30       0.2190      1.19  QV        |         |         |         |
2+35       0.2272      1.20  QV        |         |         |         |
2+40       0.2355      1.20  QV        |         |         |         |
2+45       0.2438      1.21  QV        |         |         |         |
2+50       0.2522      1.21  QV        |         |         |         |
2+55       0.2605      1.22  QV        |         |         |         |
3+ 0       0.2689      1.22  QV        |         |         |         |
3+ 5       0.2774      1.22  Q V       |         |         |         |
3+10       0.2858      1.23  Q V       |         |         |         |
3+15       0.2943      1.23  Q V       |         |         |         |
3+20       0.3029      1.24  Q V       |         |         |         |
3+25       0.3114      1.24  Q V       |         |         |         |
3+30       0.3200      1.25  Q V       |         |         |         |
3+35       0.3287      1.25  Q V       |         |         |         |
3+40       0.3373      1.26  Q V       |         |         |         |
3+45       0.3460      1.26  Q V       |         |         |         |
3+50       0.3547      1.27  Q V       |         |         |         |
3+55       0.3635      1.27  Q V       |         |         |         |
4+ 0       0.3723      1.28  Q V       |         |         |         |
4+ 5       0.3812      1.28  Q V       |         |         |         |
4+10       0.3900      1.29  Q V       |         |         |         |
4+15       0.3989      1.29  Q V       |         |         |         |
4+20       0.4079      1.30  Q V       |         |         |         |
4+25       0.4169      1.30  Q  V      |         |         |         |
4+30       0.4259      1.31  Q  V      |         |         |         |
4+35       0.4349      1.32  Q  V      |         |         |         |
4+40       0.4440      1.32  Q  V      |         |         |         |
4+45       0.4532      1.33  Q  V      |         |         |         |
4+50       0.4624      1.33  Q  V      |         |         |         |
4+55       0.4716      1.34  Q  V      |         |         |         |
5+ 0       0.4808      1.34  Q  V      |         |         |         |
5+ 5       0.4901      1.35  Q  V      |         |         |         |
5+10       0.4995      1.36  Q  V      |         |         |         |
5+15       0.5088      1.36  Q  V      |         |         |         |
5+20       0.5183      1.37  Q  V      |         |         |         |
5+25       0.5277      1.37  Q  V      |         |         |         |
5+30       0.5372      1.38  Q  V      |         |         |         |
5+35       0.5468      1.39  Q   V     |         |         |         |
5+40       0.5564      1.39  Q   V     |         |         |         |
5+45       0.5660      1.40  Q   V     |         |         |         |
5+50       0.5757      1.41  Q   V     |         |         |         |
5+55       0.5854      1.41  Q   V     |         |         |         |
6+ 0       0.5952      1.42  Q   V     |         |         |         |
6+ 5       0.6051      1.43  Q   V     |         |         |         |
6+10       0.6149      1.43  Q   V     |         |         |         |
6+15       0.6249      1.44  Q   V     |         |         |         |
6+20       0.6348      1.45  Q   V     |         |         |         |
6+25       0.6448      1.46  Q   V     |         |         |         |
6+30       0.6549      1.46  Q   V     |         |         |         |
6+35       0.6650      1.47  Q   V     |         |         |         |
6+40       0.6752      1.48  Q   V     |         |         |         |
6+45       0.6854      1.49  Q    V    |         |         |         |
6+50       0.6957      1.49  Q    V    |         |         |         |
6+55       0.7061      1.50  |Q   V    |         |         |         |
7+ 0       0.7165      1.51  |Q   V    |         |         |         |
7+ 5       0.7269      1.52  |Q   V    |         |         |         |
7+10       0.7374      1.53  |Q   V    |         |         |         |
7+15       0.7480      1.53  |Q   V    |         |         |         |
7+20       0.7586      1.54  |Q   V    |         |         |         |
7+25       0.7693      1.55  |Q   V    |         |         |         |
7+30       0.7800      1.56  |Q   V    |         |         |         |
7+35       0.7908      1.57  |Q   V    |         |         |         |
7+40       0.8017      1.58  |Q   V    |         |         |         |
7+45       0.8126      1.59  |Q   V    |         |         |         |
7+50       0.8236      1.60  |Q    V   |         |         |         |
7+55       0.8346      1.60  |Q    V   |         |         |         |
8+ 0       0.8457      1.61  |Q    V   |         |         |         |
8+ 5       0.8569      1.62  |Q    V   |         |         |         |
8+10       0.8682      1.63  |Q    V   |         |         |         |
8+15       0.8795      1.64  |Q    V   |         |         |         |
8+20       0.8909      1.65  |Q    V   |         |         |         |
8+25       0.9024      1.66  |Q    V   |         |         |         |
8+30       0.9139      1.68  |Q    V   |         |         |         |
8+35       0.9255      1.69  |Q    V   |         |         |         |
8+40       0.9372      1.70  |Q    V   |         |         |         |
```

8+45	0.9490	1.71	Q V				
8+50	0.9608	1.72	Q V				
8+55	0.9727	1.73	Q V				
9+ 0	0.9847	1.74	Q V				
9+ 5	0.9968	1.75	Q V				
9+10	1.0090	1.77	Q V				
9+15	1.0212	1.78	Q V				
9+20	1.0336	1.79	Q V				
9+25	1.0460	1.80	Q V				
9+30	1.0585	1.82	Q V				
9+35	1.0711	1.83	Q V				
9+40	1.0838	1.84	Q V				
9+45	1.0966	1.86	Q V				
9+50	1.1095	1.87	Q V				
9+55	1.1225	1.89	Q V				
10+ 0	1.1356	1.90	Q V				
10+ 5	1.1488	1.92	Q V				
10+10	1.1621	1.93	Q V				
10+15	1.1756	1.95	Q V				
10+20	1.1891	1.96	Q V				
10+25	1.2027	1.98	Q V				
10+30	1.2165	2.00	Q V				
10+35	1.2304	2.02	Q V				
10+40	1.2444	2.03	Q V				
10+45	1.2585	2.05	Q V				
10+50	1.2728	2.07	Q V				
10+55	1.2872	2.09	Q V				
11+ 0	1.3017	2.11	Q V				
11+ 5	1.3164	2.13	Q V				
11+10	1.3312	2.15	Q V				
11+15	1.3461	2.17	Q V				
11+20	1.3612	2.19	Q V				
11+25	1.3765	2.21	Q V				
11+30	1.3919	2.24	Q V				
11+35	1.4074	2.26	Q V				
11+40	1.4232	2.29	Q V				
11+45	1.4391	2.31	Q V				
11+50	1.4552	2.34	Q V				
11+55	1.4714	2.36	Q V				
12+ 0	1.4879	2.39	Q V				
12+ 5	1.5045	2.41	Q V				
12+10	1.5210	2.40	Q V				
12+15	1.5374	2.37	Q V				
12+20	1.5537	2.37	Q V				
12+25	1.5702	2.39	Q V				
12+30	1.5868	2.42	Q V				
12+35	1.6037	2.45	Q V				
12+40	1.6209	2.49	Q V				
12+45	1.6383	2.52	Q V				
12+50	1.6559	2.56	Q V				
12+55	1.6738	2.60	Q V				
13+ 0	1.6920	2.64	Q V				
13+ 5	1.7105	2.69	Q V				
13+10	1.7293	2.73	Q V				
13+15	1.7484	2.78	Q V				
13+20	1.7679	2.82	Q V				
13+25	1.7877	2.88	Q V				
13+30	1.8079	2.93	Q V				
13+35	1.8284	2.99	Q V				
13+40	1.8494	3.04	Q V				
13+45	1.8708	3.11	Q V				
13+50	1.8926	3.17	Q V				
13+55	1.9150	3.24	Q V				
14+ 0	1.9378	3.32	Q V				
14+ 5	1.9612	3.40	Q V				
14+10	1.9852	3.48	Q V				
14+15	2.0098	3.58	Q V				
14+20	2.0351	3.67	Q V				
14+25	2.0611	3.78	Q V				
14+30	2.0878	3.89	Q V				
14+35	2.1154	4.01	Q V				
14+40	2.1439	4.13	Q V				
14+45	2.1734	4.28	Q V				
14+50	2.2039	4.43	Q V				
14+55	2.2355	4.60	Q V				



```
  21+15       5.1654      1.44  Q          |          |          |      V  |
  21+20       5.1752      1.43  Q          |          |          |      V  |
  21+25       5.1849      1.41  Q          |          |          |      V  |
  21+30       5.1946      1.40  Q          |          |          |       V |
  21+35       5.2041      1.39  Q          |          |          |       V |
  21+40       5.2136      1.37  Q          |          |          |       V |
  21+45       5.2229      1.36  Q          |          |          |       V |
  21+50       5.2322      1.35  Q          |          |          |       V |
  21+55       5.2415      1.34  Q          |          |          |       V |
  22+ 0       5.2506      1.33  Q          |          |          |       V |
  22+ 5       5.2596      1.31  Q          |          |          |       V |
  22+10       5.2686      1.30  Q          |          |          |       V |
  22+15       5.2775      1.29  Q          |          |          |       V |
  22+20       5.2864      1.28  Q          |          |          |       V |
  22+25       5.2951      1.27  Q          |          |          |       V |
  22+30       5.3038      1.26  Q          |          |          |       V |
  22+35       5.3124      1.25  Q          |          |          |       V |
  22+40       5.3210      1.24  Q          |          |          |       V |
  22+45       5.3295      1.23  Q          |          |          |        V|
  22+50       5.3379      1.22  Q          |          |          |        V|
  22+55       5.3463      1.22  Q          |          |          |        V|
  23+ 0       5.3546      1.21  Q          |          |          |        V|
  23+ 5       5.3629      1.20  Q          |          |          |        V|
  23+10       5.3710      1.19  Q          |          |          |        V|
  23+15       5.3792      1.18  Q          |          |          |        V|
  23+20       5.3873      1.17  Q          |          |          |        V|
  23+25       5.3953      1.16  Q          |          |          |        V|
  23+30       5.4032      1.16  Q          |          |          |        V|
  23+35       5.4112      1.15  Q          |          |          |        V|
  23+40       5.4190      1.14  Q          |          |          |        V|
  23+45       5.4268      1.13  Q          |          |          |        V|
  23+50       5.4346      1.13  Q          |          |          |        V|
  23+55       5.4423      1.12  Q          |          |          |        V|
  24+ 0       5.4499      1.11  Q          |          |          |        V|
  24+ 5       5.4572      1.06  Q          |          |          |        V|
  24+10       5.4626      0.78  Q          |          |          |        V|
  24+15       5.4650      0.35  Q          |          |          |        V|
  24+20       5.4658      0.11  Q          |          |          |        V|
  24+25       5.4660      0.03  Q          |          |          |        V|
  24+30       5.4661      0.01  Q          |          |          |        V|
  24+35       5.4661      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/15/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 5C
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 5CPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
13.00	1	0.60
Rainfall data for year 2		
13.00	6	0.70
Rainfall data for year 2		
13.00	24	1.20
Rainfall data for year 100		
13.00	1	1.00
Rainfall data for year 100		
13.00	6	1.90
Rainfall data for year 100		
13.00	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	13.00	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.30	0.100	69.0	69.0	4.49	0.121
11.70	0.900	98.0	98.0	0.20	0.892

Area-averaged catchment yield fraction, Y = 0.815
Area-averaged low loss fraction, Yb = 0.185
User entry of time of concentration = 0.190 (hours)
++
Watershed area = 13.00(Ac.)
Catchment Lag time = 0.152 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.222(In)
Computed peak 30-minute rainfall = 0.455(In)
Specified peak 1-hour rainfall = 0.600(In)
Computed peak 3-hour rainfall = 0.915(In)
Specified peak 6-hour rainfall = 1.194(In)
Specified peak 24-hour rainfall = 2.105(In)

Rainfall depth area reduction factors:
Using a total area of 13.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.222(In)
30-minute factor = 0.999 Adjusted rainfall = 0.454(In)
1-hour factor = 0.999 Adjusted rainfall = 0.600(In)
3-hour factor = 1.000 Adjusted rainfall = 0.915(In)
6-hour factor = 1.000 Adjusted rainfall = 1.194(In)
24-hour factor = 1.000 Adjusted rainfall = 2.105(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 157.22 (CFS))	
1	5.469	8.599
2	35.337	46.957
3	75.925	63.813
4	93.130	27.049
5	98.077	7.778
6	99.228	1.808
7	100.000	1.214

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2219	0.2219
2	0.2928	0.0709
3	0.3444	0.0516
4	0.3864	0.0420
5	0.4225	0.0361
6	0.4544	0.0320
7	0.4833	0.0289
8	0.5099	0.0265
9	0.5345	0.0246
10	0.5575	0.0230
11	0.5791	0.0217
12	0.5996	0.0205
13	0.6184	0.0187
14	0.6362	0.0179
15	0.6533	0.0171
16	0.6697	0.0164
17	0.6855	0.0158
18	0.7008	0.0152
19	0.7155	0.0147
20	0.7297	0.0142
21	0.7435	0.0138
22	0.7570	0.0134
23	0.7700	0.0130
24	0.7827	0.0127
25	0.7951	0.0124
26	0.8072	0.0121

27	0.8190	0.0118
28	0.8305	0.0115
29	0.8418	0.0113
30	0.8528	0.0110
31	0.8636	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9049	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9433	0.0094
40	0.9525	0.0092
41	0.9616	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9966	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0216	0.0082
49	1.0297	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0612	0.0077
54	1.0688	0.0076
55	1.0764	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1058	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1409	0.0069
65	1.1477	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2138	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2652	0.0063
84	1.2714	0.0062
85	1.2775	0.0062
86	1.2837	0.0061
87	1.2898	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3313	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3542	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3710	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3984	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4812	0.0050
123	1.4861	0.0050
124	1.4911	0.0049
125	1.4960	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5106	0.0048
129	1.5154	0.0048
130	1.5202	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6119	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6250	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6508	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6760	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6884	0.0041
169	1.6925	0.0041
170	1.6966	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7088	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7328	0.0040
180	1.7367	0.0040
181	1.7407	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7946	0.0038
196	1.7983	0.0038
197	1.8021	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8317	0.0037
206	1.8353	0.0037
207	1.8390	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8642	0.0036
215	1.8677	0.0036
216	1.8713	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8819	0.0035
220	1.8854	0.0035
221	1.8889	0.0035
222	1.8924	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9166	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9370	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9604	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9703	0.0033
246	1.9736	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0440	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0961	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1051	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0086
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0098
177	0.0127	0.0023	0.0104
178	0.0130	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0142	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0201
188	0.0265	0.0046	0.0220
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0516	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2219	0.0046	0.2174
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 18.09(CFS)

++

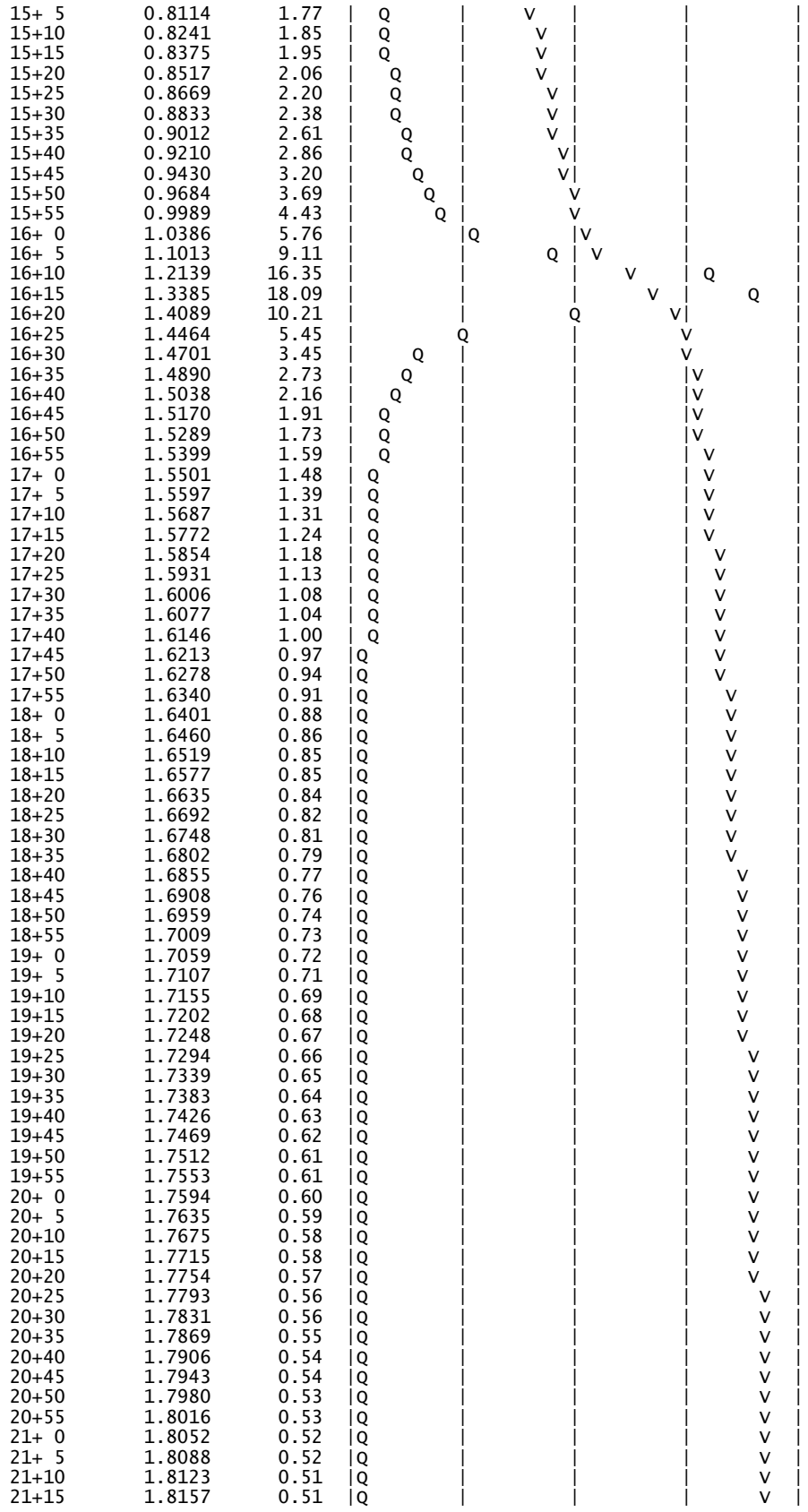
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0011	0.14	Q	|	|	|	|
0+15	0.0031	0.29	Q	|	|	|	|
0+20	0.0056	0.36	Q	|	|	|	|
0+25	0.0082	0.38	Q	|	|	|	|
0+30	0.0108	0.38	Q	|	|	|	|
0+35	0.0135	0.39	Q	|	|	|	|
0+40	0.0162	0.39	Q	|	|	|	|
0+45	0.0189	0.39	Q	|	|	|	|
0+50	0.0216	0.39	Q	|	|	|	|
0+55	0.0243	0.39	Q	|	|	|	|
1+ 0	0.0270	0.39	Q	|	|	|	|
1+ 5	0.0297	0.40	Q	|	|	|	|
1+10	0.0325	0.40	Q	|	|	|	|
1+15	0.0352	0.40	Q	|	|	|	|
1+20	0.0380	0.40	Q	|	|	|	|
1+25	0.0407	0.40	Q	|	|	|	|
1+30	0.0435	0.40	Q	|	|	|	|
1+35	0.0463	0.40	Q	|	|	|	|
1+40	0.0491	0.41	QV	|	|	|	|
1+45	0.0519	0.41	QV	|	|	|	|
1+50	0.0547	0.41	QV	|	|	|	|
1+55	0.0575	0.41	QV	|	|	|	|
2+ 0	0.0603	0.41	QV	|	|	|	|
2+ 5	0.0632	0.41	QV	|	|	|	|
2+10	0.0660	0.41	QV	|	|	|	|
2+15	0.0689	0.42	QV	|	|	|	|
2+20	0.0718	0.42	QV	|	|	|	|
2+25	0.0746	0.42	QV	|	|	|	|
2+30	0.0775	0.42	QV	|	|	|	|

2+35	0.0804	0.42	QV	|	|	|	|
2+40	0.0833	0.42	QV	|	|	|	|
2+45	0.0863	0.42	QV	|	|	|	|
2+50	0.0892	0.43	QV	|	|	|	|
2+55	0.0921	0.43	QV	|	|	|	|
3+ 0	0.0951	0.43	QV	|	|	|	|
3+ 5	0.0981	0.43	Q V	|	|	|	|
3+10	0.1010	0.43	Q V	|	|	|	|
3+15	0.1040	0.43	Q V	|	|	|	|
3+20	0.1070	0.44	Q V	|	|	|	|
3+25	0.1100	0.44	Q V	|	|	|	|
3+30	0.1131	0.44	Q V	|	|	|	|
3+35	0.1161	0.44	Q V	|	|	|	|
3+40	0.1191	0.44	Q V	|	|	|	|
3+45	0.1222	0.44	Q V	|	|	|	|
3+50	0.1253	0.45	Q V	|	|	|	|
3+55	0.1283	0.45	Q V	|	|	|	|
4+ 0	0.1314	0.45	Q V	|	|	|	|
4+ 5	0.1345	0.45	Q V	|	|	|	|
4+10	0.1377	0.45	Q V	|	|	|	|
4+15	0.1408	0.45	Q V	|	|	|	|
4+20	0.1439	0.46	Q V	|	|	|	|
4+25	0.1471	0.46	Q V	|	|	|	|
4+30	0.1503	0.46	Q V	|	|	|	|
4+35	0.1535	0.46	Q V	|	|	|	|
4+40	0.1567	0.46	Q V	|	|	|	|
4+45	0.1599	0.47	Q V	|	|	|	|
4+50	0.1631	0.47	Q V	|	|	|	|
4+55	0.1663	0.47	Q V	|	|	|	|
5+ 0	0.1696	0.47	Q V	|	|	|	|
5+ 5	0.1729	0.47	Q V	|	|	|	|
5+10	0.1761	0.48	Q V	|	|	|	|
5+15	0.1794	0.48	Q V	|	|	|	|
5+20	0.1828	0.48	Q V	|	|	|	|
5+25	0.1861	0.48	Q V	|	|	|	|
5+30	0.1894	0.49	Q V	|	|	|	|
5+35	0.1928	0.49	Q V	|	|	|	|
5+40	0.1962	0.49	Q V	|	|	|	|
5+45	0.1996	0.49	Q V	|	|	|	|
5+50	0.2030	0.49	Q V	|	|	|	|
5+55	0.2064	0.50	Q V	|	|	|	|
6+ 0	0.2098	0.50	Q V	|	|	|	|
6+ 5	0.2133	0.50	|Q V	|	|	|	|
6+10	0.2168	0.50	|Q V	|	|	|	|
6+15	0.2202	0.51	|Q V	|	|	|	|
6+20	0.2237	0.51	|Q V	|	|	|	|
6+25	0.2273	0.51	|Q V	|	|	|	|
6+30	0.2308	0.51	|Q V	|	|	|	|
6+35	0.2344	0.52	|Q V	|	|	|	|
6+40	0.2380	0.52	|Q V	|	|	|	|
6+45	0.2416	0.52	|Q V	|	|	|	|
6+50	0.2452	0.53	|Q V	|	|	|	|
6+55	0.2488	0.53	|Q V	|	|	|	|
7+ 0	0.2525	0.53	|Q V	|	|	|	|
7+ 5	0.2561	0.53	|Q V	|	|	|	|
7+10	0.2598	0.54	|Q V	|	|	|	|
7+15	0.2635	0.54	|Q V	|	|	|	|
7+20	0.2673	0.54	|Q V	|	|	|	|
7+25	0.2710	0.55	|Q V	|	|	|	|
7+30	0.2748	0.55	|Q V	|	|	|	|
7+35	0.2786	0.55	|Q V	|	|	|	|
7+40	0.2824	0.55	|Q V	|	|	|	|
7+45	0.2863	0.56	|Q V	|	|	|	|
7+50	0.2901	0.56	|Q V	|	|	|	|
7+55	0.2940	0.56	|Q V	|	|	|	|
8+ 0	0.2979	0.57	|Q V	|	|	|	|
8+ 5	0.3019	0.57	|Q V	|	|	|	|
8+10	0.3058	0.57	|Q V	|	|	|	|
8+15	0.3098	0.58	|Q V	|	|	|	|
8+20	0.3138	0.58	|Q V	|	|	|	|
8+25	0.3179	0.59	|Q V	|	|	|	|
8+30	0.3219	0.59	|Q V	|	|	|	|
8+35	0.3260	0.59	|Q V	|	|	|	|
8+40	0.3301	0.60	|Q V	|	|	|	|
8+45	0.3342	0.60	|Q V	|	|	|	|

```
 8+50       0.3384      0.60  |Q     V  |          |          |          |
 8+55       0.3426      0.61  |Q     V  |          |          |          |
 9+ 0       0.3468      0.61  |Q     V  |          |          |          |
 9+ 5       0.3511      0.62  |Q     V  |          |          |          |
 9+10       0.3554      0.62  |Q     V  |          |          |          |
 9+15       0.3597      0.63  |Q     V  |          |          |          |
 9+20       0.3640      0.63  |Q     V  |          |          |          |
 9+25       0.3684      0.63  |Q     V  |          |          |          |
 9+30       0.3728      0.64  |Q     V  |          |          |          |
 9+35       0.3772      0.64  |Q     V  |          |          |          |
 9+40       0.3817      0.65  |Q     V  |          |          |          |
 9+45       0.3862      0.65  |Q      V |          |          |          |
 9+50       0.3907      0.66  |Q      V |          |          |          |
 9+55       0.3953      0.66  |Q      V |          |          |          |
10+ 0       0.3999      0.67  |Q      V |          |          |          |
10+ 5       0.4046      0.67  |Q      V |          |          |          |
10+10       0.4093      0.68  |Q      V |          |          |          |
10+15       0.4140      0.69  |Q      V |          |          |          |
10+20       0.4187      0.69  |Q      V |          |          |          |
10+25       0.4235      0.70  |Q      V |          |          |          |
10+30       0.4284      0.70  |Q      V |          |          |          |
10+35       0.4333      0.71  |Q       V|          |          |          |
10+40       0.4382      0.72  |Q       V|          |          |          |
10+45       0.4432      0.72  |Q       V|          |          |          |
10+50       0.4482      0.73  |Q       V|          |          |          |
10+55       0.4533      0.74  |Q       V|          |          |          |
11+ 0       0.4584      0.74  |Q       V|          |          |          |
11+ 5       0.4635      0.75  |Q       V|          |          |          |
11+10       0.4687      0.76  |Q       V|          |          |          |
11+15       0.4740      0.76  |Q       V|          |          |          |
11+20       0.4793      0.77  |Q       V|          |          |          |
11+25       0.4847      0.78  |Q        V          |          |          |
11+30       0.4901      0.79  |Q        V          |          |          |
11+35       0.4956      0.80  |Q        V          |          |          |
11+40       0.5011      0.80  |Q        V          |          |          |
11+45       0.5067      0.81  |Q        V          |          |          |
11+50       0.5124      0.82  |Q        V          |          |          |
11+55       0.5181      0.83  |Q        V          |          |          |
12+ 0       0.5239      0.84  |Q        V          |          |          |
12+ 5       0.5298      0.85  |Q        |V         |          |          |
12+10       0.5356      0.84  |Q        |V         |          |          |
12+15       0.5413      0.83  |Q        |V         |          |          |
12+20       0.5470      0.83  |Q        |V         |          |          |
12+25       0.5528      0.84  |Q        |V         |          |          |
12+30       0.5587      0.85  |Q        |V         |          |          |
12+35       0.5647      0.86  |Q        |V         |          |          |
12+40       0.5707      0.88  |Q        |V         |          |          |
12+45       0.5768      0.89  |Q        | V        |          |          |
12+50       0.5830      0.90  |Q        | V        |          |          |
12+55       0.5894      0.92  |Q        | V        |          |          |
13+ 0       0.5958      0.93  |Q        | V        |          |          |
13+ 5       0.6023      0.95  |Q        | V        |          |          |
13+10       0.6089      0.96  |Q        | V        |          |          |
13+15       0.6157      0.98  |Q        | V        |          |          |
13+20       0.6225      1.00  |Q        | V        |          |          |
13+25       0.6295      1.01  | Q       |  V       |          |          |
13+30       0.6366      1.03  | Q       |  V       |          |          |
13+35       0.6439      1.05  | Q       |  V       |          |          |
13+40       0.6513      1.07  | Q       |  V       |          |          |
13+45       0.6588      1.10  | Q       |  V       |          |          |
13+50       0.6665      1.12  | Q       |  V       |          |          |
13+55       0.6744      1.14  | Q       |   V      |          |          |
14+ 0       0.6824      1.17  | Q       |   V      |          |          |
14+ 5       0.6907      1.20  | Q       |   V      |          |          |
14+10       0.6992      1.23  | Q       |   V      |          |          |
14+15       0.7078      1.26  | Q       |   V      |          |          |
14+20       0.7168      1.29  | Q       |   V      |          |          |
14+25       0.7259      1.33  | Q       |    V     |          |          |
14+30       0.7354      1.37  | Q       |    V     |          |          |
14+35       0.7451      1.41  | Q       |    V     |          |          |
14+40       0.7551      1.46  | Q       |    V     |          |          |
14+45       0.7655      1.51  |  Q      |    V     |          |          |
14+50       0.7763      1.56  |  Q      |     V    |          |          |
14+55       0.7875      1.63  |  Q      |     V    |          |          |
15+ 0       0.7992      1.69  |  Q      |     V    |          |          |
```



```
  21+20       1.8192      0.50  |Q        |         |         |      V  |
  21+25       1.8226      0.50  Q        |         |         |      V  |
  21+30       1.8260      0.49  Q        |         |         |       V |
  21+35       1.8293      0.49  Q        |         |         |       V |
  21+40       1.8326      0.48  Q        |         |         |       V |
  21+45       1.8359      0.48  Q        |         |         |       V |
  21+50       1.8392      0.47  Q        |         |         |       V |
  21+55       1.8424      0.47  Q        |         |         |       V |
  22+ 0       1.8456      0.47  Q        |         |         |       V |
  22+ 5       1.8488      0.46  Q        |         |         |       V |
  22+10       1.8520      0.46  Q        |         |         |       V |
  22+15       1.8551      0.45  Q        |         |         |       V |
  22+20       1.8582      0.45  Q        |         |         |       V |
  22+25       1.8612      0.45  Q        |         |         |       V |
  22+30       1.8643      0.44  Q        |         |         |       V |
  22+35       1.8673      0.44  Q        |         |         |       V |
  22+40       1.8703      0.44  Q        |         |         |       V |
  22+45       1.8733      0.43  Q        |         |         |        V|
  22+50       1.8763      0.43  Q        |         |         |        V|
  22+55       1.8792      0.43  Q        |         |         |        V|
  23+ 0       1.8821      0.42  Q        |         |         |        V|
  23+ 5       1.8850      0.42  Q        |         |         |        V|
  23+10       1.8879      0.42  Q        |         |         |        V|
  23+15       1.8907      0.41  Q        |         |         |        V|
  23+20       1.8936      0.41  Q        |         |         |        V|
  23+25       1.8964      0.41  Q        |         |         |        V|
  23+30       1.8992      0.41  Q        |         |         |        V|
  23+35       1.9020      0.40  Q        |         |         |        V|
  23+40       1.9047      0.40  Q        |         |         |        V|
  23+45       1.9074      0.40  Q        |         |         |        V|
  23+50       1.9102      0.40  Q        |         |         |        V|
  23+55       1.9129      0.39  Q        |         |         |        V|
  24+ 0       1.9156      0.39  Q        |         |         |        V|
  24+ 5       1.9181      0.37  Q        |         |         |        V|
  24+10       1.9198      0.25  Q        |         |         |        V|
  24+15       1.9204      0.09  Q        |         |         |        V|
  24+20       1.9206      0.03  Q        |         |         |        V|
  24+25       1.9207      0.01  Q        |         |         |        V|
  24+30       1.9207      0.00  Q        |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/15/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 5D
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 5DPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
28.50	1	0.60
Rainfall data for year 2		
28.50	6	0.70
Rainfall data for year 2		
28.50	24	1.20
Rainfall data for year 100		
28.50	1	1.00
Rainfall data for year 100		
28.50	6	1.90
Rainfall data for year 100		
28.50	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	28.50	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.85	0.100	69.0	69.0	4.49	0.121
25.65	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.220 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      28.50(Ac.)
Catchment Lag time =   0.176 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 47.3485
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      28.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       344.67 (CFS))

  1                4.127                  14.225
  2               26.887                  78.448
  3               64.399                 129.292
  4               87.458                  79.479
  5               96.010                  29.475
  6               98.485                   8.533
  7               99.340                   2.945
  8              100.000                   2.276
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2218              0.2218
  2              0.2926              0.0709
  3              0.3441              0.0515
  4              0.3861              0.0420
  5              0.4222              0.0360
  6              0.4541              0.0319
  7              0.4830              0.0289
  8              0.5095              0.0265
  9              0.5341              0.0246
 10              0.5571              0.0230
 11              0.5787              0.0216
 12              0.5992              0.0205
 13              0.6179              0.0188
 14              0.6358              0.0179
 15              0.6529              0.0171
 16              0.6694              0.0164
 17              0.6852              0.0158
 18              0.7004              0.0152
 19              0.7152              0.0147
 20              0.7294              0.0143
 21              0.7432              0.0138
 22              0.7567              0.0134
 23              0.7697              0.0131
 24              0.7825              0.0127
 25              0.7948              0.0124
```

26	0.8069	0.0121
27	0.8188	0.0118
28	0.8303	0.0115
29	0.8416	0.0113
30	0.8526	0.0111
31	0.8635	0.0108
32	0.8741	0.0106
33	0.8845	0.0104
34	0.8947	0.0102
35	0.9048	0.0100
36	0.9146	0.0099
37	0.9243	0.0097
38	0.9338	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9704	0.0089
43	0.9792	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0049	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0376	0.0080
51	1.0455	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0687	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1339	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1610	0.0067
68	1.1677	0.0066
69	1.1742	0.0066
70	1.1807	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2003	0.0068
74	1.2070	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2268	0.0065
78	1.2333	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2525	0.0064
82	1.2588	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2957	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3136	0.0059
92	1.3195	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3427	0.0057
97	1.3484	0.0057
98	1.3541	0.0057
99	1.3597	0.0056
100	1.3653	0.0056

101	1.3709	0.0056
102	1.3765	0.0055
103	1.3820	0.0055
104	1.3874	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4090	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4249	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4610	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4761	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5296	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5484	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5623	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5760	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5985	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6464	0.0043
159	1.6507	0.0043
160	1.6549	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6717	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7127	0.0040
175	1.7168	0.0040

176	1.7208	0.0040
177	1.7248	0.0040
178	1.7287	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7445	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7601	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7755	0.0038
191	1.7793	0.0038
192	1.7832	0.0038
193	1.7869	0.0038
194	1.7907	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8279	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8425	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8605	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9027	0.0035
226	1.9062	0.0035
227	1.9096	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9199	0.0034
231	1.9233	0.0034
232	1.9267	0.0034
233	1.9301	0.0034
234	1.9335	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9436	0.0034
238	1.9470	0.0034
239	1.9503	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033

251	1.9898	0.0032
252	1.9931	0.0032
253	1.9963	0.0032
254	1.9995	0.0032
255	2.0027	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0155	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0470	0.0031
270	2.0501	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0594	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0717	0.0031
278	2.0748	0.0031
279	2.0778	0.0031
280	2.0809	0.0030
281	2.0839	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027

33	0.0033	0.0006	0.0027
34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039

108	0.0048	0.0009	0.0039
109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0111	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129

183	0.0171	0.0032	0.0140
184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0216	0.0040	0.0176
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0319	0.0046	0.0274
190	0.0360	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2172
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0188	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031

258	0.0038	0.0007	0.0031
259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 38.41(CFS)

++

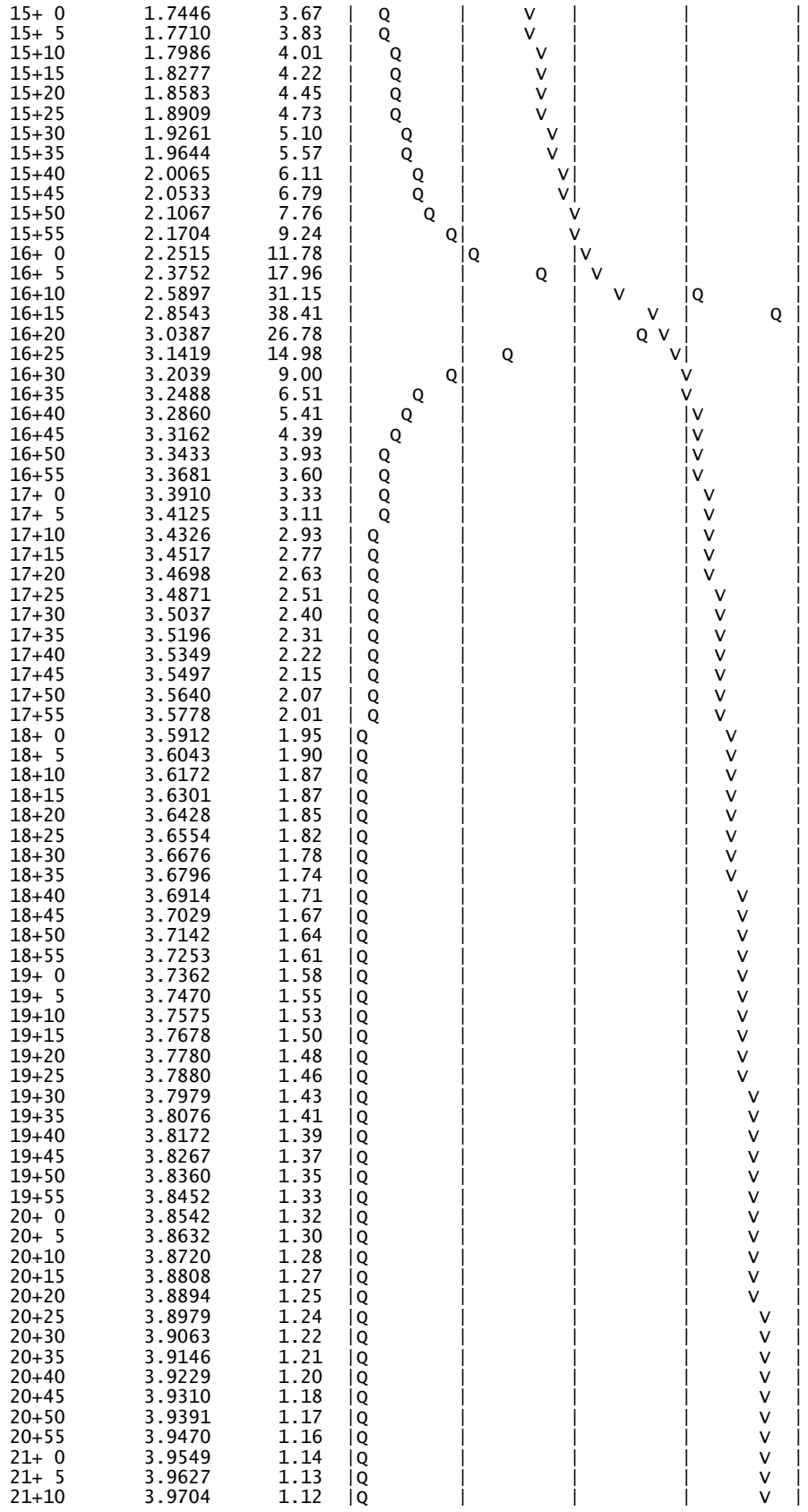
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0002	0.03	Q	|	|	|	|
0+10	0.0018	0.23	Q	|	|	|	|
0+15	0.0055	0.54	Q	|	|	|	|
0+20	0.0106	0.74	Q	|	|	|	|
0+25	0.0162	0.81	Q	|	|	|	|
0+30	0.0220	0.84	Q	|	|	|	|
0+35	0.0278	0.85	Q	|	|	|	|
0+40	0.0337	0.85	Q	|	|	|	|
0+45	0.0396	0.86	Q	|	|	|	|
0+50	0.0455	0.86	Q	|	|	|	|
0+55	0.0514	0.86	Q	|	|	|	|
1+ 0	0.0574	0.86	Q	|	|	|	|
1+ 5	0.0633	0.87	Q	|	|	|	|
1+10	0.0693	0.87	Q	|	|	|	|
1+15	0.0754	0.87	Q	|	|	|	|
1+20	0.0814	0.88	Q	|	|	|	|
1+25	0.0874	0.88	Q	|	|	|	|
1+30	0.0935	0.88	Q	|	|	|	|
1+35	0.0996	0.88	Q	|	|	|	|
1+40	0.1057	0.89	QV	|	|	|	|
1+45	0.1119	0.89	QV	|	|	|	|
1+50	0.1180	0.89	QV	|	|	|	|
1+55	0.1242	0.90	QV	|	|	|	|
2+ 0	0.1304	0.90	QV	|	|	|	|
2+ 5	0.1366	0.90	QV	|	|	|	|
2+10	0.1428	0.91	QV	|	|	|	|
2+15	0.1491	0.91	QV	|	|	|	|
2+20	0.1554	0.91	QV	|	|	|	|
2+25	0.1617	0.92	QV	|	|	|	|

```
2+30       0.1680      0.92  QV        |         |         |         |
2+35       0.1744      0.92  QV        |         |         |         |
2+40       0.1808      0.93  QV        |         |         |         |
2+45       0.1872      0.93  QV        |         |         |         |
2+50       0.1936      0.93  QV        |         |         |         |
2+55       0.2000      0.94  QV        |         |         |         |
3+ 0       0.2065      0.94  QV        |         |         |         |
3+ 5       0.2130      0.94  Q V       |         |         |         |
3+10       0.2195      0.95  Q V       |         |         |         |
3+15       0.2261      0.95  Q V       |         |         |         |
3+20       0.2326      0.95  Q V       |         |         |         |
3+25       0.2392      0.96  Q V       |         |         |         |
3+30       0.2458      0.96  Q V       |         |         |         |
3+35       0.2525      0.96  Q V       |         |         |         |
3+40       0.2591      0.97  Q V       |         |         |         |
3+45       0.2658      0.97  Q V       |         |         |         |
3+50       0.2726      0.98  Q V       |         |         |         |
3+55       0.2793      0.98  Q V       |         |         |         |
4+ 0       0.2861      0.98  Q V       |         |         |         |
4+ 5       0.2929      0.99  Q V       |         |         |         |
4+10       0.2997      0.99  Q V       |         |         |         |
4+15       0.3066      1.00  Q V       |         |         |         |
4+20       0.3135      1.00  |QV       |         |         |         |
4+25       0.3204      1.00  |Q V       |         |         |         |
4+30       0.3273      1.01  |Q V       |         |         |         |
4+35       0.3343      1.01  |Q V       |         |         |         |
4+40       0.3413      1.02  |Q V       |         |         |         |
4+45       0.3484      1.02  |Q V       |         |         |         |
4+50       0.3554      1.03  |Q V       |         |         |         |
4+55       0.3625      1.03  |Q V       |         |         |         |
5+ 0       0.3696      1.03  |Q V       |         |         |         |
5+ 5       0.3768      1.04  |Q V       |         |         |         |
5+10       0.3840      1.04  |Q V       |         |         |         |
5+15       0.3912      1.05  |Q V       |         |         |         |
5+20       0.3985      1.05  |Q V       |         |         |         |
5+25       0.4058      1.06  |Q V       |         |         |         |
5+30       0.4131      1.06  |Q V       |         |         |         |
5+35       0.4204      1.07  |Q V       |         |         |         |
5+40       0.4278      1.07  |Q  V      |         |         |         |
5+45       0.4352      1.08  |Q  V      |         |         |         |
5+50       0.4427      1.08  |Q  V      |         |         |         |
5+55       0.4502      1.09  |Q  V      |         |         |         |
6+ 0       0.4577      1.09  |Q  V      |         |         |         |
6+ 5       0.4653      1.10  |Q  V      |         |         |         |
6+10       0.4729      1.10  |Q  V      |         |         |         |
6+15       0.4805      1.11  |Q  V      |         |         |         |
6+20       0.4882      1.11  |Q  V      |         |         |         |
6+25       0.4959      1.12  |Q  V      |         |         |         |
6+30       0.5037      1.13  |Q  V      |         |         |         |
6+35       0.5115      1.13  |Q  V      |         |         |         |
6+40       0.5193      1.14  |Q  V      |         |         |         |
6+45       0.5272      1.14  |Q   V     |         |         |         |
6+50       0.5351      1.15  |Q   V     |         |         |         |
6+55       0.5430      1.16  |Q   V     |         |         |         |
7+ 0       0.5510      1.16  |Q   V     |         |         |         |
7+ 5       0.5591      1.17  |Q   V     |         |         |         |
7+10       0.5672      1.17  |Q   V     |         |         |         |
7+15       0.5753      1.18  |Q   V     |         |         |         |
7+20       0.5835      1.19  |Q   V     |         |         |         |
7+25       0.5917      1.19  |Q   V     |         |         |         |
7+30       0.6000      1.20  |Q   V     |         |         |         |
7+35       0.6083      1.21  |Q   V     |         |         |         |
7+40       0.6166      1.21  |Q   V     |         |         |         |
7+45       0.6251      1.22  |Q   V     |         |         |         |
7+50       0.6335      1.23  |Q    V    |         |         |         |
7+55       0.6420      1.24  |Q    V    |         |         |         |
8+ 0       0.6506      1.24  |Q    V    |         |         |         |
8+ 5       0.6592      1.25  |Q    V    |         |         |         |
8+10       0.6679      1.26  |Q    V    |         |         |         |
8+15       0.6766      1.27  |Q    V    |         |         |         |
8+20       0.6853      1.27  |Q    V    |         |         |         |
8+25       0.6942      1.28  |Q    V    |         |         |         |
8+30       0.7030      1.29  |Q    V    |         |         |         |
8+35       0.7120      1.30  |Q    V    |         |         |         |
8+40       0.7210      1.31  |Q    V    |         |         |         |
```

8+45	0.7300	1.31	Q V				
8+50	0.7391	1.32	Q V				
8+55	0.7483	1.33	Q V				
9+ 0	0.7576	1.34	Q V				
9+ 5	0.7669	1.35	Q V				
9+10	0.7762	1.36	Q V				
9+15	0.7857	1.37	Q V				
9+20	0.7951	1.38	Q V				
9+25	0.8047	1.39	Q V				
9+30	0.8144	1.40	Q V				
9+35	0.8241	1.41	Q V				
9+40	0.8338	1.42	Q V				
9+45	0.8437	1.43	Q V				
9+50	0.8536	1.44	Q V				
9+55	0.8636	1.45	Q V				
10+ 0	0.8737	1.46	Q V				
10+ 5	0.8839	1.48	Q V				
10+10	0.8941	1.49	Q V				
10+15	0.9044	1.50	Q V				
10+20	0.9149	1.51	Q V				
10+25	0.9254	1.53	Q V				
10+30	0.9360	1.54	Q V				
10+35	0.9466	1.55	Q V				
10+40	0.9574	1.56	Q V				
10+45	0.9683	1.58	Q V				
10+50	0.9793	1.59	Q V				
10+55	0.9903	1.61	Q V				
11+ 0	1.0015	1.62	Q V				
11+ 5	1.0128	1.64	Q V				
11+10	1.0242	1.65	Q V				
11+15	1.0357	1.67	Q V				
11+20	1.0473	1.69	Q V				
11+25	1.0590	1.70	Q V				
11+30	1.0709	1.72	Q V				
11+35	1.0829	1.74	Q V				
11+40	1.0950	1.76	Q V				
11+45	1.1072	1.78	Q V				
11+50	1.1196	1.80	Q V				
11+55	1.1321	1.82	Q V				
12+ 0	1.1448	1.84	Q V				
12+ 5	1.1576	1.86	Q V				
12+10	1.1703	1.85	Q V				
12+15	1.1829	1.83	Q V				
12+20	1.1955	1.83	Q V				
12+25	1.2082	1.84	Q V				
12+30	1.2210	1.86	Q V				
12+35	1.2340	1.89	Q V				
12+40	1.2472	1.91	Q V				
12+45	1.2605	1.94	Q V				
12+50	1.2741	1.97	Q V				
12+55	1.2879	2.00	Q V				
13+ 0	1.3019	2.03	Q V				
13+ 5	1.3161	2.06	Q V				
13+10	1.3305	2.10	Q V				
13+15	1.3452	2.13	Q V				
13+20	1.3602	2.17	Q V				
13+25	1.3754	2.21	Q V				
13+30	1.3909	2.25	Q V				
13+35	1.4068	2.30	Q V				
13+40	1.4229	2.34	Q V				
13+45	1.4393	2.39	Q V				
13+50	1.4561	2.44	Q V				
13+55	1.4733	2.49	Q V				
14+ 0	1.4908	2.55	Q V				
14+ 5	1.5088	2.61	Q V				
14+10	1.5272	2.67	Q V				
14+15	1.5461	2.75	Q V				
14+20	1.5655	2.82	Q V				
14+25	1.5855	2.90	Q V				
14+30	1.6060	2.98	Q V				
14+35	1.6272	3.07	Q V				
14+40	1.6491	3.17	Q V				
14+45	1.6716	3.28	Q V				
14+50	1.6950	3.40	Q V				
14+55	1.7193	3.53	Q V				



```
  21+15       3.9781      1.11  |Q        |         |         |      V  |
  21+20       3.9857      1.10  |Q        |         |         |      V  |
  21+25       3.9932      1.09  |Q        |         |         |      V  |
  21+30       4.0006      1.08  |Q        |         |         |       V |
  21+35       4.0080      1.07  |Q        |         |         |       V |
  21+40       4.0153      1.06  |Q        |         |         |       V |
  21+45       4.0225      1.05  |Q        |         |         |       V |
  21+50       4.0296      1.04  |Q        |         |         |       V |
  21+55       4.0368      1.03  |Q        |         |         |       V |
  22+ 0       4.0438      1.02  |Q        |         |         |       V |
  22+ 5       4.0508      1.01  |Q        |         |         |       V |
  22+10       4.0577      1.01  |Q        |         |         |       V |
  22+15       4.0646      1.00  Q         |         |         |       V |
  22+20       4.0714      0.99  Q         |         |         |       V |
  22+25       4.0781      0.98  Q         |         |         |       V |
  22+30       4.0848      0.97  Q         |         |         |       V |
  22+35       4.0915      0.97  Q         |         |         |       V |
  22+40       4.0981      0.96  Q         |         |         |       V |
  22+45       4.1046      0.95  Q         |         |         |       V |
  22+50       4.1111      0.94  Q         |         |         |        V|
  22+55       4.1176      0.94  Q         |         |         |        V|
  23+ 0       4.1240      0.93  Q         |         |         |        V|
  23+ 5       4.1303      0.92  Q         |         |         |        V|
  23+10       4.1367      0.92  Q         |         |         |        V|
  23+15       4.1429      0.91  Q         |         |         |        V|
  23+20       4.1491      0.90  Q         |         |         |        V|
  23+25       4.1553      0.90  Q         |         |         |        V|
  23+30       4.1615      0.89  Q         |         |         |        V|
  23+35       4.1676      0.89  Q         |         |         |        V|
  23+40       4.1736      0.88  Q         |         |         |        V|
  23+45       4.1796      0.87  Q         |         |         |        V|
  23+50       4.1856      0.87  Q         |         |         |        V|
  23+55       4.1916      0.86  Q         |         |         |        V|
  24+ 0       4.1975      0.86  Q         |         |         |        V|
  24+ 5       4.2031      0.82  Q         |         |         |        V|
  24+10       4.2074      0.62  Q         |         |         |        V|
  24+15       4.2094      0.30  Q         |         |         |        V|
  24+20       4.2102      0.11  Q         |         |         |        V|
  24+25       4.2104      0.03  Q         |         |         |        V|
  24+30       4.2105      0.01  Q         |         |         |        V|
  24+35       4.2105      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

BUILDING 6

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 6A
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 6APROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
21.10	1	0.60
Rainfall data for year 2		
21.10	6	0.70
Rainfall data for year 2		
21.10	24	1.20
Rainfall data for year 100		
21.10	1	1.00
Rainfall data for year 100		
21.10	6	1.90
Rainfall data for year 100		
21.10	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	21.10	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.11	0.100	69.0	69.0	4.49	0.121
18.99	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      21.10(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      21.10(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       255.18 (CFS))

  1                5.469                  13.956
  2               35.337                  76.216
  3               75.925                 103.573
  4               93.130                  43.903
  5               98.077                  12.624
  6               99.228                   2.935
  7              100.000                   1.971
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2218              0.2218
  2              0.2927              0.0709
  3              0.3443              0.0515
  4              0.3863              0.0420
  5              0.4223              0.0361
  6              0.4543              0.0319
  7              0.4832              0.0289
  8              0.5097              0.0265
  9              0.5343              0.0246
 10              0.5572              0.0230
 11              0.5789              0.0217
 12              0.5994              0.0205
 13              0.6182              0.0187
 14              0.6360              0.0179
 15              0.6531              0.0171
 16              0.6696              0.0164
 17              0.6854              0.0158
 18              0.7006              0.0152
 19              0.7153              0.0147
 20              0.7296              0.0143
 21              0.7434              0.0138
 22              0.7568              0.0134
 23              0.7699              0.0131
 24              0.7826              0.0127
 25              0.7950              0.0124
 26              0.8070              0.0121
```

27	0.8189	0.0118
28	0.8304	0.0115
29	0.8417	0.0113
30	0.8527	0.0110
31	0.8635	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3427	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3709	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4249	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5624	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7755	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9335	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9995	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0319	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 29.35(CFS)

++

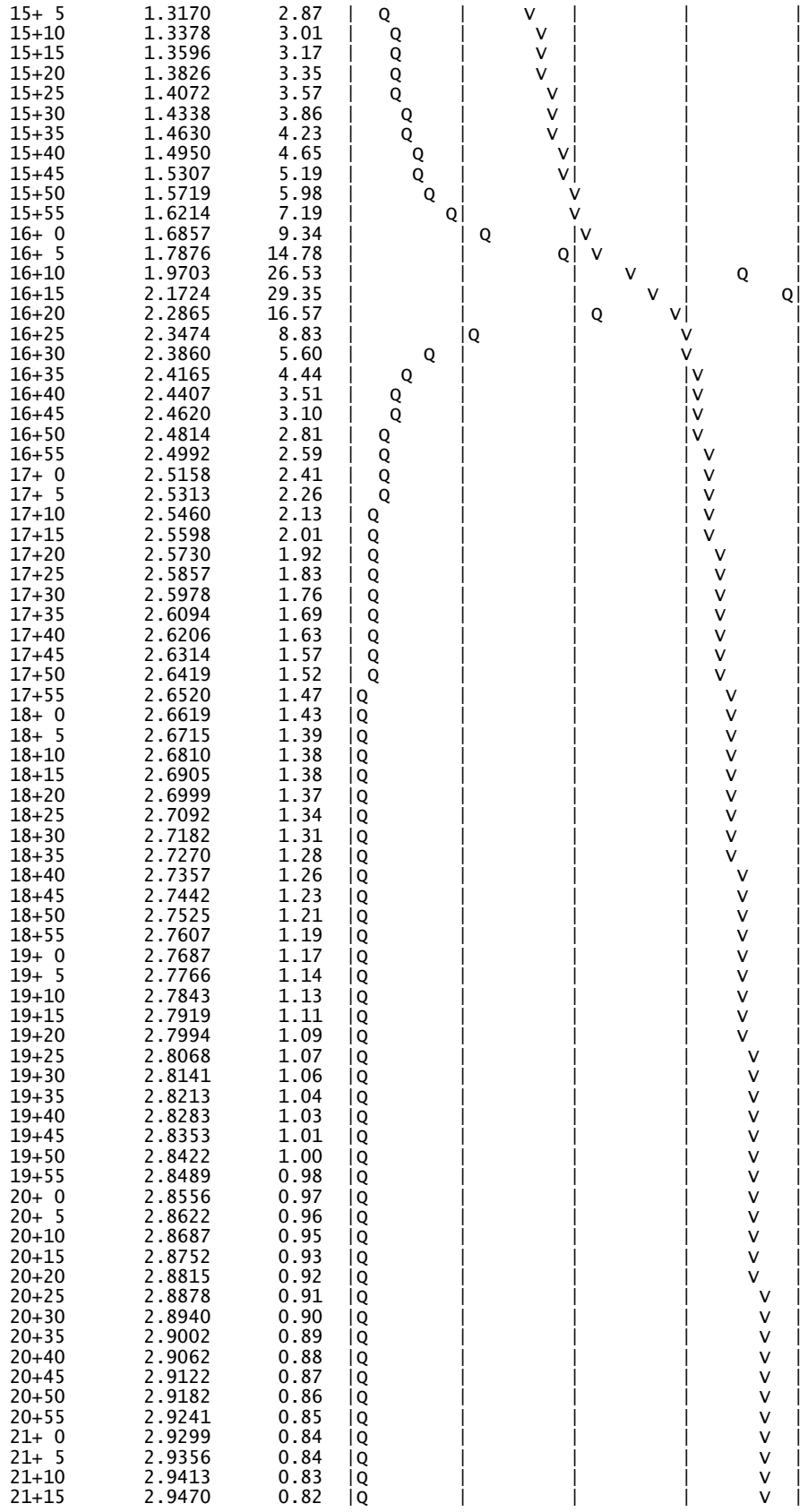
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q				
0+10	0.0018	0.22	Q				
0+15	0.0050	0.47	Q				
0+20	0.0090	0.58	Q				
0+25	0.0133	0.61	Q				
0+30	0.0176	0.62	Q				
0+35	0.0219	0.63	Q				
0+40	0.0263	0.63	Q				
0+45	0.0306	0.63	Q				
0+50	0.0350	0.64	Q				
0+55	0.0394	0.64	Q				
1+ 0	0.0438	0.64	Q				
1+ 5	0.0482	0.64	Q				
1+10	0.0527	0.64	Q				
1+15	0.0571	0.65	Q				
1+20	0.0616	0.65	Q				
1+25	0.0661	0.65	Q				
1+30	0.0706	0.65	Q				
1+35	0.0751	0.66	Q				
1+40	0.0796	0.66	QV				
1+45	0.0842	0.66	QV				
1+50	0.0888	0.66	QV				
1+55	0.0933	0.66	QV				
2+ 0	0.0979	0.67	QV				
2+ 5	0.1025	0.67	QV				
2+10	0.1072	0.67	QV				
2+15	0.1118	0.67	QV				
2+20	0.1165	0.68	QV				
2+25	0.1211	0.68	QV				
2+30	0.1258	0.68	QV				

2+35	0.1305	0.68	QV	|	|	|	|
2+40	0.1353	0.69	QV	|	|	|	|
2+45	0.1400	0.69	QV	|	|	|	|
2+50	0.1448	0.69	QV	|	|	|	|
2+55	0.1495	0.69	QV	|	|	|	|
3+ 0	0.1543	0.70	QV	|	|	|	|
3+ 5	0.1591	0.70	Q V	|	|	|	|
3+10	0.1640	0.70	Q V	|	|	|	|
3+15	0.1688	0.70	Q V	|	|	|	|
3+20	0.1737	0.71	Q V	|	|	|	|
3+25	0.1786	0.71	Q V	|	|	|	|
3+30	0.1835	0.71	Q V	|	|	|	|
3+35	0.1884	0.72	Q V	|	|	|	|
3+40	0.1934	0.72	Q V	|	|	|	|
3+45	0.1983	0.72	Q V	|	|	|	|
3+50	0.2033	0.72	Q V	|	|	|	|
3+55	0.2083	0.73	Q V	|	|	|	|
4+ 0	0.2133	0.73	Q V	|	|	|	|
4+ 5	0.2184	0.73	Q V	|	|	|	|
4+10	0.2234	0.74	Q V	|	|	|	|
4+15	0.2285	0.74	Q V	|	|	|	|
4+20	0.2336	0.74	Q V	|	|	|	|
4+25	0.2388	0.74	Q V	|	|	|	|
4+30	0.2439	0.75	Q V	|	|	|	|
4+35	0.2491	0.75	|Q V	|	|	|	|
4+40	0.2543	0.75	|Q V	|	|	|	|
4+45	0.2595	0.76	|Q V	|	|	|	|
4+50	0.2647	0.76	|Q V	|	|	|	|
4+55	0.2700	0.76	|Q V	|	|	|	|
5+ 0	0.2753	0.77	|Q V	|	|	|	|
5+ 5	0.2806	0.77	|Q V	|	|	|	|
5+10	0.2859	0.77	|Q V	|	|	|	|
5+15	0.2913	0.78	|Q V	|	|	|	|
5+20	0.2966	0.78	|Q V	|	|	|	|
5+25	0.3020	0.78	|Q V	|	|	|	|
5+30	0.3075	0.79	|Q V	|	|	|	|
5+35	0.3129	0.79	|Q V	|	|	|	|
5+40	0.3184	0.80	|Q V	|	|	|	|
5+45	0.3239	0.80	|Q V	|	|	|	|
5+50	0.3294	0.80	|Q V	|	|	|	|
5+55	0.3350	0.81	|Q V	|	|	|	|
6+ 0	0.3406	0.81	|Q V	|	|	|	|
6+ 5	0.3462	0.81	|Q V	|	|	|	|
6+10	0.3518	0.82	|Q V	|	|	|	|
6+15	0.3575	0.82	|Q V	|	|	|	|
6+20	0.3632	0.83	|Q V	|	|	|	|
6+25	0.3689	0.83	|Q V	|	|	|	|
6+30	0.3746	0.83	|Q V	|	|	|	|
6+35	0.3804	0.84	|Q V	|	|	|	|
6+40	0.3862	0.84	|Q V	|	|	|	|
6+45	0.3921	0.85	|Q V	|	|	|	|
6+50	0.3979	0.85	|Q V	|	|	|	|
6+55	0.4038	0.86	|Q V	|	|	|	|
7+ 0	0.4098	0.86	|Q V	|	|	|	|
7+ 5	0.4157	0.87	|Q V	|	|	|	|
7+10	0.4217	0.87	|Q V	|	|	|	|
7+15	0.4278	0.88	|Q V	|	|	|	|
7+20	0.4338	0.88	|Q V	|	|	|	|
7+25	0.4399	0.89	|Q V	|	|	|	|
7+30	0.4460	0.89	|Q V	|	|	|	|
7+35	0.4522	0.90	|Q V	|	|	|	|
7+40	0.4584	0.90	|Q V	|	|	|	|
7+45	0.4647	0.91	|Q V	|	|	|	|
7+50	0.4709	0.91	|Q V	|	|	|	|
7+55	0.4772	0.92	|Q V	|	|	|	|
8+ 0	0.4836	0.92	|Q V	|	|	|	|
8+ 5	0.4900	0.93	|Q V	|	|	|	|
8+10	0.4964	0.93	|Q V	|	|	|	|
8+15	0.5029	0.94	|Q V	|	|	|	|
8+20	0.5094	0.94	|Q V	|	|	|	|
8+25	0.5159	0.95	|Q V	|	|	|	|
8+30	0.5225	0.96	|Q V	|	|	|	|
8+35	0.5291	0.96	|Q V	|	|	|	|
8+40	0.5358	0.97	|Q V	|	|	|	|
8+45	0.5425	0.98	|Q V	|	|	|	|

```
 8+50       0.5493      0.98  |Q     V  |          |          |          |
 8+55       0.5561      0.99  |Q     V  |          |          |          |
 9+ 0       0.5629      0.99  |Q     V  |          |          |          |
 9+ 5       0.5698      1.00  |Q     V  |          |          |          |
 9+10       0.5768      1.01  |Q     V  |          |          |          |
 9+15       0.5838      1.02  |Q     V  |          |          |          |
 9+20       0.5908      1.02  |Q     V  |          |          |          |
 9+25       0.5979      1.03  |Q     V  |          |          |          |
 9+30       0.6051      1.04  |Q     V  |          |          |          |
 9+35       0.6123      1.05  |Q     V  |          |          |          |
 9+40       0.6195      1.05  |Q     V  |          |          |          |
 9+45       0.6268      1.06  |Q      V |          |          |          |
 9+50       0.6342      1.07  |Q      V |          |          |          |
 9+55       0.6416      1.08  |Q      V |          |          |          |
10+ 0       0.6491      1.09  |Q      V |          |          |          |
10+ 5       0.6567      1.10  |Q      V |          |          |          |
10+10       0.6643      1.10  |Q      V |          |          |          |
10+15       0.6719      1.11  |Q      V |          |          |          |
10+20       0.6797      1.12  |Q      V |          |          |          |
10+25       0.6875      1.13  |Q      V |          |          |          |
10+30       0.6953      1.14  |Q      V |          |          |          |
10+35       0.7032      1.15  |Q       V|          |          |          |
10+40       0.7112      1.16  |Q       V|          |          |          |
10+45       0.7193      1.17  |Q       V|          |          |          |
10+50       0.7275      1.18  |Q       V|          |          |          |
10+55       0.7357      1.19  |Q       V|          |          |          |
11+ 0       0.7440      1.20  |Q       V|          |          |          |
11+ 5       0.7524      1.22  |Q       V|          |          |          |
11+10       0.7608      1.23  |Q       V|          |          |          |
11+15       0.7694      1.24  |Q       V|          |          |          |
11+20       0.7780      1.25  |Q       V|          |          |          |
11+25       0.7867      1.27  |Q        V          |          |          |
11+30       0.7955      1.28  |Q        V          |          |          |
11+35       0.8044      1.29  |Q        V          |          |          |
11+40       0.8134      1.31  |Q        V          |          |          |
11+45       0.8225      1.32  |Q        V          |          |          |
11+50       0.8317      1.33  |Q        V          |          |          |
11+55       0.8410      1.35  |Q        V          |          |          |
12+ 0       0.8504      1.37  |Q        V          |          |          |
12+ 5       0.8599      1.38  |Q        |V         |          |          |
12+10       0.8693      1.37  |Q        |V         |          |          |
12+15       0.8786      1.35  |Q        |V         |          |          |
12+20       0.8879      1.35  |Q        |V         |          |          |
12+25       0.8973      1.37  |Q        |V         |          |          |
12+30       0.9068      1.38  |Q        |V         |          |          |
12+35       0.9165      1.40  |Q        |V         |          |          |
12+40       0.9263      1.42  |Q        |V         |          |          |
12+45       0.9362      1.44  |Q        | V        |          |          |
12+50       0.9463      1.47  |Q        | V        |          |          |
12+55       0.9566      1.49  |Q        | V        |          |          |
13+ 0       0.9670      1.51  | Q       | V        |          |          |
13+ 5       0.9776      1.54  | Q       | V        |          |          |
13+10       0.9883      1.56  | Q       | V        |          |          |
13+15       0.9993      1.59  | Q       | V        |          |          |
13+20       1.0104      1.62  | Q       | V        |          |          |
13+25       1.0217      1.65  | Q       |  V       |          |          |
13+30       1.0333      1.68  | Q       |  V       |          |          |
13+35       1.0450      1.71  | Q       |  V       |          |          |
13+40       1.0570      1.74  | Q       |  V       |          |          |
13+45       1.0693      1.78  | Q       |  V       |          |          |
13+50       1.0818      1.82  | Q       |  V       |          |          |
13+55       1.0946      1.86  | Q       |   V      |          |          |
14+ 0       1.1077      1.90  | Q       |   V      |          |          |
14+ 5       1.1211      1.95  | Q       |   V      |          |          |
14+10       1.1348      1.99  | Q       |   V      |          |          |
14+15       1.1489      2.05  | Q       |   V      |          |          |
14+20       1.1634      2.10  | Q       |   V      |          |          |
14+25       1.1783      2.16  | Q       |    V     |          |          |
14+30       1.1936      2.23  | Q       |    V     |          |          |
14+35       1.2094      2.30  |  Q      |    V     |          |          |
14+40       1.2257      2.37  |  Q      |    V     |          |          |
14+45       1.2426      2.45  |  Q      |    V     |          |          |
14+50       1.2601      2.54  |  Q      |     V    |          |          |
14+55       1.2783      2.64  |  Q      |     V    |          |          |
15+ 0       1.2972      2.75  |  Q      |     V    |          |          |
```



```
   21+20       2.9526      0.81  |Q        |         |         |      V  |
   21+25       2.9581      0.80  |Q        |         |         |      V  |
   21+30       2.9636      0.80  |Q        |         |         |       V |
   21+35       2.9690      0.79  |Q        |         |         |       V |
   21+40       2.9744      0.78  |Q        |         |         |       V |
   21+45       2.9798      0.77  |Q        |         |         |       V |
   21+50       2.9851      0.77  |Q        |         |         |       V |
   21+55       2.9903      0.76  |Q        |         |         |       V |
   22+ 0       2.9955      0.75  |Q        |         |         |       V |
   22+ 5       3.0007      0.75  Q         |         |         |       V |
   22+10       3.0058      0.74  Q         |         |         |       V |
   22+15       3.0108      0.74  Q         |         |         |       V |
   22+20       3.0159      0.73  Q         |         |         |       V |
   22+25       3.0209      0.72  Q         |         |         |       V |
   22+30       3.0258      0.72  Q         |         |         |       V |
   22+35       3.0307      0.71  Q         |         |         |       V |
   22+40       3.0356      0.71  Q         |         |         |       V |
   22+45       3.0404      0.70  Q         |         |         |        V|
   22+50       3.0452      0.70  Q         |         |         |        V|
   22+55       3.0500      0.69  Q         |         |         |        V|
   23+ 0       3.0547      0.69  Q         |         |         |        V|
   23+ 5       3.0594      0.68  Q         |         |         |        V|
   23+10       3.0641      0.68  Q         |         |         |        V|
   23+15       3.0687      0.67  Q         |         |         |        V|
   23+20       3.0733      0.67  Q         |         |         |        V|
   23+25       3.0779      0.66  Q         |         |         |        V|
   23+30       3.0824      0.66  Q         |         |         |        V|
   23+35       3.0869      0.65  Q         |         |         |        V|
   23+40       3.0914      0.65  Q         |         |         |        V|
   23+45       3.0958      0.65  Q         |         |         |        V|
   23+50       3.1003      0.64  Q         |         |         |        V|
   23+55       3.1046      0.64  Q         |         |         |        V|
   24+ 0       3.1090      0.63  Q         |         |         |        V|
   24+ 5       3.1131      0.60  Q         |         |         |        V|
   24+10       3.1159      0.41  Q         |         |         |        V|
   24+15       3.1169      0.15  Q         |         |         |        V|
   24+20       3.1172      0.04  Q         |         |         |        V|
   24+25       3.1173      0.01  Q         |         |         |        V|
   24+30       3.1174      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 6B
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 6BPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
19.10	1	0.60
Rainfall data for year 2		
19.10	6	0.70
Rainfall data for year 2		
19.10	24	1.20
Rainfall data for year 100		
19.10	1	1.00
Rainfall data for year 100		
19.10	6	1.90
Rainfall data for year 100		
19.10	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	19.10	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.91	0.100	69.0	69.0	4.49	0.121
17.19	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      19.10(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      19.10(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       230.99 (CFS))

  1                5.469                  12.633
  2               35.337                  68.991
  3               75.925                  93.756
  4               93.130                  39.742
  5               98.077                  11.427
  6               99.228                   2.657
  7              100.000                   1.784
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2219              0.2219
  2              0.2928              0.0709
  3              0.3443              0.0515
  4              0.3863              0.0420
  5              0.4224              0.0361
  6              0.4543              0.0320
  7              0.4832              0.0289
  8              0.5097              0.0265
  9              0.5343              0.0246
 10              0.5573              0.0230
 11              0.5790              0.0217
 12              0.5995              0.0205
 13              0.6182              0.0187
 14              0.6361              0.0179
 15              0.6532              0.0171
 16              0.6696              0.0164
 17              0.6854              0.0158
 18              0.7006              0.0152
 19              0.7154              0.0147
 20              0.7296              0.0143
 21              0.7434              0.0138
 22              0.7569              0.0134
 23              0.7699              0.0131
 24              0.7826              0.0127
 25              0.7950              0.0124
 26              0.8071              0.0121
```

27	0.8189	0.0118
28	0.8304	0.0115
29	0.8417	0.0113
30	0.8527	0.0110
31	0.8636	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9525	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1058	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3709	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6925	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9703	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2219	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 26.57(CFS)

++

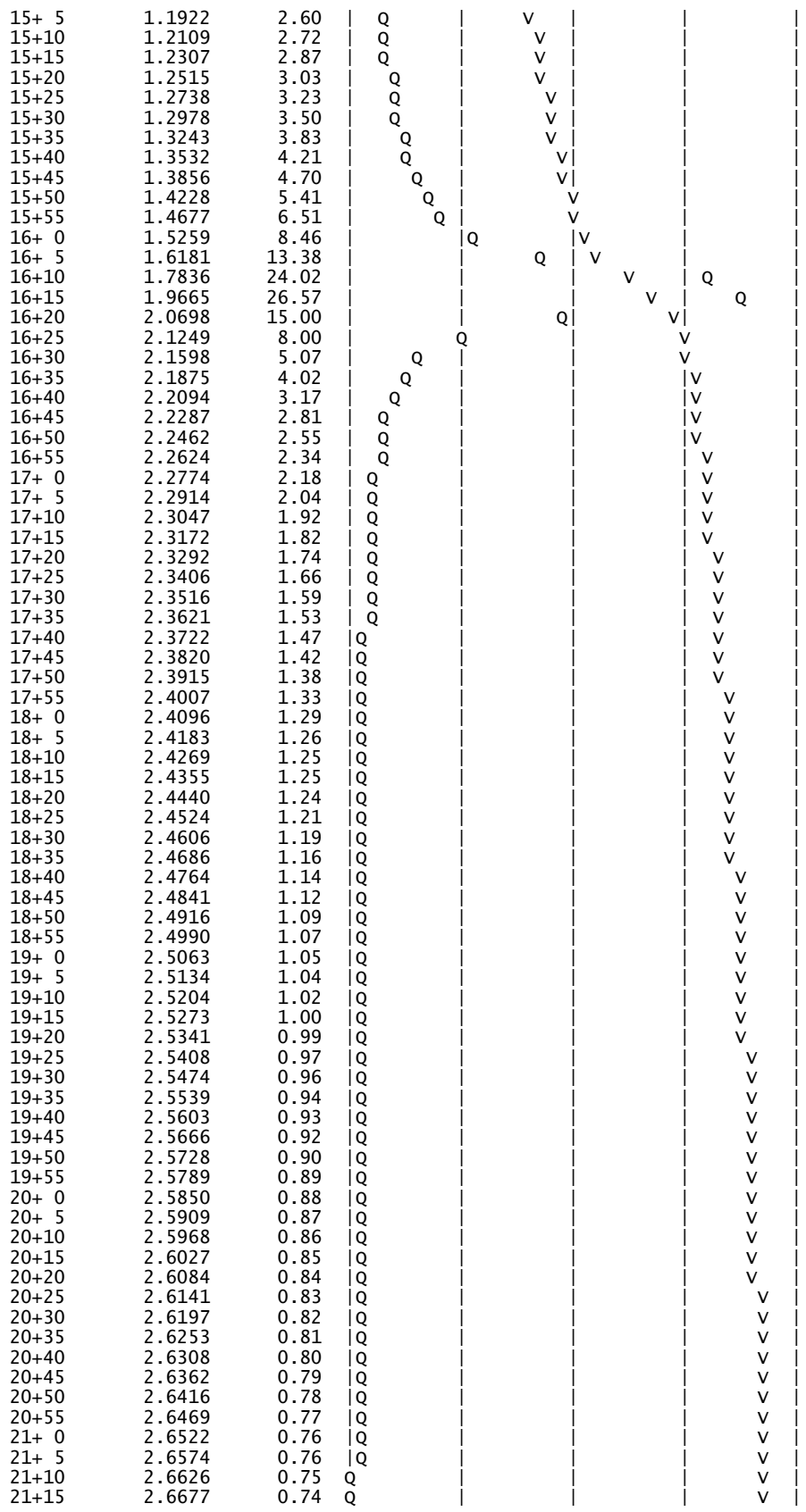
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q	|	|	|	|
0+10	0.0016	0.20	Q	|	|	|	|
0+15	0.0045	0.43	Q	|	|	|	|
0+20	0.0082	0.53	Q	|	|	|	|
0+25	0.0120	0.56	Q	|	|	|	|
0+30	0.0159	0.56	Q	|	|	|	|
0+35	0.0198	0.57	Q	|	|	|	|
0+40	0.0238	0.57	Q	|	|	|	|
0+45	0.0277	0.57	Q	|	|	|	|
0+50	0.0317	0.58	Q	|	|	|	|
0+55	0.0357	0.58	Q	|	|	|	|
1+ 0	0.0397	0.58	Q	|	|	|	|
1+ 5	0.0437	0.58	Q	|	|	|	|
1+10	0.0477	0.58	Q	|	|	|	|
1+15	0.0517	0.59	Q	|	|	|	|
1+20	0.0558	0.59	Q	|	|	|	|
1+25	0.0598	0.59	Q	|	|	|	|
1+30	0.0639	0.59	Q	|	|	|	|
1+35	0.0680	0.59	Q	|	|	|	|
1+40	0.0721	0.60	QV	|	|	|	|
1+45	0.0762	0.60	QV	|	|	|	|
1+50	0.0803	0.60	QV	|	|	|	|
1+55	0.0845	0.60	QV	|	|	|	|
2+ 0	0.0886	0.60	QV	|	|	|	|
2+ 5	0.0928	0.61	QV	|	|	|	|
2+10	0.0970	0.61	QV	|	|	|	|
2+15	0.1012	0.61	QV	|	|	|	|
2+20	0.1054	0.61	QV	|	|	|	|
2+25	0.1097	0.61	QV	|	|	|	|
2+30	0.1139	0.62	QV	|	|	|	|

2+35	0.1182	0.62	QV	|	|	|	|
2+40	0.1224	0.62	QV	|	|	|	|
2+45	0.1267	0.62	QV	|	|	|	|
2+50	0.1310	0.63	QV	|	|	|	|
2+55	0.1354	0.63	QV	|	|	|	|
3+ 0	0.1397	0.63	QV	|	|	|	|
3+ 5	0.1441	0.63	Q V	|	|	|	|
3+10	0.1484	0.64	Q V	|	|	|	|
3+15	0.1528	0.64	Q V	|	|	|	|
3+20	0.1572	0.64	Q V	|	|	|	|
3+25	0.1617	0.64	Q V	|	|	|	|
3+30	0.1661	0.64	Q V	|	|	|	|
3+35	0.1706	0.65	Q V	|	|	|	|
3+40	0.1750	0.65	Q V	|	|	|	|
3+45	0.1795	0.65	Q V	|	|	|	|
3+50	0.1840	0.65	Q V	|	|	|	|
3+55	0.1886	0.66	Q V	|	|	|	|
4+ 0	0.1931	0.66	Q V	|	|	|	|
4+ 5	0.1977	0.66	Q V	|	|	|	|
4+10	0.2023	0.67	Q V	|	|	|	|
4+15	0.2069	0.67	Q V	|	|	|	|
4+20	0.2115	0.67	Q V	|	|	|	|
4+25	0.2161	0.67	Q V	|	|	|	|
4+30	0.2208	0.68	Q V	|	|	|	|
4+35	0.2255	0.68	Q V	|	|	|	|
4+40	0.2302	0.68	Q V	|	|	|	|
4+45	0.2349	0.69	Q V	|	|	|	|
4+50	0.2396	0.69	Q V	|	|	|	|
4+55	0.2444	0.69	Q V	|	|	|	|
5+ 0	0.2492	0.69	Q V	|	|	|	|
5+ 5	0.2540	0.70	Q V	|	|	|	|
5+10	0.2588	0.70	Q V	|	|	|	|
5+15	0.2636	0.70	Q V	|	|	|	|
5+20	0.2685	0.71	Q V	|	|	|	|
5+25	0.2734	0.71	Q V	|	|	|	|
5+30	0.2783	0.71	Q V	|	|	|	|
5+35	0.2833	0.72	Q V	|	|	|	|
5+40	0.2882	0.72	Q V	|	|	|	|
5+45	0.2932	0.72	Q V	|	|	|	|
5+50	0.2982	0.73	Q V	|	|	|	|
5+55	0.3032	0.73	Q V	|	|	|	|
6+ 0	0.3083	0.73	Q V	|	|	|	|
6+ 5	0.3134	0.74	Q V	|	|	|	|
6+10	0.3185	0.74	Q V	|	|	|	|
6+15	0.3236	0.74	Q V	|	|	|	|
6+20	0.3287	0.75	Q V	|	|	|	|
6+25	0.3339	0.75	|Q V	|	|	|	|
6+30	0.3391	0.76	|Q V	|	|	|	|
6+35	0.3444	0.76	|Q V	|	|	|	|
6+40	0.3496	0.76	|Q V	|	|	|	|
6+45	0.3549	0.77	|Q V	|	|	|	|
6+50	0.3602	0.77	|Q V	|	|	|	|
6+55	0.3656	0.78	|Q V	|	|	|	|
7+ 0	0.3709	0.78	|Q V	|	|	|	|
7+ 5	0.3763	0.78	|Q V	|	|	|	|
7+10	0.3818	0.79	|Q V	|	|	|	|
7+15	0.3872	0.79	|Q V	|	|	|	|
7+20	0.3927	0.80	|Q V	|	|	|	|
7+25	0.3982	0.80	|Q V	|	|	|	|
7+30	0.4038	0.81	|Q V	|	|	|	|
7+35	0.4093	0.81	|Q V	|	|	|	|
7+40	0.4150	0.81	|Q V	|	|	|	|
7+45	0.4206	0.82	|Q V	|	|	|	|
7+50	0.4263	0.82	|Q V	|	|	|	|
7+55	0.4320	0.83	|Q V	|	|	|	|
8+ 0	0.4377	0.83	|Q V	|	|	|	|
8+ 5	0.4435	0.84	|Q V	|	|	|	|
8+10	0.4493	0.84	|Q V	|	|	|	|
8+15	0.4552	0.85	|Q V	|	|	|	|
8+20	0.4611	0.85	|Q V	|	|	|	|
8+25	0.4670	0.86	|Q V	|	|	|	|
8+30	0.4730	0.87	|Q V	|	|	|	|
8+35	0.4790	0.87	|Q V	|	|	|	|
8+40	0.4850	0.88	|Q V	|	|	|	|
8+45	0.4911	0.88	|Q V	|	|	|	|

8+50	0.4972	0.89	Q	V			
8+55	0.5034	0.89	Q	V			
9+ 0	0.5096	0.90	Q	V			
9+ 5	0.5158	0.91	Q	V			
9+10	0.5221	0.91	Q	V			
9+15	0.5284	0.92	Q	V			
9+20	0.5348	0.93	Q	V			
9+25	0.5412	0.93	Q	V			
9+30	0.5477	0.94	Q	V			
9+35	0.5542	0.95	Q	V			
9+40	0.5608	0.95	Q	V			
9+45	0.5674	0.96	Q	V			
9+50	0.5741	0.97	Q	V			
9+55	0.5808	0.98	Q	V			
10+ 0	0.5876	0.98	Q	V			
10+ 5	0.5944	0.99	Q	V			
10+10	0.6013	1.00	Q	V			
10+15	0.6082	1.01	Q	V			
10+20	0.6152	1.02	Q	V			
10+25	0.6223	1.02	Q	V			
10+30	0.6294	1.03	Q	V			
10+35	0.6366	1.04	Q	V			
10+40	0.6438	1.05	Q	V			
10+45	0.6511	1.06	Q	V			
10+50	0.6585	1.07	Q	V			
10+55	0.6660	1.08	Q	V			
11+ 0	0.6735	1.09	Q	V			
11+ 5	0.6810	1.10	Q	V			
11+10	0.6887	1.11	Q	V			
11+15	0.6964	1.12	Q	V			
11+20	0.7042	1.13	Q	V			
11+25	0.7121	1.15	Q	V			
11+30	0.7201	1.16	Q	V			
11+35	0.7282	1.17	Q	V			
11+40	0.7363	1.18	Q	V			
11+45	0.7445	1.20	Q	V			
11+50	0.7529	1.21	Q	V			
11+55	0.7613	1.22	Q	V			
12+ 0	0.7698	1.24	Q	V			
12+ 5	0.7784	1.25	Q	V			
12+10	0.7869	1.24	Q	V			
12+15	0.7953	1.22	Q	V			
12+20	0.8037	1.22	Q	V			
12+25	0.8123	1.24	Q	V			
12+30	0.8209	1.25	Q	V			
12+35	0.8296	1.27	Q	V			
12+40	0.8385	1.29	Q	V			
12+45	0.8475	1.31	Q	V			
12+50	0.8566	1.33	Q	V			
12+55	0.8659	1.35	Q	V			
13+ 0	0.8753	1.37	Q	V			
13+ 5	0.8849	1.39	Q	V			
13+10	0.8946	1.41	Q	V			
13+15	0.9045	1.44	Q	V			
13+20	0.9146	1.46	Q	V			
13+25	0.9249	1.49	Q	V			
13+30	0.9353	1.52	Q	V			
13+35	0.9460	1.55	Q	V			
13+40	0.9569	1.58	Q	V			
13+45	0.9679	1.61	Q	V			
13+50	0.9793	1.64	Q	V			
13+55	0.9908	1.68	Q	V			
14+ 0	1.0027	1.72	Q	V			
14+ 5	1.0148	1.76	Q	V			
14+10	1.0272	1.80	Q	V			
14+15	1.0400	1.85	Q	V			
14+20	1.0531	1.90	Q	V			
14+25	1.0666	1.96	Q	V			
14+30	1.0805	2.01	Q	V			
14+35	1.0948	2.08	Q	V			
14+40	1.1095	2.14	Q	V			
14+45	1.1248	2.22	Q	V			
14+50	1.1407	2.30	Q	V			
14+55	1.1571	2.39	Q	V			
15+ 0	1.1743	2.49	Q	V			



```
   21+20       2.6727      0.73  Q          |          |          |      V  |
   21+25       2.6778      0.73  Q          |          |          |      V  |
   21+30       2.6827      0.72  Q          |          |          |       V |
   21+35       2.6876      0.71  Q          |          |          |       V |
   21+40       2.6925      0.71  Q          |          |          |       V |
   21+45       2.6973      0.70  Q          |          |          |       V |
   21+50       2.7021      0.70  Q          |          |          |       V |
   21+55       2.7069      0.69  Q          |          |          |       V |
   22+ 0       2.7116      0.68  Q          |          |          |       V |
   22+ 5       2.7163      0.68  Q          |          |          |       V |
   22+10       2.7209      0.67  Q          |          |          |       V |
   22+15       2.7255      0.67  Q          |          |          |       V |
   22+20       2.7300      0.66  Q          |          |          |       V |
   22+25       2.7345      0.66  Q          |          |          |       V |
   22+30       2.7390      0.65  Q          |          |          |       V |
   22+35       2.7435      0.65  Q          |          |          |       V |
   22+40       2.7479      0.64  Q          |          |          |       V |
   22+45       2.7523      0.64  Q          |          |          |        V|
   22+50       2.7566      0.63  Q          |          |          |        V|
   22+55       2.7609      0.63  Q          |          |          |        V|
   23+ 0       2.7652      0.62  Q          |          |          |        V|
   23+ 5       2.7695      0.62  Q          |          |          |        V|
   23+10       2.7737      0.61  Q          |          |          |        V|
   23+15       2.7779      0.61  Q          |          |          |        V|
   23+20       2.7820      0.60  Q          |          |          |        V|
   23+25       2.7862      0.60  Q          |          |          |        V|
   23+30       2.7903      0.60  Q          |          |          |        V|
   23+35       2.7943      0.59  Q          |          |          |        V|
   23+40       2.7984      0.59  Q          |          |          |        V|
   23+45       2.8024      0.58  Q          |          |          |        V|
   23+50       2.8064      0.58  Q          |          |          |        V|
   23+55       2.8104      0.58  Q          |          |          |        V|
   24+ 0       2.8143      0.57  Q          |          |          |        V|
   24+ 5       2.8180      0.54  Q          |          |          |        V|
   24+10       2.8206      0.37  Q          |          |          |        V|
   24+15       2.8215      0.14  Q          |          |          |        V|
   24+20       2.8218      0.04  Q          |          |          |        V|
   24+25       2.8219      0.01  Q          |          |          |        V|
   24+30       2.8219      0.00  Q          |          |          |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 6C
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 6CPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	18.20	1	0.60
Rainfall data for year 2	18.20	6	0.70
Rainfall data for year 2	18.20	24	1.20
Rainfall data for year 100	18.20	1	1.00
Rainfall data for year 100	18.20	6	1.90
Rainfall data for year 100	18.20	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	18.20	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.82	0.100	69.0	69.0	4.49	0.121
16.38	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.180 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      18.20(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.8704
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      18.20(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       220.11 (CFS))

  1                6.077                  13.375
  2               39.009                  72.487
  3               79.564                  89.263
  4               94.634                  33.171
  5               98.466                   8.434
  6               99.524                   2.328
  7              100.000                   1.048
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2219              0.2219
  2              0.2928              0.0709
  3              0.3443              0.0515
  4              0.3863              0.0420
  5              0.4224              0.0361
  6              0.4543              0.0320
  7              0.4832              0.0289
  8              0.5097              0.0265
  9              0.5343              0.0246
 10              0.5573              0.0230
 11              0.5790              0.0217
 12              0.5995              0.0205
 13              0.6182              0.0187
 14              0.6361              0.0179
 15              0.6532              0.0171
 16              0.6696              0.0164
 17              0.6854              0.0158
 18              0.7007              0.0152
 19              0.7154              0.0147
 20              0.7296              0.0143
 21              0.7434              0.0138
 22              0.7569              0.0134
 23              0.7699              0.0131
 24              0.7826              0.0127
 25              0.7950              0.0124
 26              0.8071              0.0121
```

27	0.8189	0.0118
28	0.8304	0.0115
29	0.8417	0.0113
30	0.8528	0.0110
31	0.8636	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9525	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1058	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1408	0.0069
65	1.1477	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2837	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3710	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5154	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6884	0.0041
169	1.6925	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8854	0.0035
221	1.8889	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9703	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0086
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2219	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 25.13(CFS)

++

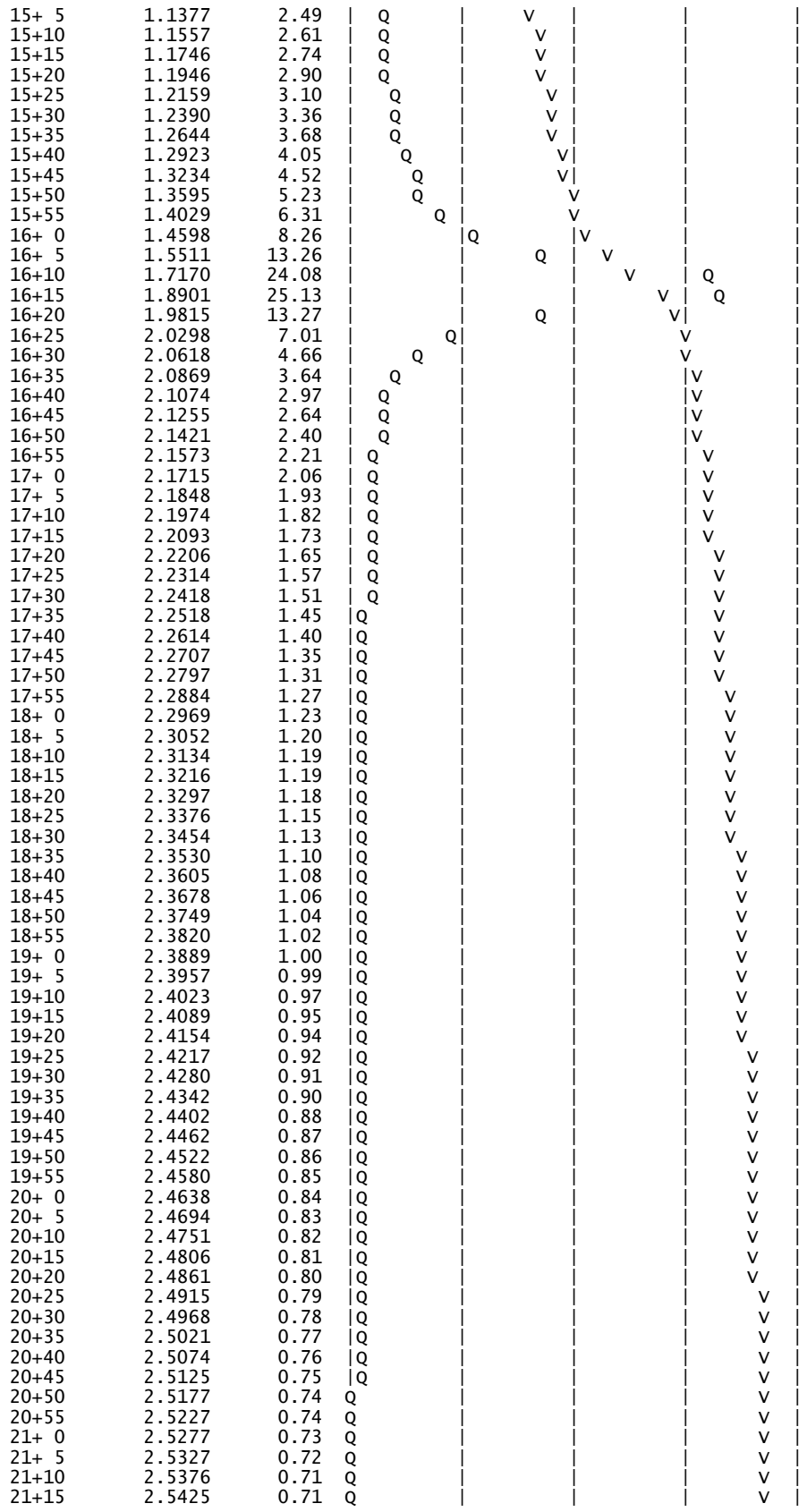
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q				
0+10	0.0017	0.21	Q				
0+15	0.0046	0.43	Q				
0+20	0.0081	0.51	Q				
0+25	0.0118	0.53	Q				
0+30	0.0155	0.54	Q				
0+35	0.0193	0.54	Q				
0+40	0.0230	0.55	Q				
0+45	0.0268	0.55	Q				
0+50	0.0306	0.55	Q				
0+55	0.0344	0.55	Q				
1+ 0	0.0382	0.55	Q				
1+ 5	0.0420	0.55	Q				
1+10	0.0458	0.56	Q				
1+15	0.0497	0.56	Q				
1+20	0.0535	0.56	Q				
1+25	0.0574	0.56	Q				
1+30	0.0613	0.56	Q				
1+35	0.0652	0.57	Q				
1+40	0.0691	0.57	QV				
1+45	0.0730	0.57	QV				
1+50	0.0770	0.57	QV				
1+55	0.0809	0.57	QV				
2+ 0	0.0849	0.58	QV				
2+ 5	0.0888	0.58	QV				
2+10	0.0928	0.58	QV				
2+15	0.0968	0.58	QV				
2+20	0.1009	0.58	QV				
2+25	0.1049	0.59	QV				
2+30	0.1089	0.59	QV				

2+35	0.1130	0.59	QV				
2+40	0.1171	0.59	QV				
2+45	0.1212	0.59	QV				
2+50	0.1253	0.60	QV				
2+55	0.1294	0.60	QV				
3+ 0	0.1335	0.60	QV				
3+ 5	0.1377	0.60	Q V				
3+10	0.1419	0.61	Q V				
3+15	0.1460	0.61	Q V				
3+20	0.1502	0.61	Q V				
3+25	0.1545	0.61	Q V				
3+30	0.1587	0.61	Q V				
3+35	0.1629	0.62	Q V				
3+40	0.1672	0.62	Q V				
3+45	0.1715	0.62	Q V				
3+50	0.1758	0.62	Q V				
3+55	0.1801	0.63	Q V				
4+ 0	0.1845	0.63	Q V				
4+ 5	0.1888	0.63	Q V				
4+10	0.1932	0.63	Q V				
4+15	0.1976	0.64	Q V				
4+20	0.2020	0.64	Q V				
4+25	0.2064	0.64	Q V				
4+30	0.2108	0.65	Q V				
4+35	0.2153	0.65	Q V				
4+40	0.2198	0.65	Q V				
4+45	0.2243	0.65	Q V				
4+50	0.2288	0.66	Q V				
4+55	0.2333	0.66	Q V				
5+ 0	0.2379	0.66	Q V				
5+ 5	0.2425	0.66	Q V				
5+10	0.2471	0.67	Q V				
5+15	0.2517	0.67	Q V				
5+20	0.2563	0.67	Q V				
5+25	0.2610	0.68	Q V				
5+30	0.2657	0.68	Q V				
5+35	0.2704	0.68	Q V				
5+40	0.2751	0.69	Q V				
5+45	0.2799	0.69	Q V				
5+50	0.2846	0.69	Q V				
5+55	0.2894	0.70	Q V				
6+ 0	0.2942	0.70	Q V				
6+ 5	0.2991	0.70	Q V				
6+10	0.3039	0.71	Q V				
6+15	0.3088	0.71	Q V				
6+20	0.3137	0.71	Q V				
6+25	0.3187	0.72	Q V				
6+30	0.3236	0.72	Q V				
6+35	0.3286	0.72	Q V				
6+40	0.3336	0.73	Q V				
6+45	0.3387	0.73	Q V				
6+50	0.3438	0.74	Q V				
6+55	0.3488	0.74	Q V				
7+ 0	0.3540	0.74	Q V				
7+ 5	0.3591	0.75	Q V				
7+10	0.3643	0.75	|Q V				
7+15	0.3695	0.76	|Q V				
7+20	0.3747	0.76	|Q V				
7+25	0.3800	0.76	|Q V				
7+30	0.3853	0.77	|Q V				
7+35	0.3906	0.77	|Q V				
7+40	0.3959	0.78	|Q V				
7+45	0.4013	0.78	|Q V				
7+50	0.4067	0.79	|Q V				
7+55	0.4122	0.79	|Q V				
8+ 0	0.4177	0.80	|Q V				
8+ 5	0.4232	0.80	|Q V				
8+10	0.4287	0.81	|Q V				
8+15	0.4343	0.81	|Q V				
8+20	0.4399	0.82	|Q V				
8+25	0.4456	0.82	|Q V				
8+30	0.4513	0.83	|Q V				
8+35	0.4570	0.83	|Q V				
8+40	0.4627	0.84	|Q V				
8+45	0.4685	0.84	|Q V				

8+50	0.4744	0.85	Q	V			
8+55	0.4802	0.85	Q	V			
9+ 0	0.4862	0.86	Q	V			
9+ 5	0.4921	0.86	Q	V			
9+10	0.4981	0.87	Q	V			
9+15	0.5042	0.88	Q	V			
9+20	0.5102	0.88	Q	V			
9+25	0.5164	0.89	Q	V			
9+30	0.5225	0.90	Q	V			
9+35	0.5287	0.90	Q	V			
9+40	0.5350	0.91	Q	V			
9+45	0.5413	0.92	Q	V			
9+50	0.5477	0.92	Q	V			
9+55	0.5541	0.93	Q	V			
10+ 0	0.5606	0.94	Q	V			
10+ 5	0.5671	0.95	Q	V			
10+10	0.5736	0.95	Q	V			
10+15	0.5802	0.96	Q	V			
10+20	0.5869	0.97	Q	V			
10+25	0.5936	0.98	Q	V			
10+30	0.6004	0.99	Q	V			
10+35	0.6073	0.99	Q	V			
10+40	0.6142	1.00	Q	V			
10+45	0.6212	1.01	Q	V			
10+50	0.6282	1.02	Q	V			
10+55	0.6353	1.03	Q	V			
11+ 0	0.6425	1.04	Q	V			
11+ 5	0.6497	1.05	Q	V			
11+10	0.6570	1.06	Q	V			
11+15	0.6644	1.07	Q	V			
11+20	0.6718	1.08	Q	V			
11+25	0.6793	1.09	Q	V			
11+30	0.6869	1.10	Q	V			
11+35	0.6946	1.12	Q	V			
11+40	0.7024	1.13	Q	V			
11+45	0.7102	1.14	Q	V			
11+50	0.7182	1.15	Q	V			
11+55	0.7262	1.17	Q	V			
12+ 0	0.7343	1.18	Q	V			
12+ 5	0.7425	1.19	Q	V			
12+10	0.7506	1.18	Q	V			
12+15	0.7587	1.16	Q	V			
12+20	0.7667	1.17	Q	V			
12+25	0.7748	1.18	Q	V			
12+30	0.7830	1.19	Q	V			
12+35	0.7914	1.21	Q	V			
12+40	0.7998	1.23	Q	V			
12+45	0.8084	1.25	Q	V			
12+50	0.8171	1.27	Q	V			
12+55	0.8260	1.29	Q	V			
13+ 0	0.8350	1.31	Q	V			
13+ 5	0.8441	1.33	Q	V			
13+10	0.8534	1.35	Q	V			
13+15	0.8629	1.37	Q	V			
13+20	0.8725	1.40	Q	V			
13+25	0.8823	1.42	Q	V			
13+30	0.8923	1.45	Q	V			
13+35	0.9024	1.48	Q	V			
13+40	0.9128	1.51	Q	V			
13+45	0.9234	1.54	Q	V			
13+50	0.9342	1.57	Q	V			
13+55	0.9453	1.61	Q	V			
14+ 0	0.9566	1.64	Q	V			
14+ 5	0.9682	1.68	Q	V			
14+10	0.9800	1.72	Q	V			
14+15	0.9922	1.77	Q	V			
14+20	1.0048	1.82	Q	V			
14+25	1.0176	1.87	Q	V			
14+30	1.0309	1.93	Q	V			
14+35	1.0446	1.99	Q	V			
14+40	1.0587	2.05	Q	V			
14+45	1.0733	2.12	Q	V			
14+50	1.0884	2.20	Q	V			
14+55	1.1042	2.29	Q	V			
15+ 0	1.1206	2.38	Q	V			



```
   21+20       2.5473      0.70  Q          |          |          |      V  |
   21+25       2.5521      0.69  Q          |          |          |      V  |
   21+30       2.5568      0.69  Q          |          |          |       V |
   21+35       2.5615      0.68  Q          |          |          |       V |
   21+40       2.5661      0.67  Q          |          |          |       V |
   21+45       2.5707      0.67  Q          |          |          |       V |
   21+50       2.5753      0.66  Q          |          |          |       V |
   21+55       2.5798      0.66  Q          |          |          |       V |
   22+ 0       2.5843      0.65  Q          |          |          |       V |
   22+ 5       2.5887      0.65  Q          |          |          |       V |
   22+10       2.5931      0.64  Q          |          |          |       V |
   22+15       2.5975      0.63  Q          |          |          |       V |
   22+20       2.6018      0.63  Q          |          |          |       V |
   22+25       2.6061      0.62  Q          |          |          |       V |
   22+30       2.6104      0.62  Q          |          |          |       V |
   22+35       2.6146      0.61  Q          |          |          |       V |
   22+40       2.6188      0.61  Q          |          |          |       V |
   22+45       2.6230      0.61  Q          |          |          |        V|
   22+50       2.6271      0.60  Q          |          |          |        V|
   22+55       2.6312      0.60  Q          |          |          |        V|
   23+ 0       2.6353      0.59  Q          |          |          |        V|
   23+ 5       2.6394      0.59  Q          |          |          |        V|
   23+10       2.6434      0.58  Q          |          |          |        V|
   23+15       2.6474      0.58  Q          |          |          |        V|
   23+20       2.6513      0.58  Q          |          |          |        V|
   23+25       2.6553      0.57  Q          |          |          |        V|
   23+30       2.6592      0.57  Q          |          |          |        V|
   23+35       2.6631      0.56  Q          |          |          |        V|
   23+40       2.6669      0.56  Q          |          |          |        V|
   23+45       2.6708      0.56  Q          |          |          |        V|
   23+50       2.6746      0.55  Q          |          |          |        V|
   23+55       2.6784      0.55  Q          |          |          |        V|
   24+ 0       2.6821      0.55  Q          |          |          |        V|
   24+ 5       2.6856      0.51  Q          |          |          |        V|
   24+10       2.6879      0.33  Q          |          |          |        V|
   24+15       2.6887      0.11  Q          |          |          |        V|
   24+20       2.6889      0.03  Q          |          |          |        V|
   24+25       2.6889      0.01  Q          |          |          |        V|
   24+30       2.6889      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 6D
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 6DPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
16.50	1	0.60
Rainfall data for year 2		
16.50	6	0.70
Rainfall data for year 2		
16.50	24	1.20
Rainfall data for year 100		
16.50	1	1.00
Rainfall data for year 100		
16.50	6	1.90
Rainfall data for year 100		
16.50	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	16.50	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.65	0.100	69.0	69.0	4.49	0.121
14.85	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.170 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      16.50(Ac.)
Catchment Lag time =   0.136 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 61.2745
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      16.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.600(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       199.55 (CFS))

  1                6.789                  13.548
  2               43.210                  72.677
  3               82.892                  79.184
  4               95.987                  26.130
  5               98.763                   5.540
  6              100.000                   2.468
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2219              0.2219
  2              0.2928              0.0709
  3              0.3443              0.0516
  4              0.3863              0.0420
  5              0.4224              0.0361
  6              0.4544              0.0320
  7              0.4833              0.0289
  8              0.5098              0.0265
  9              0.5344              0.0246
 10              0.5574              0.0230
 11              0.5790              0.0217
 12              0.5995              0.0205
 13              0.6183              0.0187
 14              0.6361              0.0179
 15              0.6533              0.0171
 16              0.6697              0.0164
 17              0.6855              0.0158
 18              0.7007              0.0152
 19              0.7154              0.0147
 20              0.7297              0.0143
 21              0.7435              0.0138
 22              0.7569              0.0134
 23              0.7699              0.0130
 24              0.7827              0.0127
 25              0.7950              0.0124
 26              0.8071              0.0121
 27              0.8189              0.0118
```

28	0.8304	0.0115
29	0.8417	0.0113
30	0.8528	0.0110
31	0.8636	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9433	0.0094
40	0.9525	0.0092
41	0.9615	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9965	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0297	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0612	0.0077
54	1.0688	0.0076
55	1.0764	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1058	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1408	0.0069
65	1.1477	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2714	0.0062
85	1.2775	0.0062
86	1.2837	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3710	0.0056
102	1.3765	0.0055

103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5154	0.0048
130	1.5202	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6250	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6760	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6884	0.0041
169	1.6925	0.0041
170	1.6966	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040
177	1.7248	0.0040

178	1.7288	0.0040
179	1.7328	0.0040
180	1.7367	0.0040
181	1.7407	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8021	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8713	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8854	0.0035
221	1.8889	0.0035
222	1.8924	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9703	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032
252	1.9931	0.0032

253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0440	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0961	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1051	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027
34	0.0033	0.0006	0.0027

35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039
109	0.0049	0.0009	0.0040

110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0086
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0098
177	0.0127	0.0023	0.0104
178	0.0130	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139
184	0.0179	0.0033	0.0146

185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0516	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2219	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031
259	0.0037	0.0007	0.0030

260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 23.02(CFS)

++

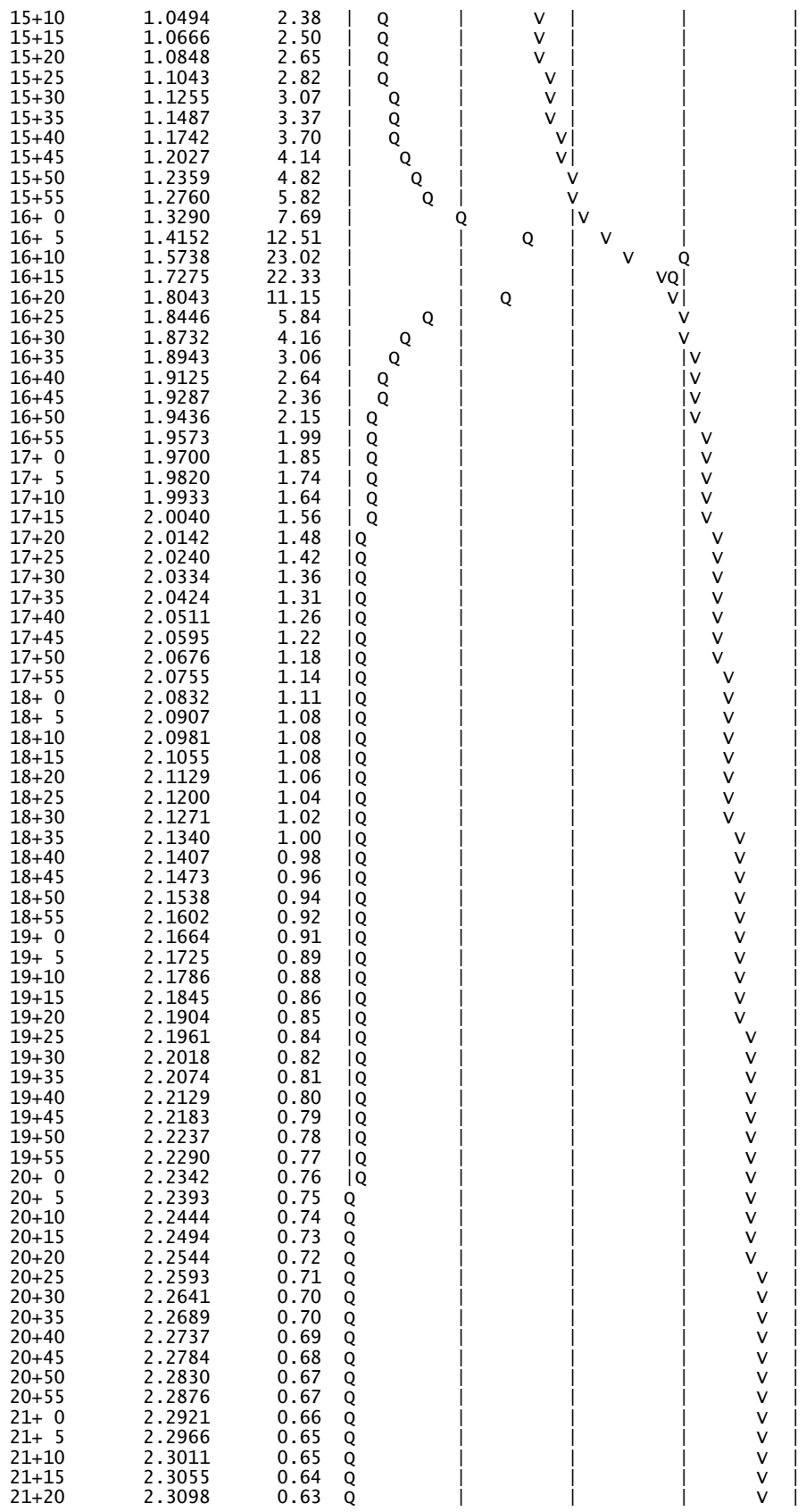
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q	|	|	|	|
0+10	0.0017	0.21	Q	|	|	|	|
0+15	0.0045	0.40	Q	|	|	|	|
0+20	0.0077	0.47	Q	|	|	|	|
0+25	0.0110	0.48	Q	|	|	|	|
0+30	0.0144	0.49	Q	|	|	|	|
0+35	0.0178	0.49	Q	|	|	|	|
0+40	0.0212	0.49	Q	|	|	|	|
0+45	0.0246	0.50	Q	|	|	|	|
0+50	0.0281	0.50	Q	|	|	|	|
0+55	0.0315	0.50	Q	|	|	|	|
1+ 0	0.0350	0.50	Q	|	|	|	|
1+ 5	0.0384	0.50	Q	|	|	|	|
1+10	0.0419	0.50	Q	|	|	|	|
1+15	0.0454	0.51	Q	|	|	|	|
1+20	0.0489	0.51	Q	|	|	|	|
1+25	0.0524	0.51	Q	|	|	|	|
1+30	0.0559	0.51	Q	|	|	|	|
1+35	0.0595	0.51	Q	|	|	|	|
1+40	0.0630	0.51	QV	|	|	|	|
1+45	0.0666	0.52	QV	|	|	|	|
1+50	0.0701	0.52	QV	|	|	|	|
1+55	0.0737	0.52	QV	|	|	|	|
2+ 0	0.0773	0.52	QV	|	|	|	|
2+ 5	0.0809	0.52	QV	|	|	|	|
2+10	0.0845	0.53	QV	|	|	|	|
2+15	0.0882	0.53	QV	|	|	|	|
2+20	0.0918	0.53	QV	|	|	|	|
2+25	0.0955	0.53	QV	|	|	|	|
2+30	0.0991	0.53	QV	|	|	|	|
2+35	0.1028	0.53	QV	|	|	|	|

2+40	0.1065	0.54	QV	|	|	|	|
2+45	0.1102	0.54	QV	|	|	|	|
2+50	0.1140	0.54	QV	|	|	|	|
2+55	0.1177	0.54	QV	|	|	|	|
3+ 0	0.1215	0.54	QV	|	|	|	|
3+ 5	0.1252	0.55	Q V	|	|	|	|
3+10	0.1290	0.55	Q V	|	|	|	|
3+15	0.1328	0.55	Q V	|	|	|	|
3+20	0.1366	0.55	Q V	|	|	|	|
3+25	0.1404	0.56	Q V	|	|	|	|
3+30	0.1443	0.56	Q V	|	|	|	|
3+35	0.1481	0.56	Q V	|	|	|	|
3+40	0.1520	0.56	Q V	|	|	|	|
3+45	0.1559	0.56	Q V	|	|	|	|
3+50	0.1598	0.57	Q V	|	|	|	|
3+55	0.1637	0.57	Q V	|	|	|	|
4+ 0	0.1676	0.57	Q V	|	|	|	|
4+ 5	0.1716	0.57	Q V	|	|	|	|
4+10	0.1755	0.58	Q V	|	|	|	|
4+15	0.1795	0.58	Q V	|	|	|	|
4+20	0.1835	0.58	Q V	|	|	|	|
4+25	0.1875	0.58	Q V	|	|	|	|
4+30	0.1916	0.59	Q V	|	|	|	|
4+35	0.1956	0.59	Q V	|	|	|	|
4+40	0.1997	0.59	Q V	|	|	|	|
4+45	0.2038	0.59	Q V	|	|	|	|
4+50	0.2078	0.60	Q V	|	|	|	|
4+55	0.2120	0.60	Q V	|	|	|	|
5+ 0	0.2161	0.60	Q V	|	|	|	|
5+ 5	0.2203	0.60	Q V	|	|	|	|
5+10	0.2244	0.61	Q V	|	|	|	|
5+15	0.2286	0.61	Q V	|	|	|	|
5+20	0.2328	0.61	Q V	|	|	|	|
5+25	0.2371	0.61	Q V	|	|	|	|
5+30	0.2413	0.62	Q V	|	|	|	|
5+35	0.2456	0.62	Q V	|	|	|	|
5+40	0.2499	0.62	Q V	|	|	|	|
5+45	0.2542	0.63	Q V	|	|	|	|
5+50	0.2585	0.63	Q V	|	|	|	|
5+55	0.2628	0.63	Q V	|	|	|	|
6+ 0	0.2672	0.63	Q V	|	|	|	|
6+ 5	0.2716	0.64	Q V	|	|	|	|
6+10	0.2760	0.64	Q V	|	|	|	|
6+15	0.2804	0.64	Q V	|	|	|	|
6+20	0.2849	0.65	Q V	|	|	|	|
6+25	0.2894	0.65	Q V	|	|	|	|
6+30	0.2939	0.65	Q V	|	|	|	|
6+35	0.2984	0.66	Q V	|	|	|	|
6+40	0.3030	0.66	Q V	|	|	|	|
6+45	0.3075	0.66	Q V	|	|	|	|
6+50	0.3121	0.67	Q V	|	|	|	|
6+55	0.3167	0.67	Q V	|	|	|	|
7+ 0	0.3214	0.67	Q V	|	|	|	|
7+ 5	0.3261	0.68	Q V	|	|	|	|
7+10	0.3307	0.68	Q V	|	|	|	|
7+15	0.3355	0.69	Q V	|	|	|	|
7+20	0.3402	0.69	Q V	|	|	|	|
7+25	0.3450	0.69	Q V	|	|	|	|
7+30	0.3498	0.70	Q V	|	|	|	|
7+35	0.3546	0.70	Q V	|	|	|	|
7+40	0.3595	0.70	Q V	|	|	|	|
7+45	0.3643	0.71	Q V	|	|	|	|
7+50	0.3693	0.71	Q V	|	|	|	|
7+55	0.3742	0.72	Q V	|	|	|	|
8+ 0	0.3792	0.72	Q V	|	|	|	|
8+ 5	0.3842	0.73	Q V	|	|	|	|
8+10	0.3892	0.73	Q V	|	|	|	|
8+15	0.3943	0.73	Q V	|	|	|	|
8+20	0.3994	0.74	Q V	|	|	|	|
8+25	0.4045	0.74	Q V	|	|	|	|
8+30	0.4096	0.75	Q V	|	|	|	|
8+35	0.4148	0.75	|Q V	|	|	|	|
8+40	0.4201	0.76	|Q V	|	|	|	|
8+45	0.4253	0.76	|Q V	|	|	|	|
8+50	0.4306	0.77	|Q V	|	|	|	|

8+55	0.4359	0.77	Q V				
9+ 0	0.4413	0.78	Q V				
9+ 5	0.4467	0.78	Q V				
9+10	0.4521	0.79	Q V				
9+15	0.4576	0.80	Q V				
9+20	0.4631	0.80	Q V				
9+25	0.4687	0.81	Q V				
9+30	0.4743	0.81	Q V				
9+35	0.4799	0.82	Q V				
9+40	0.4856	0.83	Q V				
9+45	0.4914	0.83	Q V				
9+50	0.4971	0.84	Q V				
9+55	0.5029	0.84	Q V				
10+ 0	0.5088	0.85	Q V				
10+ 5	0.5147	0.86	Q V				
10+10	0.5207	0.86	Q V				
10+15	0.5267	0.87	Q V				
10+20	0.5327	0.88	Q V				
10+25	0.5388	0.89	Q V				
10+30	0.5450	0.89	Q V				
10+35	0.5512	0.90	Q V				
10+40	0.5575	0.91	Q V				
10+45	0.5638	0.92	Q V				
10+50	0.5702	0.93	Q V				
10+55	0.5766	0.94	Q V				
11+ 0	0.5831	0.94	Q V				
11+ 5	0.5897	0.95	Q V				
11+10	0.5963	0.96	Q V				
11+15	0.6030	0.97	Q V				
11+20	0.6098	0.98	Q V				
11+25	0.6166	0.99	Q V				
11+30	0.6235	1.00	Q V				
11+35	0.6305	1.01	Q V				
11+40	0.6375	1.02	Q V				
11+45	0.6446	1.03	Q V				
11+50	0.6518	1.05	Q V				
11+55	0.6591	1.06	Q V				
12+ 0	0.6665	1.07	Q V				
12+ 5	0.6739	1.08	Q V				
12+10	0.6813	1.07	Q V				
12+15	0.6885	1.05	Q V				
12+20	0.6958	1.06	Q V				
12+25	0.7032	1.07	Q V				
12+30	0.7107	1.08	Q V				
12+35	0.7182	1.10	Q V				
12+40	0.7259	1.12	Q V				
12+45	0.7337	1.13	Q V				
12+50	0.7416	1.15	Q V				
12+55	0.7497	1.17	Q V				
13+ 0	0.7578	1.19	Q V				
13+ 5	0.7661	1.20	Q V				
13+10	0.7746	1.23	Q V				
13+15	0.7832	1.25	Q V				
13+20	0.7919	1.27	Q V				
13+25	0.8008	1.29	Q V				
13+30	0.8099	1.32	Q V				
13+35	0.8191	1.34	Q V				
13+40	0.8285	1.37	Q V				
13+45	0.8381	1.40	Q V				
13+50	0.8480	1.43	Q V				
13+55	0.8580	1.46	Q V				
14+ 0	0.8683	1.49	Q V				
14+ 5	0.8788	1.53	Q V				
14+10	0.8896	1.57	Q V				
14+15	0.9007	1.61	Q V				
14+20	0.9121	1.65	Q V				
14+25	0.9238	1.70	Q V				
14+30	0.9358	1.75	Q V				
14+35	0.9483	1.80	Q V				
14+40	0.9611	1.86	Q V				
14+45	0.9744	1.93	Q V				
14+50	0.9882	2.00	Q V				
14+55	1.0025	2.08	Q V				
15+ 0	1.0174	2.17	Q V				
15+ 5	1.0330	2.26	Q V				



21+25	2.3142	0.63	Q	|	|	|	V |
21+30	2.3184	0.62	Q	|	|	|	V |
21+35	2.3227	0.62	Q	|	|	|	V |
21+40	2.3269	0.61	Q	|	|	|	V |
21+45	2.3310	0.60	Q	|	|	|	V |
21+50	2.3352	0.60	Q	|	|	|	V |
21+55	2.3393	0.59	Q	|	|	|	V |
22+ 0	2.3433	0.59	Q	|	|	|	V |
22+ 5	2.3473	0.58	Q	|	|	|	V |
22+10	2.3513	0.58	Q	|	|	|	V |
22+15	2.3553	0.57	Q	|	|	|	V |
22+20	2.3592	0.57	Q	|	|	|	V |
22+25	2.3631	0.57	Q	|	|	|	V |
22+30	2.3670	0.56	Q	|	|	|	V |
22+35	2.3708	0.56	Q	|	|	|	V |
22+40	2.3746	0.55	Q	|	|	|	V |
22+45	2.3784	0.55	Q	|	|	|	V|
22+50	2.3822	0.54	Q	|	|	|	V|
22+55	2.3859	0.54	Q	|	|	|	V|
23+ 0	2.3896	0.54	Q	|	|	|	V|
23+ 5	2.3932	0.53	Q	|	|	|	V|
23+10	2.3969	0.53	Q	|	|	|	V|
23+15	2.4005	0.52	Q	|	|	|	V|
23+20	2.4041	0.52	Q	|	|	|	V|
23+25	2.4076	0.52	Q	|	|	|	V|
23+30	2.4112	0.51	Q	|	|	|	V|
23+35	2.4147	0.51	Q	|	|	|	V|
23+40	2.4182	0.51	Q	|	|	|	V|
23+45	2.4217	0.50	Q	|	|	|	V|
23+50	2.4251	0.50	Q	|	|	|	V|
23+55	2.4285	0.50	Q	|	|	|	V|
24+ 0	2.4320	0.49	Q	|	|	|	V|
24+ 5	2.4351	0.46	Q	|	|	|	V|
24+10	2.4370	0.28	Q	|	|	|	V|
24+15	2.4376	0.08	Q	|	|	|	V|
24+20	2.4377	0.02	Q	|	|	|	V|
24+25	2.4378	0.01	Q	|	|	|	V|

BUILDING 7

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 7A
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 7APROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
22.50	1	0.60
Rainfall data for year 2		
22.50	6	0.70
Rainfall data for year 2		
22.50	24	1.20
Rainfall data for year 100		
22.50	1	1.00
Rainfall data for year 100		
22.50	6	1.90
Rainfall data for year 100		
22.50	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	22.50	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.25	0.100	69.0	69.0	4.49	0.121
20.25	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      22.50(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      22.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       272.11 (CFS))

  1                5.469                  14.882
  2               35.337                  81.273
  3               75.925                 110.445
  4               93.130                  46.816
  5               98.077                  13.461
  6               99.228                   3.130
  7              100.000                   2.102
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2218              0.2218
  2              0.2927              0.0709
  3              0.3442              0.0515
  4              0.3862              0.0420
  5              0.4223              0.0361
  6              0.4542              0.0319
  7              0.4831              0.0289
  8              0.5096              0.0265
  9              0.5342              0.0246
 10              0.5572              0.0230
 11              0.5789              0.0217
 12              0.5994              0.0205
 13              0.6181              0.0187
 14              0.6360              0.0179
 15              0.6531              0.0171
 16              0.6695              0.0164
 17              0.6853              0.0158
 18              0.7006              0.0152
 19              0.7153              0.0147
 20              0.7295              0.0143
 21              0.7434              0.0138
 22              0.7568              0.0134
 23              0.7698              0.0131
 24              0.7826              0.0127
 25              0.7949              0.0124
 26              0.8070              0.0121
```

27	0.8188	0.0118
28	0.8304	0.0115
29	0.8417	0.0113
30	0.8527	0.0111
31	0.8635	0.0108
32	0.8741	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9243	0.0097
38	0.9339	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9704	0.0089
43	0.9793	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0049	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0376	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1339	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3427	0.0057
97	1.3485	0.0057
98	1.3541	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3709	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4249	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4761	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5624	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5985	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6507	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7755	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7907	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9199	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9335	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9503	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033
251	1.9898	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9995	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0839	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0111	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0319	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2173
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 31.29(CFS)

++

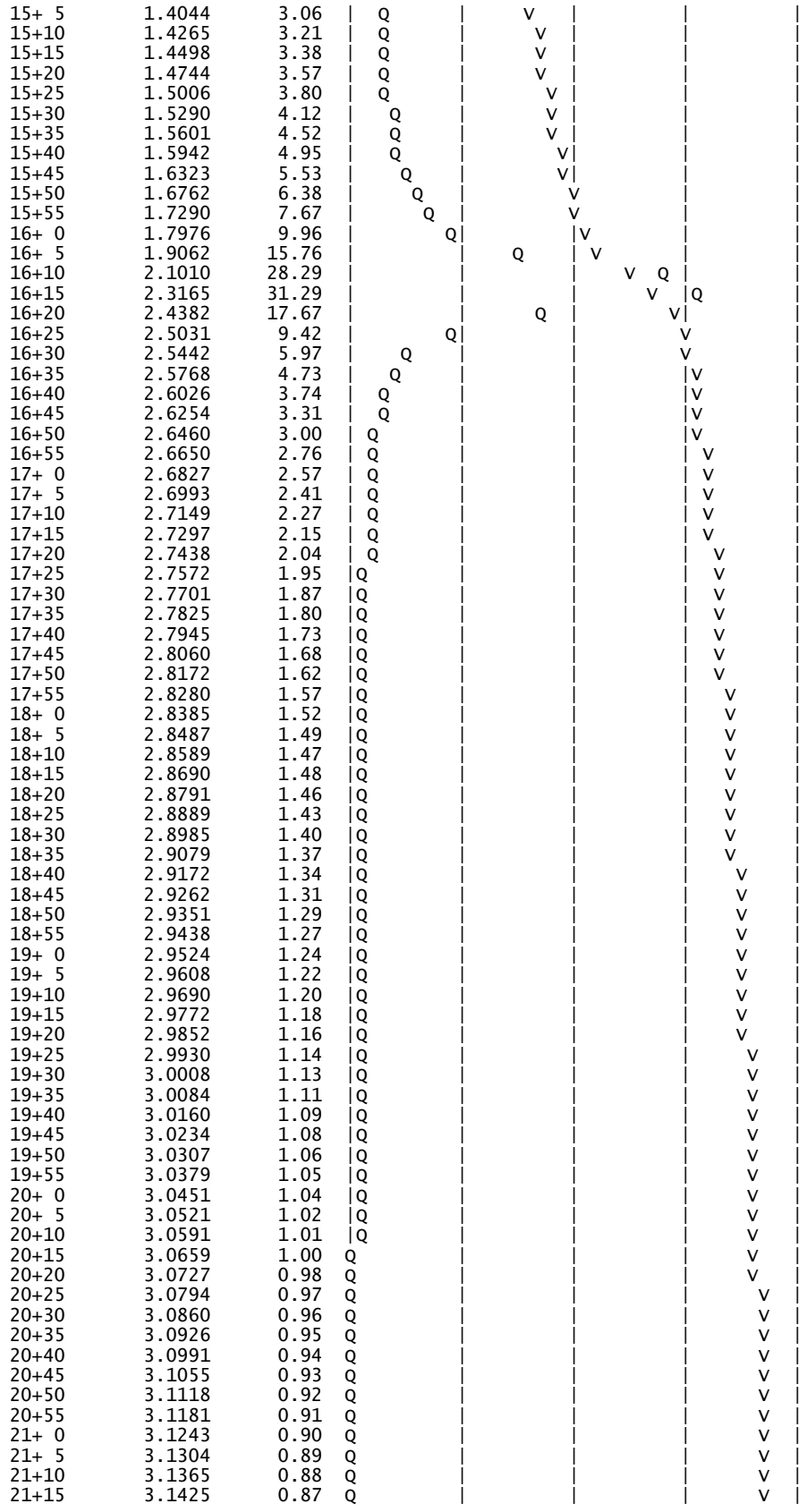
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0003	0.04	Q				
0+10	0.0019	0.23	Q				
0+15	0.0053	0.51	Q				
0+20	0.0096	0.62	Q				
0+25	0.0141	0.66	Q				
0+30	0.0187	0.67	Q				
0+35	0.0233	0.67	Q				
0+40	0.0280	0.67	Q				
0+45	0.0327	0.68	Q				
0+50	0.0373	0.68	Q				
0+55	0.0420	0.68	Q				
1+ 0	0.0467	0.68	Q				
1+ 5	0.0514	0.69	Q				
1+10	0.0562	0.69	Q				
1+15	0.0609	0.69	Q				
1+20	0.0657	0.69	Q				
1+25	0.0705	0.69	Q				
1+30	0.0753	0.70	Q				
1+35	0.0801	0.70	Q				
1+40	0.0849	0.70	QV				
1+45	0.0898	0.70	QV				
1+50	0.0946	0.71	QV				
1+55	0.0995	0.71	QV				
2+ 0	0.1044	0.71	QV				
2+ 5	0.1093	0.71	QV				
2+10	0.1143	0.72	QV				
2+15	0.1192	0.72	QV				
2+20	0.1242	0.72	QV				
2+25	0.1292	0.72	QV				
2+30	0.1342	0.73	QV				

2+35	0.1392	0.73	QV	|	|	|	|
2+40	0.1442	0.73	QV	|	|	|	|
2+45	0.1493	0.73	QV	|	|	|	|
2+50	0.1544	0.74	QV	|	|	|	|
2+55	0.1595	0.74	QV	|	|	|	|
3+ 0	0.1646	0.74	QV	|	|	|	|
3+ 5	0.1697	0.75	Q V	|	|	|	|
3+10	0.1749	0.75	Q V	|	|	|	|
3+15	0.1800	0.75	Q V	|	|	|	|
3+20	0.1852	0.75	Q V	|	|	|	|
3+25	0.1904	0.76	Q V	|	|	|	|
3+30	0.1957	0.76	Q V	|	|	|	|
3+35	0.2009	0.76	Q V	|	|	|	|
3+40	0.2062	0.77	Q V	|	|	|	|
3+45	0.2115	0.77	Q V	|	|	|	|
3+50	0.2168	0.77	Q V	|	|	|	|
3+55	0.2221	0.77	Q V	|	|	|	|
4+ 0	0.2275	0.78	Q V	|	|	|	|
4+ 5	0.2329	0.78	Q V	|	|	|	|
4+10	0.2383	0.78	Q V	|	|	|	|
4+15	0.2437	0.79	Q V	|	|	|	|
4+20	0.2491	0.79	Q V	|	|	|	|
4+25	0.2546	0.79	Q V	|	|	|	|
4+30	0.2601	0.80	Q V	|	|	|	|
4+35	0.2656	0.80	Q V	|	|	|	|
4+40	0.2711	0.80	Q V	|	|	|	|
4+45	0.2767	0.81	Q V	|	|	|	|
4+50	0.2823	0.81	Q V	|	|	|	|
4+55	0.2879	0.81	Q V	|	|	|	|
5+ 0	0.2935	0.82	Q V	|	|	|	|
5+ 5	0.2992	0.82	Q V	|	|	|	|
5+10	0.3049	0.83	Q V	|	|	|	|
5+15	0.3106	0.83	Q V	|	|	|	|
5+20	0.3163	0.83	Q V	|	|	|	|
5+25	0.3221	0.84	Q V	|	|	|	|
5+30	0.3279	0.84	Q V	|	|	|	|
5+35	0.3337	0.84	Q V	|	|	|	|
5+40	0.3395	0.85	Q V	|	|	|	|
5+45	0.3454	0.85	Q V	|	|	|	|
5+50	0.3513	0.86	Q V	|	|	|	|
5+55	0.3572	0.86	Q V	|	|	|	|
6+ 0	0.3632	0.86	Q V	|	|	|	|
6+ 5	0.3691	0.87	Q V	|	|	|	|
6+10	0.3752	0.87	Q V	|	|	|	|
6+15	0.3812	0.88	Q V	|	|	|	|
6+20	0.3873	0.88	Q V	|	|	|	|
6+25	0.3934	0.89	Q V	|	|	|	|
6+30	0.3995	0.89	Q V	|	|	|	|
6+35	0.4057	0.89	Q V	|	|	|	|
6+40	0.4119	0.90	Q V	|	|	|	|
6+45	0.4181	0.90	Q V	|	|	|	|
6+50	0.4243	0.91	Q V	|	|	|	|
6+55	0.4306	0.91	Q V	|	|	|	|
7+ 0	0.4370	0.92	Q V	|	|	|	|
7+ 5	0.4433	0.92	Q V	|	|	|	|
7+10	0.4497	0.93	Q V	|	|	|	|
7+15	0.4561	0.93	Q V	|	|	|	|
7+20	0.4626	0.94	Q V	|	|	|	|
7+25	0.4691	0.94	Q V	|	|	|	|
7+30	0.4756	0.95	Q V	|	|	|	|
7+35	0.4822	0.95	Q V	|	|	|	|
7+40	0.4888	0.96	Q V	|	|	|	|
7+45	0.4955	0.97	Q V	|	|	|	|
7+50	0.5022	0.97	Q V	|	|	|	|
7+55	0.5089	0.98	Q V	|	|	|	|
8+ 0	0.5157	0.98	Q V	|	|	|	|
8+ 5	0.5225	0.99	Q V	|	|	|	|
8+10	0.5293	0.99	Q V	|	|	|	|
8+15	0.5362	1.00	|Q V	|	|	|	|
8+20	0.5432	1.01	|Q V	|	|	|	|
8+25	0.5501	1.01	|Q V	|	|	|	|
8+30	0.5572	1.02	|Q V	|	|	|	|
8+35	0.5642	1.03	|Q V	|	|	|	|
8+40	0.5713	1.03	|Q V	|	|	|	|
8+45	0.5785	1.04	|Q V	|	|	|	|

```
 8+50       0.5857      1.05  |Q     V  |          |          |          |
 8+55       0.5930      1.05  |Q     V  |          |          |          |
 9+ 0       0.6003      1.06  |Q     V  |          |          |          |
 9+ 5       0.6076      1.07  |Q     V  |          |          |          |
 9+10       0.6151      1.08  |Q     V  |          |          |          |
 9+15       0.6225      1.08  |Q     V  |          |          |          |
 9+20       0.6300      1.09  |Q     V  |          |          |          |
 9+25       0.6376      1.10  |Q     V  |          |          |          |
 9+30       0.6452      1.11  |Q     V  |          |          |          |
 9+35       0.6529      1.12  |Q     V  |          |          |          |
 9+40       0.6606      1.12  |Q     V  |          |          |          |
 9+45       0.6684      1.13  |Q      V |          |          |          |
 9+50       0.6763      1.14  |Q      V |          |          |          |
 9+55       0.6842      1.15  |Q      V |          |          |          |
10+ 0       0.6922      1.16  |Q      V |          |          |          |
10+ 5       0.7002      1.17  |Q      V |          |          |          |
10+10       0.7083      1.18  |Q      V |          |          |          |
10+15       0.7165      1.19  |Q      V |          |          |          |
10+20       0.7248      1.20  |Q      V |          |          |          |
10+25       0.7331      1.21  |Q      V |          |          |          |
10+30       0.7415      1.22  |Q      V |          |          |          |
10+35       0.7499      1.23  |Q       V|          |          |          |
10+40       0.7584      1.24  |Q       V|          |          |          |
10+45       0.7670      1.25  |Q       V|          |          |          |
10+50       0.7757      1.26  |Q       V|          |          |          |
10+55       0.7845      1.27  |Q       V|          |          |          |
11+ 0       0.7934      1.28  |Q       V|          |          |          |
11+ 5       0.8023      1.30  |Q       V|          |          |          |
11+10       0.8113      1.31  |Q       V|          |          |          |
11+15       0.8204      1.32  |Q       V|          |          |          |
11+20       0.8296      1.34  |Q       V|          |          |          |
11+25       0.8389      1.35  |Q        V          |          |          |
11+30       0.8483      1.36  |Q        V          |          |          |
11+35       0.8578      1.38  |Q        V          |          |          |
11+40       0.8674      1.39  |Q        V          |          |          |
11+45       0.8771      1.41  |Q        V          |          |          |
11+50       0.8869      1.42  |Q        V          |          |          |
11+55       0.8968      1.44  |Q        V          |          |          |
12+ 0       0.9068      1.46  |Q        V          |          |          |
12+ 5       0.9169      1.47  |Q        |V         |          |          |
12+10       0.9270      1.46  |Q        |V         |          |          |
12+15       0.9369      1.44  |Q        |V         |          |          |
12+20       0.9468      1.44  |Q        |V         |          |          |
12+25       0.9569      1.46  |Q        |V         |          |          |
12+30       0.9670      1.48  |Q        |V         |          |          |
12+35       0.9773      1.50  |Q        |V         |          |          |
12+40       0.9878      1.52  |Q        |V         |          |          |
12+45       0.9984      1.54  |Q        | V        |          |          |
12+50       1.0091      1.56  |Q        | V        |          |          |
12+55       1.0201      1.59  |Q        | V        |          |          |
13+ 0       1.0312      1.61  |Q        | V        |          |          |
13+ 5       1.0424      1.64  |Q        | V        |          |          |
13+10       1.0539      1.67  |Q        | V        |          |          |
13+15       1.0656      1.69  |Q        | V        |          |          |
13+20       1.0774      1.72  |Q        | V        |          |          |
13+25       1.0895      1.76  |Q        |  V       |          |          |
13+30       1.1018      1.79  |Q        |  V       |          |          |
13+35       1.1144      1.82  |Q        |  V       |          |          |
13+40       1.1272      1.86  |Q        |  V       |          |          |
13+45       1.1403      1.90  |Q        |  V       |          |          |
13+50       1.1536      1.94  |Q        |  V       |          |          |
13+55       1.1672      1.98  |Q        |   V      |          |          |
14+ 0       1.1812      2.03  | Q       |   V      |          |          |
14+ 5       1.1955      2.07  | Q       |   V      |          |          |
14+10       1.2101      2.13  | Q       |   V      |          |          |
14+15       1.2252      2.18  | Q       |   V      |          |          |
14+20       1.2406      2.24  | Q       |   V      |          |          |
14+25       1.2565      2.31  | Q       |    V     |          |          |
14+30       1.2728      2.37  | Q       |    V     |          |          |
14+35       1.2897      2.45  | Q       |    V     |          |          |
14+40       1.3071      2.53  | Q       |    V     |          |          |
14+45       1.3251      2.61  | Q       |    V     |          |          |
14+50       1.3438      2.71  | Q       |     V    |          |          |
14+55       1.3632      2.82  | Q       |     V    |          |          |
15+ 0       1.3833      2.93  | Q       |     V    |          |          |
```



```
   21+20       3.1485      0.87  Q          |          |          |      V  |
   21+25       3.1544      0.86  Q          |          |          |      V  |
   21+30       3.1602      0.85  Q          |          |          |       V |
   21+35       3.1660      0.84  Q          |          |          |       V |
   21+40       3.1718      0.83  Q          |          |          |       V |
   21+45       3.1775      0.83  Q          |          |          |       V |
   21+50       3.1831      0.82  Q          |          |          |       V |
   21+55       3.1887      0.81  Q          |          |          |       V |
   22+ 0       3.1942      0.81  Q          |          |          |       V |
   22+ 5       3.1997      0.80  Q          |          |          |       V |
   22+10       3.2052      0.79  Q          |          |          |       V |
   22+15       3.2106      0.79  Q          |          |          |       V |
   22+20       3.2160      0.78  Q          |          |          |       V |
   22+25       3.2213      0.77  Q          |          |          |       V |
   22+30       3.2266      0.77  Q          |          |          |       V |
   22+35       3.2318      0.76  Q          |          |          |       V |
   22+40       3.2370      0.75  Q          |          |          |       V |
   22+45       3.2421      0.75  Q          |          |          |        V|
   22+50       3.2473      0.74  Q          |          |          |        V|
   22+55       3.2523      0.74  Q          |          |          |        V|
   23+ 0       3.2574      0.73  Q          |          |          |        V|
   23+ 5       3.2624      0.73  Q          |          |          |        V|
   23+10       3.2674      0.72  Q          |          |          |        V|
   23+15       3.2723      0.72  Q          |          |          |        V|
   23+20       3.2772      0.71  Q          |          |          |        V|
   23+25       3.2821      0.71  Q          |          |          |        V|
   23+30       3.2869      0.70  Q          |          |          |        V|
   23+35       3.2917      0.70  Q          |          |          |        V|
   23+40       3.2965      0.69  Q          |          |          |        V|
   23+45       3.3012      0.69  Q          |          |          |        V|
   23+50       3.3059      0.68  Q          |          |          |        V|
   23+55       3.3106      0.68  Q          |          |          |        V|
   24+ 0       3.3153      0.68  Q          |          |          |        V|
   24+ 5       3.3196      0.63  Q          |          |          |        V|
   24+10       3.3226      0.43  Q          |          |          |        V|
   24+15       3.3237      0.16  Q          |          |          |        V|
   24+20       3.3241      0.05  Q          |          |          |        V|
   24+25       3.3241      0.01  Q          |          |          |        V|
   24+30       3.3242      0.01  Q          |          |          |        V|
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 7B
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 7BPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
9.40	1	0.60
Rainfall data for year 2		
9.40	6	0.70
Rainfall data for year 2		
9.40	24	1.20
Rainfall data for year 100		
9.40	1	1.00
Rainfall data for year 100		
9.40	6	1.90
Rainfall data for year 100		
9.40	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	9.40	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.94	0.100	69.0	69.0	4.49	0.121
8.46	0.900	98.0	98.0	0.20	0.892

Area-averaged catchment yield fraction, Y = 0.815
Area-averaged low loss fraction, Yb = 0.185
User entry of time of concentration = 0.180 (hours)
++
Watershed area = 9.40(Ac.)
Catchment Lag time = 0.144 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 57.8704
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.222(In)
Computed peak 30-minute rainfall = 0.455(In)
Specified peak 1-hour rainfall = 0.600(In)
Computed peak 3-hour rainfall = 0.915(In)
Specified peak 6-hour rainfall = 1.194(In)
Specified peak 24-hour rainfall = 2.105(In)

Rainfall depth area reduction factors:
Using a total area of 9.40(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.222(In)
30-minute factor = 1.000 Adjusted rainfall = 0.455(In)
1-hour factor = 1.000 Adjusted rainfall = 0.600(In)
3-hour factor = 1.000 Adjusted rainfall = 0.915(In)
6-hour factor = 1.000 Adjusted rainfall = 1.194(In)
24-hour factor = 1.000 Adjusted rainfall = 2.105(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 113.68 (CFS))	
1	6.077	6.908
2	39.009	37.438
3	79.564	46.103
4	94.634	17.132
5	98.466	4.356
6	99.524	1.202
7	100.000	0.541

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2220	0.2220
2	0.2929	0.0709
3	0.3445	0.0516
4	0.3865	0.0420
5	0.4225	0.0361
6	0.4545	0.0320
7	0.4834	0.0289
8	0.5099	0.0265
9	0.5345	0.0246
10	0.5576	0.0230
11	0.5792	0.0217
12	0.5997	0.0205
13	0.6185	0.0187
14	0.6363	0.0179
15	0.6534	0.0171
16	0.6698	0.0164
17	0.6856	0.0158
18	0.7008	0.0152
19	0.7156	0.0147
20	0.7298	0.0142
21	0.7436	0.0138
22	0.7570	0.0134
23	0.7701	0.0130
24	0.7828	0.0127
25	0.7951	0.0124
26	0.8072	0.0121

27	0.8190	0.0118
28	0.8305	0.0115
29	0.8418	0.0113
30	0.8528	0.0110
31	0.8637	0.0108
32	0.8743	0.0106
33	0.8847	0.0104
34	0.8949	0.0102
35	0.9049	0.0100
36	0.9147	0.0098
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9433	0.0094
40	0.9525	0.0092
41	0.9616	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9966	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0216	0.0082
49	1.0297	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0535	0.0078
53	1.0612	0.0077
54	1.0688	0.0076
55	1.0764	0.0076
56	1.0839	0.0075
57	1.0912	0.0074
58	1.0986	0.0073
59	1.1058	0.0072
60	1.1130	0.0072
61	1.1200	0.0071
62	1.1271	0.0070
63	1.1340	0.0069
64	1.1409	0.0069
65	1.1477	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1873	0.0064
72	1.1937	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2138	0.0066
76	1.2204	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2652	0.0063
84	1.2714	0.0062
85	1.2776	0.0062
86	1.2837	0.0061
87	1.2898	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3255	0.0059
94	1.3313	0.0058
95	1.3371	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3542	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3710	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3930	0.0054
106	1.3984	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4662	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4812	0.0050
123	1.4861	0.0050
124	1.4911	0.0049
125	1.4960	0.0049
126	1.5009	0.0049
127	1.5057	0.0049
128	1.5106	0.0048
129	1.5154	0.0048
130	1.5202	0.0048
131	1.5250	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5392	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5532	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5716	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5852	0.0045
145	1.5897	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6075	0.0044
150	1.6119	0.0044
151	1.6163	0.0044
152	1.6206	0.0044
153	1.6250	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6508	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6760	0.0042
166	1.6801	0.0041
167	1.6843	0.0041
168	1.6884	0.0041
169	1.6925	0.0041
170	1.6966	0.0041
171	1.7007	0.0041
172	1.7047	0.0041
173	1.7088	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7328	0.0040
180	1.7367	0.0040
181	1.7407	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7641	0.0039
188	1.7679	0.0039
189	1.7718	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7946	0.0038
196	1.7983	0.0038
197	1.8021	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8133	0.0037
201	1.8170	0.0037
202	1.8207	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8317	0.0037
206	1.8353	0.0037
207	1.8390	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8642	0.0036
215	1.8677	0.0036
216	1.8713	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8819	0.0035
220	1.8854	0.0035
221	1.8889	0.0035
222	1.8924	0.0035
223	1.8959	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9063	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9166	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9370	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9604	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9703	0.0033
246	1.9736	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9964	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0220	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0440	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0657	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0931	0.0030
285	2.0961	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1051	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0098	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0086
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0098
177	0.0127	0.0023	0.0104
178	0.0130	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0142	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0201
188	0.0265	0.0046	0.0220
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0516	0.0046	0.0470
192	0.0709	0.0046	0.0664
193	0.2220	0.0046	0.2174
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0043	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0054
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 12.99(CFS)

++

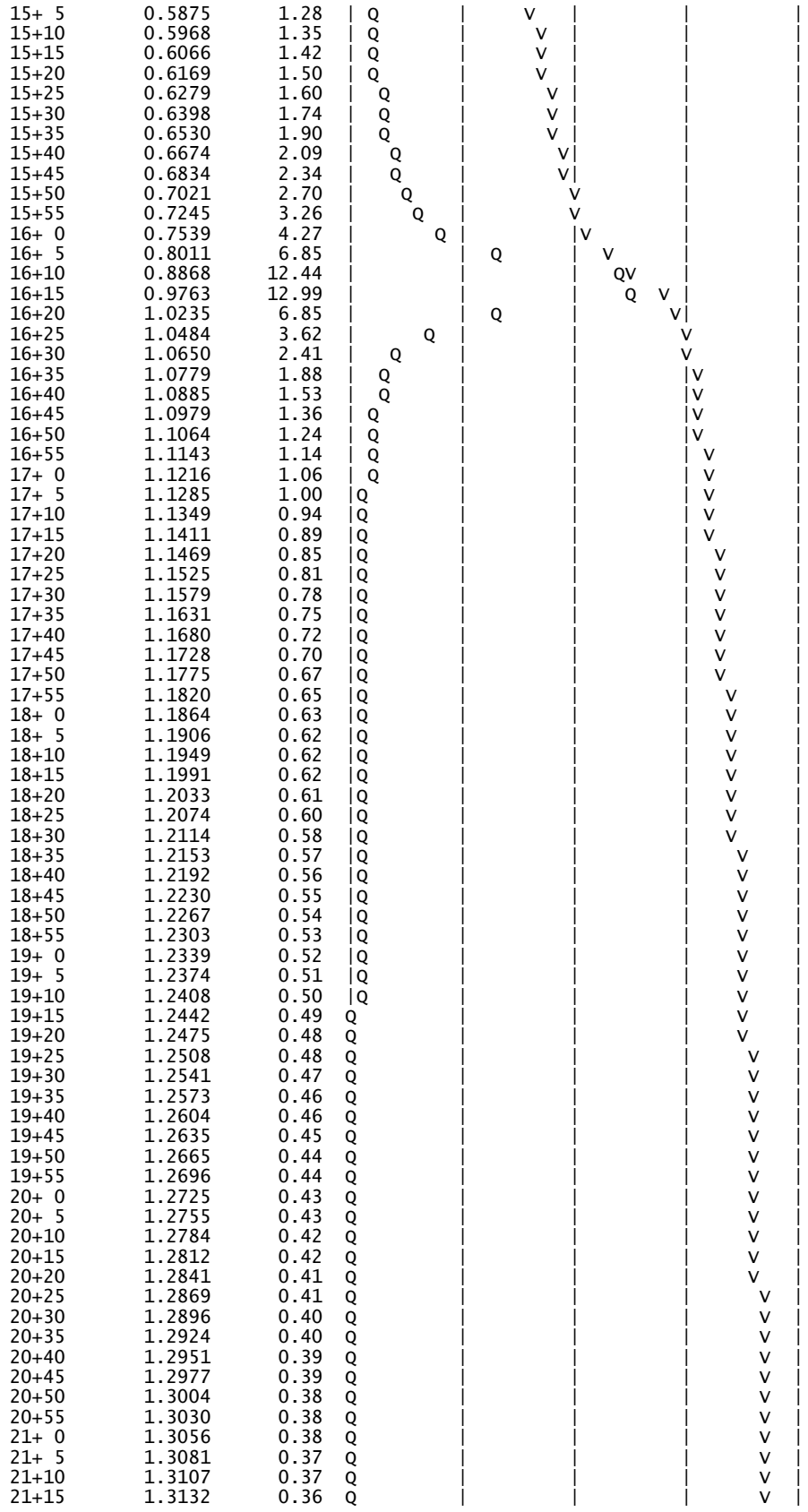
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0009	0.11	Q	|	|	|	|
0+15	0.0024	0.22	Q	|	|	|	|
0+20	0.0042	0.26	Q	|	|	|	|
0+25	0.0061	0.28	Q	|	|	|	|
0+30	0.0080	0.28	Q	|	|	|	|
0+35	0.0099	0.28	Q	|	|	|	|
0+40	0.0119	0.28	Q	|	|	|	|
0+45	0.0138	0.28	Q	|	|	|	|
0+50	0.0158	0.28	Q	|	|	|	|
0+55	0.0178	0.28	Q	|	|	|	|
1+ 0	0.0197	0.29	Q	|	|	|	|
1+ 5	0.0217	0.29	Q	|	|	|	|
1+10	0.0237	0.29	Q	|	|	|	|
1+15	0.0257	0.29	Q	|	|	|	|
1+20	0.0276	0.29	Q	|	|	|	|
1+25	0.0296	0.29	Q	|	|	|	|
1+30	0.0317	0.29	Q	|	|	|	|
1+35	0.0337	0.29	Q	|	|	|	|
1+40	0.0357	0.29	QV	|	|	|	|
1+45	0.0377	0.29	QV	|	|	|	|
1+50	0.0397	0.30	QV	|	|	|	|
1+55	0.0418	0.30	QV	|	|	|	|
2+ 0	0.0438	0.30	QV	|	|	|	|
2+ 5	0.0459	0.30	QV	|	|	|	|
2+10	0.0479	0.30	QV	|	|	|	|
2+15	0.0500	0.30	QV	|	|	|	|
2+20	0.0521	0.30	QV	|	|	|	|
2+25	0.0542	0.30	QV	|	|	|	|
2+30	0.0563	0.30	QV	|	|	|	|

2+35	0.0584	0.30	QV				
2+40	0.0605	0.31	QV				
2+45	0.0626	0.31	QV				
2+50	0.0647	0.31	QV				
2+55	0.0668	0.31	QV				
3+ 0	0.0690	0.31	QV				
3+ 5	0.0711	0.31	Q V				
3+10	0.0733	0.31	Q V				
3+15	0.0754	0.31	Q V				
3+20	0.0776	0.32	Q V				
3+25	0.0798	0.32	Q V				
3+30	0.0820	0.32	Q V				
3+35	0.0842	0.32	Q V				
3+40	0.0864	0.32	Q V				
3+45	0.0886	0.32	Q V				
3+50	0.0908	0.32	Q V				
3+55	0.0930	0.32	Q V				
4+ 0	0.0953	0.33	Q V				
4+ 5	0.0975	0.33	Q V				
4+10	0.0998	0.33	Q V				
4+15	0.1020	0.33	Q V				
4+20	0.1043	0.33	Q V				
4+25	0.1066	0.33	Q V				
4+30	0.1089	0.33	Q V				
4+35	0.1112	0.33	Q V				
4+40	0.1135	0.34	Q V				
4+45	0.1158	0.34	Q V				
4+50	0.1182	0.34	Q V				
4+55	0.1205	0.34	Q V				
5+ 0	0.1229	0.34	Q V				
5+ 5	0.1252	0.34	Q V				
5+10	0.1276	0.34	Q V				
5+15	0.1300	0.35	Q V				
5+20	0.1324	0.35	Q V				
5+25	0.1348	0.35	Q V				
5+30	0.1372	0.35	Q V				
5+35	0.1396	0.35	Q V				
5+40	0.1421	0.35	Q V				
5+45	0.1445	0.36	Q V				
5+50	0.1470	0.36	Q V				
5+55	0.1495	0.36	Q V				
6+ 0	0.1520	0.36	Q V				
6+ 5	0.1545	0.36	Q V				
6+10	0.1570	0.36	Q V				
6+15	0.1595	0.37	Q V				
6+20	0.1620	0.37	Q V				
6+25	0.1646	0.37	Q V				
6+30	0.1672	0.37	Q V				
6+35	0.1697	0.37	Q V				
6+40	0.1723	0.38	Q V				
6+45	0.1749	0.38	Q V				
6+50	0.1775	0.38	Q V				
6+55	0.1802	0.38	Q V				
7+ 0	0.1828	0.38	Q V				
7+ 5	0.1855	0.39	Q V				
7+10	0.1881	0.39	Q V				
7+15	0.1908	0.39	Q V				
7+20	0.1935	0.39	Q V				
7+25	0.1963	0.39	Q V				
7+30	0.1990	0.40	Q V				
7+35	0.2017	0.40	Q V				
7+40	0.2045	0.40	Q V				
7+45	0.2073	0.40	Q V				
7+50	0.2101	0.41	Q V				
7+55	0.2129	0.41	Q V				
8+ 0	0.2157	0.41	Q V				
8+ 5	0.2186	0.41	Q V				
8+10	0.2214	0.42	Q V				
8+15	0.2243	0.42	Q V				
8+20	0.2272	0.42	Q V				
8+25	0.2301	0.42	Q V				
8+30	0.2331	0.43	Q V				
8+35	0.2360	0.43	Q V				
8+40	0.2390	0.43	Q V				
8+45	0.2420	0.43	Q V				

8+50	0.2450	0.44	Q	V	|	|	|	|
8+55	0.2480	0.44	Q	V	|	|	|	|
9+ 0	0.2511	0.44	Q	V	|	|	|	|
9+ 5	0.2542	0.45	Q	V	|	|	|	|
9+10	0.2573	0.45	Q	V	|	|	|	|
9+15	0.2604	0.45	Q	V	|	|	|	|
9+20	0.2635	0.46	Q	V	|	|	|	|
9+25	0.2667	0.46	Q	V	|	|	|	|
9+30	0.2699	0.46	Q	V	|	|	|	|
9+35	0.2731	0.47	Q	V	|	|	|	|
9+40	0.2763	0.47	Q	V	|	|	|	|
9+45	0.2796	0.47	Q	V	|	|	|	|
9+50	0.2829	0.48	Q	V	|	|	|	|
9+55	0.2862	0.48	Q	V	|	|	|	|
10+ 0	0.2895	0.48	Q	V	|	|	|	|
10+ 5	0.2929	0.49	Q	V	|	|	|	|
10+10	0.2963	0.49	Q	V	|	|	|	|
10+15	0.2997	0.50	Q	V	|	|	|	|
10+20	0.3031	0.50	|Q	V	|	|	|	|
10+25	0.3066	0.50	|Q	V	|	|	|	|
10+30	0.3101	0.51	|Q	V	|	|	|	|
10+35	0.3136	0.51	|Q	V|	|	|	|	|
10+40	0.3172	0.52	|Q	V|	|	|	|	|
10+45	0.3208	0.52	|Q	V|	|	|	|	|
10+50	0.3244	0.53	|Q	V|	|	|	|	|
10+55	0.3281	0.53	|Q	V|	|	|	|	|
11+ 0	0.3318	0.54	|Q	V|	|	|	|	|
11+ 5	0.3355	0.54	|Q	V|	|	|	|	|
11+10	0.3393	0.55	|Q	V|	|	|	|	|
11+15	0.3431	0.55	|Q	V|	|	|	|	|
11+20	0.3470	0.56	|Q	V|	|	|	|	|
11+25	0.3509	0.56	|Q	V	|	|	|	|
11+30	0.3548	0.57	|Q	V	|	|	|	|
11+35	0.3588	0.58	|Q	V	|	|	|	|
11+40	0.3628	0.58	|Q	V	|	|	|	|
11+45	0.3668	0.59	|Q	V	|	|	|	|
11+50	0.3709	0.60	|Q	V	|	|	|	|
11+55	0.3751	0.60	|Q	V	|	|	|	|
12+ 0	0.3793	0.61	|Q	V	|	|	|	|
12+ 5	0.3835	0.61	|Q	|V	|	|	|	|
12+10	0.3877	0.61	|Q	|V	|	|	|	|
12+15	0.3918	0.60	|Q	|V	|	|	|	|
12+20	0.3960	0.60	|Q	|V	|	|	|	|
12+25	0.4002	0.61	|Q	|V	|	|	|	|
12+30	0.4044	0.62	|Q	|V	|	|	|	|
12+35	0.4087	0.63	|Q	|V	|	|	|	|
12+40	0.4131	0.63	|Q	|V	|	|	|	|
12+45	0.4175	0.64	|Q	| V	|	|	|	|
12+50	0.4220	0.65	|Q	| V	|	|	|	|
12+55	0.4266	0.66	|Q	| V	|	|	|	|
13+ 0	0.4313	0.67	|Q	| V	|	|	|	|
13+ 5	0.4360	0.69	|Q	| V	|	|	|	|
13+10	0.4408	0.70	|Q	| V	|	|	|	|
13+15	0.4457	0.71	|Q	| V	|	|	|	|
13+20	0.4506	0.72	|Q	| V	|	|	|	|
13+25	0.4557	0.73	|Q	| V	|	|	|	|
13+30	0.4608	0.75	|Q	| V	|	|	|	|
13+35	0.4661	0.76	|Q	| V	|	|	|	|
13+40	0.4714	0.78	|Q	| V	|	|	|	|
13+45	0.4769	0.79	|Q	| V	|	|	|	|
13+50	0.4825	0.81	|Q	| V	|	|	|	|
13+55	0.4882	0.83	|Q	| V	|	|	|	|
14+ 0	0.4940	0.85	|Q	| V	|	|	|	|
14+ 5	0.5000	0.87	|Q	| V	|	|	|	|
14+10	0.5062	0.89	|Q	| V	|	|	|	|
14+15	0.5125	0.91	|Q	| V	|	|	|	|
14+20	0.5189	0.94	|Q	| V	|	|	|	|
14+25	0.5256	0.97	|Q	| V	|	|	|	|
14+30	0.5324	0.99	|Q	| V	|	|	|	|
14+35	0.5395	1.02	| Q	| V	|	|	|	|
14+40	0.5467	1.06	| Q	| V	|	|	|	|
14+45	0.5543	1.09	| Q	| V	|	|	|	|
14+50	0.5621	1.14	| Q	| V	|	|	|	|
14+55	0.5702	1.18	| Q	| V	|	|	|	|
15+ 0	0.5787	1.23	| Q	| V	|	|	|	|



21+20	1.3157	0.36	Q	|	|	|	V |
21+25	1.3181	0.36	Q	|	|	|	V |
21+30	1.3206	0.35	Q	|	|	|	V |
21+35	1.3230	0.35	Q	|	|	|	V |
21+40	1.3254	0.35	Q	|	|	|	V |
21+45	1.3278	0.34	Q	|	|	|	V |
21+50	1.3301	0.34	Q	|	|	|	V |
21+55	1.3325	0.34	Q	|	|	|	V |
22+ 0	1.3348	0.34	Q	|	|	|	V |
22+ 5	1.3371	0.33	Q	|	|	|	V |
22+10	1.3394	0.33	Q	|	|	|	V |
22+15	1.3416	0.33	Q	|	|	|	V |
22+20	1.3438	0.33	Q	|	|	|	V |
22+25	1.3461	0.32	Q	|	|	|	V |
22+30	1.3483	0.32	Q	|	|	|	V |
22+35	1.3505	0.32	Q	|	|	|	V |
22+40	1.3526	0.32	Q	|	|	|	V |
22+45	1.3548	0.31	Q	|	|	|	V|
22+50	1.3569	0.31	Q	|	|	|	V|
22+55	1.3590	0.31	Q	|	|	|	V|
23+ 0	1.3611	0.31	Q	|	|	|	V|
23+ 5	1.3632	0.30	Q	|	|	|	V|
23+10	1.3653	0.30	Q	|	|	|	V|
23+15	1.3674	0.30	Q	|	|	|	V|
23+20	1.3694	0.30	Q	|	|	|	V|
23+25	1.3715	0.30	Q	|	|	|	V|
23+30	1.3735	0.29	Q	|	|	|	V|
23+35	1.3755	0.29	Q	|	|	|	V|
23+40	1.3775	0.29	Q	|	|	|	V|
23+45	1.3795	0.29	Q	|	|	|	V|
23+50	1.3814	0.29	Q	|	|	|	V|
23+55	1.3834	0.28	Q	|	|	|	V|
24+ 0	1.3853	0.28	Q	|	|	|	V|
24+ 5	1.3871	0.26	Q	|	|	|	V|
24+10	1.3883	0.17	Q	|	|	|	V|
24+15	1.3887	0.06	Q	|	|	|	V|
24+20	1.3888	0.01	Q	|	|	|	V|
24+25	1.3888	0.00	Q	|	|	|	V|
24+30	1.3888	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 7C
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 7CPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
25.90	1	0.60
Rainfall data for year 2		
25.90	6	0.70
Rainfall data for year 2		
25.90	24	1.20
Rainfall data for year 100		
25.90	1	1.00
Rainfall data for year 100		
25.90	6	1.90
Rainfall data for year 100		
25.90	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	25.90	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.59	0.100	69.0	69.0	4.49	0.121
23.31	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.160 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      25.90(Ac.)
Catchment Lag time =   0.128 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 65.1042
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      25.90(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.599(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       313.23 (CFS))

  1                7.634                  23.911
  2               47.879                 126.061
  3               85.995                 119.388
  4               97.049                  34.624
  5               99.073                   6.342
  6              100.000                   2.902
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2218              0.2218
  2              0.2927              0.0709
  3              0.3442              0.0515
  4              0.3862              0.0420
  5              0.4222              0.0361
  6              0.4542              0.0319
  7              0.4830              0.0289
  8              0.5096              0.0265
  9              0.5341              0.0246
 10              0.5571              0.0230
 11              0.5788              0.0216
 12              0.5993              0.0205
 13              0.6180              0.0187
 14              0.6359              0.0179
 15              0.6530              0.0171
 16              0.6694              0.0164
 17              0.6852              0.0158
 18              0.7005              0.0152
 19              0.7152              0.0147
 20              0.7295              0.0143
 21              0.7433              0.0138
 22              0.7567              0.0134
 23              0.7698              0.0131
 24              0.7825              0.0127
 25              0.7949              0.0124
 26              0.8070              0.0121
 27              0.8188              0.0118
```

28	0.8303	0.0115
29	0.8416	0.0113
30	0.8527	0.0111
31	0.8635	0.0108
32	0.8741	0.0106
33	0.8845	0.0104
34	0.8948	0.0102
35	0.9048	0.0100
36	0.9147	0.0099
37	0.9243	0.0097
38	0.9338	0.0095
39	0.9432	0.0094
40	0.9524	0.0092
41	0.9615	0.0091
42	0.9704	0.0089
43	0.9792	0.0088
44	0.9879	0.0087
45	0.9965	0.0086
46	1.0049	0.0084
47	1.0133	0.0083
48	1.0215	0.0082
49	1.0296	0.0081
50	1.0376	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0611	0.0077
54	1.0688	0.0076
55	1.0763	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1057	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1339	0.0069
64	1.1408	0.0069
65	1.1476	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1742	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2137	0.0066
76	1.2203	0.0066
77	1.2268	0.0065
78	1.2333	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2525	0.0064
82	1.2588	0.0063
83	1.2651	0.0063
84	1.2713	0.0062
85	1.2775	0.0062
86	1.2836	0.0061
87	1.2897	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3077	0.0060
91	1.3137	0.0059
92	1.3195	0.0059
93	1.3254	0.0059
94	1.3312	0.0058
95	1.3370	0.0058
96	1.3427	0.0057
97	1.3484	0.0057
98	1.3541	0.0057
99	1.3597	0.0056
100	1.3654	0.0056
101	1.3709	0.0056
102	1.3765	0.0055

103	1.3820	0.0055
104	1.3874	0.0055
105	1.3929	0.0054
106	1.3983	0.0054
107	1.4037	0.0054
108	1.4090	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4249	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4457	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4610	0.0051
119	1.4661	0.0051
120	1.4711	0.0050
121	1.4761	0.0050
122	1.4811	0.0050
123	1.4861	0.0050
124	1.4910	0.0049
125	1.4959	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5105	0.0048
129	1.5153	0.0048
130	1.5201	0.0048
131	1.5249	0.0048
132	1.5296	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5577	0.0046
139	1.5623	0.0046
140	1.5669	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5985	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6118	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6249	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6464	0.0043
159	1.6507	0.0043
160	1.6549	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6759	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6883	0.0041
169	1.6924	0.0041
170	1.6965	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7087	0.0040
174	1.7127	0.0040
175	1.7168	0.0040
176	1.7208	0.0040
177	1.7248	0.0040

178	1.7288	0.0040
179	1.7327	0.0040
180	1.7367	0.0040
181	1.7406	0.0039
182	1.7445	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7601	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7755	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7907	0.0038
195	1.7945	0.0038
196	1.7983	0.0038
197	1.8020	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8316	0.0037
206	1.8353	0.0037
207	1.8389	0.0036
208	1.8425	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8605	0.0036
214	1.8641	0.0036
215	1.8677	0.0036
216	1.8712	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8818	0.0035
220	1.8853	0.0035
221	1.8888	0.0035
222	1.8923	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9027	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9165	0.0034
230	1.9199	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9301	0.0034
234	1.9335	0.0034
235	1.9369	0.0034
236	1.9403	0.0034
237	1.9436	0.0034
238	1.9470	0.0034
239	1.9503	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9603	0.0033
243	1.9636	0.0033
244	1.9669	0.0033
245	1.9702	0.0033
246	1.9735	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9833	0.0033
250	1.9866	0.0033
251	1.9898	0.0032
252	1.9931	0.0032

253	1.9963	0.0032
254	1.9995	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0187	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0282	0.0032
264	2.0314	0.0032
265	2.0345	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0439	0.0031
269	2.0470	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0594	0.0031
274	2.0625	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0717	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0839	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0960	0.0030
286	2.0990	0.0030
287	2.1020	0.0030
288	2.1050	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027
34	0.0033	0.0006	0.0027

35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039
109	0.0049	0.0009	0.0040

110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0087
173	0.0111	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0099
177	0.0127	0.0023	0.0104
178	0.0131	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0143	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0140
184	0.0179	0.0033	0.0146

185	0.0205	0.0038	0.0167
186	0.0216	0.0040	0.0177
187	0.0246	0.0045	0.0200
188	0.0265	0.0046	0.0219
189	0.0319	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0515	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2218	0.0046	0.2172
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0187
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031
259	0.0037	0.0007	0.0030

260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 38.10(CFS)

++

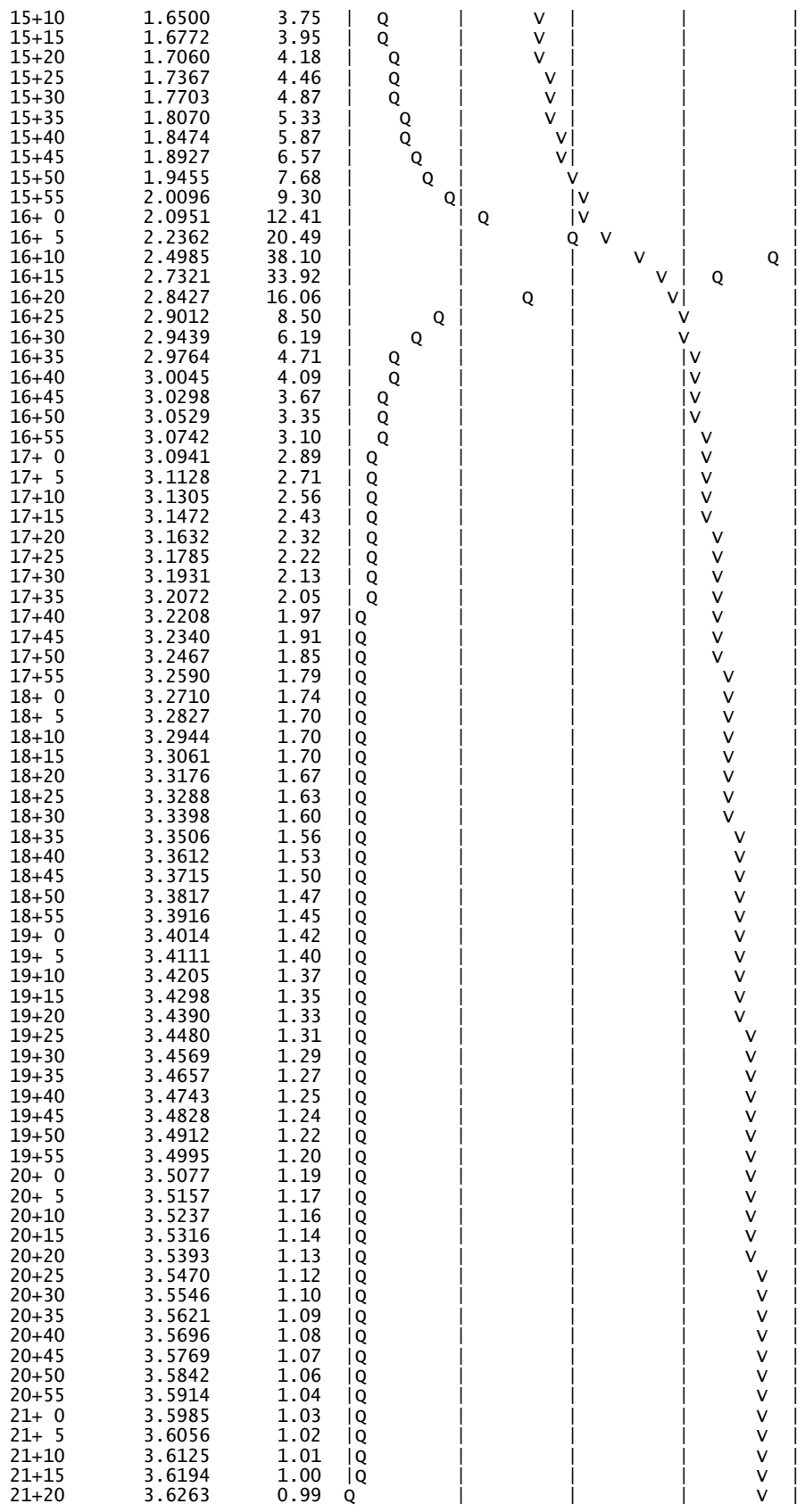
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0004	0.06	Q				
0+10	0.0029	0.37	Q				
0+15	0.0075	0.66	Q				
0+20	0.0126	0.75	Q				
0+25	0.0178	0.76	Q				
0+30	0.0232	0.77	Q				
0+35	0.0285	0.77	Q				
0+40	0.0339	0.78	Q				
0+45	0.0392	0.78	Q				
0+50	0.0446	0.78	Q				
0+55	0.0500	0.78	Q				
1+ 0	0.0554	0.79	Q				
1+ 5	0.0609	0.79	Q				
1+10	0.0663	0.79	Q				
1+15	0.0718	0.79	Q				
1+20	0.0773	0.80	Q				
1+25	0.0828	0.80	Q				
1+30	0.0883	0.80	Q				
1+35	0.0939	0.81	Q				
1+40	0.0995	0.81	QV				
1+45	0.1050	0.81	QV				
1+50	0.1107	0.81	QV				
1+55	0.1163	0.82	QV				
2+ 0	0.1219	0.82	QV				
2+ 5	0.1276	0.82	QV				
2+10	0.1333	0.83	QV				
2+15	0.1390	0.83	QV				
2+20	0.1447	0.83	QV				
2+25	0.1504	0.83	QV				
2+30	0.1562	0.84	QV				
2+35	0.1620	0.84	QV				

```
2+40       0.1678      0.84  QV        |         |         |         |
2+45       0.1736      0.85  QV        |         |         |         |
2+50       0.1795      0.85  QV        |         |         |         |
2+55       0.1853      0.85  QV        |         |         |         |
3+ 0       0.1912      0.86  QV        |         |         |         |
3+ 5       0.1972      0.86  Q V       |         |         |         |
3+10       0.2031      0.86  Q V       |         |         |         |
3+15       0.2091      0.87  Q V       |         |         |         |
3+20       0.2150      0.87  Q V       |         |         |         |
3+25       0.2210      0.87  Q V       |         |         |         |
3+30       0.2271      0.88  Q V       |         |         |         |
3+35       0.2331      0.88  Q V       |         |         |         |
3+40       0.2392      0.88  Q V       |         |         |         |
3+45       0.2453      0.89  Q V       |         |         |         |
3+50       0.2514      0.89  Q V       |         |         |         |
3+55       0.2576      0.89  Q V       |         |         |         |
4+ 0       0.2637      0.90  Q V       |         |         |         |
4+ 5       0.2699      0.90  Q V       |         |         |         |
4+10       0.2762      0.90  Q V       |         |         |         |
4+15       0.2824      0.91  Q V       |         |         |         |
4+20       0.2887      0.91  Q  V      |         |         |         |
4+25       0.2950      0.91  Q  V      |         |         |         |
4+30       0.3013      0.92  Q  V      |         |         |         |
4+35       0.3077      0.92  Q  V      |         |         |         |
4+40       0.3141      0.93  Q  V      |         |         |         |
4+45       0.3205      0.93  Q  V      |         |         |         |
4+50       0.3269      0.93  Q  V      |         |         |         |
4+55       0.3334      0.94  Q  V      |         |         |         |
5+ 0       0.3399      0.94  Q  V      |         |         |         |
5+ 5       0.3464      0.95  Q  V      |         |         |         |
5+10       0.3529      0.95  Q  V      |         |         |         |
5+15       0.3595      0.96  Q  V      |         |         |         |
5+20       0.3661      0.96  Q  V      |         |         |         |
5+25       0.3728      0.96  Q  V      |         |         |         |
5+30       0.3794      0.97  Q  V      |         |         |         |
5+35       0.3861      0.97  Q   V     |         |         |         |
5+40       0.3929      0.98  Q   V     |         |         |         |
5+45       0.3996      0.98  Q   V     |         |         |         |
5+50       0.4064      0.99  Q   V     |         |         |         |
5+55       0.4133      0.99  Q   V     |         |         |         |
6+ 0       0.4201      1.00  Q   V     |         |         |         |
6+ 5       0.4270      1.00  |Q  V     |         |         |         |
6+10       0.4340      1.01  |Q  V     |         |         |         |
6+15       0.4409      1.01  |Q  V     |         |         |         |
6+20       0.4479      1.02  |Q  V     |         |         |         |
6+25       0.4550      1.02  |Q  V     |         |         |         |
6+30       0.4620      1.03  |Q  V     |         |         |         |
6+35       0.4691      1.03  |Q  V     |         |         |         |
6+40       0.4763      1.04  |Q  V     |         |         |         |
6+45       0.4834      1.04  |Q   V    |         |         |         |
6+50       0.4907      1.05  |Q   V    |         |         |         |
6+55       0.4979      1.05  |Q   V    |         |         |         |
7+ 0       0.5052      1.06  |Q   V    |         |         |         |
7+ 5       0.5125      1.06  |Q   V    |         |         |         |
7+10       0.5199      1.07  |Q   V    |         |         |         |
7+15       0.5273      1.08  |Q   V    |         |         |         |
7+20       0.5348      1.08  |Q   V    |         |         |         |
7+25       0.5423      1.09  |Q   V    |         |         |         |
7+30       0.5498      1.09  |Q   V    |         |         |         |
7+35       0.5574      1.10  |Q   V    |         |         |         |
7+40       0.5650      1.11  |Q   V    |         |         |         |
7+45       0.5727      1.11  |Q   V    |         |         |         |
7+50       0.5804      1.12  |Q    V   |         |         |         |
7+55       0.5882      1.13  |Q    V   |         |         |         |
8+ 0       0.5960      1.13  |Q    V   |         |         |         |
8+ 5       0.6038      1.14  |Q    V   |         |         |         |
8+10       0.6117      1.15  |Q    V   |         |         |         |
8+15       0.6197      1.15  |Q    V   |         |         |         |
8+20       0.6277      1.16  |Q    V   |         |         |         |
8+25       0.6357      1.17  |Q    V   |         |         |         |
8+30       0.6438      1.18  |Q    V   |         |         |         |
8+35       0.6520      1.18  |Q    V   |         |         |         |
8+40       0.6602      1.19  |Q    V   |         |         |         |
8+45       0.6684      1.20  |Q    V   |         |         |         |
8+50       0.6768      1.21  |Q     V  |         |         |         |
```

```
 8+55       0.6851      1.22  |Q     V  |          |          |          |
 9+ 0       0.6936      1.22  |Q     V  |          |          |          |
 9+ 5       0.7021      1.23  |Q     V  |          |          |          |
 9+10       0.7106      1.24  |Q     V  |          |          |          |
 9+15       0.7192      1.25  |Q     V  |          |          |          |
 9+20       0.7279      1.26  |Q     V  |          |          |          |
 9+25       0.7366      1.27  |Q     V  |          |          |          |
 9+30       0.7454      1.28  |Q     V  |          |          |          |
 9+35       0.7543      1.29  |Q     V  |          |          |          |
 9+40       0.7632      1.30  |Q     V  |          |          |          |
 9+45       0.7722      1.31  |Q      V |          |          |          |
 9+50       0.7812      1.32  |Q      V |          |          |          |
 9+55       0.7904      1.33  |Q      V |          |          |          |
10+ 0       0.7996      1.34  |Q      V |          |          |          |
10+ 5       0.8089      1.35  |Q      V |          |          |          |
10+10       0.8182      1.36  |Q      V |          |          |          |
10+15       0.8277      1.37  |Q      V |          |          |          |
10+20       0.8372      1.38  |Q      V |          |          |          |
10+25       0.8468      1.39  |Q      V |          |          |          |
10+30       0.8564      1.41  |Q      V |          |          |          |
10+35       0.8662      1.42  |Q       V|          |          |          |
10+40       0.8761      1.43  |Q       V|          |          |          |
10+45       0.8860      1.44  |Q       V|          |          |          |
10+50       0.8960      1.46  |Q       V|          |          |          |
10+55       0.9061      1.47  |Q       V|          |          |          |
11+ 0       0.9163      1.48  |Q       V|          |          |          |
11+ 5       0.9267      1.50  |Q       V|          |          |          |
11+10       0.9371      1.51  |Q       V|          |          |          |
11+15       0.9476      1.53  |Q       V|          |          |          |
11+20       0.9582      1.54  |Q        V          |          |          |
11+25       0.9689      1.56  |Q        V          |          |          |
11+30       0.9798      1.57  |Q        V          |          |          |
11+35       0.9907      1.59  |Q        V          |          |          |
11+40       1.0018      1.61  |Q        V          |          |          |
11+45       1.0130      1.63  |Q        V          |          |          |
11+50       1.0243      1.64  |Q        V          |          |          |
11+55       1.0358      1.66  |Q        V          |          |          |
12+ 0       1.0474      1.68  |Q        V          |          |          |
12+ 5       1.0591      1.69  |Q        |V         |          |          |
12+10       1.0706      1.67  |Q        |V         |          |          |
12+15       1.0820      1.65  |Q        |V         |          |          |
12+20       1.0934      1.66  |Q        |V         |          |          |
12+25       1.1050      1.68  |Q        |V         |          |          |
12+30       1.1167      1.70  |Q        |V         |          |          |
12+35       1.1286      1.73  |Q        |V         |          |          |
12+40       1.1407      1.75  |Q        |V         |          |          |
12+45       1.1530      1.78  |Q        | V        |          |          |
12+50       1.1654      1.81  |Q        | V        |          |          |
12+55       1.1780      1.83  |Q        | V        |          |          |
13+ 0       1.1909      1.86  |Q        | V        |          |          |
13+ 5       1.2039      1.89  |Q        | V        |          |          |
13+10       1.2172      1.93  |Q        | V        |          |          |
13+15       1.2307      1.96  |Q        | V        |          |          |
13+20       1.2444      2.00  |Q        |  V       |          |          |
13+25       1.2584      2.03  | Q       |  V       |          |          |
13+30       1.2727      2.07  | Q       |  V       |          |          |
13+35       1.2872      2.11  | Q       |  V       |          |          |
13+40       1.3020      2.15  | Q       |  V       |          |          |
13+45       1.3172      2.20  | Q       |  V       |          |          |
13+50       1.3326      2.25  | Q       |  V       |          |          |
13+55       1.3484      2.29  | Q       |   V      |          |          |
14+ 0       1.3646      2.35  | Q       |   V      |          |          |
14+ 5       1.3812      2.40  | Q       |   V      |          |          |
14+10       1.3982      2.47  | Q       |   V      |          |          |
14+15       1.4156      2.53  | Q       |   V      |          |          |
14+20       1.4335      2.60  | Q       |   V      |          |          |
14+25       1.4520      2.68  | Q       |    V     |          |          |
14+30       1.4710      2.76  | Q       |    V     |          |          |
14+35       1.4906      2.84  | Q       |    V     |          |          |
14+40       1.5108      2.94  | Q       |    V     |          |          |
14+45       1.5317      3.04  |  Q      |     V    |          |          |
14+50       1.5535      3.16  |  Q      |     V    |          |          |
14+55       1.5761      3.28  |  Q      |     V    |          |          |
15+ 0       1.5996      3.42  |  Q      |     V    |          |          |
15+ 5       1.6242      3.57  |  Q      |     V    |          |          |
```



```
   21+25       3.6331      0.98  Q          |          |          |      V  |
   21+30       3.6398      0.97  Q          |          |          |       V |
   21+35       3.6464      0.97  Q          |          |          |       V |
   21+40       3.6530      0.96  Q          |          |          |       V |
   21+45       3.6595      0.95  Q          |          |          |       V |
   21+50       3.6660      0.94  Q          |          |          |       V |
   21+55       3.6724      0.93  Q          |          |          |       V |
   22+ 0       3.6788      0.92  Q          |          |          |       V |
   22+ 5       3.6851      0.92  Q          |          |          |       V |
   22+10       3.6914      0.91  Q          |          |          |       V |
   22+15       3.6976      0.90  Q          |          |          |       V |
   22+20       3.7037      0.89  Q          |          |          |       V |
   22+25       3.7099      0.89  Q          |          |          |       V |
   22+30       3.7159      0.88  Q          |          |          |       V |
   22+35       3.7219      0.87  Q          |          |          |       V |
   22+40       3.7279      0.87  Q          |          |          |       V |
   22+45       3.7338      0.86  Q          |          |          |        V|
   22+50       3.7397      0.85  Q          |          |          |        V|
   22+55       3.7455      0.85  Q          |          |          |        V|
   23+ 0       3.7513      0.84  Q          |          |          |        V|
   23+ 5       3.7571      0.84  Q          |          |          |        V|
   23+10       3.7628      0.83  Q          |          |          |        V|
   23+15       3.7685      0.82  Q          |          |          |        V|
   23+20       3.7741      0.82  Q          |          |          |        V|
   23+25       3.7797      0.81  Q          |          |          |        V|
   23+30       3.7853      0.81  Q          |          |          |        V|
   23+35       3.7908      0.80  Q          |          |          |        V|
   23+40       3.7963      0.80  Q          |          |          |        V|
   23+45       3.8017      0.79  Q          |          |          |        V|
   23+50       3.8071      0.79  Q          |          |          |        V|
   23+55       3.8125      0.78  Q          |          |          |        V|
   24+ 0       3.8178      0.78  Q          |          |          |        V|
   24+ 5       3.8227      0.71  Q          |          |          |        V|
   24+10       3.8255      0.40  Q          |          |          |        V|
   24+15       3.8262      0.11  Q          |          |          |        V|
   24+20       3.8264      0.02  Q          |          |          |        V|
   24+25       3.8264      0.01  Q          |          |          |         V
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/16/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 7D
PROPOSED CONDITION, 10-YEAR 24-HOUR
FN: 7DPROPUH10.OUT - ABE

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
13.00	1	0.60
Rainfall data for year 2		
13.00	6	0.70
Rainfall data for year 2		
13.00	24	1.20
Rainfall data for year 100		
13.00	1	1.00
Rainfall data for year 100		
13.00	6	1.90
Rainfall data for year 100		
13.00	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	13.00	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.30	0.100	69.0	69.0	4.49	0.121
11.70	0.900	98.0	98.0	0.20	0.892

```
Area-averaged catchment yield fraction, Y =  0.815
Area-averaged low loss fraction, Yb =  0.185
User entry of time of concentration  =   0.200 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      13.00(Ac.)
Catchment Lag time =   0.160 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 52.0833
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.185 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.222(In)
Computed peak 30-minute rainfall =  0.455(In)
Specified peak 1-hour rainfall =  0.600(In)
Computed peak 3-hour rainfall =  0.915(In)
Specified peak 6-hour rainfall =  1.194(In)
Specified peak 24-hour rainfall =  2.105(In)


Rainfall depth area reduction factors:
Using a total area of      13.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.222(In)
30-minute factor = 0.999    Adjusted rainfall =  0.454(In)
1-hour factor = 0.999       Adjusted rainfall =  0.600(In)
3-hour factor = 1.000       Adjusted rainfall =  0.915(In)
6-hour factor = 1.000       Adjusted rainfall =  1.194(In)
24-hour factor = 1.000      Adjusted rainfall =  2.105(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       157.22 (CFS))

  1                4.951                   7.783
  2               32.173                  42.799
  3               71.993                  62.605
  4               91.514                  30.690
  5               97.565                   9.512
  6               98.956                   2.188
  7              100.000                   1.641
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2219              0.2219
  2              0.2928              0.0709
  3              0.3444              0.0516
  4              0.3864              0.0420
  5              0.4225              0.0361
  6              0.4544              0.0320
  7              0.4833              0.0289
  8              0.5099              0.0265
  9              0.5345              0.0246
 10              0.5575              0.0230
 11              0.5791              0.0217
 12              0.5996              0.0205
 13              0.6184              0.0187
 14              0.6362              0.0179
 15              0.6533              0.0171
 16              0.6697              0.0164
 17              0.6855              0.0158
 18              0.7008              0.0152
 19              0.7155              0.0147
 20              0.7297              0.0142
 21              0.7435              0.0138
 22              0.7570              0.0134
 23              0.7700              0.0130
 24              0.7827              0.0127
 25              0.7951              0.0124
 26              0.8072              0.0121
```

27	0.8190	0.0118
28	0.8305	0.0115
29	0.8418	0.0113
30	0.8528	0.0110
31	0.8636	0.0108
32	0.8742	0.0106
33	0.8846	0.0104
34	0.8948	0.0102
35	0.9049	0.0100
36	0.9147	0.0099
37	0.9244	0.0097
38	0.9339	0.0095
39	0.9433	0.0094
40	0.9525	0.0092
41	0.9616	0.0091
42	0.9705	0.0089
43	0.9793	0.0088
44	0.9880	0.0087
45	0.9966	0.0086
46	1.0050	0.0084
47	1.0133	0.0083
48	1.0216	0.0082
49	1.0297	0.0081
50	1.0377	0.0080
51	1.0456	0.0079
52	1.0534	0.0078
53	1.0612	0.0077
54	1.0688	0.0076
55	1.0764	0.0076
56	1.0838	0.0075
57	1.0912	0.0074
58	1.0985	0.0073
59	1.1058	0.0072
60	1.1129	0.0072
61	1.1200	0.0071
62	1.1270	0.0070
63	1.1340	0.0069
64	1.1409	0.0069
65	1.1477	0.0068
66	1.1544	0.0067
67	1.1611	0.0067
68	1.1677	0.0066
69	1.1743	0.0066
70	1.1808	0.0065
71	1.1872	0.0064
72	1.1936	0.0064
73	1.2004	0.0068
74	1.2071	0.0067
75	1.2138	0.0066
76	1.2203	0.0066
77	1.2269	0.0065
78	1.2334	0.0065
79	1.2398	0.0064
80	1.2462	0.0064
81	1.2526	0.0064
82	1.2589	0.0063
83	1.2652	0.0063
84	1.2714	0.0062
85	1.2775	0.0062
86	1.2837	0.0061
87	1.2898	0.0061
88	1.2958	0.0060
89	1.3018	0.0060
90	1.3078	0.0060
91	1.3137	0.0059
92	1.3196	0.0059
93	1.3254	0.0059
94	1.3313	0.0058
95	1.3370	0.0058
96	1.3428	0.0057
97	1.3485	0.0057
98	1.3542	0.0057
99	1.3598	0.0056
100	1.3654	0.0056
101	1.3710	0.0056

102	1.3765	0.0055
103	1.3820	0.0055
104	1.3875	0.0055
105	1.3929	0.0054
106	1.3984	0.0054
107	1.4037	0.0054
108	1.4091	0.0054
109	1.4144	0.0053
110	1.4197	0.0053
111	1.4250	0.0053
112	1.4302	0.0052
113	1.4354	0.0052
114	1.4406	0.0052
115	1.4458	0.0052
116	1.4509	0.0051
117	1.4560	0.0051
118	1.4611	0.0051
119	1.4661	0.0051
120	1.4712	0.0050
121	1.4762	0.0050
122	1.4812	0.0050
123	1.4861	0.0050
124	1.4911	0.0049
125	1.4960	0.0049
126	1.5008	0.0049
127	1.5057	0.0049
128	1.5106	0.0048
129	1.5154	0.0048
130	1.5202	0.0048
131	1.5249	0.0048
132	1.5297	0.0048
133	1.5344	0.0047
134	1.5391	0.0047
135	1.5438	0.0047
136	1.5485	0.0047
137	1.5531	0.0046
138	1.5578	0.0046
139	1.5624	0.0046
140	1.5670	0.0046
141	1.5715	0.0046
142	1.5761	0.0046
143	1.5806	0.0045
144	1.5851	0.0045
145	1.5896	0.0045
146	1.5941	0.0045
147	1.5986	0.0045
148	1.6030	0.0044
149	1.6074	0.0044
150	1.6119	0.0044
151	1.6162	0.0044
152	1.6206	0.0044
153	1.6250	0.0044
154	1.6293	0.0043
155	1.6336	0.0043
156	1.6379	0.0043
157	1.6422	0.0043
158	1.6465	0.0043
159	1.6508	0.0043
160	1.6550	0.0042
161	1.6592	0.0042
162	1.6634	0.0042
163	1.6676	0.0042
164	1.6718	0.0042
165	1.6760	0.0042
166	1.6801	0.0041
167	1.6842	0.0041
168	1.6884	0.0041
169	1.6925	0.0041
170	1.6966	0.0041
171	1.7006	0.0041
172	1.7047	0.0041
173	1.7088	0.0040
174	1.7128	0.0040
175	1.7168	0.0040
176	1.7208	0.0040

177	1.7248	0.0040
178	1.7288	0.0040
179	1.7328	0.0040
180	1.7367	0.0040
181	1.7407	0.0039
182	1.7446	0.0039
183	1.7485	0.0039
184	1.7524	0.0039
185	1.7563	0.0039
186	1.7602	0.0039
187	1.7640	0.0039
188	1.7679	0.0039
189	1.7717	0.0038
190	1.7756	0.0038
191	1.7794	0.0038
192	1.7832	0.0038
193	1.7870	0.0038
194	1.7908	0.0038
195	1.7946	0.0038
196	1.7983	0.0038
197	1.8021	0.0037
198	1.8058	0.0037
199	1.8095	0.0037
200	1.8132	0.0037
201	1.8169	0.0037
202	1.8206	0.0037
203	1.8243	0.0037
204	1.8280	0.0037
205	1.8317	0.0037
206	1.8353	0.0037
207	1.8390	0.0036
208	1.8426	0.0036
209	1.8462	0.0036
210	1.8498	0.0036
211	1.8534	0.0036
212	1.8570	0.0036
213	1.8606	0.0036
214	1.8642	0.0036
215	1.8677	0.0036
216	1.8713	0.0036
217	1.8748	0.0035
218	1.8783	0.0035
219	1.8819	0.0035
220	1.8854	0.0035
221	1.8889	0.0035
222	1.8924	0.0035
223	1.8958	0.0035
224	1.8993	0.0035
225	1.9028	0.0035
226	1.9062	0.0035
227	1.9097	0.0034
228	1.9131	0.0034
229	1.9166	0.0034
230	1.9200	0.0034
231	1.9234	0.0034
232	1.9268	0.0034
233	1.9302	0.0034
234	1.9336	0.0034
235	1.9370	0.0034
236	1.9403	0.0034
237	1.9437	0.0034
238	1.9470	0.0034
239	1.9504	0.0033
240	1.9537	0.0033
241	1.9570	0.0033
242	1.9604	0.0033
243	1.9637	0.0033
244	1.9670	0.0033
245	1.9703	0.0033
246	1.9736	0.0033
247	1.9768	0.0033
248	1.9801	0.0033
249	1.9834	0.0033
250	1.9866	0.0033
251	1.9899	0.0032

252	1.9931	0.0032
253	1.9963	0.0032
254	1.9996	0.0032
255	2.0028	0.0032
256	2.0060	0.0032
257	2.0092	0.0032
258	2.0124	0.0032
259	2.0156	0.0032
260	2.0188	0.0032
261	2.0219	0.0032
262	2.0251	0.0032
263	2.0283	0.0032
264	2.0314	0.0032
265	2.0346	0.0031
266	2.0377	0.0031
267	2.0408	0.0031
268	2.0440	0.0031
269	2.0471	0.0031
270	2.0502	0.0031
271	2.0533	0.0031
272	2.0564	0.0031
273	2.0595	0.0031
274	2.0626	0.0031
275	2.0656	0.0031
276	2.0687	0.0031
277	2.0718	0.0031
278	2.0748	0.0031
279	2.0779	0.0031
280	2.0809	0.0030
281	2.0840	0.0030
282	2.0870	0.0030
283	2.0900	0.0030
284	2.0930	0.0030
285	2.0961	0.0030
286	2.0991	0.0030
287	2.1021	0.0030
288	2.1051	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0025
4	0.0030	0.0006	0.0025
5	0.0030	0.0006	0.0025
6	0.0030	0.0006	0.0025
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0026
16	0.0031	0.0006	0.0026
17	0.0032	0.0006	0.0026
18	0.0032	0.0006	0.0026
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0032	0.0006	0.0026
27	0.0033	0.0006	0.0027
28	0.0033	0.0006	0.0027
29	0.0033	0.0006	0.0027
30	0.0033	0.0006	0.0027
31	0.0033	0.0006	0.0027
32	0.0033	0.0006	0.0027
33	0.0033	0.0006	0.0027

34	0.0033	0.0006	0.0027
35	0.0034	0.0006	0.0027
36	0.0034	0.0006	0.0027
37	0.0034	0.0006	0.0028
38	0.0034	0.0006	0.0028
39	0.0034	0.0006	0.0028
40	0.0034	0.0006	0.0028
41	0.0034	0.0006	0.0028
42	0.0034	0.0006	0.0028
43	0.0035	0.0006	0.0028
44	0.0035	0.0006	0.0028
45	0.0035	0.0006	0.0028
46	0.0035	0.0006	0.0029
47	0.0035	0.0007	0.0029
48	0.0035	0.0007	0.0029
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0030
55	0.0036	0.0007	0.0030
56	0.0037	0.0007	0.0030
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0037	0.0007	0.0031
63	0.0038	0.0007	0.0031
64	0.0038	0.0007	0.0031
65	0.0038	0.0007	0.0031
66	0.0038	0.0007	0.0031
67	0.0038	0.0007	0.0031
68	0.0039	0.0007	0.0031
69	0.0039	0.0007	0.0032
70	0.0039	0.0007	0.0032
71	0.0039	0.0007	0.0032
72	0.0039	0.0007	0.0032
73	0.0040	0.0007	0.0032
74	0.0040	0.0007	0.0032
75	0.0040	0.0007	0.0033
76	0.0040	0.0007	0.0033
77	0.0040	0.0007	0.0033
78	0.0040	0.0007	0.0033
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0034
82	0.0041	0.0008	0.0034
83	0.0042	0.0008	0.0034
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0035
88	0.0043	0.0008	0.0035
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0044	0.0008	0.0036
92	0.0044	0.0008	0.0036
93	0.0044	0.0008	0.0036
94	0.0044	0.0008	0.0036
95	0.0045	0.0008	0.0036
96	0.0045	0.0008	0.0037
97	0.0045	0.0008	0.0037
98	0.0045	0.0008	0.0037
99	0.0046	0.0008	0.0037
100	0.0046	0.0008	0.0037
101	0.0046	0.0009	0.0038
102	0.0046	0.0009	0.0038
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0048	0.0009	0.0039
106	0.0048	0.0009	0.0039
107	0.0048	0.0009	0.0039
108	0.0048	0.0009	0.0039

109	0.0049	0.0009	0.0040
110	0.0049	0.0009	0.0040
111	0.0050	0.0009	0.0040
112	0.0050	0.0009	0.0041
113	0.0050	0.0009	0.0041
114	0.0051	0.0009	0.0041
115	0.0051	0.0009	0.0042
116	0.0051	0.0009	0.0042
117	0.0052	0.0010	0.0042
118	0.0052	0.0010	0.0042
119	0.0053	0.0010	0.0043
120	0.0053	0.0010	0.0043
121	0.0054	0.0010	0.0044
122	0.0054	0.0010	0.0044
123	0.0054	0.0010	0.0044
124	0.0055	0.0010	0.0045
125	0.0055	0.0010	0.0045
126	0.0056	0.0010	0.0045
127	0.0056	0.0010	0.0046
128	0.0057	0.0010	0.0046
129	0.0057	0.0011	0.0047
130	0.0058	0.0011	0.0047
131	0.0059	0.0011	0.0048
132	0.0059	0.0011	0.0048
133	0.0060	0.0011	0.0049
134	0.0060	0.0011	0.0049
135	0.0061	0.0011	0.0050
136	0.0061	0.0011	0.0050
137	0.0062	0.0011	0.0051
138	0.0063	0.0012	0.0051
139	0.0064	0.0012	0.0052
140	0.0064	0.0012	0.0052
141	0.0065	0.0012	0.0053
142	0.0065	0.0012	0.0053
143	0.0066	0.0012	0.0054
144	0.0067	0.0012	0.0055
145	0.0064	0.0012	0.0052
146	0.0064	0.0012	0.0053
147	0.0066	0.0012	0.0054
148	0.0066	0.0012	0.0054
149	0.0067	0.0012	0.0055
150	0.0068	0.0013	0.0056
151	0.0069	0.0013	0.0057
152	0.0070	0.0013	0.0057
153	0.0072	0.0013	0.0058
154	0.0072	0.0013	0.0059
155	0.0074	0.0014	0.0060
156	0.0075	0.0014	0.0061
157	0.0076	0.0014	0.0062
158	0.0077	0.0014	0.0063
159	0.0079	0.0015	0.0065
160	0.0080	0.0015	0.0065
161	0.0082	0.0015	0.0067
162	0.0083	0.0015	0.0068
163	0.0086	0.0016	0.0070
164	0.0087	0.0016	0.0071
165	0.0089	0.0017	0.0073
166	0.0091	0.0017	0.0074
167	0.0094	0.0017	0.0076
168	0.0095	0.0018	0.0078
169	0.0099	0.0018	0.0080
170	0.0100	0.0019	0.0082
171	0.0104	0.0019	0.0085
172	0.0106	0.0020	0.0086
173	0.0110	0.0020	0.0090
174	0.0113	0.0021	0.0092
175	0.0118	0.0022	0.0096
176	0.0121	0.0022	0.0098
177	0.0127	0.0023	0.0104
178	0.0130	0.0024	0.0106
179	0.0138	0.0026	0.0113
180	0.0142	0.0026	0.0116
181	0.0152	0.0028	0.0124
182	0.0158	0.0029	0.0129
183	0.0171	0.0032	0.0139

184	0.0179	0.0033	0.0146
185	0.0205	0.0038	0.0167
186	0.0217	0.0040	0.0177
187	0.0246	0.0045	0.0201
188	0.0265	0.0046	0.0220
189	0.0320	0.0046	0.0274
190	0.0361	0.0046	0.0315
191	0.0516	0.0046	0.0470
192	0.0709	0.0046	0.0663
193	0.2219	0.0046	0.2174
194	0.0420	0.0046	0.0374
195	0.0289	0.0046	0.0243
196	0.0230	0.0042	0.0188
197	0.0187	0.0035	0.0153
198	0.0164	0.0030	0.0134
199	0.0147	0.0027	0.0120
200	0.0134	0.0025	0.0109
201	0.0124	0.0023	0.0101
202	0.0115	0.0021	0.0094
203	0.0108	0.0020	0.0088
204	0.0102	0.0019	0.0083
205	0.0097	0.0018	0.0079
206	0.0092	0.0017	0.0075
207	0.0088	0.0016	0.0072
208	0.0084	0.0016	0.0069
209	0.0081	0.0015	0.0066
210	0.0078	0.0014	0.0064
211	0.0076	0.0014	0.0062
212	0.0073	0.0014	0.0060
213	0.0071	0.0013	0.0058
214	0.0069	0.0013	0.0056
215	0.0067	0.0012	0.0055
216	0.0065	0.0012	0.0053
217	0.0068	0.0012	0.0055
218	0.0066	0.0012	0.0054
219	0.0064	0.0012	0.0053
220	0.0063	0.0012	0.0051
221	0.0062	0.0011	0.0050
222	0.0060	0.0011	0.0049
223	0.0059	0.0011	0.0048
224	0.0058	0.0011	0.0047
225	0.0057	0.0011	0.0047
226	0.0056	0.0010	0.0046
227	0.0055	0.0010	0.0045
228	0.0054	0.0010	0.0044
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0043
231	0.0052	0.0010	0.0042
232	0.0051	0.0009	0.0041
233	0.0050	0.0009	0.0041
234	0.0049	0.0009	0.0040
235	0.0049	0.0009	0.0040
236	0.0048	0.0009	0.0039
237	0.0047	0.0009	0.0039
238	0.0047	0.0009	0.0038
239	0.0046	0.0009	0.0038
240	0.0046	0.0008	0.0037
241	0.0045	0.0008	0.0037
242	0.0044	0.0008	0.0036
243	0.0044	0.0008	0.0036
244	0.0043	0.0008	0.0035
245	0.0043	0.0008	0.0035
246	0.0042	0.0008	0.0035
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0034
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0007	0.0033
252	0.0040	0.0007	0.0032
253	0.0039	0.0007	0.0032
254	0.0039	0.0007	0.0032
255	0.0039	0.0007	0.0032
256	0.0038	0.0007	0.0031
257	0.0038	0.0007	0.0031
258	0.0038	0.0007	0.0031

259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0030
262	0.0036	0.0007	0.0030
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0029
266	0.0035	0.0006	0.0029
267	0.0035	0.0006	0.0028
268	0.0035	0.0006	0.0028
269	0.0034	0.0006	0.0028
270	0.0034	0.0006	0.0028
271	0.0034	0.0006	0.0028
272	0.0034	0.0006	0.0027
273	0.0033	0.0006	0.0027
274	0.0033	0.0006	0.0027
275	0.0033	0.0006	0.0027
276	0.0033	0.0006	0.0027
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0031	0.0006	0.0026
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0030	0.0006	0.0025
287	0.0030	0.0006	0.0025
288	0.0030	0.0006	0.0025

Total soil rain loss = 0.33(In)
Total effective rainfall = 1.77(In)
Peak flow rate in flood hydrograph = 18.00(CFS)

++

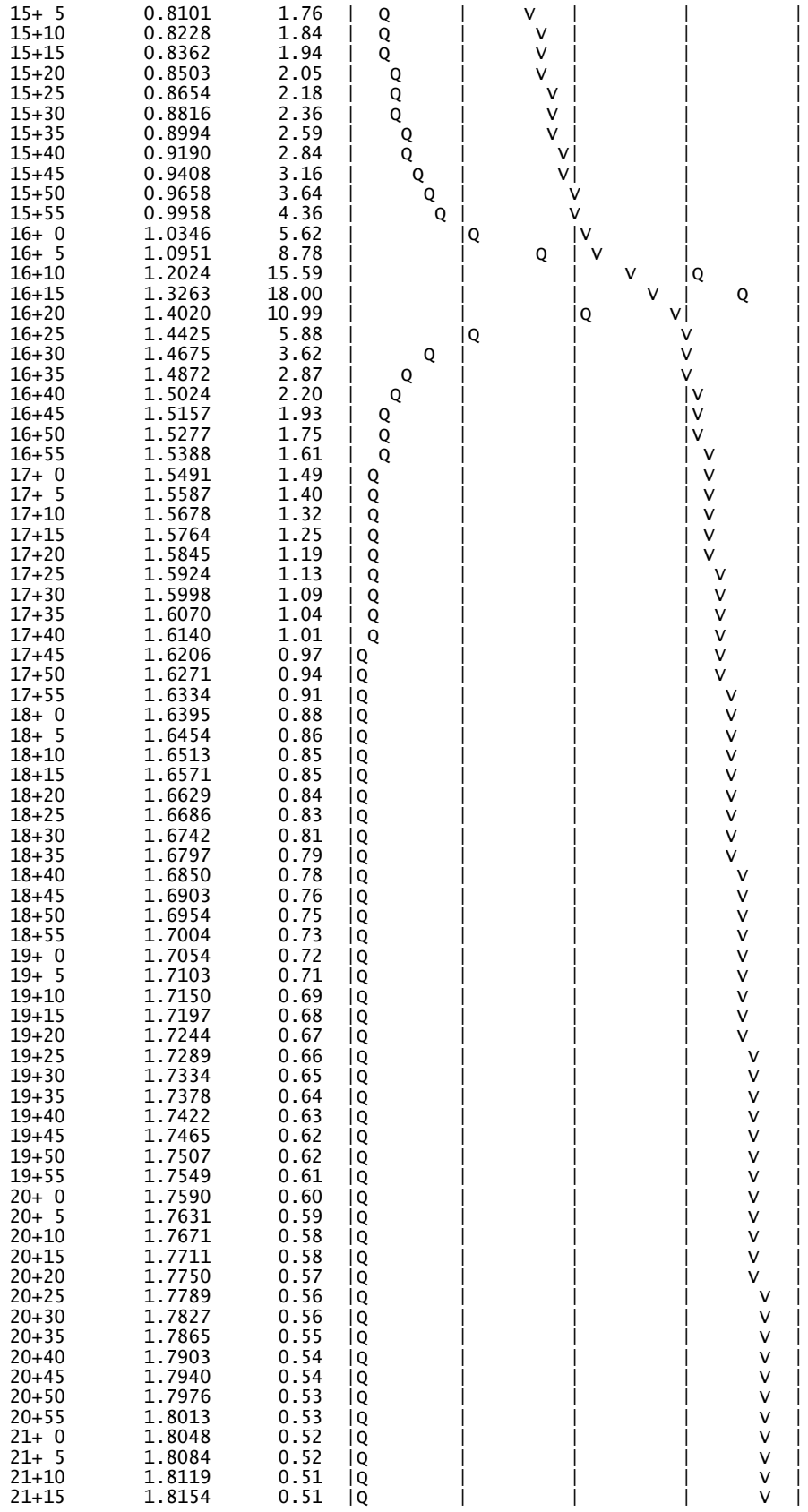
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0010	0.12	Q	|	|	|	|
0+15	0.0029	0.28	Q	|	|	|	|
0+20	0.0053	0.35	Q	|	|	|	|
0+25	0.0079	0.38	Q	|	|	|	|
0+30	0.0105	0.38	Q	|	|	|	|
0+35	0.0132	0.39	Q	|	|	|	|
0+40	0.0159	0.39	Q	|	|	|	|
0+45	0.0186	0.39	Q	|	|	|	|
0+50	0.0213	0.39	Q	|	|	|	|
0+55	0.0240	0.39	Q	|	|	|	|
1+ 0	0.0267	0.39	Q	|	|	|	|
1+ 5	0.0295	0.40	Q	|	|	|	|
1+10	0.0322	0.40	Q	|	|	|	|
1+15	0.0349	0.40	Q	|	|	|	|
1+20	0.0377	0.40	Q	|	|	|	|
1+25	0.0404	0.40	Q	|	|	|	|
1+30	0.0432	0.40	Q	|	|	|	|
1+35	0.0460	0.40	Q	|	|	|	|
1+40	0.0488	0.41	QV	|	|	|	|
1+45	0.0516	0.41	QV	|	|	|	|
1+50	0.0544	0.41	QV	|	|	|	|
1+55	0.0572	0.41	QV	|	|	|	|
2+ 0	0.0600	0.41	QV	|	|	|	|
2+ 5	0.0629	0.41	QV	|	|	|	|
2+10	0.0657	0.41	QV	|	|	|	|
2+15	0.0686	0.42	QV	|	|	|	|
2+20	0.0715	0.42	QV	|	|	|	|
2+25	0.0743	0.42	QV	|	|	|	|
2+30	0.0772	0.42	QV	|	|	|	|

2+35	0.0801	0.42	QV				
2+40	0.0830	0.42	QV				
2+45	0.0860	0.42	QV				
2+50	0.0889	0.43	QV				
2+55	0.0918	0.43	QV				
3+ 0	0.0948	0.43	QV				
3+ 5	0.0978	0.43	Q V				
3+10	0.1007	0.43	Q V				
3+15	0.1037	0.43	Q V				
3+20	0.1067	0.44	Q V				
3+25	0.1097	0.44	Q V				
3+30	0.1127	0.44	Q V				
3+35	0.1158	0.44	Q V				
3+40	0.1188	0.44	Q V				
3+45	0.1219	0.44	Q V				
3+50	0.1250	0.45	Q V				
3+55	0.1280	0.45	Q V				
4+ 0	0.1311	0.45	Q V				
4+ 5	0.1342	0.45	Q V				
4+10	0.1374	0.45	Q V				
4+15	0.1405	0.45	Q V				
4+20	0.1436	0.46	Q V				
4+25	0.1468	0.46	Q V				
4+30	0.1500	0.46	Q V				
4+35	0.1531	0.46	Q V				
4+40	0.1563	0.46	Q V				
4+45	0.1595	0.47	Q V				
4+50	0.1628	0.47	Q V				
4+55	0.1660	0.47	Q V				
5+ 0	0.1693	0.47	Q V				
5+ 5	0.1725	0.47	Q V				
5+10	0.1758	0.48	Q V				
5+15	0.1791	0.48	Q V				
5+20	0.1824	0.48	Q V				
5+25	0.1858	0.48	Q V				
5+30	0.1891	0.49	Q V				
5+35	0.1925	0.49	Q V				
5+40	0.1958	0.49	Q V				
5+45	0.1992	0.49	Q V				
5+50	0.2026	0.49	Q V				
5+55	0.2060	0.50	Q V				
6+ 0	0.2095	0.50	Q V				
6+ 5	0.2129	0.50	|Q V				
6+10	0.2164	0.50	|Q V				
6+15	0.2199	0.51	|Q V				
6+20	0.2234	0.51	|Q V				
6+25	0.2269	0.51	|Q V				
6+30	0.2305	0.51	|Q V				
6+35	0.2340	0.52	|Q V				
6+40	0.2376	0.52	|Q V				
6+45	0.2412	0.52	|Q V				
6+50	0.2448	0.52	|Q V				
6+55	0.2484	0.53	|Q V				
7+ 0	0.2521	0.53	|Q V				
7+ 5	0.2558	0.53	|Q V				
7+10	0.2595	0.54	|Q V				
7+15	0.2632	0.54	|Q V				
7+20	0.2669	0.54	|Q V				
7+25	0.2707	0.55	|Q V				
7+30	0.2744	0.55	|Q V				
7+35	0.2782	0.55	|Q V				
7+40	0.2820	0.55	|Q V				
7+45	0.2859	0.56	|Q V				
7+50	0.2898	0.56	|Q V				
7+55	0.2936	0.56	|Q V				
8+ 0	0.2975	0.57	|Q V				
8+ 5	0.3015	0.57	|Q V				
8+10	0.3054	0.57	|Q V				
8+15	0.3094	0.58	|Q V				
8+20	0.3134	0.58	|Q V				
8+25	0.3175	0.59	|Q V				
8+30	0.3215	0.59	|Q V				
8+35	0.3256	0.59	|Q V				
8+40	0.3297	0.60	|Q V				
8+45	0.3338	0.60	|Q V				

```
 8+50       0.3380      0.60  |Q     V  |          |          |          |
 8+55       0.3422      0.61  |Q     V  |          |          |          |
 9+ 0       0.3464      0.61  |Q     V  |          |          |          |
 9+ 5       0.3507      0.62  |Q     V  |          |          |          |
 9+10       0.3549      0.62  |Q     V  |          |          |          |
 9+15       0.3592      0.63  |Q     V  |          |          |          |
 9+20       0.3636      0.63  |Q     V  |          |          |          |
 9+25       0.3679      0.63  |Q     V  |          |          |          |
 9+30       0.3723      0.64  |Q     V  |          |          |          |
 9+35       0.3768      0.64  |Q     V  |          |          |          |
 9+40       0.3812      0.65  |Q     V  |          |          |          |
 9+45       0.3858      0.65  |Q      V |          |          |          |
 9+50       0.3903      0.66  |Q      V |          |          |          |
 9+55       0.3949      0.66  |Q      V |          |          |          |
10+ 0       0.3995      0.67  |Q      V |          |          |          |
10+ 5       0.4041      0.67  |Q      V |          |          |          |
10+10       0.4088      0.68  |Q      V |          |          |          |
10+15       0.4135      0.69  |Q      V |          |          |          |
10+20       0.4183      0.69  |Q      V |          |          |          |
10+25       0.4231      0.70  |Q      V |          |          |          |
10+30       0.4279      0.70  |Q      V |          |          |          |
10+35       0.4328      0.71  |Q       V|          |          |          |
10+40       0.4377      0.72  |Q       V|          |          |          |
10+45       0.4427      0.72  |Q       V|          |          |          |
10+50       0.4477      0.73  |Q       V|          |          |          |
10+55       0.4528      0.73  |Q       V|          |          |          |
11+ 0       0.4579      0.74  |Q       V|          |          |          |
11+ 5       0.4630      0.75  |Q       V|          |          |          |
11+10       0.4682      0.76  |Q       V|          |          |          |
11+15       0.4735      0.76  |Q       V|          |          |          |
11+20       0.4788      0.77  |Q       V|          |          |          |
11+25       0.4842      0.78  |Q        V          |          |          |
11+30       0.4896      0.79  |Q        V          |          |          |
11+35       0.4951      0.80  |Q        V          |          |          |
11+40       0.5006      0.80  |Q        V          |          |          |
11+45       0.5062      0.81  |Q        V          |          |          |
11+50       0.5118      0.82  |Q        V          |          |          |
11+55       0.5176      0.83  |Q        V          |          |          |
12+ 0       0.5234      0.84  |Q        V          |          |          |
12+ 5       0.5292      0.85  |Q        |V         |          |          |
12+10       0.5350      0.84  |Q        |V         |          |          |
12+15       0.5407      0.83  |Q        |V         |          |          |
12+20       0.5465      0.83  |Q        |V         |          |          |
12+25       0.5523      0.84  |Q        |V         |          |          |
12+30       0.5581      0.85  |Q        |V         |          |          |
12+35       0.5641      0.86  |Q        |V         |          |          |
12+40       0.5701      0.88  |Q        |V         |          |          |
12+45       0.5762      0.89  |Q        | V        |          |          |
12+50       0.5824      0.90  |Q        | V        |          |          |
12+55       0.5887      0.92  |Q        | V        |          |          |
13+ 0       0.5951      0.93  |Q        | V        |          |          |
13+ 5       0.6016      0.94  |Q        | V        |          |          |
13+10       0.6082      0.96  |Q        | V        |          |          |
13+15       0.6150      0.98  |Q        | V        |          |          |
13+20       0.6218      0.99  |Q        | V        |          |          |
13+25       0.6288      1.01  | Q       |  V       |          |          |
13+30       0.6359      1.03  | Q       |  V       |          |          |
13+35       0.6431      1.05  | Q       |  V       |          |          |
13+40       0.6505      1.07  | Q       |  V       |          |          |
13+45       0.6580      1.09  | Q       |  V       |          |          |
13+50       0.6657      1.12  | Q       |  V       |          |          |
13+55       0.6736      1.14  | Q       |   V      |          |          |
14+ 0       0.6816      1.17  | Q       |   V      |          |          |
14+ 5       0.6899      1.20  | Q       |   V      |          |          |
14+10       0.6983      1.23  | Q       |   V      |          |          |
14+15       0.7070      1.26  | Q       |   V      |          |          |
14+20       0.7159      1.29  | Q       |   V      |          |          |
14+25       0.7250      1.33  | Q       |    V     |          |          |
14+30       0.7344      1.37  | Q       |    V     |          |          |
14+35       0.7441      1.41  | Q       |    V     |          |          |
14+40       0.7541      1.45  | Q       |    V     |          |          |
14+45       0.7645      1.50  |  Q      |    V     |          |          |
14+50       0.7752      1.56  |  Q      |     V    |          |          |
14+55       0.7864      1.62  |  Q      |     V    |          |          |
15+ 0       0.7980      1.69  |  Q      |     V    |          |          |
```



```
   21+20       1.8188      0.50  |Q        |         |         |      V  |
   21+25       1.8223      0.50  Q        |         |         |      V  |
   21+30       1.8256      0.49  Q        |         |         |       V |
   21+35       1.8290      0.49  Q        |         |         |       V |
   21+40       1.8323      0.48  Q        |         |         |       V |
   21+45       1.8356      0.48  Q        |         |         |       V |
   21+50       1.8389      0.47  Q        |         |         |       V |
   21+55       1.8421      0.47  Q        |         |         |       V |
   22+ 0       1.8453      0.47  Q        |         |         |       V |
   22+ 5       1.8485      0.46  Q        |         |         |       V |
   22+10       1.8516      0.46  Q        |         |         |       V |
   22+15       1.8548      0.45  Q        |         |         |       V |
   22+20       1.8579      0.45  Q        |         |         |       V |
   22+25       1.8609      0.45  Q        |         |         |       V |
   22+30       1.8640      0.44  Q        |         |         |       V |
   22+35       1.8670      0.44  Q        |         |         |       V |
   22+40       1.8700      0.44  Q        |         |         |       V |
   22+45       1.8730      0.43  Q        |         |         |        V|
   22+50       1.8760      0.43  Q        |         |         |        V|
   22+55       1.8789      0.43  Q        |         |         |        V|
   23+ 0       1.8818      0.42  Q        |         |         |        V|
   23+ 5       1.8847      0.42  Q        |         |         |        V|
   23+10       1.8876      0.42  Q        |         |         |        V|
   23+15       1.8904      0.41  Q        |         |         |        V|
   23+20       1.8933      0.41  Q        |         |         |        V|
   23+25       1.8961      0.41  Q        |         |         |        V|
   23+30       1.8989      0.41  Q        |         |         |        V|
   23+35       1.9017      0.40  Q        |         |         |        V|
   23+40       1.9044      0.40  Q        |         |         |        V|
   23+45       1.9072      0.40  Q        |         |         |        V|
   23+50       1.9099      0.40  Q        |         |         |        V|
   23+55       1.9126      0.39  Q        |         |         |        V|
   24+ 0       1.9153      0.39  Q        |         |         |        V|
   24+ 5       1.9178      0.37  Q        |         |         |        V|
   24+10       1.9196      0.26  Q        |         |         |        V|
   24+15       1.9204      0.11  Q        |         |         |        V|
   24+20       1.9206      0.03  Q        |         |         |        V|
   24+25       1.9207      0.01  Q        |         |         |        V|
   24+30       1.9207      0.00  Q        |         |         |        V|
-------------------------------------------------------------------------
```

PROPOSED CONDITION
100-YEAR, 24-HOUR UNIT HYDROGRAPH

BUILDING 1

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 1A
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 1APROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
10.00	1	0.60
Rainfall data for year 2		
10.00	6	0.70
Rainfall data for year 2		
10.00	24	1.20
Rainfall data for year 100		
10.00	1	1.00
Rainfall data for year 100		
10.00	6	1.90
Rainfall data for year 100		
10.00	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	10.00	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.00	0.100	69.0	69.0	4.49	0.263
9.00	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.160 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      10.00(Ac.)
Catchment Lag time =   0.128 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 65.1042
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      10.00(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.370(In)
30-minute factor = 1.000    Adjusted rainfall =  0.758(In)
1-hour factor = 1.000       Adjusted rainfall =  1.000(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       120.94 (CFS))

  1                7.634                   9.232
  2               47.879                  48.672
  3               85.995                  46.096
  4               97.049                  13.368
  5               99.073                   2.449
  6              100.000                   1.121
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3699              0.3699
  2              0.4881              0.1182
  3              0.5741              0.0859
  4              0.6441              0.0700
  5              0.7042              0.0601
  6              0.7575              0.0533
  7              0.8057              0.0482
  8              0.8499              0.0442
  9              0.8909              0.0410
 10              0.9292              0.0383
 11              0.9653              0.0361
 12              0.9995              0.0342
 13              1.0286              0.0291
 14              1.0563              0.0277
 15              1.0828              0.0265
 16              1.1082              0.0254
 17              1.1325              0.0244
 18              1.1560              0.0235
 19              1.1786              0.0226
 20              1.2005              0.0219
 21              1.2217              0.0212
 22              1.2422              0.0206
 23              1.2622              0.0200
 24              1.2816              0.0194
 25              1.3005              0.0189
 26              1.3189              0.0184
 27              1.3369              0.0180
```

28	1.3544	0.0175
29	1.3716	0.0172
30	1.3883	0.0168
31	1.4048	0.0164
32	1.4208	0.0161
33	1.4366	0.0158
34	1.4521	0.0155
35	1.4672	0.0152
36	1.4821	0.0149
37	1.4968	0.0146
38	1.5111	0.0144
39	1.5253	0.0141
40	1.5392	0.0139
41	1.5528	0.0137
42	1.5663	0.0135
43	1.5796	0.0133
44	1.5926	0.0131
45	1.6055	0.0129
46	1.6182	0.0127
47	1.6307	0.0125
48	1.6431	0.0123
49	1.6552	0.0122
50	1.6673	0.0120
51	1.6791	0.0119
52	1.6909	0.0117
53	1.7024	0.0116
54	1.7139	0.0114
55	1.7252	0.0113
56	1.7363	0.0112
57	1.7474	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7798	0.0107
61	1.7904	0.0106
62	1.8008	0.0105
63	1.8112	0.0104
64	1.8214	0.0102
65	1.8316	0.0101
66	1.8416	0.0100
67	1.8516	0.0099
68	1.8614	0.0099
69	1.8712	0.0098
70	1.8809	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9110	0.0110
74	1.9219	0.0109
75	1.9328	0.0109
76	1.9436	0.0108
77	1.9542	0.0107
78	1.9649	0.0106
79	1.9754	0.0105
80	1.9859	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0168	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0471	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1059	0.0096
93	2.1154	0.0096
94	2.1250	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1532	0.0093
98	2.1624	0.0093
99	2.1717	0.0092
100	2.1809	0.0092
101	2.1900	0.0091
102	2.1991	0.0091

103	2.2081	0.0090
104	2.2171	0.0090
105	2.2260	0.0089
106	2.2349	0.0089
107	2.2437	0.0088
108	2.2525	0.0088
109	2.2612	0.0087
110	2.2699	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2957	0.0086
114	2.3042	0.0085
115	2.3126	0.0085
116	2.3211	0.0084
117	2.3294	0.0084
118	2.3378	0.0083
119	2.3461	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3789	0.0081
124	2.3870	0.0081
125	2.3950	0.0081
126	2.4031	0.0080
127	2.4110	0.0080
128	2.4190	0.0080
129	2.4269	0.0079
130	2.4348	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4660	0.0077
135	2.4737	0.0077
136	2.4813	0.0077
137	2.4890	0.0076
138	2.4966	0.0076
139	2.5042	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5342	0.0075
144	2.5416	0.0074
145	2.5490	0.0074
146	2.5564	0.0074
147	2.5637	0.0073
148	2.5710	0.0073
149	2.5783	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6142	0.0071
155	2.6214	0.0071
156	2.6284	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6635	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6911	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7115	0.0068
169	2.7183	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7451	0.0067
174	2.7517	0.0066
175	2.7584	0.0066
176	2.7650	0.0066
177	2.7716	0.0066

178	2.7781	0.0066
179	2.7847	0.0065
180	2.7912	0.0065
181	2.7977	0.0065
182	2.8042	0.0065
183	2.8106	0.0065
184	2.8171	0.0064
185	2.8235	0.0064
186	2.8299	0.0064
187	2.8362	0.0064
188	2.8426	0.0064
189	2.8489	0.0063
190	2.8553	0.0063
191	2.8616	0.0063
192	2.8678	0.0063
193	2.8741	0.0063
194	2.8803	0.0062
195	2.8866	0.0062
196	2.8928	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9113	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9357	0.0061
204	2.9418	0.0061
205	2.9478	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9778	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9956	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0132	0.0059
217	3.0190	0.0058
218	3.0249	0.0058
219	3.0307	0.0058
220	3.0365	0.0058
221	3.0423	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0653	0.0057
226	3.0710	0.0057
227	3.0767	0.0057
228	3.0824	0.0057
229	3.0880	0.0057
230	3.0937	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1106	0.0056
234	3.1162	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1329	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1550	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1714	0.0055
245	3.1768	0.0054
246	3.1823	0.0054
247	3.1877	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2039	0.0054
251	3.2093	0.0054
252	3.2146	0.0054

253	3.2200	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2571	0.0053
261	3.2623	0.0053
262	3.2676	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2988	0.0052
269	3.3039	0.0052
270	3.3091	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3245	0.0051
274	3.3296	0.0051
275	3.3347	0.0051
276	3.3398	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3549	0.0051
280	3.3600	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3751	0.0050
284	3.3801	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.4000	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048
34	0.0055	0.0007	0.0048

35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069
109	0.0080	0.0011	0.0069

110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0095
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229
184	0.0277	0.0038	0.0240

185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0556
191	0.0859	0.0046	0.0814
192	0.1182	0.0046	0.1136
193	0.3699	0.0046	0.3654
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0163
202	0.0175	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054
259	0.0062	0.0008	0.0053

260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 24.90(CFS)

++

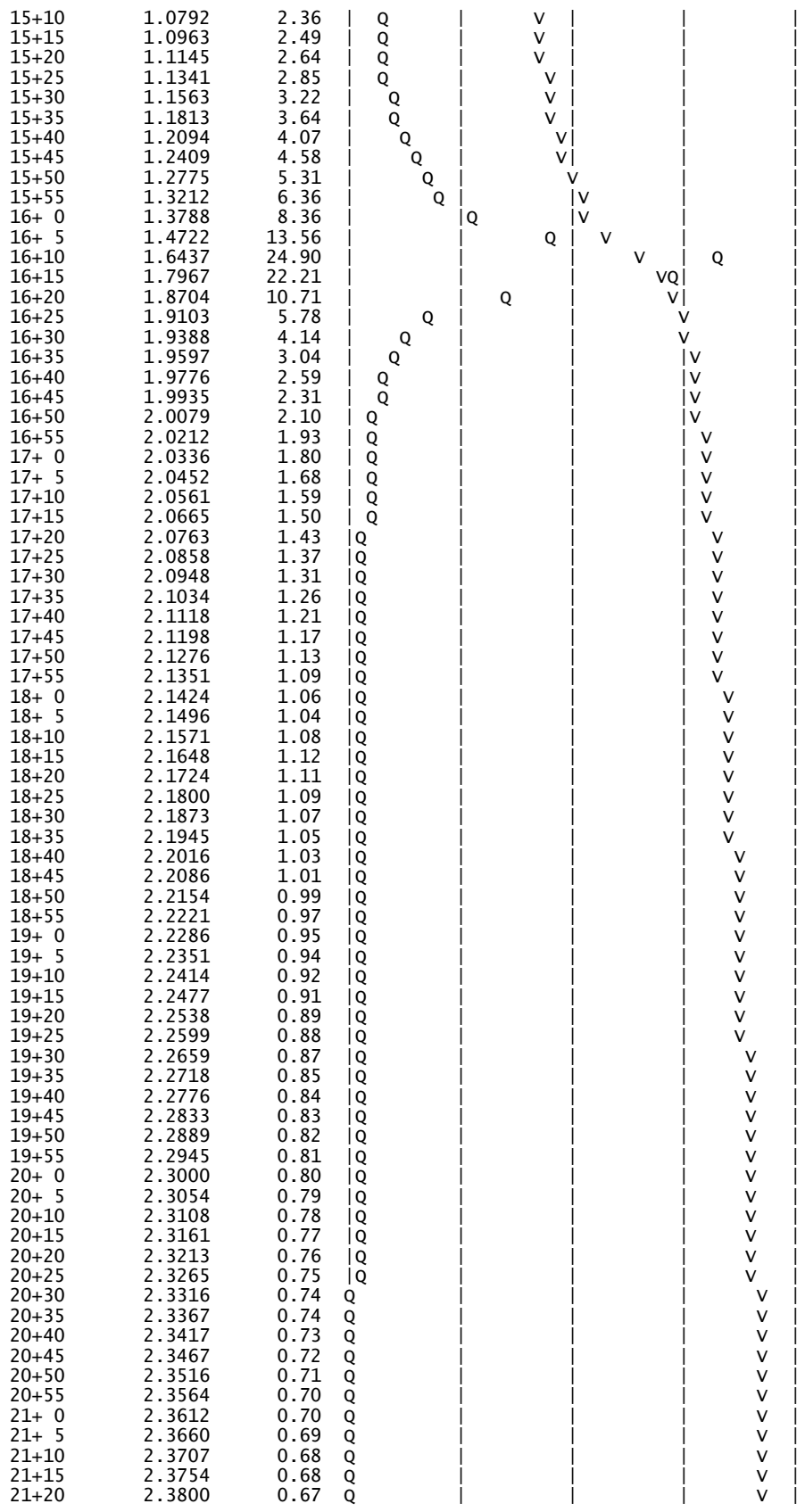
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0003	0.04	Q	|	|	|	|
0+10	0.0020	0.25	Q	|	|	|	|
0+15	0.0051	0.45	Q	|	|	|	|
0+20	0.0085	0.51	Q	|	|	|	|
0+25	0.0121	0.52	Q	|	|	|	|
0+30	0.0157	0.52	Q	|	|	|	|
0+35	0.0193	0.53	Q	|	|	|	|
0+40	0.0230	0.53	Q	|	|	|	|
0+45	0.0266	0.53	Q	|	|	|	|
0+50	0.0303	0.53	Q	|	|	|	|
0+55	0.0339	0.53	Q	|	|	|	|
1+ 0	0.0376	0.53	Q	|	|	|	|
1+ 5	0.0413	0.54	Q	|	|	|	|
1+10	0.0450	0.54	Q	|	|	|	|
1+15	0.0487	0.54	Q	|	|	|	|
1+20	0.0524	0.54	Q	|	|	|	|
1+25	0.0562	0.54	Q	|	|	|	|
1+30	0.0599	0.54	Q	|	|	|	|
1+35	0.0637	0.55	QV	|	|	|	|
1+40	0.0674	0.55	QV	|	|	|	|
1+45	0.0712	0.55	QV	|	|	|	|
1+50	0.0750	0.55	QV	|	|	|	|
1+55	0.0788	0.55	QV	|	|	|	|
2+ 0	0.0827	0.56	QV	|	|	|	|
2+ 5	0.0865	0.56	QV	|	|	|	|
2+10	0.0903	0.56	QV	|	|	|	|
2+15	0.0942	0.56	QV	|	|	|	|
2+20	0.0981	0.56	QV	|	|	|	|
2+25	0.1020	0.56	QV	|	|	|	|
2+30	0.1059	0.57	QV	|	|	|	|
2+35	0.1098	0.57	QV	|	|	|	|

2+40	0.1137	0.57	QV	|	|	|	|
2+45	0.1177	0.57	QV	|	|	|	|
2+50	0.1216	0.58	QV	|	|	|	|
2+55	0.1256	0.58	QV	|	|	|	|
3+ 0	0.1296	0.58	Q V	|	|	|	|
3+ 5	0.1336	0.58	Q V	|	|	|	|
3+10	0.1376	0.58	Q V	|	|	|	|
3+15	0.1416	0.59	Q V	|	|	|	|
3+20	0.1457	0.59	Q V	|	|	|	|
3+25	0.1498	0.59	Q V	|	|	|	|
3+30	0.1538	0.59	Q V	|	|	|	|
3+35	0.1579	0.59	Q V	|	|	|	|
3+40	0.1620	0.60	Q V	|	|	|	|
3+45	0.1662	0.60	Q V	|	|	|	|
3+50	0.1703	0.60	Q V	|	|	|	|
3+55	0.1745	0.60	Q V	|	|	|	|
4+ 0	0.1787	0.61	Q V	|	|	|	|
4+ 5	0.1828	0.61	Q V	|	|	|	|
4+10	0.1871	0.61	Q V	|	|	|	|
4+15	0.1913	0.61	Q V	|	|	|	|
4+20	0.1955	0.62	Q V	|	|	|	|
4+25	0.1998	0.62	Q V	|	|	|	|
4+30	0.2041	0.62	Q V	|	|	|	|
4+35	0.2084	0.62	Q V	|	|	|	|
4+40	0.2127	0.63	Q V	|	|	|	|
4+45	0.2170	0.63	Q V	|	|	|	|
4+50	0.2214	0.63	Q V	|	|	|	|
4+55	0.2257	0.63	Q V	|	|	|	|
5+ 0	0.2301	0.64	Q V	|	|	|	|
5+ 5	0.2345	0.64	Q V	|	|	|	|
5+10	0.2389	0.64	Q V	|	|	|	|
5+15	0.2434	0.65	Q V	|	|	|	|
5+20	0.2479	0.65	Q V	|	|	|	|
5+25	0.2523	0.65	Q V	|	|	|	|
5+30	0.2569	0.65	Q V	|	|	|	|
5+35	0.2614	0.66	Q V	|	|	|	|
5+40	0.2659	0.66	Q V	|	|	|	|
5+45	0.2705	0.66	Q V	|	|	|	|
5+50	0.2751	0.67	Q V	|	|	|	|
5+55	0.2797	0.67	Q V	|	|	|	|
6+ 0	0.2843	0.67	Q V	|	|	|	|
6+ 5	0.2890	0.68	Q V	|	|	|	|
6+10	0.2937	0.68	Q V	|	|	|	|
6+15	0.2984	0.68	Q V	|	|	|	|
6+20	0.3031	0.69	Q V	|	|	|	|
6+25	0.3078	0.69	Q V	|	|	|	|
6+30	0.3126	0.69	Q V	|	|	|	|
6+35	0.3174	0.70	Q V	|	|	|	|
6+40	0.3222	0.70	Q V	|	|	|	|
6+45	0.3271	0.70	Q V	|	|	|	|
6+50	0.3319	0.71	Q V	|	|	|	|
6+55	0.3368	0.71	Q V	|	|	|	|
7+ 0	0.3417	0.71	Q V	|	|	|	|
7+ 5	0.3467	0.72	Q V	|	|	|	|
7+10	0.3516	0.72	Q V	|	|	|	|
7+15	0.3566	0.73	Q V	|	|	|	|
7+20	0.3617	0.73	Q V	|	|	|	|
7+25	0.3667	0.73	Q V	|	|	|	|
7+30	0.3718	0.74	Q V	|	|	|	|
7+35	0.3769	0.74	Q V	|	|	|	|
7+40	0.3820	0.75	Q V	|	|	|	|
7+45	0.3872	0.75	|Q V	|	|	|	|
7+50	0.3924	0.75	|Q V	|	|	|	|
7+55	0.3976	0.76	|Q V	|	|	|	|
8+ 0	0.4029	0.76	|Q V	|	|	|	|
8+ 5	0.4082	0.77	|Q V	|	|	|	|
8+10	0.4135	0.77	|Q V	|	|	|	|
8+15	0.4189	0.78	|Q V	|	|	|	|
8+20	0.4242	0.78	|Q V	|	|	|	|
8+25	0.4297	0.79	|Q V	|	|	|	|
8+30	0.4351	0.79	|Q V	|	|	|	|
8+35	0.4406	0.80	|Q V	|	|	|	|
8+40	0.4461	0.80	|Q V	|	|	|	|
8+45	0.4517	0.81	|Q V	|	|	|	|
8+50	0.4573	0.81	|Q V	|	|	|	|

8+55	0.4629	0.82	Q	V			
9+ 0	0.4686	0.82	Q	V			
9+ 5	0.4743	0.83	Q	V			
9+10	0.4800	0.83	Q	V			
9+15	0.4858	0.84	Q	V			
9+20	0.4917	0.85	Q	V			
9+25	0.4975	0.85	Q	V			
9+30	0.5034	0.86	Q	V			
9+35	0.5094	0.86	Q	V			
9+40	0.5154	0.87	Q	V			
9+45	0.5214	0.88	Q	V			
9+50	0.5275	0.88	Q	V			
9+55	0.5337	0.89	Q	V			
10+ 0	0.5398	0.90	Q	V			
10+ 5	0.5461	0.90	Q	V			
10+10	0.5524	0.91	Q	V			
10+15	0.5587	0.92	Q	V			
10+20	0.5651	0.93	Q	V			
10+25	0.5715	0.93	Q	V			
10+30	0.5780	0.94	Q	V			
10+35	0.5846	0.95	Q	V			
10+40	0.5912	0.96	Q	V			
10+45	0.5978	0.97	Q	V			
10+50	0.6045	0.98	Q	V			
10+55	0.6113	0.99	Q	V			
11+ 0	0.6182	0.99	Q	V			
11+ 5	0.6251	1.00	Q	V			
11+10	0.6321	1.01	Q	V			
11+15	0.6391	1.02	Q	V			
11+20	0.6462	1.03	Q	V			
11+25	0.6534	1.04	Q	V			
11+30	0.6607	1.05	Q	V			
11+35	0.6680	1.07	Q	V			
11+40	0.6754	1.08	Q	V			
11+45	0.6829	1.09	Q	V			
11+50	0.6905	1.10	Q	V			
11+55	0.6982	1.11	Q	V			
12+ 0	0.7059	1.13	Q	V			
12+ 5	0.7137	1.13	Q	V			
12+10	0.7210	1.07	Q	V			
12+15	0.7281	1.02	Q	V			
12+20	0.7351	1.01	Q	V			
12+25	0.7421	1.03	Q	V			
12+30	0.7493	1.04	Q	V			
12+35	0.7565	1.05	Q	V			
12+40	0.7639	1.07	Q	V			
12+45	0.7714	1.09	Q	V			
12+50	0.7790	1.10	Q	V			
12+55	0.7867	1.12	Q	V			
13+ 0	0.7945	1.14	Q	V			
13+ 5	0.8025	1.16	Q	V			
13+10	0.8107	1.18	Q	V			
13+15	0.8189	1.20	Q	V			
13+20	0.8274	1.22	Q	V			
13+25	0.8359	1.25	Q	V			
13+30	0.8447	1.27	Q	V			
13+35	0.8536	1.30	Q	V			
13+40	0.8627	1.32	Q	V			
13+45	0.8721	1.35	Q	V			
13+50	0.8816	1.38	Q	V			
13+55	0.8913	1.42	Q	V			
14+ 0	0.9013	1.45	Q	V			
14+ 5	0.9116	1.49	Q	V			
14+10	0.9221	1.53	Q	V			
14+15	0.9329	1.57	Q	V			
14+20	0.9440	1.61	Q	V			
14+25	0.9554	1.66	Q	V			
14+30	0.9672	1.71	Q	V			
14+35	0.9794	1.77	Q	V			
14+40	0.9920	1.83	Q	V			
14+45	1.0050	1.90	Q	V			
14+50	1.0186	1.97	Q	V			
14+55	1.0327	2.05	Q	V			
15+ 0	1.0475	2.14	Q	V			
15+ 5	1.0629	2.24	Q	V			



```
   21+25       2.3846      0.66  Q          |          |          |      V  |
   21+30       2.3891      0.66  Q          |          |          |      V  |
   21+35       2.3936      0.65  Q          |          |          |       V |
   21+40       2.3980      0.65  Q          |          |          |       V |
   21+45       2.4025      0.64  Q          |          |          |       V |
   21+50       2.4068      0.64  Q          |          |          |       V |
   21+55       2.4112      0.63  Q          |          |          |       V |
   22+ 0       2.4155      0.62  Q          |          |          |       V |
   22+ 5       2.4197      0.62  Q          |          |          |       V |
   22+10       2.4240      0.61  Q          |          |          |       V |
   22+15       2.4282      0.61  Q          |          |          |       V |
   22+20       2.4323      0.60  Q          |          |          |       V |
   22+25       2.4365      0.60  Q          |          |          |       V |
   22+30       2.4406      0.60  Q          |          |          |       V |
   22+35       2.4446      0.59  Q          |          |          |       V |
   22+40       2.4487      0.59  Q          |          |          |       V |
   22+45       2.4527      0.58  Q          |          |          |        V|
   22+50       2.4567      0.58  Q          |          |          |        V|
   22+55       2.4606      0.57  Q          |          |          |        V|
   23+ 0       2.4645      0.57  Q          |          |          |        V|
   23+ 5       2.4684      0.57  Q          |          |          |        V|
   23+10       2.4723      0.56  Q          |          |          |        V|
   23+15       2.4762      0.56  Q          |          |          |        V|
   23+20       2.4800      0.55  Q          |          |          |        V|
   23+25       2.4838      0.55  Q          |          |          |        V|
   23+30       2.4875      0.55  Q          |          |          |        V|
   23+35       2.4913      0.54  Q          |          |          |        V|
   23+40       2.4950      0.54  Q          |          |          |        V|
   23+45       2.4987      0.54  Q          |          |          |        V|
   23+50       2.5023      0.53  Q          |          |          |        V|
   23+55       2.5060      0.53  Q          |          |          |        V|
   24+ 0       2.5096      0.53  Q          |          |          |        V|
   24+ 5       2.5129      0.48  Q          |          |          |        V|
   24+10       2.5148      0.27  Q          |          |          |        V|
   24+15       2.5153      0.07  Q          |          |          |        V|
   24+20       2.5154      0.02  Q          |          |          |        V|
   24+25       2.5155      0.00  Q          |          |          |        V|
-------------------------------------------------------------------------
```

BUILDING 2

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 2A
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 2APROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
22.40	1	0.60
Rainfall data for year 2		
22.40	6	0.70
Rainfall data for year 2		
22.40	24	1.20
Rainfall data for year 100		
22.40	1	1.00
Rainfall data for year 100		
22.40	6	1.90
Rainfall data for year 100		
22.40	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	22.40	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.24	0.100	69.0	69.0	4.49	0.263
20.16	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      22.40(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      22.40(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       270.90 (CFS))

  1                5.469                  14.816
  2               35.337                  80.911
  3               75.925                 109.955
  4               93.130                  46.608
  5               98.077                  13.401
  6               99.228                   3.116
  7              100.000                   2.092
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3697              0.3697
  2              0.4878              0.1181
  3              0.5737              0.0859
  4              0.6437              0.0700
  5              0.7038              0.0601
  6              0.7571              0.0532
  7              0.8052              0.0481
  8              0.8494              0.0442
  9              0.8904              0.0410
 10              0.9287              0.0383
 11              0.9648              0.0361
 12              0.9990              0.0342
 13              1.0281              0.0291
 14              1.0558              0.0277
 15              1.0823              0.0265
 16              1.1077              0.0254
 17              1.1320              0.0244
 18              1.1555              0.0235
 19              1.1782              0.0227
 20              1.2001              0.0219
 21              1.2213              0.0212
 22              1.2418              0.0206
 23              1.2618              0.0200
 24              1.2812              0.0194
 25              1.3002              0.0189
 26              1.3186              0.0184
```

27	1.3366	0.0180
28	1.3542	0.0176
29	1.3713	0.0172
30	1.3881	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4519	0.0155
35	1.4671	0.0152
36	1.4820	0.0149
37	1.4967	0.0146
38	1.5110	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5527	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6551	0.0122
50	1.6672	0.0120
51	1.6790	0.0119
52	1.6908	0.0117
53	1.7023	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8415	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9218	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0668	0.0099
89	2.0767	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091

102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4581	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5116	0.0075
141	2.5192	0.0075
142	2.5266	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6070	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6354	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6841	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7046	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8105	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9235	0.0061
202	2.9295	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9717	0.0060
210	2.9777	0.0060
211	2.9836	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0537	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1272	0.0056
237	3.1328	0.0056
238	3.1383	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2199	0.0053
254	3.2252	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2517	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3949	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0532	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3697	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0481	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0227	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 52.75(CFS)

++

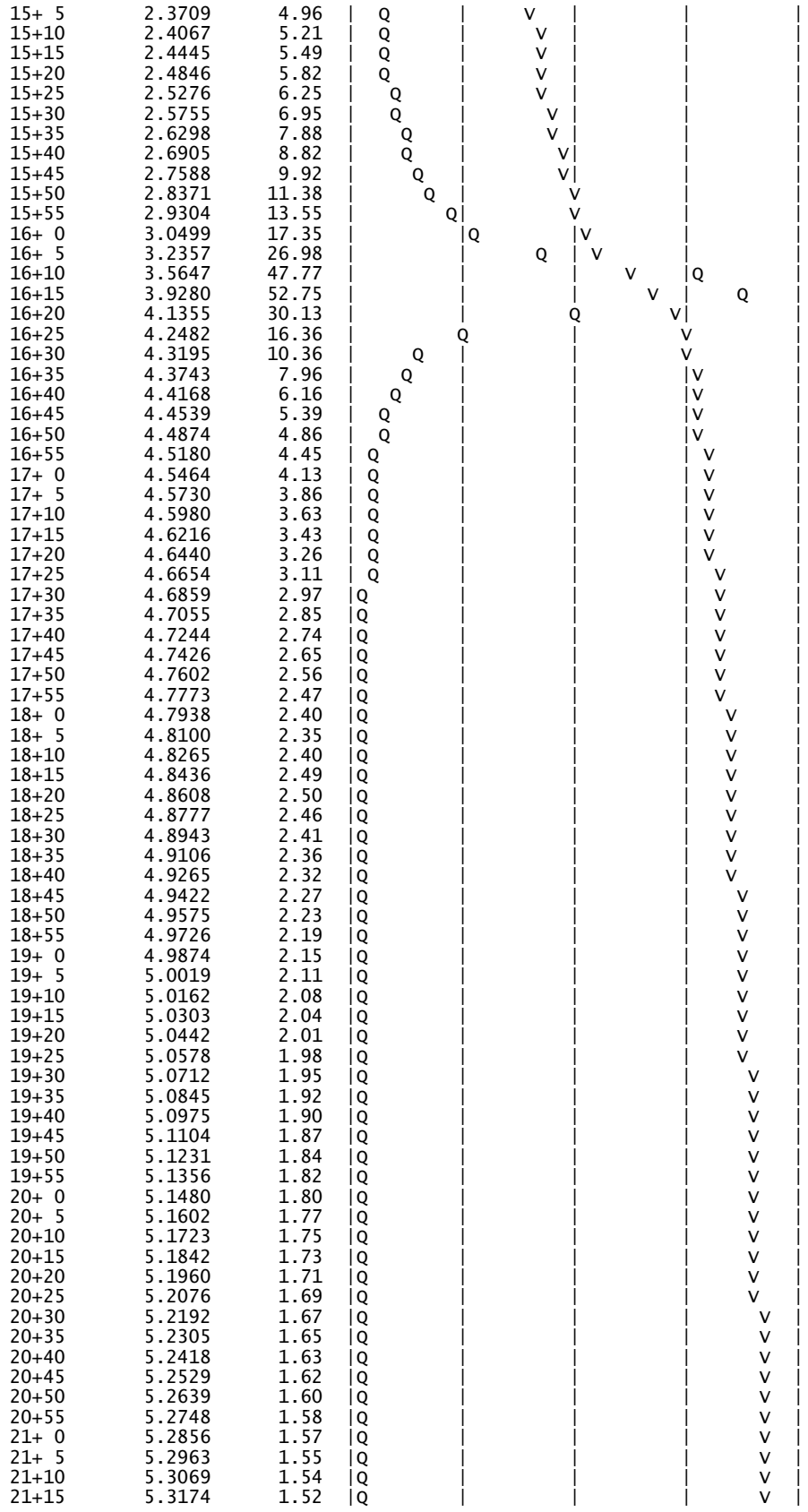
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0004	0.06	Q	|	|	|	|
0+10	0.0033	0.41	Q	|	|	|	|
0+15	0.0093	0.88	Q	|	|	|	|
0+20	0.0168	1.09	Q	|	|	|	|
0+25	0.0247	1.15	Q	|	|	|	|
0+30	0.0327	1.16	Q	|	|	|	|
0+35	0.0408	1.18	Q	|	|	|	|
0+40	0.0490	1.18	Q	|	|	|	|
0+45	0.0571	1.18	Q	|	|	|	|
0+50	0.0653	1.19	Q	|	|	|	|
0+55	0.0735	1.19	Q	|	|	|	|
1+ 0	0.0817	1.19	Q	|	|	|	|
1+ 5	0.0900	1.20	Q	|	|	|	|
1+10	0.0982	1.20	Q	|	|	|	|
1+15	0.1065	1.21	Q	|	|	|	|
1+20	0.1149	1.21	Q	|	|	|	|
1+25	0.1232	1.21	Q	|	|	|	|
1+30	0.1316	1.22	Q	|	|	|	|
1+35	0.1400	1.22	Q	|	|	|	|
1+40	0.1485	1.23	QV	|	|	|	|
1+45	0.1569	1.23	QV	|	|	|	|
1+50	0.1654	1.23	QV	|	|	|	|
1+55	0.1740	1.24	QV	|	|	|	|
2+ 0	0.1825	1.24	QV	|	|	|	|
2+ 5	0.1911	1.25	QV	|	|	|	|
2+10	0.1997	1.25	QV	|	|	|	|
2+15	0.2084	1.26	QV	|	|	|	|
2+20	0.2171	1.26	QV	|	|	|	|
2+25	0.2258	1.26	QV	|	|	|	|
2+30	0.2345	1.27	QV	|	|	|	|

2+35	0.2433	1.27	QV	|	|	|	|
2+40	0.2521	1.28	QV	|	|	|	|
2+45	0.2609	1.28	QV	|	|	|	|
2+50	0.2698	1.29	QV	|	|	|	|
2+55	0.2786	1.29	QV	|	|	|	|
3+ 0	0.2876	1.30	Q V	|	|	|	|
3+ 5	0.2965	1.30	Q V	|	|	|	|
3+10	0.3055	1.31	Q V	|	|	|	|
3+15	0.3145	1.31	Q V	|	|	|	|
3+20	0.3236	1.32	Q V	|	|	|	|
3+25	0.3327	1.32	Q V	|	|	|	|
3+30	0.3418	1.33	Q V	|	|	|	|
3+35	0.3510	1.33	Q V	|	|	|	|
3+40	0.3602	1.34	Q V	|	|	|	|
3+45	0.3694	1.34	Q V	|	|	|	|
3+50	0.3787	1.35	Q V	|	|	|	|
3+55	0.3880	1.35	Q V	|	|	|	|
4+ 0	0.3973	1.36	Q V	|	|	|	|
4+ 5	0.4067	1.36	Q V	|	|	|	|
4+10	0.4161	1.37	Q V	|	|	|	|
4+15	0.4256	1.37	Q V	|	|	|	|
4+20	0.4351	1.38	Q V	|	|	|	|
4+25	0.4446	1.38	Q V	|	|	|	|
4+30	0.4542	1.39	Q V	|	|	|	|
4+35	0.4638	1.40	Q V	|	|	|	|
4+40	0.4735	1.40	Q V	|	|	|	|
4+45	0.4832	1.41	Q V	|	|	|	|
4+50	0.4929	1.41	Q V	|	|	|	|
4+55	0.5027	1.42	Q V	|	|	|	|
5+ 0	0.5125	1.43	Q V	|	|	|	|
5+ 5	0.5223	1.43	Q V	|	|	|	|
5+10	0.5322	1.44	Q V	|	|	|	|
5+15	0.5422	1.44	Q V	|	|	|	|
5+20	0.5522	1.45	Q V	|	|	|	|
5+25	0.5622	1.46	Q V	|	|	|	|
5+30	0.5723	1.46	Q V	|	|	|	|
5+35	0.5824	1.47	Q V	|	|	|	|
5+40	0.5926	1.48	Q V	|	|	|	|
5+45	0.6028	1.48	Q V	|	|	|	|
5+50	0.6131	1.49	Q V	|	|	|	|
5+55	0.6234	1.50	Q V	|	|	|	|
6+ 0	0.6337	1.50	|Q V	|	|	|	|
6+ 5	0.6442	1.51	|Q V	|	|	|	|
6+10	0.6546	1.52	|Q V	|	|	|	|
6+15	0.6651	1.53	|Q V	|	|	|	|
6+20	0.6757	1.53	|Q V	|	|	|	|
6+25	0.6863	1.54	|Q V	|	|	|	|
6+30	0.6970	1.55	|Q V	|	|	|	|
6+35	0.7077	1.56	|Q V	|	|	|	|
6+40	0.7185	1.56	|Q V	|	|	|	|
6+45	0.7293	1.57	|Q V	|	|	|	|
6+50	0.7402	1.58	|Q V	|	|	|	|
6+55	0.7511	1.59	|Q V	|	|	|	|
7+ 0	0.7621	1.60	|Q V	|	|	|	|
7+ 5	0.7732	1.61	|Q V	|	|	|	|
7+10	0.7843	1.61	|Q V	|	|	|	|
7+15	0.7955	1.62	|Q V	|	|	|	|
7+20	0.8067	1.63	|Q V	|	|	|	|
7+25	0.8180	1.64	|Q V	|	|	|	|
7+30	0.8294	1.65	|Q V	|	|	|	|
7+35	0.8408	1.66	|Q V	|	|	|	|
7+40	0.8523	1.67	|Q V	|	|	|	|
7+45	0.8639	1.68	|Q V	|	|	|	|
7+50	0.8755	1.69	|Q V	|	|	|	|
7+55	0.8872	1.70	|Q V	|	|	|	|
8+ 0	0.8989	1.71	|Q V	|	|	|	|
8+ 5	0.9108	1.72	|Q V	|	|	|	|
8+10	0.9226	1.73	|Q V	|	|	|	|
8+15	0.9346	1.74	|Q V	|	|	|	|
8+20	0.9467	1.75	|Q V	|	|	|	|
8+25	0.9588	1.76	|Q V	|	|	|	|
8+30	0.9710	1.77	|Q V	|	|	|	|
8+35	0.9832	1.78	|Q V	|	|	|	|
8+40	0.9956	1.79	|Q V	|	|	|	|
8+45	1.0080	1.80	|Q V	|	|	|	|

8+50	1.0205	1.82	Q	V			
8+55	1.0331	1.83	Q	V			
9+ 0	1.0458	1.84	Q	V			
9+ 5	1.0586	1.85	Q	V			
9+10	1.0714	1.87	Q	V			
9+15	1.0843	1.88	Q	V			
9+20	1.0974	1.89	Q	V			
9+25	1.1105	1.90	Q	V			
9+30	1.1237	1.92	Q	V			
9+35	1.1370	1.93	Q	V			
9+40	1.1504	1.95	Q	V			
9+45	1.1639	1.96	Q	V			
9+50	1.1775	1.98	Q	V			
9+55	1.1912	1.99	Q	V			
10+ 0	1.2051	2.01	Q	V			
10+ 5	1.2190	2.02	Q	V			
10+10	1.2330	2.04	Q	V			
10+15	1.2472	2.05	Q	V			
10+20	1.2614	2.07	Q	V			
10+25	1.2758	2.09	Q	V			
10+30	1.2903	2.11	Q	V			
10+35	1.3050	2.12	Q	V			
10+40	1.3197	2.14	Q	V			
10+45	1.3346	2.16	Q	V			
10+50	1.3496	2.18	Q	V			
10+55	1.3648	2.20	Q	V			
11+ 0	1.3801	2.22	Q	V			
11+ 5	1.3955	2.24	Q	V			
11+10	1.4111	2.26	Q	V			
11+15	1.4268	2.29	Q	V			
11+20	1.4427	2.31	Q	V			
11+25	1.4588	2.33	Q	V			
11+30	1.4750	2.35	Q	V			
11+35	1.4914	2.38	Q	V			
11+40	1.5079	2.40	Q	V			
11+45	1.5247	2.43	Q	V			
11+50	1.5416	2.46	Q	V			
11+55	1.5587	2.48	Q	V			
12+ 0	1.5760	2.51	Q	V			
12+ 5	1.5934	2.52	Q	V			
12+10	1.6101	2.44	Q	V			
12+15	1.6261	2.31	Q	V			
12+20	1.6418	2.28	Q	V			
12+25	1.6575	2.29	Q	V			
12+30	1.6735	2.32	Q	V			
12+35	1.6897	2.35	Q	V			
12+40	1.7061	2.39	Q	V			
12+45	1.7228	2.42	Q	V			
12+50	1.7398	2.46	Q	V			
12+55	1.7570	2.50	Q	V			
13+ 0	1.7745	2.54	Q	V			
13+ 5	1.7923	2.58	Q	V			
13+10	1.8104	2.63	Q	V			
13+15	1.8288	2.68	Q	V			
13+20	1.8476	2.73	Q	V			
13+25	1.8667	2.78	Q	V			
13+30	1.8862	2.83	Q	V			
13+35	1.9061	2.89	Q	V			
13+40	1.9264	2.95	Q	V			
13+45	1.9471	3.01	Q	V			
13+50	1.9683	3.08	Q	V			
13+55	1.9900	3.15	Q	V			
14+ 0	2.0122	3.22	Q	V			
14+ 5	2.0350	3.31	Q	V			
14+10	2.0584	3.39	Q	V			
14+15	2.0824	3.49	Q	V			
14+20	2.1071	3.58	Q	V			
14+25	2.1325	3.69	Q	V			
14+30	2.1587	3.80	Q	V			
14+35	2.1857	3.93	Q	V			
14+40	2.2137	4.06	Q	V			
14+45	2.2427	4.21	Q	V			
14+50	2.2727	4.37	Q	V			
14+55	2.3040	4.54	Q	V			
15+ 0	2.3367	4.74	Q	V			



```
   21+20       5.3278      1.51  |Q        |         |         |      V  |
   21+25       5.3380      1.49  Q        |         |         |      V  |
   21+30       5.3482      1.48  Q        |         |         |      V  |
   21+35       5.3583      1.47  Q        |         |         |       V |
   21+40       5.3683      1.45  Q        |         |         |       V |
   21+45       5.3782      1.44  Q        |         |         |       V |
   21+50       5.3881      1.43  Q        |         |         |       V |
   21+55       5.3978      1.42  Q        |         |         |       V |
   22+ 0       5.4075      1.40  Q        |         |         |       V |
   22+ 5       5.4171      1.39  Q        |         |         |       V |
   22+10       5.4266      1.38  Q        |         |         |       V |
   22+15       5.4360      1.37  Q        |         |         |       V |
   22+20       5.4454      1.36  Q        |         |         |       V |
   22+25       5.4546      1.35  Q        |         |         |       V |
   22+30       5.4638      1.34  Q        |         |         |       V |
   22+35       5.4730      1.33  Q        |         |         |       V |
   22+40       5.4821      1.32  Q        |         |         |       V |
   22+45       5.4911      1.31  Q        |         |         |       V |
   22+50       5.5000      1.30  Q        |         |         |        V|
   22+55       5.5089      1.29  Q        |         |         |        V|
   23+ 0       5.5177      1.28  Q        |         |         |        V|
   23+ 5       5.5264      1.27  Q        |         |         |        V|
   23+10       5.5351      1.26  Q        |         |         |        V|
   23+15       5.5437      1.25  Q        |         |         |        V|
   23+20       5.5523      1.24  Q        |         |         |        V|
   23+25       5.5608      1.24  Q        |         |         |        V|
   23+30       5.5692      1.23  Q        |         |         |        V|
   23+35       5.5776      1.22  Q        |         |         |        V|
   23+40       5.5860      1.21  Q        |         |         |        V|
   23+45       5.5943      1.20  Q        |         |         |        V|
   23+50       5.6025      1.20  Q        |         |         |        V|
   23+55       5.6107      1.19  Q        |         |         |        V|
   24+ 0       5.6188      1.18  Q        |         |         |        V|
   24+ 5       5.6265      1.11  Q        |         |         |        V|
   24+10       5.6317      0.76  Q        |         |         |        V|
   24+15       5.6336      0.28  Q        |         |         |        V|
   24+20       5.6342      0.08  Q        |         |         |        V|
   24+25       5.6343      0.02  Q        |         |         |        V|
   24+30       5.6344      0.01  Q        |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 2B
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 2BPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
12.50	1	0.60
Rainfall data for year 2		
12.50	6	0.70
Rainfall data for year 2		
12.50	24	1.20
Rainfall data for year 100		
12.50	1	1.00
Rainfall data for year 100		
12.50	6	1.90
Rainfall data for year 100		
12.50	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	12.50	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.25	0.100	69.0	69.0	4.49	0.263
11.25	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      12.50(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      12.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       151.17 (CFS))

  1                5.469                   8.268
  2               35.337                  45.151
  3               75.925                  61.359
  4               93.130                  26.009
  5               98.077                   7.478
  6               99.228                   1.739
  7              100.000                   1.168
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3699              0.3699
  2              0.4881              0.1182
  3              0.5740              0.0859
  4              0.6440              0.0700
  5              0.7041              0.0601
  6              0.7574              0.0533
  7              0.8056              0.0482
  8              0.8498              0.0442
  9              0.8908              0.0410
 10              0.9291              0.0383
 11              0.9652              0.0361
 12              0.9994              0.0342
 13              1.0285              0.0291
 14              1.0562              0.0277
 15              1.0827              0.0265
 16              1.1081              0.0254
 17              1.1324              0.0244
 18              1.1559              0.0235
 19              1.1785              0.0226
 20              1.2004              0.0219
 21              1.2216              0.0212
 22              1.2421              0.0206
 23              1.2621              0.0200
 24              1.2815              0.0194
 25              1.3004              0.0189
 26              1.3188              0.0184
```

27	1.3368	0.0180
28	1.3544	0.0176
29	1.3715	0.0172
30	1.3883	0.0168
31	1.4047	0.0164
32	1.4208	0.0161
33	1.4366	0.0158
34	1.4520	0.0155
35	1.4672	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5111	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5528	0.0137
42	1.5663	0.0135
43	1.5795	0.0133
44	1.5926	0.0131
45	1.6055	0.0129
46	1.6182	0.0127
47	1.6307	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7139	0.0114
55	1.7252	0.0113
56	1.7363	0.0112
57	1.7474	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7798	0.0107
61	1.7904	0.0106
62	1.8008	0.0105
63	1.8112	0.0104
64	1.8214	0.0102
65	1.8316	0.0101
66	1.8416	0.0100
67	1.8516	0.0099
68	1.8614	0.0099
69	1.8712	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9110	0.0110
74	1.9219	0.0109
75	1.9328	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9754	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0168	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0471	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1717	0.0092
100	2.1809	0.0092
101	2.1900	0.0091

102	2.1991	0.0091
103	2.2081	0.0090
104	2.2171	0.0090
105	2.2260	0.0089
106	2.2349	0.0089
107	2.2437	0.0088
108	2.2525	0.0088
109	2.2612	0.0087
110	2.2699	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2957	0.0086
114	2.3042	0.0085
115	2.3126	0.0085
116	2.3211	0.0084
117	2.3294	0.0084
118	2.3378	0.0083
119	2.3461	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4190	0.0080
129	2.4269	0.0079
130	2.4348	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4737	0.0077
136	2.4813	0.0077
137	2.4890	0.0076
138	2.4966	0.0076
139	2.5042	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5342	0.0075
144	2.5416	0.0074
145	2.5490	0.0074
146	2.5563	0.0074
147	2.5637	0.0073
148	2.5710	0.0073
149	2.5783	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6635	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6911	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7115	0.0068
169	2.7183	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7451	0.0067
174	2.7517	0.0066
175	2.7584	0.0066
176	2.7650	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7912	0.0065
181	2.7977	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8235	0.0064
186	2.8299	0.0064
187	2.8362	0.0064
188	2.8426	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8741	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9113	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9357	0.0061
204	2.9417	0.0061
205	2.9478	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9778	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0132	0.0059
217	3.0190	0.0058
218	3.0249	0.0058
219	3.0307	0.0058
220	3.0365	0.0058
221	3.0423	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0653	0.0057
226	3.0710	0.0057
227	3.0767	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0937	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1329	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1714	0.0055
245	3.1768	0.0054
246	3.1823	0.0054
247	3.1877	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2039	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2200	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2571	0.0053
261	3.2623	0.0053
262	3.2676	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2988	0.0052
269	3.3039	0.0052
270	3.3091	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3245	0.0051
274	3.3296	0.0051
275	3.3347	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3549	0.0051
280	3.3600	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0095
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0556
191	0.0859	0.0046	0.0814
192	0.1182	0.0046	0.1136
193	0.3699	0.0046	0.3653
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0163
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 29.45(CFS)

++

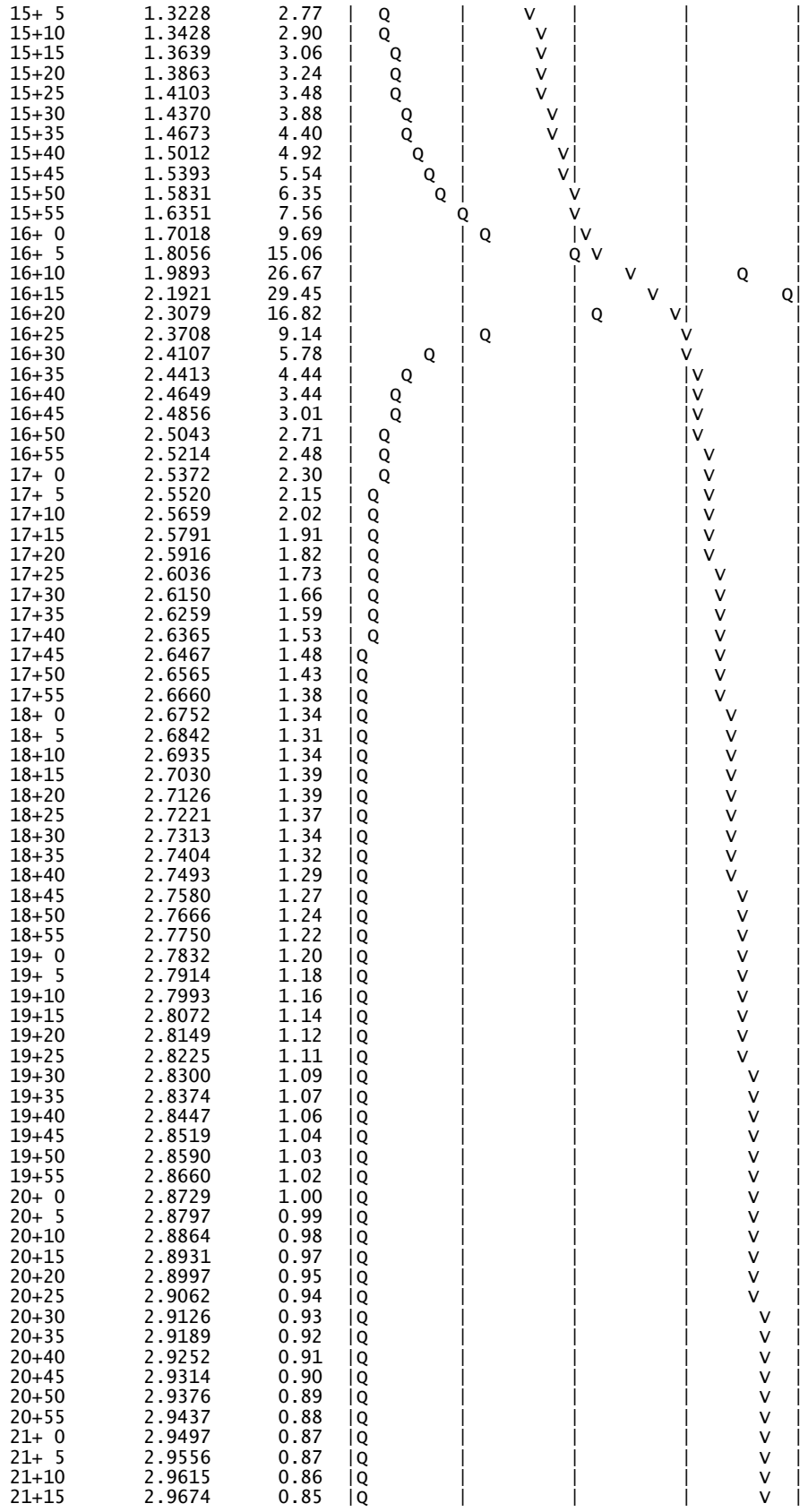
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.04	Q				
0+10	0.0018	0.23	Q				
0+15	0.0052	0.49	Q				
0+20	0.0094	0.61	Q				
0+25	0.0138	0.64	Q				
0+30	0.0183	0.65	Q				
0+35	0.0228	0.66	Q				
0+40	0.0273	0.66	Q				
0+45	0.0319	0.66	Q				
0+50	0.0364	0.66	Q				
0+55	0.0410	0.66	Q				
1+ 0	0.0456	0.67	Q				
1+ 5	0.0502	0.67	Q				
1+10	0.0548	0.67	Q				
1+15	0.0595	0.67	Q				
1+20	0.0641	0.68	Q				
1+25	0.0688	0.68	Q				
1+30	0.0734	0.68	Q				
1+35	0.0781	0.68	Q				
1+40	0.0829	0.68	QV				
1+45	0.0876	0.69	QV				
1+50	0.0923	0.69	QV				
1+55	0.0971	0.69	QV				
2+ 0	0.1019	0.69	QV				
2+ 5	0.1066	0.70	QV				
2+10	0.1115	0.70	QV				
2+15	0.1163	0.70	QV				
2+20	0.1211	0.70	QV				
2+25	0.1260	0.71	QV				
2+30	0.1309	0.71	QV				

2+35	0.1357	0.71	QV	|	|	|	|
2+40	0.1407	0.71	QV	|	|	|	|
2+45	0.1456	0.72	QV	|	|	|	|
2+50	0.1505	0.72	QV	|	|	|	|
2+55	0.1555	0.72	QV	|	|	|	|
3+ 0	0.1605	0.72	Q V	|	|	|	|
3+ 5	0.1655	0.73	Q V	|	|	|	|
3+10	0.1705	0.73	Q V	|	|	|	|
3+15	0.1755	0.73	Q V	|	|	|	|
3+20	0.1806	0.73	Q V	|	|	|	|
3+25	0.1857	0.74	Q V	|	|	|	|
3+30	0.1908	0.74	Q V	|	|	|	|
3+35	0.1959	0.74	Q V	|	|	|	|
3+40	0.2010	0.75	Q V	|	|	|	|
3+45	0.2061	0.75	Q V	|	|	|	|
3+50	0.2113	0.75	|QV	|	|	|	|
3+55	0.2165	0.75	|QV	|	|	|	|
4+ 0	0.2217	0.76	|QV	|	|	|	|
4+ 5	0.2270	0.76	|QV	|	|	|	|
4+10	0.2322	0.76	|QV	|	|	|	|
4+15	0.2375	0.77	|Q V	|	|	|	|
4+20	0.2428	0.77	|Q V	|	|	|	|
4+25	0.2481	0.77	|Q V	|	|	|	|
4+30	0.2535	0.78	|Q V	|	|	|	|
4+35	0.2588	0.78	|Q V	|	|	|	|
4+40	0.2642	0.78	|Q V	|	|	|	|
4+45	0.2696	0.79	|Q V	|	|	|	|
4+50	0.2750	0.79	|Q V	|	|	|	|
4+55	0.2805	0.79	|Q V	|	|	|	|
5+ 0	0.2860	0.80	|Q V	|	|	|	|
5+ 5	0.2915	0.80	|Q V	|	|	|	|
5+10	0.2970	0.80	|Q V	|	|	|	|
5+15	0.3026	0.81	|Q V	|	|	|	|
5+20	0.3081	0.81	|Q V	|	|	|	|
5+25	0.3137	0.81	|Q V	|	|	|	|
5+30	0.3194	0.82	|Q V	|	|	|	|
5+35	0.3250	0.82	|Q V	|	|	|	|
5+40	0.3307	0.82	|Q V	|	|	|	|
5+45	0.3364	0.83	|Q V	|	|	|	|
5+50	0.3421	0.83	|Q V	|	|	|	|
5+55	0.3479	0.84	|Q V	|	|	|	|
6+ 0	0.3536	0.84	|Q V	|	|	|	|
6+ 5	0.3595	0.84	|Q V	|	|	|	|
6+10	0.3653	0.85	|Q V	|	|	|	|
6+15	0.3712	0.85	|Q V	|	|	|	|
6+20	0.3771	0.86	|Q V	|	|	|	|
6+25	0.3830	0.86	|Q V	|	|	|	|
6+30	0.3889	0.86	|Q V	|	|	|	|
6+35	0.3949	0.87	|Q V	|	|	|	|
6+40	0.4009	0.87	|Q V	|	|	|	|
6+45	0.4070	0.88	|Q V	|	|	|	|
6+50	0.4130	0.88	|Q V	|	|	|	|
6+55	0.4192	0.89	|Q V	|	|	|	|
7+ 0	0.4253	0.89	|Q V	|	|	|	|
7+ 5	0.4315	0.90	|Q V	|	|	|	|
7+10	0.4377	0.90	|Q V	|	|	|	|
7+15	0.4439	0.91	|Q V	|	|	|	|
7+20	0.4502	0.91	|Q V	|	|	|	|
7+25	0.4565	0.92	|Q V	|	|	|	|
7+30	0.4628	0.92	|Q V	|	|	|	|
7+35	0.4692	0.93	|Q V	|	|	|	|
7+40	0.4756	0.93	|Q V	|	|	|	|
7+45	0.4821	0.94	|Q V	|	|	|	|
7+50	0.4885	0.94	|Q V	|	|	|	|
7+55	0.4951	0.95	|Q V	|	|	|	|
8+ 0	0.5016	0.95	|Q V	|	|	|	|
8+ 5	0.5082	0.96	|Q V	|	|	|	|
8+10	0.5149	0.96	|Q V	|	|	|	|
8+15	0.5215	0.97	|Q V	|	|	|	|
8+20	0.5283	0.98	|Q V	|	|	|	|
8+25	0.5350	0.98	|Q V	|	|	|	|
8+30	0.5418	0.99	|Q V	|	|	|	|
8+35	0.5487	0.99	|Q V	|	|	|	|
8+40	0.5556	1.00	|Q V	|	|	|	|
8+45	0.5625	1.01	|Q V	|	|	|	|

```
 8+50       0.5695      1.01  |Q     V  |          |          |          |
 8+55       0.5765      1.02  |Q     V  |          |          |          |
 9+ 0       0.5836      1.03  |Q     V  |          |          |          |
 9+ 5       0.5907      1.03  |Q     V  |          |          |          |
 9+10       0.5979      1.04  |Q     V  |          |          |          |
 9+15       0.6051      1.05  |Q     V  |          |          |          |
 9+20       0.6124      1.06  |Q     V  |          |          |          |
 9+25       0.6197      1.06  |Q     V  |          |          |          |
 9+30       0.6271      1.07  |Q     V  |          |          |          |
 9+35       0.6345      1.08  |Q      V |          |          |          |
 9+40       0.6420      1.09  |Q      V |          |          |          |
 9+45       0.6495      1.09  |Q      V |          |          |          |
 9+50       0.6571      1.10  |Q      V |          |          |          |
 9+55       0.6647      1.11  |Q      V |          |          |          |
10+ 0       0.6725      1.12  |Q      V |          |          |          |
10+ 5       0.6802      1.13  |Q      V |          |          |          |
10+10       0.6881      1.14  |Q      V |          |          |          |
10+15       0.6960      1.15  |Q      V |          |          |          |
10+20       0.7039      1.16  |Q      V |          |          |          |
10+25       0.7119      1.17  |Q       V|          |          |          |
10+30       0.7200      1.18  |Q       V|          |          |          |
10+35       0.7282      1.19  |Q       V|          |          |          |
10+40       0.7364      1.20  |Q       V|          |          |          |
10+45       0.7447      1.21  |Q       V|          |          |          |
10+50       0.7531      1.22  |Q       V|          |          |          |
10+55       0.7616      1.23  |Q       V|          |          |          |
11+ 0       0.7701      1.24  |Q       V|          |          |          |
11+ 5       0.7787      1.25  |Q       V|          |          |          |
11+10       0.7874      1.26  |Q        V          |          |          |
11+15       0.7962      1.28  |Q        V          |          |          |
11+20       0.8051      1.29  |Q        V          |          |          |
11+25       0.8140      1.30  |Q        V          |          |          |
11+30       0.8231      1.31  |Q        V          |          |          |
11+35       0.8322      1.33  |Q        V          |          |          |
11+40       0.8415      1.34  |Q        V          |          |          |
11+45       0.8508      1.36  |Q        V          |          |          |
11+50       0.8602      1.37  |Q        V          |          |          |
11+55       0.8698      1.39  |Q        |V         |          |          |
12+ 0       0.8794      1.40  |Q        |V         |          |          |
12+ 5       0.8891      1.41  |Q        |V         |          |          |
12+10       0.8985      1.36  |Q        |V         |          |          |
12+15       0.9074      1.29  |Q        |V         |          |          |
12+20       0.9161      1.27  |Q        |V         |          |          |
12+25       0.9250      1.28  |Q        |V         |          |          |
12+30       0.9339      1.29  |Q        |V         |          |          |
12+35       0.9429      1.31  |Q        |V         |          |          |
12+40       0.9521      1.33  |Q        | V        |          |          |
12+45       0.9614      1.35  |Q        | V        |          |          |
12+50       0.9708      1.37  |Q        | V        |          |          |
12+55       0.9804      1.40  |Q        | V        |          |          |
13+ 0       0.9902      1.42  |Q        | V        |          |          |
13+ 5       1.0001      1.44  |Q        | V        |          |          |
13+10       1.0102      1.47  |Q        | V        |          |          |
13+15       1.0205      1.49  |Q        | V        |          |          |
13+20       1.0310      1.52  | Q       |  V       |          |          |
13+25       1.0417      1.55  | Q       |  V       |          |          |
13+30       1.0525      1.58  | Q       |  V       |          |          |
13+35       1.0636      1.61  | Q       |  V       |          |          |
13+40       1.0750      1.64  | Q       |  V       |          |          |
13+45       1.0865      1.68  | Q       |  V       |          |          |
13+50       1.0984      1.72  | Q       |  V       |          |          |
13+55       1.1105      1.76  | Q       |   V      |          |          |
14+ 0       1.1229      1.80  | Q       |   V      |          |          |
14+ 5       1.1356      1.84  | Q       |   V      |          |          |
14+10       1.1486      1.89  | Q       |   V      |          |          |
14+15       1.1620      1.94  | Q       |   V      |          |          |
14+20       1.1758      2.00  | Q       |   V      |          |          |
14+25       1.1899      2.06  | Q       |    V     |          |          |
14+30       1.2045      2.12  | Q       |    V     |          |          |
14+35       1.2196      2.19  | Q       |    V     |          |          |
14+40       1.2352      2.26  |  Q      |    V     |          |          |
14+45       1.2514      2.35  |  Q      |    V     |          |          |
14+50       1.2681      2.43  |  Q      |     V    |          |          |
14+55       1.2856      2.53  |  Q      |     V    |          |          |
15+ 0       1.3038      2.64  |  Q      |     V    |          |          |
```



```
   21+20       2.9732      0.84  |Q        |         |         |      V  |
   21+25       2.9789      0.83  |Q        |         |         |      V  |
   21+30       2.9846      0.83  |Q        |         |         |      V  |
   21+35       2.9902      0.82  |Q        |         |         |       V |
   21+40       2.9958      0.81  |Q        |         |         |       V |
   21+45       3.0014      0.80  |Q        |         |         |       V |
   21+50       3.0068      0.80  |Q        |         |         |       V |
   21+55       3.0123      0.79  |Q        |         |         |       V |
   22+ 0       3.0177      0.78  |Q        |         |         |       V |
   22+ 5       3.0230      0.78  |Q        |         |         |       V |
   22+10       3.0283      0.77  |Q        |         |         |       V |
   22+15       3.0336      0.76  |Q        |         |         |       V |
   22+20       3.0388      0.76  |Q        |         |         |       V |
   22+25       3.0440      0.75  |Q        |         |         |       V |
   22+30       3.0491      0.75  Q         |         |         |       V |
   22+35       3.0542      0.74  Q         |         |         |       V |
   22+40       3.0593      0.73  Q         |         |         |       V |
   22+45       3.0643      0.73  Q         |         |         |       V |
   22+50       3.0693      0.72  Q         |         |         |        V|
   22+55       3.0742      0.72  Q         |         |         |        V|
   23+ 0       3.0792      0.71  Q         |         |         |        V|
   23+ 5       3.0840      0.71  Q         |         |         |        V|
   23+10       3.0889      0.70  Q         |         |         |        V|
   23+15       3.0937      0.70  Q         |         |         |        V|
   23+20       3.0985      0.69  Q         |         |         |        V|
   23+25       3.1032      0.69  Q         |         |         |        V|
   23+30       3.1079      0.68  Q         |         |         |        V|
   23+35       3.1126      0.68  Q         |         |         |        V|
   23+40       3.1173      0.68  Q         |         |         |        V|
   23+45       3.1219      0.67  Q         |         |         |        V|
   23+50       3.1265      0.67  Q         |         |         |        V|
   23+55       3.1311      0.66  Q         |         |         |        V|
   24+ 0       3.1356      0.66  Q         |         |         |        V|
   24+ 5       3.1399      0.62  Q         |         |         |        V|
   24+10       3.1428      0.42  Q         |         |         |        V|
   24+15       3.1439      0.16  Q         |         |         |        V|
   24+20       3.1442      0.04  Q         |         |         |        V|
   24+25       3.1443      0.01  Q         |         |         |        V|
   24+30       3.1443      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 2C
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 2CPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
18.30	1	0.60
Rainfall data for year 2		
18.30	6	0.70
Rainfall data for year 2		
18.30	24	1.20
Rainfall data for year 100		
18.30	1	1.00
Rainfall data for year 100		
18.30	6	1.90
Rainfall data for year 100		
18.30	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	18.30	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.83	0.100	69.0	69.0	4.49	0.263
16.47	0.900	98.0	98.0	0.20	0.931

Area-averaged catchment yield fraction, Y = 0.865
Area-averaged low loss fraction, Yb = 0.135
User entry of time of concentration = 0.180 (hours)
++
Watershed area = 18.30(Ac.)
Catchment Lag time = 0.144 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 57.8704
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.370(In)
Computed peak 30-minute rainfall = 0.758(In)
Specified peak 1-hour rainfall = 1.000(In)
Computed peak 3-hour rainfall = 1.482(In)
Specified peak 6-hour rainfall = 1.900(In)
Specified peak 24-hour rainfall = 3.400(In)

Rainfall depth area reduction factors:
Using a total area of 18.30(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.370(In)
30-minute factor = 0.999 Adjusted rainfall = 0.757(In)
1-hour factor = 0.999 Adjusted rainfall = 0.999(In)
3-hour factor = 1.000 Adjusted rainfall = 1.482(In)
6-hour factor = 1.000 Adjusted rainfall = 1.900(In)
24-hour factor = 1.000 Adjusted rainfall = 3.400(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 221.32 (CFS))	
1	6.077	13.449
2	39.009	72.885
3	79.564	89.753
4	94.634	33.354
5	98.466	8.480
6	99.524	2.341
7	100.000	1.054

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3698	0.3698
2	0.4879	0.1182
3	0.5739	0.0859
4	0.6438	0.0700
5	0.7040	0.0601
6	0.7572	0.0533
7	0.8054	0.0482
8	0.8496	0.0442
9	0.8905	0.0410
10	0.9289	0.0383
11	0.9650	0.0361
12	0.9991	0.0342
13	1.0283	0.0291
14	1.0560	0.0277
15	1.0825	0.0265
16	1.1078	0.0254
17	1.1322	0.0244
18	1.1557	0.0235
19	1.1783	0.0226
20	1.2002	0.0219
21	1.2214	0.0212
22	1.2420	0.0206
23	1.2619	0.0200
24	1.2814	0.0194
25	1.3003	0.0189
26	1.3187	0.0184

27	1.3367	0.0180
28	1.3542	0.0176
29	1.3714	0.0172
30	1.3882	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4520	0.0155
35	1.4672	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5111	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5528	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5926	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9754	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091

102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2612	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4269	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5416	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5710	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6910	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7115	0.0068
169	2.7182	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8426	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9478	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1877	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2038	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2199	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3549	0.0051
280	3.3600	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0814
192	0.1182	0.0046	0.1136
193	0.3698	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 42.79(CFS)

++

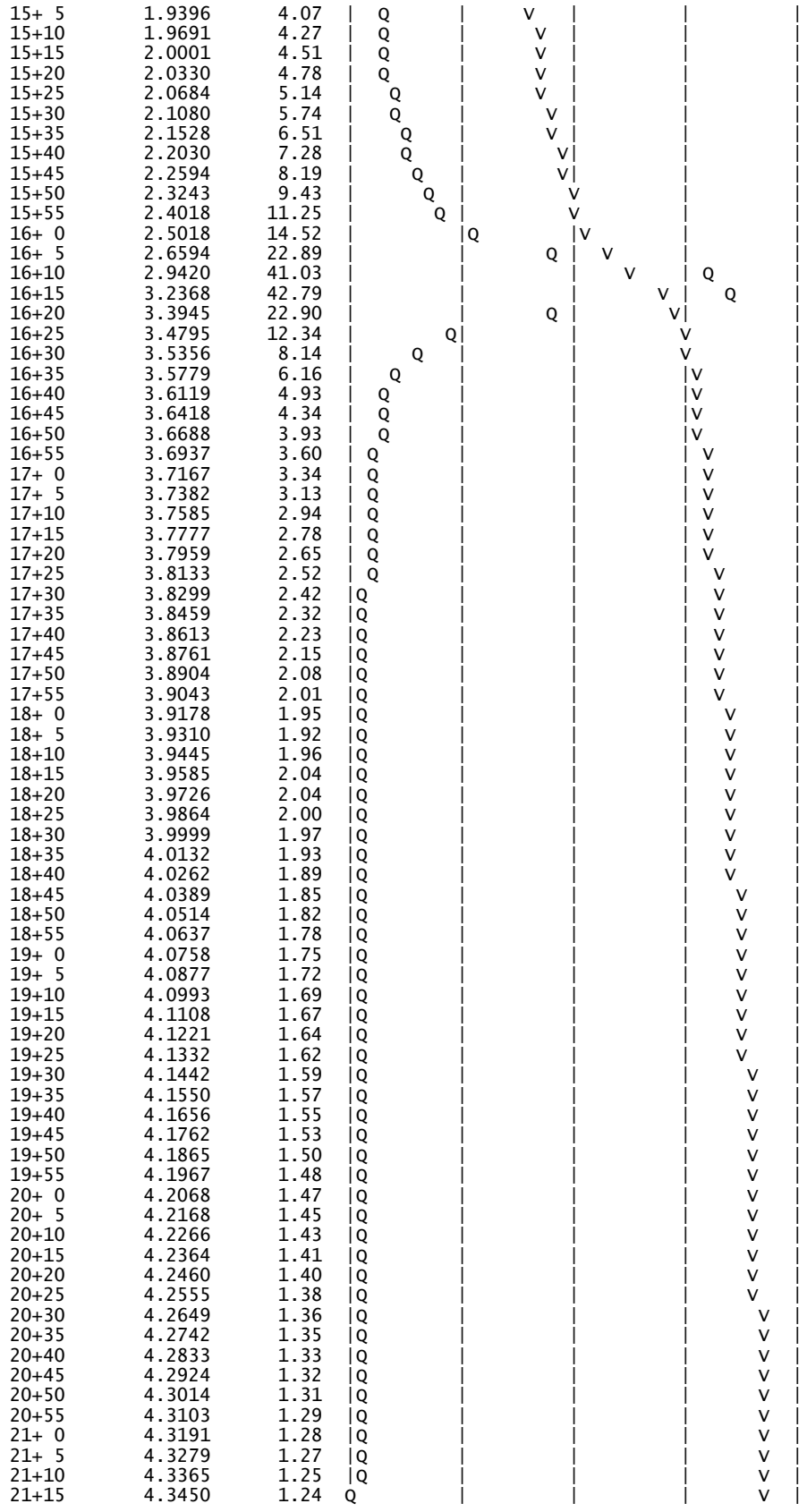
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0004	0.06	Q				
0+10	0.0029	0.37	Q				
0+15	0.0082	0.76	Q				
0+20	0.0144	0.90	Q				
0+25	0.0208	0.94	Q				
0+30	0.0274	0.95	Q				
0+35	0.0340	0.96	Q				
0+40	0.0407	0.96	Q				
0+45	0.0473	0.97	Q				
0+50	0.0540	0.97	Q				
0+55	0.0607	0.97	Q				
1+ 0	0.0674	0.98	Q				
1+ 5	0.0742	0.98	Q				
1+10	0.0809	0.98	Q				
1+15	0.0877	0.99	Q				
1+20	0.0945	0.99	Q				
1+25	0.1014	0.99	Q				
1+30	0.1082	1.00	Q				
1+35	0.1151	1.00	QV				
1+40	0.1220	1.00	QV				
1+45	0.1289	1.01	QV				
1+50	0.1359	1.01	QV				
1+55	0.1428	1.01	QV				
2+ 0	0.1498	1.02	QV				
2+ 5	0.1568	1.02	QV				
2+10	0.1639	1.02	QV				
2+15	0.1710	1.03	QV				
2+20	0.1780	1.03	QV				
2+25	0.1852	1.03	QV				
2+30	0.1923	1.04	QV				

```
2+35       0.1995      1.04  QV        |         |         |         |
2+40       0.2067      1.04  QV        |         |         |         |
2+45       0.2139      1.05  QV        |         |         |         |
2+50       0.2211      1.05  QV        |         |         |         |
2+55       0.2284      1.06  QV        |         |         |         |
3+ 0       0.2357      1.06  Q V       |         |         |         |
3+ 5       0.2430      1.06  Q V       |         |         |         |
3+10       0.2503      1.07  Q V       |         |         |         |
3+15       0.2577      1.07  Q V       |         |         |         |
3+20       0.2651      1.08  Q V       |         |         |         |
3+25       0.2726      1.08  Q V       |         |         |         |
3+30       0.2800      1.08  Q V       |         |         |         |
3+35       0.2875      1.09  Q V       |         |         |         |
3+40       0.2950      1.09  Q V       |         |         |         |
3+45       0.3026      1.10  Q V       |         |         |         |
3+50       0.3101      1.10  Q V       |         |         |         |
3+55       0.3177      1.10  Q V       |         |         |         |
4+ 0       0.3254      1.11  Q V       |         |         |         |
4+ 5       0.3331      1.11  Q V       |         |         |         |
4+10       0.3407      1.12  Q V       |         |         |         |
4+15       0.3485      1.12  Q  V      |         |         |         |
4+20       0.3562      1.13  Q  V      |         |         |         |
4+25       0.3640      1.13  Q  V      |         |         |         |
4+30       0.3718      1.14  Q  V      |         |         |         |
4+35       0.3797      1.14  Q  V      |         |         |         |
4+40       0.3876      1.15  Q  V      |         |         |         |
4+45       0.3955      1.15  Q  V      |         |         |         |
4+50       0.4035      1.16  Q  V      |         |         |         |
4+55       0.4115      1.16  Q  V      |         |         |         |
5+ 0       0.4195      1.16  Q  V      |         |         |         |
5+ 5       0.4275      1.17  Q  V      |         |         |         |
5+10       0.4356      1.18  Q  V      |         |         |         |
5+15       0.4438      1.18  Q  V      |         |         |         |
5+20       0.4519      1.19  Q  V      |         |         |         |
5+25       0.4601      1.19  Q  V      |         |         |         |
5+30       0.4684      1.20  Q   V     |         |         |         |
5+35       0.4766      1.20  Q   V     |         |         |         |
5+40       0.4850      1.21  Q   V     |         |         |         |
5+45       0.4933      1.21  Q   V     |         |         |         |
5+50       0.5017      1.22  Q   V     |         |         |         |
5+55       0.5101      1.22  Q   V     |         |         |         |
6+ 0       0.5186      1.23  Q   V     |         |         |         |
6+ 5       0.5271      1.24  Q   V     |         |         |         |
6+10       0.5357      1.24  Q   V     |         |         |         |
6+15       0.5443      1.25  Q   V     |         |         |         |
6+20       0.5529      1.25  |Q  V     |         |         |         |
6+25       0.5616      1.26  |Q  V     |         |         |         |
6+30       0.5703      1.27  |Q  V     |         |         |         |
6+35       0.5791      1.27  |Q   V    |         |         |         |
6+40       0.5879      1.28  |Q   V    |         |         |         |
6+45       0.5967      1.29  |Q   V    |         |         |         |
6+50       0.6056      1.29  |Q   V    |         |         |         |
6+55       0.6146      1.30  |Q   V    |         |         |         |
7+ 0       0.6235      1.31  |Q   V    |         |         |         |
7+ 5       0.6326      1.31  |Q   V    |         |         |         |
7+10       0.6417      1.32  |Q   V    |         |         |         |
7+15       0.6508      1.33  |Q   V    |         |         |         |
7+20       0.6600      1.33  |Q   V    |         |         |         |
7+25       0.6692      1.34  |Q   V    |         |         |         |
7+30       0.6785      1.35  |Q   V    |         |         |         |
7+35       0.6879      1.36  |Q   V    |         |         |         |
7+40       0.6972      1.36  |Q    V   |         |         |         |
7+45       0.7067      1.37  |Q    V   |         |         |         |
7+50       0.7162      1.38  |Q    V   |         |         |         |
7+55       0.7257      1.39  |Q    V   |         |         |         |
8+ 0       0.7354      1.40  |Q    V   |         |         |         |
8+ 5       0.7450      1.40  |Q    V   |         |         |         |
8+10       0.7547      1.41  |Q    V   |         |         |         |
8+15       0.7645      1.42  |Q    V   |         |         |         |
8+20       0.7744      1.43  |Q    V   |         |         |         |
8+25       0.7843      1.44  |Q    V   |         |         |         |
8+30       0.7943      1.45  |Q    V   |         |         |         |
8+35       0.8043      1.46  |Q    V   |         |         |         |
8+40       0.8144      1.47  |Q     V  |         |         |         |
8+45       0.8245      1.48  |Q     V  |         |         |         |
```

```
 8+50       0.8348      1.48  |Q     V  |          |          |          |
 8+55       0.8451      1.49  |Q     V  |          |          |          |
 9+ 0       0.8554      1.50  |Q     V  |          |          |          |
 9+ 5       0.8658      1.51  |Q     V  |          |          |          |
 9+10       0.8764      1.53  |Q     V  |          |          |          |
 9+15       0.8869      1.54  |Q     V  |          |          |          |
 9+20       0.8976      1.55  |Q     V  |          |          |          |
 9+25       0.9083      1.56  |Q     V  |          |          |          |
 9+30       0.9191      1.57  |Q     V  |          |          |          |
 9+35       0.9300      1.58  |Q      V |          |          |          |
 9+40       0.9409      1.59  |Q      V |          |          |          |
 9+45       0.9520      1.60  |Q      V |          |          |          |
 9+50       0.9631      1.62  |Q      V |          |          |          |
 9+55       0.9743      1.63  |Q      V |          |          |          |
10+ 0       0.9856      1.64  |Q      V |          |          |          |
10+ 5       0.9970      1.65  |Q      V |          |          |          |
10+10       1.0085      1.67  |Q      V |          |          |          |
10+15       1.0201      1.68  |Q      V |          |          |          |
10+20       1.0317      1.69  |Q      V |          |          |          |
10+25       1.0435      1.71  |Q       V|          |          |          |
10+30       1.0553      1.72  |Q       V|          |          |          |
10+35       1.0673      1.74  |Q       V|          |          |          |
10+40       1.0794      1.75  |Q       V|          |          |          |
10+45       1.0915      1.77  |Q       V|          |          |          |
10+50       1.1038      1.78  |Q       V|          |          |          |
10+55       1.1162      1.80  |Q       V|          |          |          |
11+ 0       1.1287      1.82  |Q       V|          |          |          |
11+ 5       1.1414      1.83  |Q       V|          |          |          |
11+10       1.1541      1.85  |Q        V          |          |          |
11+15       1.1670      1.87  |Q        V          |          |          |
11+20       1.1800      1.89  |Q        V          |          |          |
11+25       1.1931      1.91  |Q        V          |          |          |
11+30       1.2064      1.93  |Q        V          |          |          |
11+35       1.2198      1.95  |Q        V          |          |          |
11+40       1.2333      1.97  |Q        V          |          |          |
11+45       1.2470      1.99  |Q        V          |          |          |
11+50       1.2608      2.01  |Q        V          |          |          |
11+55       1.2748      2.03  |Q        |V         |          |          |
12+ 0       1.2890      2.05  |Q        |V         |          |          |
12+ 5       1.3031      2.06  |Q        |V         |          |          |
12+10       1.3168      1.98  |Q        |V         |          |          |
12+15       1.3297      1.88  |Q        |V         |          |          |
12+20       1.3425      1.86  |Q        |V         |          |          |
12+25       1.3554      1.87  |Q        |V         |          |          |
12+30       1.3685      1.90  |Q        |V         |          |          |
12+35       1.3818      1.92  |Q        | V        |          |          |
12+40       1.3952      1.95  |Q        | V        |          |          |
12+45       1.4088      1.98  |Q        | V        |          |          |
12+50       1.4227      2.01  |Q        | V        |          |          |
12+55       1.4368      2.05  |Q        | V        |          |          |
13+ 0       1.4511      2.08  |Q        | V        |          |          |
13+ 5       1.4657      2.11  |Q        | V        |          |          |
13+10       1.4805      2.15  |Q        | V        |          |          |
13+15       1.4956      2.19  |Q        | V        |          |          |
13+20       1.5109      2.23  |Q        |  V       |          |          |
13+25       1.5266      2.27  |Q        |  V       |          |          |
13+30       1.5426      2.32  |Q        |  V       |          |          |
13+35       1.5588      2.36  |Q        |  V       |          |          |
13+40       1.5755      2.41  |Q        |  V       |          |          |
13+45       1.5924      2.47  |Q        |  V       |          |          |
13+50       1.6098      2.52  | Q       |  V       |          |          |
13+55       1.6276      2.58  | Q       |   V      |          |          |
14+ 0       1.6457      2.64  | Q       |   V      |          |          |
14+ 5       1.6644      2.71  | Q       |   V      |          |          |
14+10       1.6835      2.78  | Q       |   V      |          |          |
14+15       1.7032      2.86  | Q       |   V      |          |          |
14+20       1.7234      2.94  | Q       |   V      |          |          |
14+25       1.7442      3.02  | Q       |    V     |          |          |
14+30       1.7657      3.12  | Q       |    V     |          |          |
14+35       1.7878      3.22  | Q       |    V     |          |          |
14+40       1.8108      3.33  | Q       |    V     |          |          |
14+45       1.8345      3.45  | Q       |    V     |          |          |
14+50       1.8592      3.58  | Q       |     V    |          |          |
14+55       1.8848      3.73  | Q       |     V    |          |          |
15+ 0       1.9116      3.89  |  Q      |     V    |          |          |
```



```
  21+20       4.3535      1.23  Q          |          |          |      V  |
  21+25       4.3619      1.22  Q          |          |          |      V  |
  21+30       4.3702      1.21  Q          |          |          |      V  |
  21+35       4.3785      1.20  Q          |          |          |       V |
  21+40       4.3866      1.19  Q          |          |          |       V |
  21+45       4.3947      1.18  Q          |          |          |       V |
  21+50       4.4027      1.17  Q          |          |          |       V |
  21+55       4.4107      1.16  Q          |          |          |       V |
  22+ 0       4.4186      1.15  Q          |          |          |       V |
  22+ 5       4.4264      1.14  Q          |          |          |       V |
  22+10       4.4342      1.13  Q          |          |          |       V |
  22+15       4.4419      1.12  Q          |          |          |       V |
  22+20       4.4495      1.11  Q          |          |          |       V |
  22+25       4.4571      1.10  Q          |          |          |       V |
  22+30       4.4646      1.09  Q          |          |          |       V |
  22+35       4.4720      1.08  Q          |          |          |       V |
  22+40       4.4795      1.08  Q          |          |          |       V |
  22+45       4.4868      1.07  Q          |          |          |       V |
  22+50       4.4941      1.06  Q          |          |          |        V|
  22+55       4.5013      1.05  Q          |          |          |        V|
  23+ 0       4.5085      1.04  Q          |          |          |        V|
  23+ 5       4.5157      1.04  Q          |          |          |        V|
  23+10       4.5228      1.03  Q          |          |          |        V|
  23+15       4.5298      1.02  Q          |          |          |        V|
  23+20       4.5368      1.02  Q          |          |          |        V|
  23+25       4.5437      1.01  Q          |          |          |        V|
  23+30       4.5506      1.00  Q          |          |          |        V|
  23+35       4.5575      1.00  Q          |          |          |        V|
  23+40       4.5643      0.99  Q          |          |          |        V|
  23+45       4.5711      0.98  Q          |          |          |        V|
  23+50       4.5778      0.98  Q          |          |          |        V|
  23+55       4.5845      0.97  Q          |          |          |        V|
  24+ 0       4.5911      0.96  Q          |          |          |        V|
  24+ 5       4.5973      0.90  Q          |          |          |        V|
  24+10       4.6013      0.58  Q          |          |          |        V|
  24+15       4.6027      0.20  Q          |          |          |        V|
  24+20       4.6030      0.05  Q          |          |          |        V|
  24+25       4.6031      0.01  Q          |          |          |        V|
  24+30       4.6032      0.00  Q          |          |          |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 2D
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 2DPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
8.80	1	0.60
Rainfall data for year 2		
8.80	6	0.70
Rainfall data for year 2		
8.80	24	1.20
Rainfall data for year 100		
8.80	1	1.00
Rainfall data for year 100		
8.80	6	1.90
Rainfall data for year 100		
8.80	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	8.80	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.88	0.100	69.0	69.0	4.49	0.263
7.92	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =       8.80(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of       8.80(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.370(In)
30-minute factor = 1.000    Adjusted rainfall =  0.758(In)
1-hour factor = 1.000       Adjusted rainfall =  1.000(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       106.43 (CFS))

  1                5.469                   5.821
  2               35.337                  31.787
  3               75.925                  43.196
  4               93.130                  18.310
  5               98.077                   5.265
  6               99.228                   1.224
  7              100.000                   0.822
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3700              0.3700
  2              0.4882              0.1182
  3              0.5741              0.0860
  4              0.6441              0.0700
  5              0.7043              0.0601
  6              0.7575              0.0533
  7              0.8057              0.0482
  8              0.8499              0.0442
  9              0.8909              0.0410
 10              0.9293              0.0384
 11              0.9654              0.0361
 12              0.9996              0.0342
 13              1.0287              0.0291
 14              1.0564              0.0277
 15              1.0828              0.0265
 16              1.1082              0.0253
 17              1.1326              0.0244
 18              1.1560              0.0235
 19              1.1786              0.0226
 20              1.2005              0.0219
 21              1.2217              0.0212
 22              1.2422              0.0205
 23              1.2622              0.0200
 24              1.2816              0.0194
 25              1.3005              0.0189
 26              1.3189              0.0184
```

27	1.3369	0.0180
28	1.3544	0.0175
29	1.3716	0.0171
30	1.3884	0.0168
31	1.4048	0.0164
32	1.4209	0.0161
33	1.4366	0.0158
34	1.4521	0.0155
35	1.4673	0.0152
36	1.4822	0.0149
37	1.4968	0.0146
38	1.5111	0.0144
39	1.5253	0.0141
40	1.5392	0.0139
41	1.5528	0.0137
42	1.5663	0.0135
43	1.5796	0.0133
44	1.5926	0.0131
45	1.6055	0.0129
46	1.6182	0.0127
47	1.6307	0.0125
48	1.6431	0.0123
49	1.6552	0.0122
50	1.6673	0.0120
51	1.6791	0.0119
52	1.6909	0.0117
53	1.7024	0.0116
54	1.7139	0.0114
55	1.7252	0.0113
56	1.7364	0.0112
57	1.7474	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7798	0.0107
61	1.7904	0.0106
62	1.8008	0.0105
63	1.8112	0.0104
64	1.8214	0.0102
65	1.8316	0.0101
66	1.8416	0.0100
67	1.8516	0.0099
68	1.8614	0.0099
69	1.8712	0.0098
70	1.8809	0.0097
71	1.8905	0.0096
72	1.8999	0.0095
73	1.9110	0.0110
74	1.9219	0.0109
75	1.9328	0.0109
76	1.9436	0.0108
77	1.9543	0.0107
78	1.9649	0.0106
79	1.9754	0.0105
80	1.9859	0.0105
81	1.9962	0.0104
82	2.0066	0.0103
83	2.0168	0.0102
84	2.0270	0.0102
85	2.0371	0.0101
86	2.0471	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0768	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1059	0.0096
93	2.1154	0.0096
94	2.1250	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1532	0.0093
98	2.1625	0.0093
99	2.1717	0.0092
100	2.1809	0.0092
101	2.1900	0.0091

102	2.1991	0.0091
103	2.2081	0.0090
104	2.2171	0.0090
105	2.2260	0.0089
106	2.2349	0.0089
107	2.2437	0.0088
108	2.2525	0.0088
109	2.2612	0.0087
110	2.2699	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2957	0.0086
114	2.3042	0.0085
115	2.3127	0.0085
116	2.3211	0.0084
117	2.3295	0.0084
118	2.3378	0.0083
119	2.3461	0.0083
120	2.3543	0.0083
121	2.3626	0.0082
122	2.3707	0.0082
123	2.3789	0.0081
124	2.3870	0.0081
125	2.3950	0.0081
126	2.4031	0.0080
127	2.4110	0.0080
128	2.4190	0.0080
129	2.4269	0.0079
130	2.4348	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4660	0.0077
135	2.4737	0.0077
136	2.4813	0.0077
137	2.4890	0.0076
138	2.4966	0.0076
139	2.5042	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5342	0.0075
144	2.5416	0.0074
145	2.5490	0.0074
146	2.5564	0.0074
147	2.5637	0.0073
148	2.5710	0.0073
149	2.5783	0.0073
150	2.5855	0.0072
151	2.5928	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6143	0.0071
155	2.6214	0.0071
156	2.6285	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6496	0.0070
160	2.6565	0.0070
161	2.6635	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6911	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7115	0.0068
169	2.7183	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7451	0.0067
174	2.7517	0.0066
175	2.7584	0.0066
176	2.7650	0.0066

177	2.7716	0.0066
178	2.7781	0.0066
179	2.7847	0.0065
180	2.7912	0.0065
181	2.7977	0.0065
182	2.8042	0.0065
183	2.8106	0.0065
184	2.8171	0.0064
185	2.8235	0.0064
186	2.8299	0.0064
187	2.8362	0.0064
188	2.8426	0.0064
189	2.8489	0.0063
190	2.8553	0.0063
191	2.8616	0.0063
192	2.8678	0.0063
193	2.8741	0.0063
194	2.8803	0.0062
195	2.8866	0.0062
196	2.8928	0.0062
197	2.8990	0.0062
198	2.9051	0.0062
199	2.9113	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9357	0.0061
204	2.9418	0.0061
205	2.9478	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9778	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9956	0.0059
214	3.0015	0.0059
215	3.0073	0.0059
216	3.0132	0.0059
217	3.0190	0.0058
218	3.0249	0.0058
219	3.0307	0.0058
220	3.0365	0.0058
221	3.0423	0.0058
222	3.0481	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0653	0.0057
226	3.0710	0.0057
227	3.0767	0.0057
228	3.0824	0.0057
229	3.0880	0.0057
230	3.0937	0.0057
231	3.0993	0.0056
232	3.1050	0.0056
233	3.1106	0.0056
234	3.1162	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1329	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1495	0.0055
241	3.1550	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1714	0.0055
245	3.1768	0.0054
246	3.1823	0.0054
247	3.1877	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2039	0.0054
251	3.2093	0.0054

252	3.2146	0.0054
253	3.2200	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2571	0.0053
261	3.2623	0.0053
262	3.2676	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2988	0.0052
269	3.3039	0.0052
270	3.3091	0.0052
271	3.3142	0.0051
272	3.3194	0.0051
273	3.3245	0.0051
274	3.3296	0.0051
275	3.3347	0.0051
276	3.3398	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3550	0.0051
280	3.3600	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3751	0.0050
284	3.3801	0.0050
285	3.3851	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.4000	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0095
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0171	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0239
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0556
191	0.0860	0.0046	0.0814
192	0.1182	0.0046	0.1136
193	0.3700	0.0046	0.3654
194	0.0700	0.0046	0.0655
195	0.0482	0.0046	0.0436
196	0.0384	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0253	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0205	0.0028	0.0178
201	0.0189	0.0026	0.0163
202	0.0175	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 20.74(CFS)

++

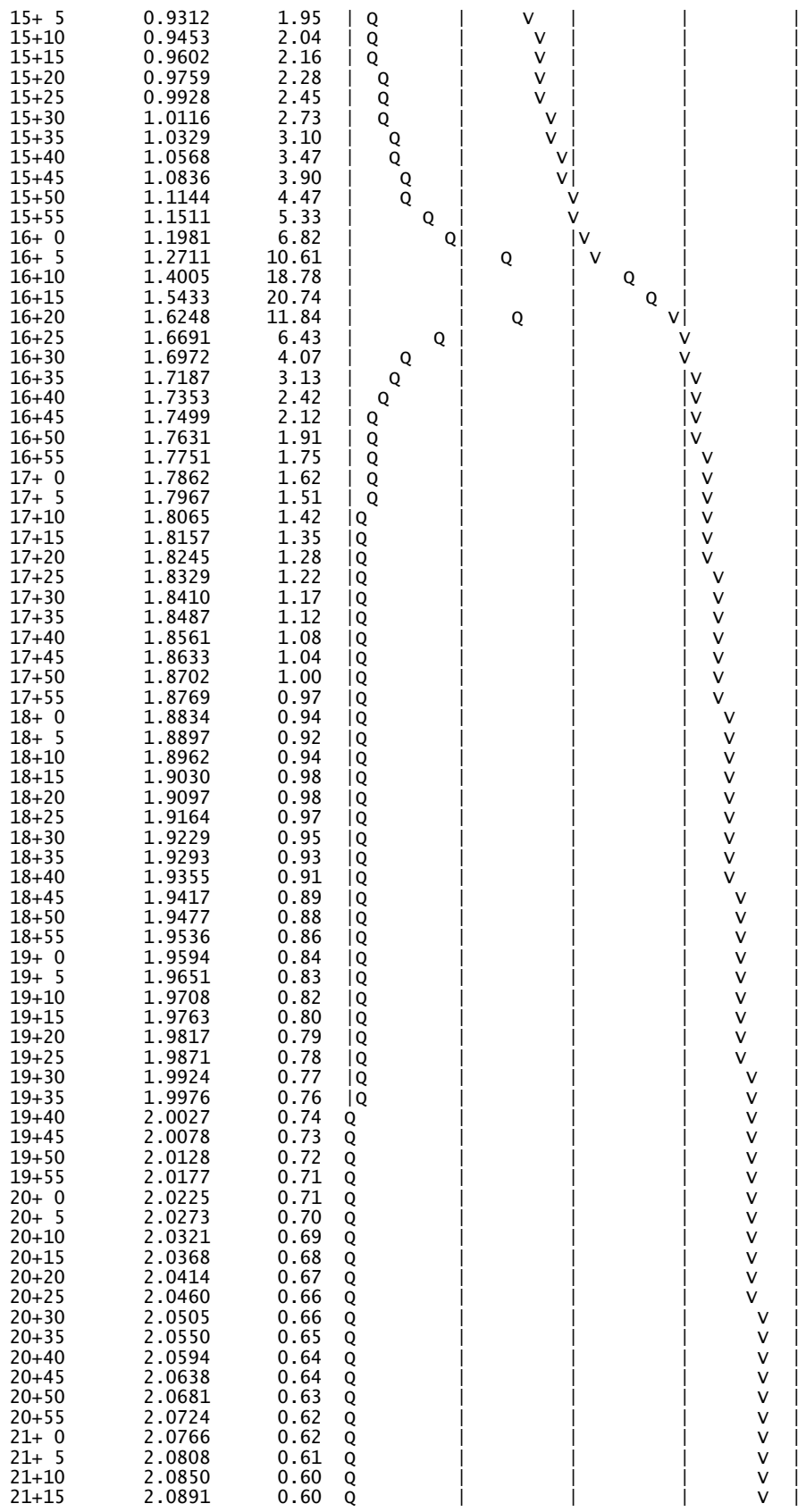
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.02	Q	|	|	|	|
0+10	0.0013	0.16	Q	|	|	|	|
0+15	0.0037	0.35	Q	|	|	|	|
0+20	0.0066	0.43	Q	|	|	|	|
0+25	0.0097	0.45	Q	|	|	|	|
0+30	0.0129	0.46	Q	|	|	|	|
0+35	0.0160	0.46	Q	|	|	|	|
0+40	0.0192	0.46	Q	|	|	|	|
0+45	0.0224	0.46	Q	|	|	|	|
0+50	0.0256	0.47	Q	|	|	|	|
0+55	0.0289	0.47	Q	|	|	|	|
1+ 0	0.0321	0.47	Q	|	|	|	|
1+ 5	0.0353	0.47	Q	|	|	|	|
1+10	0.0386	0.47	Q	|	|	|	|
1+15	0.0419	0.47	Q	|	|	|	|
1+20	0.0451	0.48	Q	|	|	|	|
1+25	0.0484	0.48	Q	|	|	|	|
1+30	0.0517	0.48	Q	|	|	|	|
1+35	0.0550	0.48	Q	|	|	|	|
1+40	0.0583	0.48	QV	|	|	|	|
1+45	0.0617	0.48	QV	|	|	|	|
1+50	0.0650	0.48	QV	|	|	|	|
1+55	0.0683	0.49	QV	|	|	|	|
2+ 0	0.0717	0.49	QV	|	|	|	|
2+ 5	0.0751	0.49	QV	|	|	|	|
2+10	0.0785	0.49	QV	|	|	|	|
2+15	0.0819	0.49	QV	|	|	|	|
2+20	0.0853	0.49	QV	|	|	|	|
2+25	0.0887	0.50	QV	|	|	|	|
2+30	0.0921	0.50	QV	|	|	|	|

2+35	0.0956	0.50	QV				
2+40	0.0990	0.50	QV				
2+45	0.1025	0.50	QV				
2+50	0.1060	0.51	QV				
2+55	0.1095	0.51	QV				
3+ 0	0.1130	0.51	Q V				
3+ 5	0.1165	0.51	Q V				
3+10	0.1200	0.51	Q V				
3+15	0.1236	0.51	Q V				
3+20	0.1271	0.52	Q V				
3+25	0.1307	0.52	Q V				
3+30	0.1343	0.52	Q V				
3+35	0.1379	0.52	Q V				
3+40	0.1415	0.52	Q V				
3+45	0.1451	0.53	Q V				
3+50	0.1488	0.53	Q V				
3+55	0.1524	0.53	Q V				
4+ 0	0.1561	0.53	Q V				
4+ 5	0.1598	0.54	Q V				
4+10	0.1635	0.54	Q V				
4+15	0.1672	0.54	Q V				
4+20	0.1709	0.54	Q V				
4+25	0.1747	0.54	Q V				
4+30	0.1784	0.55	Q V				
4+35	0.1822	0.55	Q V				
4+40	0.1860	0.55	Q V				
4+45	0.1898	0.55	Q V				
4+50	0.1936	0.56	Q V				
4+55	0.1975	0.56	Q V				
5+ 0	0.2013	0.56	Q V				
5+ 5	0.2052	0.56	Q V				
5+10	0.2091	0.56	Q V				
5+15	0.2130	0.57	Q V				
5+20	0.2169	0.57	Q V				
5+25	0.2209	0.57	Q V				
5+30	0.2248	0.57	Q V				
5+35	0.2288	0.58	Q V				
5+40	0.2328	0.58	Q V				
5+45	0.2368	0.58	Q V				
5+50	0.2408	0.59	Q V				
5+55	0.2449	0.59	Q V				
6+ 0	0.2490	0.59	Q V				
6+ 5	0.2531	0.59	Q V				
6+10	0.2572	0.60	Q V				
6+15	0.2613	0.60	Q V				
6+20	0.2654	0.60	Q V				
6+25	0.2696	0.61	Q V				
6+30	0.2738	0.61	Q V				
6+35	0.2780	0.61	Q V				
6+40	0.2823	0.61	Q V				
6+45	0.2865	0.62	Q V				
6+50	0.2908	0.62	Q V				
6+55	0.2951	0.62	Q V				
7+ 0	0.2994	0.63	Q V				
7+ 5	0.3037	0.63	Q V				
7+10	0.3081	0.63	Q V				
7+15	0.3125	0.64	Q V				
7+20	0.3169	0.64	Q V				
7+25	0.3214	0.64	Q V				
7+30	0.3258	0.65	Q V				
7+35	0.3303	0.65	Q V				
7+40	0.3348	0.66	Q V				
7+45	0.3394	0.66	Q V				
7+50	0.3439	0.66	Q V				
7+55	0.3485	0.67	Q V				
8+ 0	0.3531	0.67	Q V				
8+ 5	0.3578	0.67	Q V				
8+10	0.3625	0.68	Q V				
8+15	0.3672	0.68	Q V				
8+20	0.3719	0.69	Q V				
8+25	0.3767	0.69	Q V				
8+30	0.3814	0.70	Q V				
8+35	0.3863	0.70	Q V				
8+40	0.3911	0.70	Q V				
8+45	0.3960	0.71	Q V				

```
 8+50       0.4009      0.71  Q      V  |          |          |          |
 8+55       0.4059      0.72  Q      V  |          |          |          |
 9+ 0       0.4108      0.72  Q      V  |          |          |          |
 9+ 5       0.4159      0.73  Q      V  |          |          |          |
 9+10       0.4209      0.73  Q      V  |          |          |          |
 9+15       0.4260      0.74  Q      V  |          |          |          |
 9+20       0.4311      0.74  Q      V  |          |          |          |
 9+25       0.4363      0.75  Q      V  |          |          |          |
 9+30       0.4414      0.75  |Q     V  |          |          |          |
 9+35       0.4467      0.76  |Q      V |          |          |          |
 9+40       0.4519      0.76  |Q      V |          |          |          |
 9+45       0.4572      0.77  |Q      V |          |          |          |
 9+50       0.4626      0.78  |Q      V |          |          |          |
 9+55       0.4680      0.78  |Q      V |          |          |          |
10+ 0       0.4734      0.79  |Q      V |          |          |          |
10+ 5       0.4789      0.79  |Q      V |          |          |          |
10+10       0.4844      0.80  |Q      V |          |          |          |
10+15       0.4900      0.81  |Q      V |          |          |          |
10+20       0.4956      0.81  |Q      V |          |          |          |
10+25       0.5012      0.82  |Q       V|          |          |          |
10+30       0.5069      0.83  |Q       V|          |          |          |
10+35       0.5127      0.83  |Q       V|          |          |          |
10+40       0.5185      0.84  |Q       V|          |          |          |
10+45       0.5243      0.85  |Q       V|          |          |          |
10+50       0.5302      0.86  |Q       V|          |          |          |
10+55       0.5362      0.86  |Q       V|          |          |          |
11+ 0       0.5422      0.87  |Q       V|          |          |          |
11+ 5       0.5482      0.88  |Q       V|          |          |          |
11+10       0.5544      0.89  |Q        V          |          |          |
11+15       0.5605      0.90  |Q        V          |          |          |
11+20       0.5668      0.91  |Q        V          |          |          |
11+25       0.5731      0.92  |Q        V          |          |          |
11+30       0.5795      0.92  |Q        V          |          |          |
11+35       0.5859      0.93  |Q        V          |          |          |
11+40       0.5924      0.94  |Q        V          |          |          |
11+45       0.5990      0.95  |Q        V          |          |          |
11+50       0.6056      0.96  |Q        V          |          |          |
11+55       0.6123      0.98  |Q        |V         |          |          |
12+ 0       0.6191      0.99  |Q        |V         |          |          |
12+ 5       0.6260      0.99  |Q        |V         |          |          |
12+10       0.6325      0.96  |Q        |V         |          |          |
12+15       0.6388      0.91  |Q        |V         |          |          |
12+20       0.6450      0.89  |Q        |V         |          |          |
12+25       0.6512      0.90  |Q        |V         |          |          |
12+30       0.6574      0.91  |Q        |V         |          |          |
12+35       0.6638      0.92  |Q        |V         |          |          |
12+40       0.6703      0.94  |Q        | V        |          |          |
12+45       0.6768      0.95  |Q        | V        |          |          |
12+50       0.6835      0.97  |Q        | V        |          |          |
12+55       0.6902      0.98  |Q        | V        |          |          |
13+ 0       0.6971      1.00  |Q        | V        |          |          |
13+ 5       0.7041      1.02  |Q        | V        |          |          |
13+10       0.7112      1.03  |Q        | V        |          |          |
13+15       0.7184      1.05  |Q        | V        |          |          |
13+20       0.7258      1.07  |Q        |  V       |          |          |
13+25       0.7333      1.09  |Q        |  V       |          |          |
13+30       0.7410      1.11  |Q        |  V       |          |          |
13+35       0.7488      1.13  |Q        |  V       |          |          |
13+40       0.7568      1.16  |Q        |  V       |          |          |
13+45       0.7649      1.18  |Q        |  V       |          |          |
13+50       0.7733      1.21  |Q        |  V       |          |          |
13+55       0.7818      1.24  |Q        |   V      |          |          |
14+ 0       0.7905      1.27  |Q        |   V      |          |          |
14+ 5       0.7994      1.30  |Q        |   V      |          |          |
14+10       0.8086      1.33  |Q        |   V      |          |          |
14+15       0.8180      1.37  |Q        |   V      |          |          |
14+20       0.8277      1.41  |Q        |   V      |          |          |
14+25       0.8377      1.45  |Q        |    V     |          |          |
14+30       0.8480      1.49  |Q        |    V     |          |          |
14+35       0.8586      1.54  | Q       |    V     |          |          |
14+40       0.8696      1.59  | Q       |    V     |          |          |
14+45       0.8809      1.65  | Q       |    V     |          |          |
14+50       0.8927      1.71  | Q       |     V    |          |          |
14+55       0.9050      1.78  | Q       |     V    |          |          |
15+ 0       0.9178      1.86  | Q       |     V    |          |          |
```



21+20	2.0932	0.59	Q	|	|	|	V |
21+25	2.0972	0.59	Q	|	|	|	V |
21+30	2.1012	0.58	Q	|	|	|	V |
21+35	2.1052	0.58	Q	|	|	|	V |
21+40	2.1091	0.57	Q	|	|	|	V |
21+45	2.1130	0.57	Q	|	|	|	V |
21+50	2.1168	0.56	Q	|	|	|	V |
21+55	2.1207	0.56	Q	|	|	|	V |
22+ 0	2.1245	0.55	Q	|	|	|	V |
22+ 5	2.1282	0.55	Q	|	|	|	V |
22+10	2.1320	0.54	Q	|	|	|	V |
22+15	2.1357	0.54	Q	|	|	|	V |
22+20	2.1393	0.53	Q	|	|	|	V |
22+25	2.1430	0.53	Q	|	|	|	V |
22+30	2.1466	0.53	Q	|	|	|	V |
22+35	2.1502	0.52	Q	|	|	|	V |
22+40	2.1538	0.52	Q	|	|	|	V |
22+45	2.1573	0.51	Q	|	|	|	V |
22+50	2.1608	0.51	Q	|	|	|	V|
22+55	2.1643	0.51	Q	|	|	|	V|
23+ 0	2.1678	0.50	Q	|	|	|	V|
23+ 5	2.1712	0.50	Q	|	|	|	V|
23+10	2.1746	0.50	Q	|	|	|	V|
23+15	2.1780	0.49	Q	|	|	|	V|
23+20	2.1814	0.49	Q	|	|	|	V|
23+25	2.1847	0.49	Q	|	|	|	V|
23+30	2.1880	0.48	Q	|	|	|	V|
23+35	2.1913	0.48	Q	|	|	|	V|
23+40	2.1946	0.48	Q	|	|	|	V|
23+45	2.1978	0.47	Q	|	|	|	V|
23+50	2.2011	0.47	Q	|	|	|	V|
23+55	2.2043	0.47	Q	|	|	|	V|
24+ 0	2.2075	0.46	Q	|	|	|	V|
24+ 5	2.2105	0.44	Q	|	|	|	V|
24+10	2.2125	0.30	Q	|	|	|	V|
24+15	2.2133	0.11	Q	|	|	|	V|
24+20	2.2135	0.03	Q	|	|	|	V|
24+25	2.2136	0.01	Q	|	|	|	V|
24+30	2.2136	0.00	Q	|	|	|	V|

BUILDING 3

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 3A
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 3APROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
22.80	1	0.60
Rainfall data for year 2		
22.80	6	0.70
Rainfall data for year 2		
22.80	24	1.20
Rainfall data for year 100		
22.80	1	1.00
Rainfall data for year 100		
22.80	6	1.90
Rainfall data for year 100		
22.80	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	22.80	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.28	0.100	69.0	69.0	4.49	0.263
20.52	0.900	98.0	98.0	0.20	0.931

Area-averaged catchment yield fraction, Y = 0.865
Area-averaged low loss fraction, Yb = 0.135
User entry of time of concentration = 0.170 (hours)
++
Watershed area = 22.80(Ac.)
Catchment Lag time = 0.136 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 61.2745
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.370(In)
Computed peak 30-minute rainfall = 0.758(In)
Specified peak 1-hour rainfall = 1.000(In)
Computed peak 3-hour rainfall = 1.482(In)
Specified peak 6-hour rainfall = 1.900(In)
Specified peak 24-hour rainfall = 3.400(In)

Rainfall depth area reduction factors:
Using a total area of 22.80(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.370(In)
30-minute factor = 0.999 Adjusted rainfall = 0.757(In)
1-hour factor = 0.999 Adjusted rainfall = 0.999(In)
3-hour factor = 1.000 Adjusted rainfall = 1.482(In)
6-hour factor = 1.000 Adjusted rainfall = 1.900(In)
24-hour factor = 1.000 Adjusted rainfall = 3.400(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 275.74 (CFS))	
1	6.789	18.720
2	43.210	100.427
3	82.892	109.418
4	95.987	36.107
5	98.763	7.655
6	100.000	3.410

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3697	0.3697
2	0.4878	0.1181
3	0.5737	0.0859
4	0.6437	0.0700
5	0.7038	0.0601
6	0.7570	0.0532
7	0.8052	0.0481
8	0.8494	0.0442
9	0.8903	0.0410
10	0.9287	0.0383
11	0.9648	0.0361
12	0.9989	0.0342
13	1.0281	0.0291
14	1.0558	0.0277
15	1.0823	0.0265
16	1.1076	0.0254
17	1.1320	0.0244
18	1.1555	0.0235
19	1.1781	0.0227
20	1.2000	0.0219
21	1.2213	0.0212
22	1.2418	0.0206
23	1.2618	0.0200
24	1.2812	0.0194
25	1.3002	0.0189
26	1.3186	0.0184
27	1.3366	0.0180

28	1.3542	0.0176
29	1.3713	0.0172
30	1.3881	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4364	0.0158
34	1.4519	0.0155
35	1.4671	0.0152
36	1.4820	0.0149
37	1.4967	0.0146
38	1.5110	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5527	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6551	0.0122
50	1.6672	0.0120
51	1.6790	0.0119
52	1.6908	0.0117
53	1.7023	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8007	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8415	0.0100
67	1.8515	0.0099
68	1.8613	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9218	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0668	0.0099
89	2.0767	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091
102	2.1990	0.0091

103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4581	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5116	0.0075
141	2.5192	0.0075
142	2.5266	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6070	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6354	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6841	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7046	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7317	0.0067
172	2.7383	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066
177	2.7715	0.0066

178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8105	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9234	0.0061
202	2.9295	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9717	0.0060
210	2.9777	0.0060
211	2.9836	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0537	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1272	0.0056
237	3.1328	0.0056
238	3.1383	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054
251	3.2092	0.0054
252	3.2146	0.0054

253	3.2199	0.0053
254	3.2252	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2517	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3949	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048
34	0.0055	0.0007	0.0048

35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069
109	0.0080	0.0011	0.0069

110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229
184	0.0277	0.0038	0.0240

185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0532	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3697	0.0046	0.3651
194	0.0700	0.0046	0.0654
195	0.0481	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0227	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054
259	0.0062	0.0008	0.0053

260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 53.85(CFS)

++

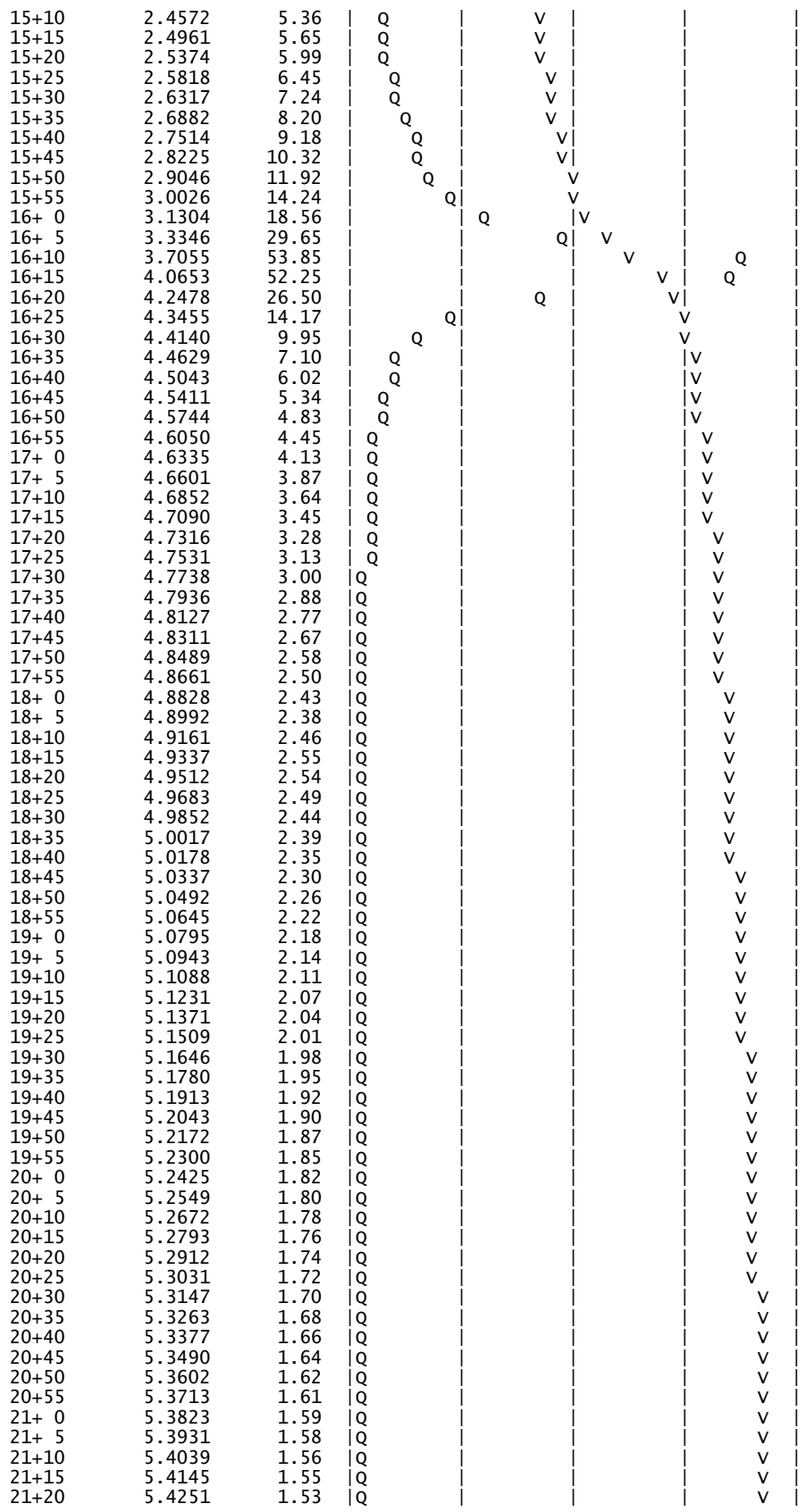
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0006	0.08	Q	|	|	|	|
0+10	0.0041	0.51	Q	|	|	|	|
0+15	0.0108	0.98	Q	|	|	|	|
0+20	0.0187	1.14	Q	|	|	|	|
0+25	0.0268	1.18	Q	|	|	|	|
0+30	0.0350	1.19	Q	|	|	|	|
0+35	0.0432	1.20	Q	|	|	|	|
0+40	0.0515	1.20	Q	|	|	|	|
0+45	0.0598	1.21	Q	|	|	|	|
0+50	0.0681	1.21	Q	|	|	|	|
0+55	0.0765	1.21	Q	|	|	|	|
1+ 0	0.0849	1.22	Q	|	|	|	|
1+ 5	0.0933	1.22	Q	|	|	|	|
1+10	0.1017	1.22	Q	|	|	|	|
1+15	0.1102	1.23	Q	|	|	|	|
1+20	0.1187	1.23	Q	|	|	|	|
1+25	0.1272	1.24	Q	|	|	|	|
1+30	0.1357	1.24	Q	|	|	|	|
1+35	0.1443	1.24	QV	|	|	|	|
1+40	0.1529	1.25	QV	|	|	|	|
1+45	0.1615	1.25	QV	|	|	|	|
1+50	0.1702	1.26	QV	|	|	|	|
1+55	0.1789	1.26	QV	|	|	|	|
2+ 0	0.1876	1.27	QV	|	|	|	|
2+ 5	0.1963	1.27	QV	|	|	|	|
2+10	0.2051	1.27	QV	|	|	|	|
2+15	0.2139	1.28	QV	|	|	|	|
2+20	0.2227	1.28	QV	|	|	|	|
2+25	0.2316	1.29	QV	|	|	|	|
2+30	0.2405	1.29	QV	|	|	|	|
2+35	0.2494	1.30	QV	|	|	|	|

2+40	0.2584	1.30	QV	|	|	|	|
2+45	0.2674	1.31	QV	|	|	|	|
2+50	0.2764	1.31	QV	|	|	|	|
2+55	0.2855	1.32	QV	|	|	|	|
3+ 0	0.2946	1.32	Q V	|	|	|	|
3+ 5	0.3037	1.33	Q V	|	|	|	|
3+10	0.3129	1.33	Q V	|	|	|	|
3+15	0.3220	1.33	Q V	|	|	|	|
3+20	0.3313	1.34	Q V	|	|	|	|
3+25	0.3405	1.34	Q V	|	|	|	|
3+30	0.3498	1.35	Q V	|	|	|	|
3+35	0.3592	1.36	Q V	|	|	|	|
3+40	0.3685	1.36	Q V	|	|	|	|
3+45	0.3779	1.37	Q V	|	|	|	|
3+50	0.3874	1.37	Q V	|	|	|	|
3+55	0.3969	1.38	Q V	|	|	|	|
4+ 0	0.4064	1.38	Q V	|	|	|	|
4+ 5	0.4159	1.39	Q V	|	|	|	|
4+10	0.4255	1.39	Q V	|	|	|	|
4+15	0.4352	1.40	Q V	|	|	|	|
4+20	0.4448	1.40	Q V	|	|	|	|
4+25	0.4546	1.41	Q V	|	|	|	|
4+30	0.4643	1.42	Q V	|	|	|	|
4+35	0.4741	1.42	Q V	|	|	|	|
4+40	0.4839	1.43	Q V	|	|	|	|
4+45	0.4938	1.43	Q V	|	|	|	|
4+50	0.5037	1.44	Q V	|	|	|	|
4+55	0.5137	1.45	Q V	|	|	|	|
5+ 0	0.5237	1.45	Q V	|	|	|	|
5+ 5	0.5337	1.46	Q V	|	|	|	|
5+10	0.5438	1.46	Q V	|	|	|	|
5+15	0.5539	1.47	Q V	|	|	|	|
5+20	0.5641	1.48	Q V	|	|	|	|
5+25	0.5743	1.48	Q V	|	|	|	|
5+30	0.5846	1.49	Q V	|	|	|	|
5+35	0.5949	1.50	Q V	|	|	|	|
5+40	0.6053	1.50	|Q V	|	|	|	|
5+45	0.6157	1.51	|Q V	|	|	|	|
5+50	0.6262	1.52	|Q V	|	|	|	|
5+55	0.6367	1.53	|Q V	|	|	|	|
6+ 0	0.6472	1.53	|Q V	|	|	|	|
6+ 5	0.6578	1.54	|Q V	|	|	|	|
6+10	0.6685	1.55	|Q V	|	|	|	|
6+15	0.6792	1.56	|Q V	|	|	|	|
6+20	0.6900	1.56	|Q V	|	|	|	|
6+25	0.7008	1.57	|Q V	|	|	|	|
6+30	0.7117	1.58	|Q V	|	|	|	|
6+35	0.7226	1.59	|Q V	|	|	|	|
6+40	0.7336	1.59	|Q V	|	|	|	|
6+45	0.7446	1.60	|Q V	|	|	|	|
6+50	0.7557	1.61	|Q V	|	|	|	|
6+55	0.7668	1.62	|Q V	|	|	|	|
7+ 0	0.7780	1.63	|Q V	|	|	|	|
7+ 5	0.7893	1.64	|Q V	|	|	|	|
7+10	0.8006	1.64	|Q V	|	|	|	|
7+15	0.8120	1.65	|Q V	|	|	|	|
7+20	0.8235	1.66	|Q V	|	|	|	|
7+25	0.8350	1.67	|Q V	|	|	|	|
7+30	0.8466	1.68	|Q V	|	|	|	|
7+35	0.8582	1.69	|Q V	|	|	|	|
7+40	0.8699	1.70	|Q V	|	|	|	|
7+45	0.8817	1.71	|Q V	|	|	|	|
7+50	0.8935	1.72	|Q V	|	|	|	|
7+55	0.9054	1.73	|Q V	|	|	|	|
8+ 0	0.9174	1.74	|Q V	|	|	|	|
8+ 5	0.9295	1.75	|Q V	|	|	|	|
8+10	0.9416	1.76	|Q V	|	|	|	|
8+15	0.9538	1.77	|Q V	|	|	|	|
8+20	0.9661	1.78	|Q V	|	|	|	|
8+25	0.9784	1.79	|Q V	|	|	|	|
8+30	0.9909	1.80	|Q V	|	|	|	|
8+35	1.0034	1.82	|Q V	|	|	|	|
8+40	1.0159	1.83	|Q V	|	|	|	|
8+45	1.0286	1.84	|Q V	|	|	|	|
8+50	1.0414	1.85	|Q V	|	|	|	|

8+55	1.0542	1.86	Q V				
9+ 0	1.0671	1.88	Q V				
9+ 5	1.0801	1.89	Q V				
9+10	1.0932	1.90	Q V				
9+15	1.1064	1.91	Q V				
9+20	1.1197	1.93	Q V				
9+25	1.1330	1.94	Q V				
9+30	1.1465	1.96	Q V				
9+35	1.1601	1.97	Q V				
9+40	1.1738	1.98	Q V				
9+45	1.1875	2.00	Q V				
9+50	1.2014	2.01	Q V				
9+55	1.2154	2.03	Q V				
10+ 0	1.2295	2.05	Q V				
10+ 5	1.2437	2.06	Q V				
10+10	1.2580	2.08	Q V				
10+15	1.2724	2.09	Q V				
10+20	1.2869	2.11	Q V				
10+25	1.3016	2.13	Q V				
10+30	1.3164	2.15	Q V				
10+35	1.3313	2.17	Q V				
10+40	1.3464	2.18	Q V				
10+45	1.3615	2.20	Q V				
10+50	1.3769	2.22	Q V				
10+55	1.3923	2.24	Q V				
11+ 0	1.4079	2.26	Q V				
11+ 5	1.4237	2.29	Q V				
11+10	1.4396	2.31	Q V				
11+15	1.4556	2.33	Q V				
11+20	1.4718	2.35	Q V				
11+25	1.4882	2.38	Q V				
11+30	1.5047	2.40	Q V				
11+35	1.5214	2.43	Q V				
11+40	1.5383	2.45	Q V				
11+45	1.5554	2.48	Q V				
11+50	1.5726	2.51	Q V				
11+55	1.5901	2.53	Q V				
12+ 0	1.6077	2.56	Q V				
12+ 5	1.6254	2.57	Q V				
12+10	1.6423	2.46	Q V				
12+15	1.6584	2.33	Q V				
12+20	1.6744	2.31	Q V				
12+25	1.6904	2.34	Q V				
12+30	1.7067	2.37	Q V				
12+35	1.7233	2.40	Q V				
12+40	1.7400	2.44	Q V				
12+45	1.7571	2.47	Q V				
12+50	1.7744	2.51	Q V				
12+55	1.7919	2.55	Q V				
13+ 0	1.8098	2.60	Q V				
13+ 5	1.8280	2.64	Q V				
13+10	1.8465	2.69	Q V				
13+15	1.8653	2.73	Q V				
13+20	1.8845	2.78	Q V				
13+25	1.9040	2.84	Q V				
13+30	1.9240	2.89	Q V				
13+35	1.9443	2.95	Q V				
13+40	1.9650	3.01	Q V				
13+45	1.9862	3.08	Q V				
13+50	2.0079	3.15	Q V				
13+55	2.0301	3.22	Q V				
14+ 0	2.0528	3.30	Q V				
14+ 5	2.0761	3.38	Q V				
14+10	2.1000	3.47	Q V				
14+15	2.1246	3.57	Q V				
14+20	2.1499	3.67	Q V				
14+25	2.1759	3.78	Q V				
14+30	2.2027	3.90	Q V				
14+35	2.2304	4.02	Q V				
14+40	2.2591	4.16	Q V				
14+45	2.2888	4.31	Q V				
14+50	2.3196	4.48	Q V				
14+55	2.3517	4.66	Q V				
15+ 0	2.3853	4.87	Q V				
15+ 5	2.4204	5.09	Q V				



```
   21+25       5.4355      1.52  |Q        |         |         |      V  |
   21+30       5.4458      1.50  |Q        |         |         |      V  |
   21+35       5.4561      1.49  Q         |         |         |       V |
   21+40       5.4663      1.48  Q         |         |         |       V |
   21+45       5.4763      1.46  Q         |         |         |       V |
   21+50       5.4863      1.45  Q         |         |         |       V |
   21+55       5.4962      1.44  Q         |         |         |       V |
   22+ 0       5.5060      1.43  Q         |         |         |       V |
   22+ 5       5.5158      1.41  Q         |         |         |       V |
   22+10       5.5254      1.40  Q         |         |         |       V |
   22+15       5.5350      1.39  Q         |         |         |       V |
   22+20       5.5445      1.38  Q         |         |         |       V |
   22+25       5.5540      1.37  Q         |         |         |       V |
   22+30       5.5633      1.36  Q         |         |         |       V |
   22+35       5.5726      1.35  Q         |         |         |       V |
   22+40       5.5818      1.34  Q         |         |         |       V |
   22+45       5.5910      1.33  Q         |         |         |       V |
   22+50       5.6001      1.32  Q         |         |         |        V|
   22+55       5.6091      1.31  Q         |         |         |        V|
   23+ 0       5.6180      1.30  Q         |         |         |        V|
   23+ 5       5.6269      1.29  Q         |         |         |        V|
   23+10       5.6357      1.28  Q         |         |         |        V|
   23+15       5.6445      1.27  Q         |         |         |        V|
   23+20       5.6532      1.26  Q         |         |         |        V|
   23+25       5.6619      1.26  Q         |         |         |        V|
   23+30       5.6704      1.25  Q         |         |         |        V|
   23+35       5.6790      1.24  Q         |         |         |        V|
   23+40       5.6875      1.23  Q         |         |         |        V|
   23+45       5.6959      1.22  Q         |         |         |        V|
   23+50       5.7043      1.22  Q         |         |         |        V|
   23+55       5.7126      1.21  Q         |         |         |        V|
   24+ 0       5.7208      1.20  Q         |         |         |        V|
   24+ 5       5.7285      1.11  Q         |         |         |        V|
   24+10       5.7332      0.68  Q         |         |         |        V|
   24+15       5.7346      0.20  Q         |         |         |        V|
   24+20       5.7349      0.05  Q         |         |         |        V|
   24+25       5.7350      0.01  Q         |         |         |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 3B
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 3BPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
20.90	1	0.60
Rainfall data for year 2		
20.90	6	0.70
Rainfall data for year 2		
20.90	24	1.20
Rainfall data for year 100		
20.90	1	1.00
Rainfall data for year 100		
20.90	6	1.90
Rainfall data for year 100		
20.90	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	20.90	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.09	0.100	69.0	69.0	4.49	0.263
18.81	0.900	98.0	98.0	0.20	0.931

Area-averaged catchment yield fraction, Y = 0.865
Area-averaged low loss fraction, Yb = 0.135
User entry of time of concentration = 0.170 (hours)
++
Watershed area = 20.90(Ac.)
Catchment Lag time = 0.136 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 61.2745
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.370(In)
Computed peak 30-minute rainfall = 0.758(In)
Specified peak 1-hour rainfall = 1.000(In)
Computed peak 3-hour rainfall = 1.482(In)
Specified peak 6-hour rainfall = 1.900(In)
Specified peak 24-hour rainfall = 3.400(In)

Rainfall depth area reduction factors:
Using a total area of 20.90(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.370(In)
30-minute factor = 0.999 Adjusted rainfall = 0.757(In)
1-hour factor = 0.999 Adjusted rainfall = 0.999(In)
3-hour factor = 1.000 Adjusted rainfall = 1.482(In)
6-hour factor = 1.000 Adjusted rainfall = 1.900(In)
24-hour factor = 1.000 Adjusted rainfall = 3.400(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 252.76 (CFS))	
1	6.789	17.160
2	43.210	92.058
3	82.892	100.300
4	95.987	33.098
5	98.763	7.017
6	100.000	3.126

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3697	0.3697
2	0.4879	0.1181
3	0.5738	0.0859
4	0.6438	0.0700
5	0.7039	0.0601
6	0.7571	0.0533
7	0.8053	0.0482
8	0.8494	0.0442
9	0.8904	0.0410
10	0.9288	0.0383
11	0.9648	0.0361
12	0.9990	0.0342
13	1.0281	0.0291
14	1.0559	0.0277
15	1.0823	0.0265
16	1.1077	0.0254
17	1.1321	0.0244
18	1.1556	0.0235
19	1.1782	0.0226
20	1.2001	0.0219
21	1.2213	0.0212
22	1.2419	0.0206
23	1.2619	0.0200
24	1.2813	0.0194
25	1.3002	0.0189
26	1.3186	0.0184
27	1.3366	0.0180

28	1.3542	0.0176
29	1.3714	0.0172
30	1.3882	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4519	0.0155
35	1.4671	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5110	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5527	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091
102	2.1990	0.0091

103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6070	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6354	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7047	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066
177	2.7715	0.0066

178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0537	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054
251	3.2092	0.0054
252	3.2146	0.0054

253	3.2199	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048
34	0.0055	0.0007	0.0048

35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069
109	0.0080	0.0011	0.0069

110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229
184	0.0277	0.0038	0.0240

185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3697	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054
259	0.0062	0.0008	0.0053

260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 49.37(CFS)

++

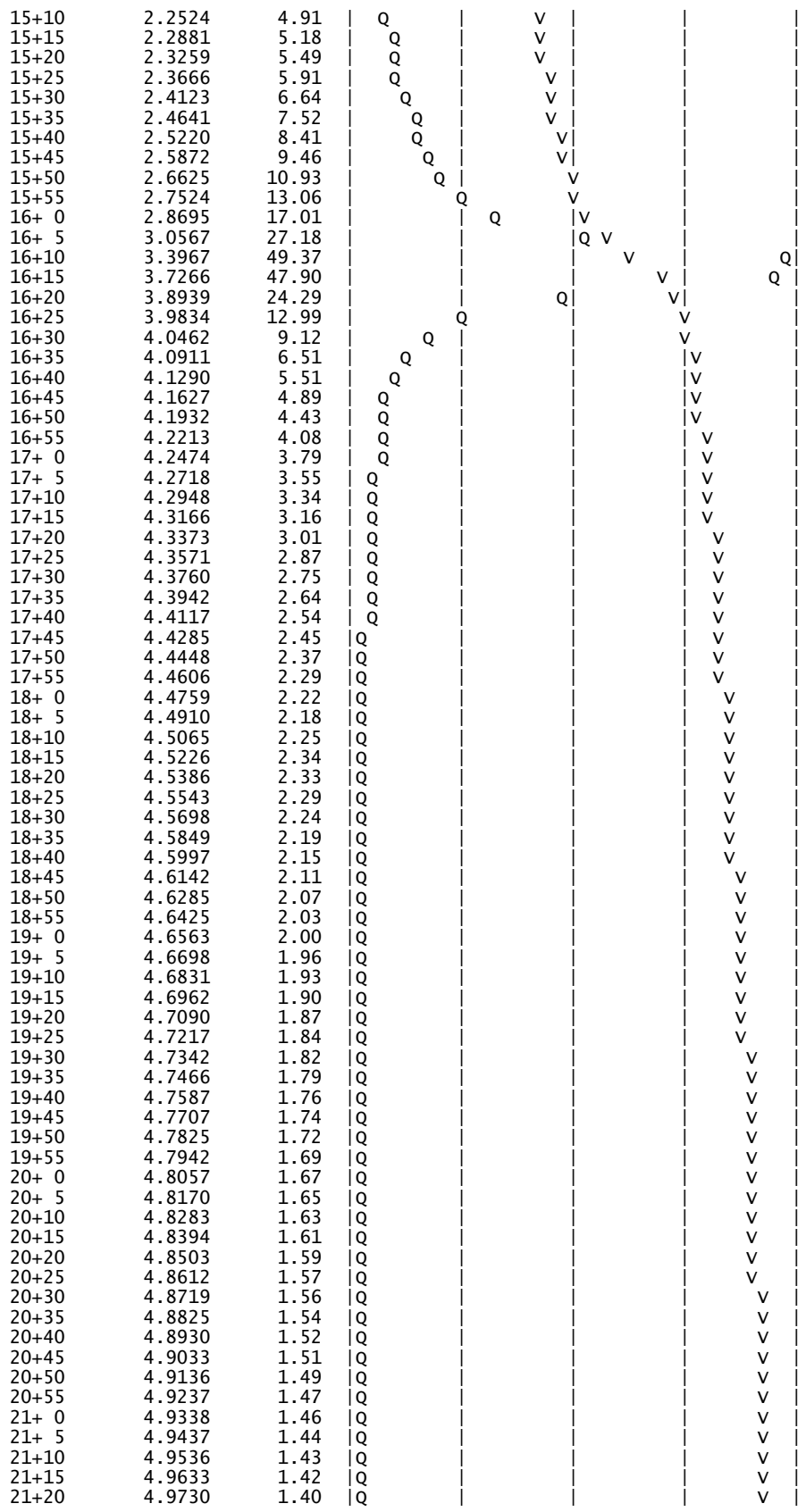
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0005	0.07	Q				
0+10	0.0037	0.47	Q				
0+15	0.0099	0.90	Q				
0+20	0.0171	1.04	Q				
0+25	0.0245	1.08	Q				
0+30	0.0321	1.09	Q				
0+35	0.0396	1.10	Q				
0+40	0.0472	1.10	Q				
0+45	0.0548	1.10	Q				
0+50	0.0625	1.11	Q				
0+55	0.0701	1.11	Q				
1+ 0	0.0778	1.12	Q				
1+ 5	0.0855	1.12	Q				
1+10	0.0932	1.12	Q				
1+15	0.1010	1.13	Q				
1+20	0.1088	1.13	Q				
1+25	0.1166	1.13	Q				
1+30	0.1244	1.14	Q				
1+35	0.1323	1.14	QV				
1+40	0.1401	1.14	QV				
1+45	0.1481	1.15	QV				
1+50	0.1560	1.15	QV				
1+55	0.1640	1.16	QV				
2+ 0	0.1719	1.16	QV				
2+ 5	0.1800	1.16	QV				
2+10	0.1880	1.17	QV				
2+15	0.1961	1.17	QV				
2+20	0.2042	1.18	QV				
2+25	0.2123	1.18	QV				
2+30	0.2205	1.18	QV				
2+35	0.2286	1.19	QV				

2+40	0.2369	1.19	QV	|	|	|	|
2+45	0.2451	1.20	QV	|	|	|	|
2+50	0.2534	1.20	QV	|	|	|	|
2+55	0.2617	1.21	QV	|	|	|	|
3+ 0	0.2700	1.21	Q V	|	|	|	|
3+ 5	0.2784	1.21	Q V	|	|	|	|
3+10	0.2868	1.22	Q V	|	|	|	|
3+15	0.2952	1.22	Q V	|	|	|	|
3+20	0.3037	1.23	Q V	|	|	|	|
3+25	0.3122	1.23	Q V	|	|	|	|
3+30	0.3207	1.24	Q V	|	|	|	|
3+35	0.3292	1.24	Q V	|	|	|	|
3+40	0.3378	1.25	Q V	|	|	|	|
3+45	0.3465	1.25	|QV	|	|	|	|
3+50	0.3551	1.26	|QV	|	|	|	|
3+55	0.3638	1.26	|QV	|	|	|	|
4+ 0	0.3725	1.27	|QV	|	|	|	|
4+ 5	0.3813	1.27	|QV	|	|	|	|
4+10	0.3901	1.28	|QV	|	|	|	|
4+15	0.3989	1.28	|Q V	|	|	|	|
4+20	0.4078	1.29	|Q V	|	|	|	|
4+25	0.4167	1.29	|Q V	|	|	|	|
4+30	0.4256	1.30	|Q V	|	|	|	|
4+35	0.4346	1.30	|Q V	|	|	|	|
4+40	0.4436	1.31	|Q V	|	|	|	|
4+45	0.4526	1.31	|Q V	|	|	|	|
4+50	0.4617	1.32	|Q V	|	|	|	|
4+55	0.4709	1.33	|Q V	|	|	|	|
5+ 0	0.4800	1.33	|Q V	|	|	|	|
5+ 5	0.4892	1.34	|Q V	|	|	|	|
5+10	0.4985	1.34	|Q V	|	|	|	|
5+15	0.5078	1.35	|Q V	|	|	|	|
5+20	0.5171	1.35	|Q V	|	|	|	|
5+25	0.5265	1.36	|Q V	|	|	|	|
5+30	0.5359	1.37	|Q V	|	|	|	|
5+35	0.5453	1.37	|Q V	|	|	|	|
5+40	0.5548	1.38	|Q V	|	|	|	|
5+45	0.5644	1.39	|Q V	|	|	|	|
5+50	0.5740	1.39	|Q V	|	|	|	|
5+55	0.5836	1.40	|Q V	|	|	|	|
6+ 0	0.5933	1.41	|Q V	|	|	|	|
6+ 5	0.6030	1.41	|Q V	|	|	|	|
6+10	0.6128	1.42	|Q V	|	|	|	|
6+15	0.6226	1.43	|Q V	|	|	|	|
6+20	0.6325	1.43	|Q V	|	|	|	|
6+25	0.6424	1.44	|Q V	|	|	|	|
6+30	0.6523	1.45	|Q V	|	|	|	|
6+35	0.6624	1.45	|Q V	|	|	|	|
6+40	0.6724	1.46	|Q V	|	|	|	|
6+45	0.6825	1.47	|Q V	|	|	|	|
6+50	0.6927	1.48	|Q V	|	|	|	|
6+55	0.7029	1.48	|Q V	|	|	|	|
7+ 0	0.7132	1.49	|Q V	|	|	|	|
7+ 5	0.7235	1.50	|Q V	|	|	|	|
7+10	0.7339	1.51	|Q V	|	|	|	|
7+15	0.7444	1.52	|Q V	|	|	|	|
7+20	0.7549	1.52	|Q V	|	|	|	|
7+25	0.7654	1.53	|Q V	|	|	|	|
7+30	0.7760	1.54	|Q V	|	|	|	|
7+35	0.7867	1.55	|Q V	|	|	|	|
7+40	0.7974	1.56	|Q V	|	|	|	|
7+45	0.8082	1.57	|Q V	|	|	|	|
7+50	0.8191	1.58	|Q V	|	|	|	|
7+55	0.8300	1.59	|Q V	|	|	|	|
8+ 0	0.8410	1.59	|Q V	|	|	|	|
8+ 5	0.8520	1.60	|Q V	|	|	|	|
8+10	0.8631	1.61	|Q V	|	|	|	|
8+15	0.8743	1.62	|Q V	|	|	|	|
8+20	0.8856	1.63	|Q V	|	|	|	|
8+25	0.8969	1.64	|Q V	|	|	|	|
8+30	0.9083	1.65	|Q V	|	|	|	|
8+35	0.9197	1.66	|Q V	|	|	|	|
8+40	0.9313	1.68	|Q V	|	|	|	|
8+45	0.9429	1.69	|Q V	|	|	|	|
8+50	0.9546	1.70	|Q V	|	|	|	|

8+55	0.9663	1.71	Q V				
9+ 0	0.9782	1.72	Q V				
9+ 5	0.9901	1.73	Q V				
9+10	1.0021	1.74	Q V				
9+15	1.0142	1.76	Q V				
9+20	1.0264	1.77	Q V				
9+25	1.0386	1.78	Q V				
9+30	1.0510	1.79	Q V				
9+35	1.0634	1.81	Q V				
9+40	1.0759	1.82	Q V				
9+45	1.0886	1.83	Q V				
9+50	1.1013	1.85	Q V				
9+55	1.1141	1.86	Q V				
10+ 0	1.1270	1.88	Q V				
10+ 5	1.1400	1.89	Q V				
10+10	1.1531	1.90	Q V				
10+15	1.1664	1.92	Q V				
10+20	1.1797	1.94	Q V				
10+25	1.1931	1.95	Q V				
10+30	1.2067	1.97	Q V				
10+35	1.2204	1.99	Q V				
10+40	1.2342	2.00	Q V				
10+45	1.2481	2.02	Q V				
10+50	1.2621	2.04	Q V				
10+55	1.2763	2.06	Q V				
11+ 0	1.2906	2.08	Q V				
11+ 5	1.3050	2.10	Q V				
11+10	1.3196	2.12	Q V				
11+15	1.3343	2.14	Q V				
11+20	1.3492	2.16	Q V				
11+25	1.3642	2.18	Q V				
11+30	1.3793	2.20	Q V				
11+35	1.3946	2.22	Q V				
11+40	1.4101	2.25	Q V				
11+45	1.4258	2.27	Q V				
11+50	1.4416	2.30	Q V				
11+55	1.4576	2.32	Q V				
12+ 0	1.4738	2.35	Q V				
12+ 5	1.4900	2.35	Q V				
12+10	1.5055	2.25	Q V				
12+15	1.5202	2.14	Q V				
12+20	1.5348	2.12	Q V				
12+25	1.5496	2.14	Q V				
12+30	1.5645	2.17	Q V				
12+35	1.5796	2.20	Q V				
12+40	1.5950	2.23	Q V				
12+45	1.6106	2.27	Q V				
12+50	1.6265	2.30	Q V				
12+55	1.6426	2.34	Q V				
13+ 0	1.6590	2.38	Q V				
13+ 5	1.6757	2.42	Q V				
13+10	1.6926	2.46	Q V				
13+15	1.7099	2.51	Q V				
13+20	1.7274	2.55	Q V				
13+25	1.7454	2.60	Q V				
13+30	1.7636	2.65	Q V				
13+35	1.7823	2.71	Q V				
13+40	1.8013	2.76	Q V				
13+45	1.8207	2.82	Q V				
13+50	1.8406	2.89	Q V				
13+55	1.8609	2.95	Q V				
14+ 0	1.8817	3.02	Q V				
14+ 5	1.9031	3.10	Q V				
14+10	1.9250	3.18	Q V				
14+15	1.9475	3.27	Q V				
14+20	1.9707	3.36	Q V				
14+25	1.9945	3.46	Q V				
14+30	2.0191	3.57	Q V				
14+35	2.0445	3.69	Q V				
14+40	2.0708	3.81	Q V				
14+45	2.0980	3.95	Q V				
14+50	2.1263	4.11	Q V				
14+55	2.1557	4.27	Q V				
15+ 0	2.1864	4.46	Q V				
15+ 5	2.2186	4.67	Q V				



```
   21+25       4.9826      1.39  |Q        |         |         |      V  |
   21+30       4.9921      1.38  |Q        |         |         |      V  |
   21+35       5.0015      1.36  |Q        |         |         |       V |
   21+40       5.0108      1.35  |Q        |         |         |       V |
   21+45       5.0200      1.34  |Q        |         |         |       V |
   21+50       5.0292      1.33  |Q        |         |         |       V |
   21+55       5.0382      1.32  |Q        |         |         |       V |
   22+ 0       5.0472      1.31  |Q        |         |         |       V |
   22+ 5       5.0562      1.30  |Q        |         |         |       V |
   22+10       5.0650      1.29  |Q        |         |         |       V |
   22+15       5.0738      1.28  |Q        |         |         |       V |
   22+20       5.0825      1.27  |Q        |         |         |       V |
   22+25       5.0912      1.26  |Q        |         |         |       V |
   22+30       5.0997      1.25  Q         |         |         |       V |
   22+35       5.1083      1.24  Q         |         |         |       V |
   22+40       5.1167      1.23  Q         |         |         |       V |
   22+45       5.1251      1.22  Q         |         |         |       V |
   22+50       5.1334      1.21  Q         |         |         |        V|
   22+55       5.1417      1.20  Q         |         |         |        V|
   23+ 0       5.1499      1.19  Q         |         |         |        V|
   23+ 5       5.1580      1.18  Q         |         |         |        V|
   23+10       5.1661      1.17  Q         |         |         |        V|
   23+15       5.1742      1.17  Q         |         |         |        V|
   23+20       5.1821      1.16  Q         |         |         |        V|
   23+25       5.1901      1.15  Q         |         |         |        V|
   23+30       5.1979      1.14  Q         |         |         |        V|
   23+35       5.2058      1.14  Q         |         |         |        V|
   23+40       5.2135      1.13  Q         |         |         |        V|
   23+45       5.2213      1.12  Q         |         |         |        V|
   23+50       5.2289      1.11  Q         |         |         |        V|
   23+55       5.2366      1.11  Q         |         |         |        V|
   24+ 0       5.2441      1.10  Q         |         |         |        V|
   24+ 5       5.2512      1.02  Q         |         |         |        V|
   24+10       5.2554      0.62  Q         |         |         |        V|
   24+15       5.2567      0.19  Q         |         |         |        V|
   24+20       5.2570      0.04  Q         |         |         |        V|
   24+25       5.2571      0.01  Q         |         |         |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 3C
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 3CPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
20.90	1	0.60
Rainfall data for year 2		
20.90	6	0.70
Rainfall data for year 2		
20.90	24	1.20
Rainfall data for year 100		
20.90	1	1.00
Rainfall data for year 100		
20.90	6	1.90
Rainfall data for year 100		
20.90	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	20.90	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.09	0.100	69.0	69.0	4.49	0.263
18.81	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      20.90(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      20.90(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       252.76 (CFS))

  1                5.469                  13.824
  2               35.337                  75.493
  3               75.925                 102.592
  4               93.130                  43.487
  5               98.077                  12.504
  6               99.228                   2.907
  7              100.000                   1.952
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3697              0.3697
  2              0.4879              0.1181
  3              0.5738              0.0859
  4              0.6438              0.0700
  5              0.7039              0.0601
  6              0.7571              0.0533
  7              0.8053              0.0482
  8              0.8494              0.0442
  9              0.8904              0.0410
 10              0.9288              0.0383
 11              0.9648              0.0361
 12              0.9990              0.0342
 13              1.0281              0.0291
 14              1.0559              0.0277
 15              1.0823              0.0265
 16              1.1077              0.0254
 17              1.1321              0.0244
 18              1.1556              0.0235
 19              1.1782              0.0226
 20              1.2001              0.0219
 21              1.2213              0.0212
 22              1.2419              0.0206
 23              1.2619              0.0200
 24              1.2813              0.0194
 25              1.3002              0.0189
 26              1.3186              0.0184
```

27	1.3366	0.0180
28	1.3542	0.0176
29	1.3714	0.0172
30	1.3882	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4519	0.0155
35	1.4671	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5110	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5527	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091

102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6070	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6354	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7047	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0537	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2199	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3697	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 49.22(CFS)

++

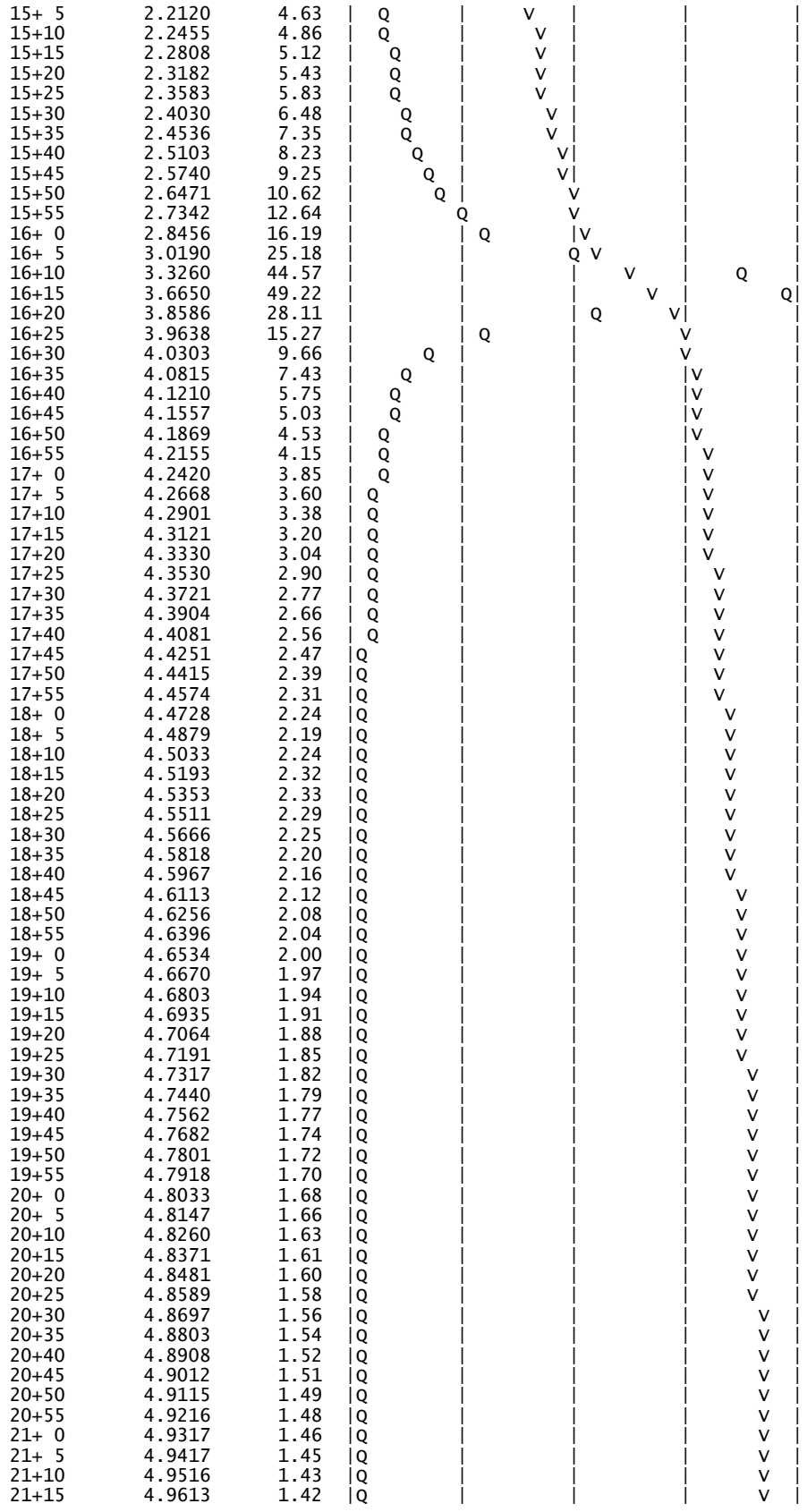
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0004	0.06	Q	|	|	|	|
0+10	0.0030	0.38	Q	|	|	|	|
0+15	0.0087	0.82	Q	|	|	|	|
0+20	0.0157	1.01	Q	|	|	|	|
0+25	0.0231	1.07	Q	|	|	|	|
0+30	0.0305	1.09	Q	|	|	|	|
0+35	0.0381	1.10	Q	|	|	|	|
0+40	0.0457	1.10	Q	|	|	|	|
0+45	0.0533	1.10	Q	|	|	|	|
0+50	0.0609	1.11	Q	|	|	|	|
0+55	0.0686	1.11	Q	|	|	|	|
1+ 0	0.0762	1.11	Q	|	|	|	|
1+ 5	0.0839	1.12	Q	|	|	|	|
1+10	0.0917	1.12	Q	|	|	|	|
1+15	0.0994	1.13	Q	|	|	|	|
1+20	0.1072	1.13	Q	|	|	|	|
1+25	0.1150	1.13	Q	|	|	|	|
1+30	0.1228	1.14	Q	|	|	|	|
1+35	0.1307	1.14	Q	|	|	|	|
1+40	0.1385	1.14	QV	|	|	|	|
1+45	0.1464	1.15	QV	|	|	|	|
1+50	0.1544	1.15	QV	|	|	|	|
1+55	0.1623	1.16	QV	|	|	|	|
2+ 0	0.1703	1.16	QV	|	|	|	|
2+ 5	0.1783	1.16	QV	|	|	|	|
2+10	0.1864	1.17	QV	|	|	|	|
2+15	0.1944	1.17	QV	|	|	|	|
2+20	0.2025	1.18	QV	|	|	|	|
2+25	0.2106	1.18	QV	|	|	|	|
2+30	0.2188	1.18	QV	|	|	|	|

```
2+35       0.2270      1.19  QV        |         |         |         |
2+40       0.2352      1.19  QV        |         |         |         |
2+45       0.2434      1.20  QV        |         |         |         |
2+50       0.2517      1.20  QV        |         |         |         |
2+55       0.2600      1.20  QV        |         |         |         |
3+ 0       0.2683      1.21  Q V       |         |         |         |
3+ 5       0.2767      1.21  Q V       |         |         |         |
3+10       0.2851      1.22  Q V       |         |         |         |
3+15       0.2935      1.22  Q V       |         |         |         |
3+20       0.3019      1.23  Q V       |         |         |         |
3+25       0.3104      1.23  Q V       |         |         |         |
3+30       0.3189      1.24  Q V       |         |         |         |
3+35       0.3275      1.24  Q V       |         |         |         |
3+40       0.3361      1.25  Q V       |         |         |         |
3+45       0.3447      1.25  |QV       |         |         |         |
3+50       0.3533      1.26  |QV       |         |         |         |
3+55       0.3620      1.26  |QV       |         |         |         |
4+ 0       0.3707      1.27  |QV       |         |         |         |
4+ 5       0.3795      1.27  |QV       |         |         |         |
4+10       0.3883      1.28  |QV       |         |         |         |
4+15       0.3971      1.28  |Q V       |         |         |         |
4+20       0.4060      1.29  |Q V       |         |         |         |
4+25       0.4148      1.29  |Q V       |         |         |         |
4+30       0.4238      1.30  |Q V       |         |         |         |
4+35       0.4327      1.30  |Q V       |         |         |         |
4+40       0.4418      1.31  |Q V       |         |         |         |
4+45       0.4508      1.31  |Q V       |         |         |         |
4+50       0.4599      1.32  |Q V       |         |         |         |
4+55       0.4690      1.32  |Q V       |         |         |         |
5+ 0       0.4782      1.33  |Q V       |         |         |         |
5+ 5       0.4874      1.34  |Q V       |         |         |         |
5+10       0.4966      1.34  |Q V       |         |         |         |
5+15       0.5059      1.35  |Q V       |         |         |         |
5+20       0.5152      1.35  |Q V       |         |         |         |
5+25       0.5246      1.36  |Q V       |         |         |         |
5+30       0.5340      1.37  |Q  V      |         |         |         |
5+35       0.5434      1.37  |Q  V      |         |         |         |
5+40       0.5529      1.38  |Q  V      |         |         |         |
5+45       0.5624      1.38  |Q  V      |         |         |         |
5+50       0.5720      1.39  |Q  V      |         |         |         |
5+55       0.5816      1.40  |Q  V      |         |         |         |
6+ 0       0.5913      1.40  |Q  V      |         |         |         |
6+ 5       0.6010      1.41  |Q  V      |         |         |         |
6+10       0.6108      1.42  |Q  V      |         |         |         |
6+15       0.6206      1.42  |Q  V      |         |         |         |
6+20       0.6304      1.43  |Q  V      |         |         |         |
6+25       0.6404      1.44  |Q  V      |         |         |         |
6+30       0.6503      1.45  |Q  V      |         |         |         |
6+35       0.6603      1.45  |Q   V     |         |         |         |
6+40       0.6704      1.46  |Q   V     |         |         |         |
6+45       0.6805      1.47  |Q   V     |         |         |         |
6+50       0.6906      1.47  |Q   V     |         |         |         |
6+55       0.7008      1.48  |Q   V     |         |         |         |
7+ 0       0.7111      1.49  |Q   V     |         |         |         |
7+ 5       0.7214      1.50  |Q   V     |         |         |         |
7+10       0.7318      1.51  |Q   V     |         |         |         |
7+15       0.7422      1.51  |Q   V     |         |         |         |
7+20       0.7527      1.52  |Q   V     |         |         |         |
7+25       0.7632      1.53  |Q   V     |         |         |         |
7+30       0.7738      1.54  |Q   V     |         |         |         |
7+35       0.7845      1.55  |Q   V     |         |         |         |
7+40       0.7952      1.56  |Q    V    |         |         |         |
7+45       0.8060      1.57  |Q    V    |         |         |         |
7+50       0.8169      1.57  |Q    V    |         |         |         |
7+55       0.8278      1.58  |Q    V    |         |         |         |
8+ 0       0.8387      1.59  |Q    V    |         |         |         |
8+ 5       0.8498      1.60  |Q    V    |         |         |         |
8+10       0.8609      1.61  |Q    V    |         |         |         |
8+15       0.8720      1.62  |Q    V    |         |         |         |
8+20       0.8833      1.63  |Q    V    |         |         |         |
8+25       0.8946      1.64  |Q    V    |         |         |         |
8+30       0.9059      1.65  |Q    V    |         |         |         |
8+35       0.9174      1.66  |Q    V    |         |         |         |
8+40       0.9289      1.67  |Q     V   |         |         |         |
8+45       0.9405      1.68  |Q     V   |         |         |         |
```

8+50	0.9522	1.69	Q	V			
8+55	0.9639	1.71	Q	V			
9+ 0	0.9758	1.72	Q	V			
9+ 5	0.9877	1.73	Q	V			
9+10	0.9997	1.74	Q	V			
9+15	1.0117	1.75	Q	V			
9+20	1.0239	1.76	Q	V			
9+25	1.0361	1.78	Q	V			
9+30	1.0484	1.79	Q	V			
9+35	1.0609	1.80	Q	V			
9+40	1.0734	1.82	Q	V			
9+45	1.0860	1.83	Q	V			
9+50	1.0987	1.84	Q	V			
9+55	1.1115	1.86	Q	V			
10+ 0	1.1244	1.87	Q	V			
10+ 5	1.1374	1.89	Q	V			
10+10	1.1505	1.90	Q	V			
10+15	1.1637	1.92	Q	V			
10+20	1.1770	1.93	Q	V			
10+25	1.1904	1.95	Q	V			
10+30	1.2039	1.97	Q	V			
10+35	1.2176	1.98	Q	V			
10+40	1.2313	2.00	Q	V			
10+45	1.2452	2.02	Q	V			
10+50	1.2592	2.03	Q	V			
10+55	1.2734	2.05	Q	V			
11+ 0	1.2877	2.07	Q	V			
11+ 5	1.3021	2.09	Q	V			
11+10	1.3166	2.11	Q	V			
11+15	1.3313	2.13	Q	V			
11+20	1.3461	2.15	Q	V			
11+25	1.3611	2.17	Q	V			
11+30	1.3762	2.20	Q	V			
11+35	1.3915	2.22	Q	V			
11+40	1.4070	2.24	Q	V			
11+45	1.4226	2.27	Q	V			
11+50	1.4384	2.29	Q	V			
11+55	1.4543	2.32	Q	V			
12+ 0	1.4705	2.34	Q	V			
12+ 5	1.4867	2.35	Q	V			
12+10	1.5023	2.27	Q	V			
12+15	1.5172	2.16	Q	V			
12+20	1.5318	2.13	Q	V			
12+25	1.5465	2.14	Q	V			
12+30	1.5614	2.16	Q	V			
12+35	1.5765	2.19	Q	V			
12+40	1.5919	2.23	Q	V			
12+45	1.6074	2.26	Q	V			
12+50	1.6233	2.30	Q	V			
12+55	1.6393	2.33	Q	V			
13+ 0	1.6556	2.37	Q	V			
13+ 5	1.6723	2.41	Q	V			
13+10	1.6891	2.45	Q	V			
13+15	1.7063	2.50	Q	V			
13+20	1.7239	2.54	Q	V			
13+25	1.7417	2.59	Q	V			
13+30	1.7599	2.64	Q	V			
13+35	1.7784	2.69	Q	V			
13+40	1.7974	2.75	Q	V			
13+45	1.8167	2.81	Q	V			
13+50	1.8365	2.87	Q	V			
13+55	1.8568	2.94	Q	V			
14+ 0	1.8775	3.01	Q	V			
14+ 5	1.8987	3.08	Q	V			
14+10	1.9205	3.16	Q	V			
14+15	1.9429	3.25	Q	V			
14+20	1.9659	3.34	Q	V			
14+25	1.9897	3.44	Q	V			
14+30	2.0141	3.55	Q	V			
14+35	2.0393	3.66	Q	V			
14+40	2.0654	3.79	Q	V			
14+45	2.0925	3.93	Q	V			
14+50	2.1205	4.07	Q	V			
14+55	2.1497	4.24	Q	V			
15+ 0	2.1802	4.42	Q	V			



```
   21+20       4.9710      1.41  |Q        |         |         |      V  |
   21+25       4.9806      1.39  |Q        |         |         |      V  |
   21+30       4.9901      1.38  |Q        |         |         |      V  |
   21+35       4.9995      1.37  |Q        |         |         |       V |
   21+40       5.0089      1.36  |Q        |         |         |       V |
   21+45       5.0181      1.34  |Q        |         |         |       V |
   21+50       5.0273      1.33  |Q        |         |         |       V |
   21+55       5.0364      1.32  |Q        |         |         |       V |
   22+ 0       5.0454      1.31  |Q        |         |         |       V |
   22+ 5       5.0543      1.30  |Q        |         |         |       V |
   22+10       5.0632      1.29  |Q        |         |         |       V |
   22+15       5.0720      1.28  |Q        |         |         |       V |
   22+20       5.0807      1.27  |Q        |         |         |       V |
   22+25       5.0894      1.26  |Q        |         |         |       V |
   22+30       5.0980      1.25  Q         |         |         |       V |
   22+35       5.1065      1.24  Q         |         |         |       V |
   22+40       5.1150      1.23  Q         |         |         |       V |
   22+45       5.1234      1.22  Q         |         |         |       V |
   22+50       5.1317      1.21  Q         |         |         |        V|
   22+55       5.1400      1.20  Q         |         |         |        V|
   23+ 0       5.1482      1.19  Q         |         |         |        V|
   23+ 5       5.1564      1.18  Q         |         |         |        V|
   23+10       5.1645      1.18  Q         |         |         |        V|
   23+15       5.1725      1.17  Q         |         |         |        V|
   23+20       5.1805      1.16  Q         |         |         |        V|
   23+25       5.1884      1.15  Q         |         |         |        V|
   23+30       5.1963      1.14  Q         |         |         |        V|
   23+35       5.2042      1.14  Q         |         |         |        V|
   23+40       5.2119      1.13  Q         |         |         |        V|
   23+45       5.2197      1.12  Q         |         |         |        V|
   23+50       5.2274      1.12  Q         |         |         |        V|
   23+55       5.2350      1.11  Q         |         |         |        V|
   24+ 0       5.2426      1.10  Q         |         |         |        V|
   24+ 5       5.2497      1.04  Q         |         |         |        V|
   24+10       5.2546      0.71  Q         |         |         |        V|
   24+15       5.2564      0.26  Q         |         |         |        V|
   24+20       5.2569      0.07  Q         |         |         |        V|
   24+25       5.2570      0.02  Q         |         |         |        V|
   24+30       5.2571      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 3D
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 3DPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
19.50	1	0.60
Rainfall data for year 2		
19.50	6	0.70
Rainfall data for year 2		
19.50	24	1.20
Rainfall data for year 100		
19.50	1	1.00
Rainfall data for year 100		
19.50	6	1.90
Rainfall data for year 100		
19.50	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	19.50	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.95	0.100	69.0	69.0	4.49	0.263
17.55	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.180 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      19.50(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.8704
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      19.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       235.83 (CFS))

  1                6.077                  14.331
  2               39.009                  77.664
  3               79.564                  95.639
  4               94.634                  35.541
  5               98.466                   9.036
  6               99.524                   2.494
  7              100.000                   1.123
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3698              0.3698
  2              0.4879              0.1181
  3              0.5738              0.0859
  4              0.6438              0.0700
  5              0.7039              0.0601
  6              0.7572              0.0533
  7              0.8053              0.0482
  8              0.8495              0.0442
  9              0.8905              0.0410
 10              0.9288              0.0383
 11              0.9649              0.0361
 12              0.9991              0.0342
 13              1.0282              0.0291
 14              1.0559              0.0277
 15              1.0824              0.0265
 16              1.1078              0.0254
 17              1.1321              0.0244
 18              1.1556              0.0235
 19              1.1783              0.0226
 20              1.2002              0.0219
 21              1.2214              0.0212
 22              1.2419              0.0206
 23              1.2619              0.0200
 24              1.2813              0.0194
 25              1.3002              0.0189
 26              1.3187              0.0184
```

27	1.3367	0.0180
28	1.3542	0.0176
29	1.3714	0.0172
30	1.3882	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4520	0.0155
35	1.4672	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5111	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5528	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091

102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2612	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4269	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6910	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2038	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2199	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3698	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 45.60(CFS)

++

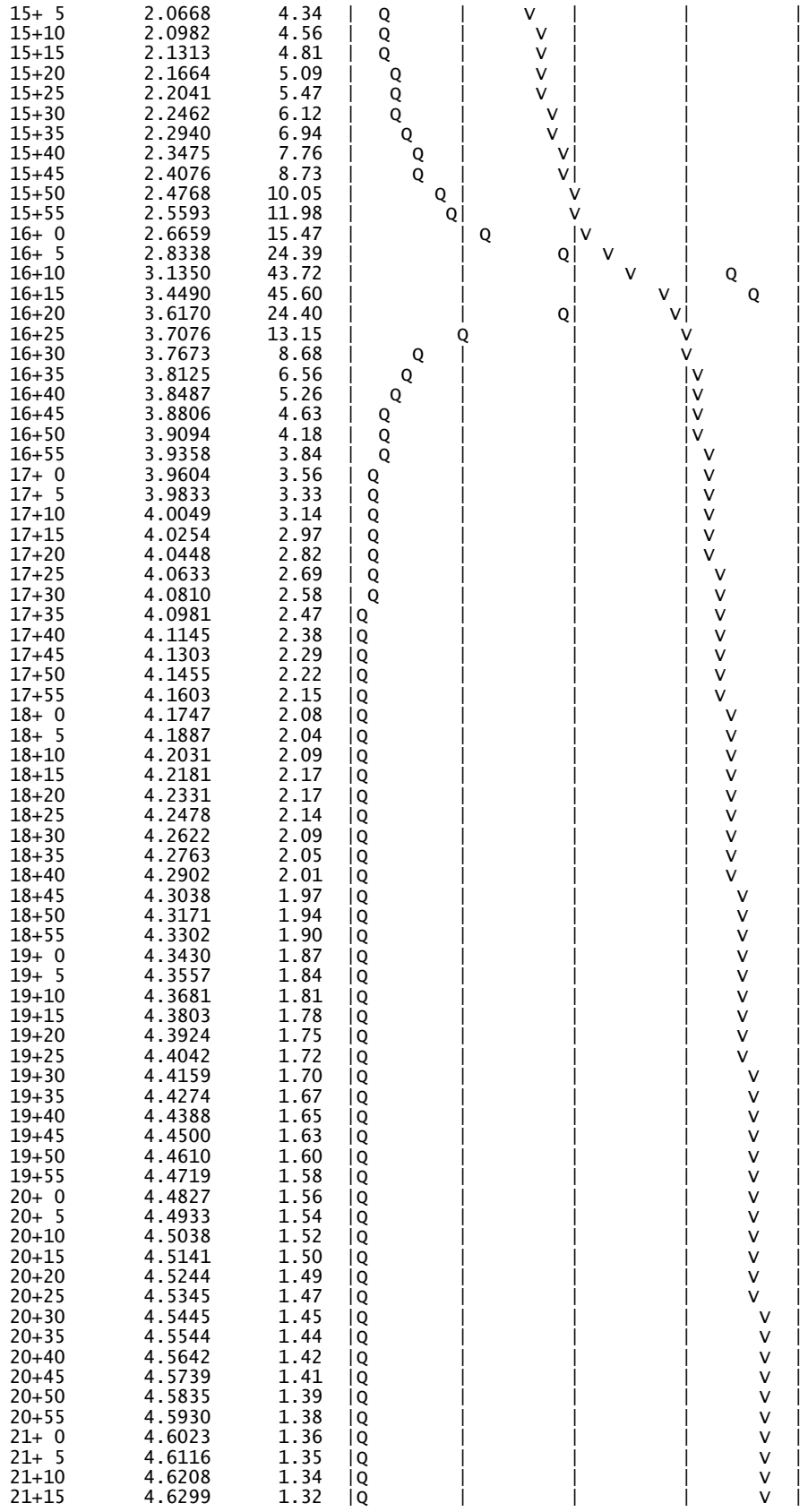
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0004	0.06	Q	|	|	|	|
0+10	0.0031	0.39	Q	|	|	|	|
0+15	0.0087	0.81	Q	|	|	|	|
0+20	0.0153	0.96	Q	|	|	|	|
0+25	0.0222	1.00	Q	|	|	|	|
0+30	0.0292	1.02	Q	|	|	|	|
0+35	0.0363	1.02	Q	|	|	|	|
0+40	0.0433	1.03	Q	|	|	|	|
0+45	0.0504	1.03	Q	|	|	|	|
0+50	0.0575	1.03	Q	|	|	|	|
0+55	0.0647	1.04	Q	|	|	|	|
1+ 0	0.0719	1.04	Q	|	|	|	|
1+ 5	0.0790	1.04	Q	|	|	|	|
1+10	0.0862	1.05	Q	|	|	|	|
1+15	0.0935	1.05	Q	|	|	|	|
1+20	0.1007	1.05	Q	|	|	|	|
1+25	0.1080	1.06	Q	|	|	|	|
1+30	0.1153	1.06	Q	|	|	|	|
1+35	0.1226	1.06	QV	|	|	|	|
1+40	0.1300	1.07	QV	|	|	|	|
1+45	0.1374	1.07	QV	|	|	|	|
1+50	0.1448	1.07	QV	|	|	|	|
1+55	0.1522	1.08	QV	|	|	|	|
2+ 0	0.1597	1.08	QV	|	|	|	|
2+ 5	0.1671	1.09	QV	|	|	|	|
2+10	0.1746	1.09	QV	|	|	|	|
2+15	0.1822	1.09	QV	|	|	|	|
2+20	0.1897	1.10	QV	|	|	|	|
2+25	0.1973	1.10	QV	|	|	|	|
2+30	0.2049	1.10	QV	|	|	|	|

```
2+35       0.2125      1.11  QV        |         |         |         |
2+40       0.2202      1.11  QV        |         |         |         |
2+45       0.2279      1.12  QV        |         |         |         |
2+50       0.2356      1.12  QV        |         |         |         |
2+55       0.2434      1.12  QV        |         |         |         |
3+ 0       0.2511      1.13  Q V       |         |         |         |
3+ 5       0.2589      1.13  Q V       |         |         |         |
3+10       0.2668      1.14  Q V       |         |         |         |
3+15       0.2746      1.14  Q V       |         |         |         |
3+20       0.2825      1.15  Q V       |         |         |         |
3+25       0.2904      1.15  Q V       |         |         |         |
3+30       0.2984      1.15  Q V       |         |         |         |
3+35       0.3064      1.16  Q V       |         |         |         |
3+40       0.3144      1.16  Q V       |         |         |         |
3+45       0.3224      1.17  Q V       |         |         |         |
3+50       0.3305      1.17  Q V       |         |         |         |
3+55       0.3386      1.18  Q V       |         |         |         |
4+ 0       0.3467      1.18  Q V       |         |         |         |
4+ 5       0.3549      1.19  Q V       |         |         |         |
4+10       0.3631      1.19  Q V       |         |         |         |
4+15       0.3713      1.20  Q  V      |         |         |         |
4+20       0.3796      1.20  Q  V      |         |         |         |
4+25       0.3879      1.21  Q  V      |         |         |         |
4+30       0.3962      1.21  Q  V      |         |         |         |
4+35       0.4046      1.22  Q  V      |         |         |         |
4+40       0.4130      1.22  Q  V      |         |         |         |
4+45       0.4215      1.23  Q  V      |         |         |         |
4+50       0.4299      1.23  Q  V      |         |         |         |
4+55       0.4384      1.24  Q  V      |         |         |         |
5+ 0       0.4470      1.24  Q  V      |         |         |         |
5+ 5       0.4556      1.25  Q  V      |         |         |         |
5+10       0.4642      1.25  |Q V       |         |         |         |
5+15       0.4729      1.26  |Q V       |         |         |         |
5+20       0.4816      1.26  |Q V       |         |         |         |
5+25       0.4903      1.27  |Q V       |         |         |         |
5+30       0.4991      1.27  |Q  V      |         |         |         |
5+35       0.5079      1.28  |Q  V      |         |         |         |
5+40       0.5168      1.29  |Q  V      |         |         |         |
5+45       0.5257      1.29  |Q  V      |         |         |         |
5+50       0.5346      1.30  |Q  V      |         |         |         |
5+55       0.5436      1.30  |Q  V      |         |         |         |
6+ 0       0.5526      1.31  |Q  V      |         |         |         |
6+ 5       0.5617      1.32  |Q  V      |         |         |         |
6+10       0.5708      1.32  |Q  V      |         |         |         |
6+15       0.5799      1.33  |Q  V      |         |         |         |
6+20       0.5891      1.34  |Q  V      |         |         |         |
6+25       0.5984      1.34  |Q  V      |         |         |         |
6+30       0.6077      1.35  |Q  V      |         |         |         |
6+35       0.6170      1.36  |Q   V     |         |         |         |
6+40       0.6264      1.36  |Q   V     |         |         |         |
6+45       0.6358      1.37  |Q   V     |         |         |         |
6+50       0.6453      1.38  |Q   V     |         |         |         |
6+55       0.6549      1.38  |Q   V     |         |         |         |
7+ 0       0.6644      1.39  |Q   V     |         |         |         |
7+ 5       0.6741      1.40  |Q   V     |         |         |         |
7+10       0.6837      1.41  |Q   V     |         |         |         |
7+15       0.6935      1.41  |Q   V     |         |         |         |
7+20       0.7033      1.42  |Q   V     |         |         |         |
7+25       0.7131      1.43  |Q   V     |         |         |         |
7+30       0.7230      1.44  |Q   V     |         |         |         |
7+35       0.7330      1.44  |Q   V     |         |         |         |
7+40       0.7430      1.45  |Q    V    |         |         |         |
7+45       0.7530      1.46  |Q    V    |         |         |         |
7+50       0.7632      1.47  |Q    V    |         |         |         |
7+55       0.7733      1.48  |Q    V    |         |         |         |
8+ 0       0.7836      1.49  |Q    V    |         |         |         |
8+ 5       0.7939      1.50  |Q    V    |         |         |         |
8+10       0.8042      1.50  |Q    V    |         |         |         |
8+15       0.8147      1.51  |Q    V    |         |         |         |
8+20       0.8252      1.52  |Q    V    |         |         |         |
8+25       0.8357      1.53  |Q    V    |         |         |         |
8+30       0.8463      1.54  |Q    V    |         |         |         |
8+35       0.8570      1.55  |Q    V    |         |         |         |
8+40       0.8678      1.56  |Q     V   |         |         |         |
8+45       0.8786      1.57  |Q     V   |         |         |         |
```

```
 8+50       0.8895      1.58  |Q     V  |          |          |          |
 8+55       0.9005      1.59  |Q     V  |          |          |          |
 9+ 0       0.9115      1.60  |Q     V  |          |          |          |
 9+ 5       0.9226      1.61  |Q     V  |          |          |          |
 9+10       0.9338      1.63  |Q     V  |          |          |          |
 9+15       0.9451      1.64  |Q     V  |          |          |          |
 9+20       0.9564      1.65  |Q     V  |          |          |          |
 9+25       0.9679      1.66  |Q     V  |          |          |          |
 9+30       0.9794      1.67  |Q     V  |          |          |          |
 9+35       0.9910      1.68  |Q      V |          |          |          |
 9+40       1.0026      1.70  |Q      V |          |          |          |
 9+45       1.0144      1.71  |Q      V |          |          |          |
 9+50       1.0263      1.72  |Q      V |          |          |          |
 9+55       1.0382      1.73  |Q      V |          |          |          |
10+ 0       1.0503      1.75  |Q      V |          |          |          |
10+ 5       1.0624      1.76  |Q      V |          |          |          |
10+10       1.0746      1.78  |Q      V |          |          |          |
10+15       1.0870      1.79  |Q      V |          |          |          |
10+20       1.0994      1.80  |Q      V |          |          |          |
10+25       1.1119      1.82  |Q       V|          |          |          |
10+30       1.1246      1.84  |Q       V|          |          |          |
10+35       1.1373      1.85  |Q       V|          |          |          |
10+40       1.1502      1.87  |Q       V|          |          |          |
10+45       1.1631      1.88  |Q       V|          |          |          |
10+50       1.1762      1.90  |Q       V|          |          |          |
10+55       1.1894      1.92  |Q       V|          |          |          |
11+ 0       1.2027      1.94  |Q       V|          |          |          |
11+ 5       1.2162      1.95  |Q       V|          |          |          |
11+10       1.2298      1.97  |Q        V          |          |          |
11+15       1.2435      1.99  |Q        V          |          |          |
11+20       1.2573      2.01  |Q        V          |          |          |
11+25       1.2713      2.03  |Q        V          |          |          |
11+30       1.2855      2.05  |Q        V          |          |          |
11+35       1.2997      2.07  |Q        V          |          |          |
11+40       1.3142      2.09  |Q        V          |          |          |
11+45       1.3287      2.12  |Q        V          |          |          |
11+50       1.3435      2.14  |Q        V          |          |          |
11+55       1.3584      2.16  |Q        |V         |          |          |
12+ 0       1.3735      2.19  |Q        |V         |          |          |
12+ 5       1.3886      2.19  |Q        |V         |          |          |
12+10       1.4031      2.11  |Q        |V         |          |          |
12+15       1.4169      2.00  |Q        |V         |          |          |
12+20       1.4306      1.98  |Q        |V         |          |          |
12+25       1.4443      2.00  |Q        |V         |          |          |
12+30       1.4583      2.02  |Q        |V         |          |          |
12+35       1.4724      2.05  |Q        | V        |          |          |
12+40       1.4867      2.08  |Q        | V        |          |          |
12+45       1.5012      2.11  |Q        | V        |          |          |
12+50       1.5160      2.14  |Q        | V        |          |          |
12+55       1.5310      2.18  |Q        | V        |          |          |
13+ 0       1.5463      2.22  |Q        | V        |          |          |
13+ 5       1.5618      2.25  |Q        | V        |          |          |
13+10       1.5776      2.29  |Q        | V        |          |          |
13+15       1.5937      2.33  |Q        | V        |          |          |
13+20       1.6100      2.38  |Q        |  V       |          |          |
13+25       1.6267      2.42  |Q        |  V       |          |          |
13+30       1.6437      2.47  |Q        |  V       |          |          |
13+35       1.6611      2.52  | Q       |  V       |          |          |
13+40       1.6788      2.57  | Q       |  V       |          |          |
13+45       1.6969      2.63  | Q       |  V       |          |          |
13+50       1.7154      2.69  | Q       |  V       |          |          |
13+55       1.7343      2.75  | Q       |   V      |          |          |
14+ 0       1.7537      2.81  | Q       |   V      |          |          |
14+ 5       1.7735      2.88  | Q       |   V      |          |          |
14+10       1.7939      2.96  | Q       |   V      |          |          |
14+15       1.8149      3.04  | Q       |   V      |          |          |
14+20       1.8364      3.13  | Q       |   V      |          |          |
14+25       1.8586      3.22  | Q       |    V     |          |          |
14+30       1.8815      3.32  | Q       |    V     |          |          |
14+35       1.9051      3.43  | Q       |    V     |          |          |
14+40       1.9295      3.55  | Q       |    V     |          |          |
14+45       1.9548      3.67  | Q       |    V     |          |          |
14+50       1.9811      3.81  |  Q      |     V    |          |          |
14+55       2.0084      3.97  |  Q      |     V    |          |          |
15+ 0       2.0370      4.14  |  Q      |     V    |          |          |
```



```
   21+20       4.6390      1.31  |Q        |         |         |      V  |
   21+25       4.6479      1.30  |Q        |         |         |      V  |
   21+30       4.6568      1.29  |Q        |         |         |      V  |
   21+35       4.6655      1.27  |Q        |         |         |       V |
   21+40       4.6742      1.26  |Q        |         |         |       V |
   21+45       4.6829      1.25  |Q        |         |         |       V |
   21+50       4.6914      1.24  Q         |         |         |       V |
   21+55       4.6999      1.23  Q         |         |         |       V |
   22+ 0       4.7083      1.22  Q         |         |         |       V |
   22+ 5       4.7166      1.21  Q         |         |         |       V |
   22+10       4.7249      1.20  Q         |         |         |       V |
   22+15       4.7331      1.19  Q         |         |         |       V |
   22+20       4.7412      1.18  Q         |         |         |       V |
   22+25       4.7493      1.17  Q         |         |         |       V |
   22+30       4.7573      1.16  Q         |         |         |       V |
   22+35       4.7653      1.15  Q         |         |         |       V |
   22+40       4.7732      1.15  Q         |         |         |       V |
   22+45       4.7810      1.14  Q         |         |         |       V |
   22+50       4.7888      1.13  Q         |         |         |        V|
   22+55       4.7965      1.12  Q         |         |         |        V|
   23+ 0       4.8041      1.11  Q         |         |         |        V|
   23+ 5       4.8118      1.10  Q         |         |         |        V|
   23+10       4.8193      1.10  Q         |         |         |        V|
   23+15       4.8268      1.09  Q         |         |         |        V|
   23+20       4.8343      1.08  Q         |         |         |        V|
   23+25       4.8417      1.07  Q         |         |         |        V|
   23+30       4.8490      1.07  Q         |         |         |        V|
   23+35       4.8563      1.06  Q         |         |         |        V|
   23+40       4.8636      1.05  Q         |         |         |        V|
   23+45       4.8708      1.05  Q         |         |         |        V|
   23+50       4.8780      1.04  Q         |         |         |        V|
   23+55       4.8851      1.03  Q         |         |         |        V|
   24+ 0       4.8921      1.03  Q         |         |         |        V|
   24+ 5       4.8988      0.96  Q         |         |         |        V|
   24+10       4.9030      0.62  Q         |         |         |        V|
   24+15       4.9045      0.21  Q         |         |         |        V|
   24+20       4.9048      0.05  Q         |         |         |        V|
   24+25       4.9049      0.02  Q         |         |         |        V|
   24+30       4.9050      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

BUILDING 4

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 4A
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 4APROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
21.40	1	0.60
Rainfall data for year 2		
21.40	6	0.70
Rainfall data for year 2		
21.40	24	1.20
Rainfall data for year 100		
21.40	1	1.00
Rainfall data for year 100		
21.40	6	1.90
Rainfall data for year 100		
21.40	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	21.40	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.14	0.100	69.0	69.0	4.49	0.263
19.26	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.110 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      21.40(Ac.)
Catchment Lag time =   0.088 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 94.6970
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      21.40(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       258.81 (CFS))

  1               15.507                  40.133
  2               75.928                 156.374
  3               97.248                  55.175
  4              100.000                   7.124
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3697              0.3697
  2              0.4879              0.1181
  3              0.5738              0.0859
  4              0.6437              0.0700
  5              0.7038              0.0601
  6              0.7571              0.0532
  7              0.8053              0.0482
  8              0.8494              0.0442
  9              0.8904              0.0410
 10              0.9287              0.0383
 11              0.9648              0.0361
 12              0.9990              0.0342
 13              1.0281              0.0291
 14              1.0558              0.0277
 15              1.0823              0.0265
 16              1.1077              0.0254
 17              1.1321              0.0244
 18              1.1555              0.0235
 19              1.1782              0.0226
 20              1.2001              0.0219
 21              1.2213              0.0212
 22              1.2419              0.0206
 23              1.2618              0.0200
 24              1.2813              0.0194
 25              1.3002              0.0189
 26              1.3186              0.0184
 27              1.3366              0.0180
 28              1.3542              0.0176
 29              1.3713              0.0172
```

30	1.3881	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4519	0.0155
35	1.4671	0.0152
36	1.4820	0.0149
37	1.4967	0.0146
38	1.5110	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5527	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6790	0.0119
52	1.6908	0.0117
53	1.7023	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091
102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090

105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6070	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6354	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6841	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7047	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066
177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065

180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9717	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0537	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054
251	3.2092	0.0054
252	3.2146	0.0054
253	3.2199	0.0053
254	3.2253	0.0053

255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3949	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048
34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048

37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069
109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070

112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229
184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315

187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0532	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3697	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054
259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052

262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 66.57(CFS)

++

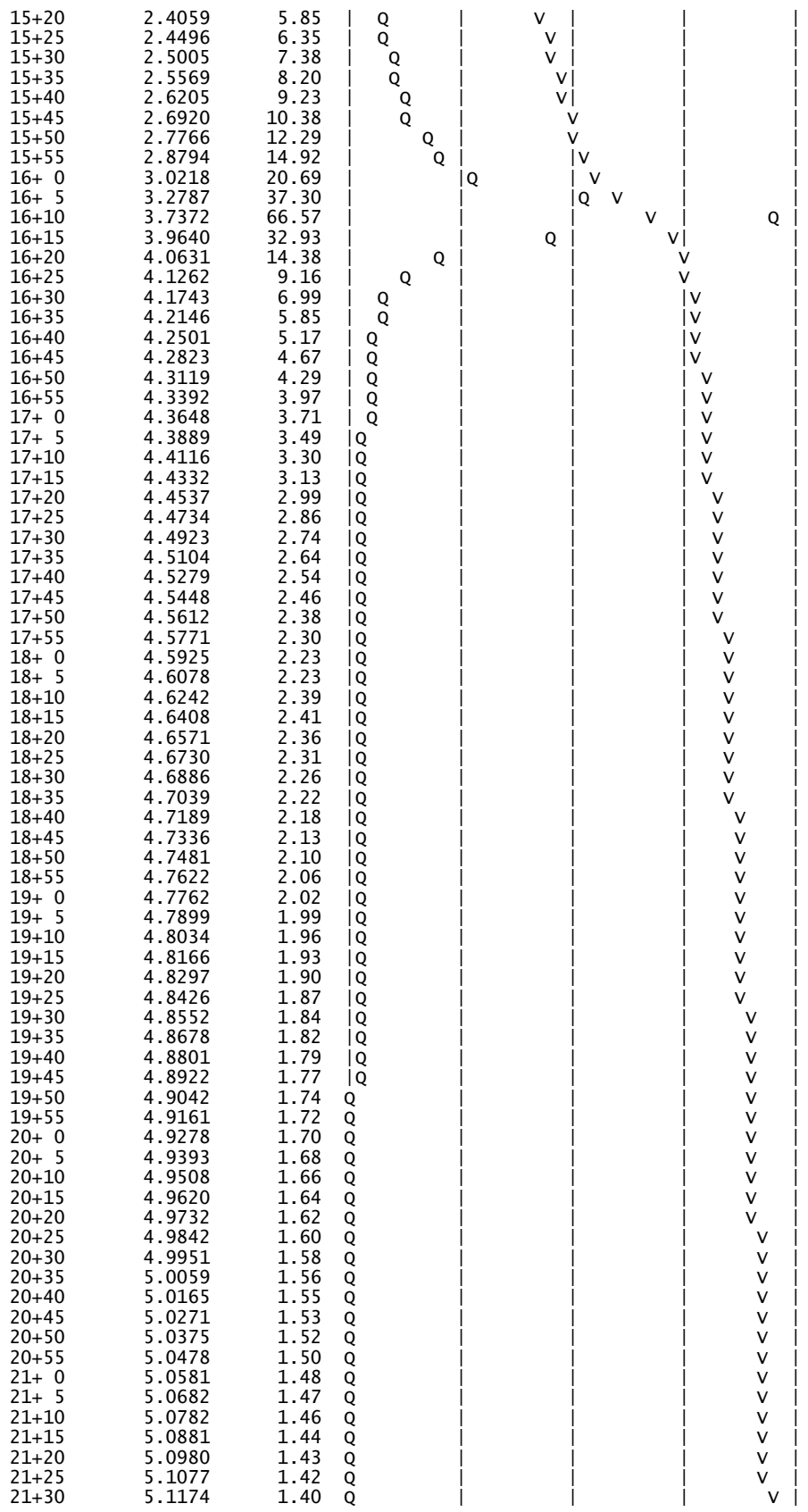
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	17.5	35.0	52.5	70.0
0+ 5	0.0012	0.17	Q	|	|	|	|
0+10	0.0070	0.84	Q	|	|	|	|
0+15	0.0144	1.08	Q	|	|	|	|
0+20	0.0221	1.12	Q	|	|	|	|
0+25	0.0298	1.12	Q	|	|	|	|
0+30	0.0376	1.12	Q	|	|	|	|
0+35	0.0453	1.13	Q	|	|	|	|
0+40	0.0531	1.13	Q	|	|	|	|
0+45	0.0609	1.13	Q	|	|	|	|
0+50	0.0687	1.14	Q	|	|	|	|
0+55	0.0766	1.14	Q	|	|	|	|
1+ 0	0.0845	1.14	Q	|	|	|	|
1+ 5	0.0924	1.15	Q	|	|	|	|
1+10	0.1003	1.15	Q	|	|	|	|
1+15	0.1083	1.15	Q	|	|	|	|
1+20	0.1162	1.16	Q	|	|	|	|
1+25	0.1243	1.16	Q	|	|	|	|
1+30	0.1323	1.17	Q	|	|	|	|
1+35	0.1403	1.17	QV	|	|	|	|
1+40	0.1484	1.17	QV	|	|	|	|
1+45	0.1565	1.18	QV	|	|	|	|
1+50	0.1647	1.18	QV	|	|	|	|
1+55	0.1729	1.19	QV	|	|	|	|
2+ 0	0.1811	1.19	QV	|	|	|	|
2+ 5	0.1893	1.19	QV	|	|	|	|
2+10	0.1975	1.20	QV	|	|	|	|
2+15	0.2058	1.20	QV	|	|	|	|
2+20	0.2141	1.21	QV	|	|	|	|
2+25	0.2225	1.21	QV	|	|	|	|
2+30	0.2308	1.22	QV	|	|	|	|
2+35	0.2392	1.22	QV	|	|	|	|
2+40	0.2477	1.22	QV	|	|	|	|
2+45	0.2561	1.23	QV	|	|	|	|

2+50	0.2646	1.23	QV	|	|	|	|
2+55	0.2731	1.24	Q V	|	|	|	|
3+ 0	0.2817	1.24	Q V	|	|	|	|
3+ 5	0.2903	1.25	Q V	|	|	|	|
3+10	0.2989	1.25	Q V	|	|	|	|
3+15	0.3075	1.26	Q V	|	|	|	|
3+20	0.3162	1.26	Q V	|	|	|	|
3+25	0.3249	1.27	Q V	|	|	|	|
3+30	0.3337	1.27	Q V	|	|	|	|
3+35	0.3425	1.27	Q V	|	|	|	|
3+40	0.3513	1.28	Q V	|	|	|	|
3+45	0.3601	1.28	Q V	|	|	|	|
3+50	0.3690	1.29	Q V	|	|	|	|
3+55	0.3779	1.29	Q V	|	|	|	|
4+ 0	0.3869	1.30	Q V	|	|	|	|
4+ 5	0.3959	1.31	Q V	|	|	|	|
4+10	0.4049	1.31	Q V	|	|	|	|
4+15	0.4140	1.32	Q V	|	|	|	|
4+20	0.4231	1.32	Q V	|	|	|	|
4+25	0.4322	1.33	Q V	|	|	|	|
4+30	0.4414	1.33	Q V	|	|	|	|
4+35	0.4506	1.34	Q V	|	|	|	|
4+40	0.4599	1.34	Q V	|	|	|	|
4+45	0.4691	1.35	Q V	|	|	|	|
4+50	0.4785	1.36	Q V	|	|	|	|
4+55	0.4878	1.36	Q V	|	|	|	|
5+ 0	0.4973	1.37	Q V	|	|	|	|
5+ 5	0.5067	1.37	Q V	|	|	|	|
5+10	0.5162	1.38	Q V	|	|	|	|
5+15	0.5257	1.38	Q V	|	|	|	|
5+20	0.5353	1.39	Q V	|	|	|	|
5+25	0.5449	1.40	Q V	|	|	|	|
5+30	0.5546	1.40	Q V	|	|	|	|
5+35	0.5643	1.41	Q V	|	|	|	|
5+40	0.5741	1.42	Q V	|	|	|	|
5+45	0.5839	1.42	Q V	|	|	|	|
5+50	0.5937	1.43	Q V	|	|	|	|
5+55	0.6036	1.44	Q V	|	|	|	|
6+ 0	0.6135	1.44	Q V	|	|	|	|
6+ 5	0.6235	1.45	Q V	|	|	|	|
6+10	0.6336	1.46	Q V	|	|	|	|
6+15	0.6436	1.46	Q V	|	|	|	|
6+20	0.6538	1.47	Q V	|	|	|	|
6+25	0.6640	1.48	Q V	|	|	|	|
6+30	0.6742	1.49	Q V	|	|	|	|
6+35	0.6845	1.49	Q V	|	|	|	|
6+40	0.6948	1.50	Q V	|	|	|	|
6+45	0.7052	1.51	Q V	|	|	|	|
6+50	0.7157	1.52	Q V	|	|	|	|
6+55	0.7261	1.52	Q V	|	|	|	|
7+ 0	0.7367	1.53	Q V	|	|	|	|
7+ 5	0.7473	1.54	Q V	|	|	|	|
7+10	0.7580	1.55	Q V	|	|	|	|
7+15	0.7687	1.56	Q V	|	|	|	|
7+20	0.7795	1.57	Q V	|	|	|	|
7+25	0.7903	1.57	Q V	|	|	|	|
7+30	0.8012	1.58	Q V	|	|	|	|
7+35	0.8122	1.59	Q V	|	|	|	|
7+40	0.8232	1.60	Q V	|	|	|	|
7+45	0.8343	1.61	Q V	|	|	|	|
7+50	0.8455	1.62	Q V	|	|	|	|
7+55	0.8567	1.63	Q V	|	|	|	|
8+ 0	0.8680	1.64	Q V	|	|	|	|
8+ 5	0.8793	1.65	Q V	|	|	|	|
8+10	0.8908	1.66	Q V	|	|	|	|
8+15	0.9022	1.67	Q V	|	|	|	|
8+20	0.9138	1.68	Q V	|	|	|	|
8+25	0.9254	1.69	Q V	|	|	|	|
8+30	0.9371	1.70	Q V	|	|	|	|
8+35	0.9489	1.71	Q V	|	|	|	|
8+40	0.9608	1.72	Q V	|	|	|	|
8+45	0.9727	1.73	Q V	|	|	|	|
8+50	0.9847	1.74	Q V	|	|	|	|
8+55	0.9968	1.76	|Q V	|	|	|	|
9+ 0	1.0090	1.77	|Q V	|	|	|	|

9+ 5	1.0213	1.78	Q V				
9+10	1.0336	1.79	Q V				
9+15	1.0460	1.80	Q V				
9+20	1.0586	1.82	Q V				
9+25	1.0712	1.83	Q V				
9+30	1.0839	1.84	Q V				
9+35	1.0966	1.86	Q V				
9+40	1.1095	1.87	Q V				
9+45	1.1225	1.88	Q V				
9+50	1.1356	1.90	Q V				
9+55	1.1488	1.91	Q V				
10+ 0	1.1621	1.93	Q V				
10+ 5	1.1755	1.94	Q V				
10+10	1.1890	1.96	Q V				
10+15	1.2026	1.98	Q V				
10+20	1.2163	1.99	Q V				
10+25	1.2301	2.01	Q V				
10+30	1.2441	2.03	Q V				
10+35	1.2581	2.04	Q V				
10+40	1.2723	2.06	Q V				
10+45	1.2867	2.08	Q V				
10+50	1.3011	2.10	Q V				
10+55	1.3157	2.12	Q V				
11+ 0	1.3304	2.14	Q V				
11+ 5	1.3453	2.16	Q V				
11+10	1.3603	2.18	Q V				
11+15	1.3755	2.20	Q V				
11+20	1.3908	2.22	Q V				
11+25	1.4062	2.24	Q V				
11+30	1.4218	2.27	Q V				
11+35	1.4376	2.29	Q V				
11+40	1.4536	2.32	Q V				
11+45	1.4697	2.34	Q V				
11+50	1.4860	2.37	Q V				
11+55	1.5025	2.39	Q V				
12+ 0	1.5192	2.42	Q V				
12+ 5	1.5357	2.39	Q V				
12+10	1.5509	2.21	Q V				
12+15	1.5657	2.15	Q V				
12+20	1.5807	2.18	Q V				
12+25	1.5959	2.21	Q V				
12+30	1.6113	2.24	Q V				
12+35	1.6270	2.27	Q V				
12+40	1.6429	2.31	Q V				
12+45	1.6590	2.34	Q V				
12+50	1.6754	2.38	Q V				
12+55	1.6920	2.42	Q V				
13+ 0	1.7090	2.46	Q V				
13+ 5	1.7262	2.50	Q V				
13+10	1.7438	2.55	Q V				
13+15	1.7616	2.59	Q V				
13+20	1.7799	2.65	Q V				
13+25	1.7984	2.69	Q V				
13+30	1.8173	2.75	Q V				
13+35	1.8366	2.80	Q V				
13+40	1.8564	2.87	Q V				
13+45	1.8765	2.92	Q V				
13+50	1.8972	3.00	Q V				
13+55	1.9183	3.06	Q V				
14+ 0	1.9399	3.14	Q V				
14+ 5	1.9621	3.22	Q V				
14+10	1.9849	3.32	Q V				
14+15	2.0083	3.40	Q V				
14+20	2.0325	3.51	Q V				
14+25	2.0573	3.61	Q V				
14+30	2.0830	3.73	Q V				
14+35	2.1095	3.85	Q V				
14+40	2.1370	3.99	Q V				
14+45	2.1655	4.13	Q V				
14+50	2.1952	4.31	Q V				
14+55	2.2260	4.48	Q V				
15+ 0	2.2584	4.70	Q V				
15+ 5	2.2922	4.91	Q V				
15+10	2.3280	5.19	Q V				
15+15	2.3656	5.47	Q V				



```
   21+35       5.1270      1.39  Q          |          |          |        V |
   21+40       5.1364      1.38  Q          |          |          |        V |
   21+45       5.1458      1.37  Q          |          |          |        V |
   21+50       5.1552      1.35  Q          |          |          |        V |
   21+55       5.1644      1.34  Q          |          |          |        V |
   22+ 0       5.1736      1.33  Q          |          |          |        V |
   22+ 5       5.1827      1.32  Q          |          |          |        V |
   22+10       5.1917      1.31  Q          |          |          |        V |
   22+15       5.2007      1.30  Q          |          |          |        V |
   22+20       5.2095      1.29  Q          |          |          |        V |
   22+25       5.2183      1.28  Q          |          |          |        V |
   22+30       5.2271      1.27  Q          |          |          |        V |
   22+35       5.2358      1.26  Q          |          |          |        V |
   22+40       5.2444      1.25  Q          |          |          |        V |
   22+45       5.2529      1.24  Q          |          |          |         V|
   22+50       5.2614      1.23  Q          |          |          |         V|
   22+55       5.2698      1.22  Q          |          |          |         V|
   23+ 0       5.2782      1.21  Q          |          |          |         V|
   23+ 5       5.2865      1.21  Q          |          |          |         V|
   23+10       5.2948      1.20  Q          |          |          |         V|
   23+15       5.3029      1.19  Q          |          |          |         V|
   23+20       5.3111      1.18  Q          |          |          |         V|
   23+25       5.3192      1.17  Q          |          |          |         V|
   23+30       5.3272      1.17  Q          |          |          |         V|
   23+35       5.3352      1.16  Q          |          |          |         V|
   23+40       5.3431      1.15  Q          |          |          |         V|
   23+45       5.3510      1.14  Q          |          |          |         V|
   23+50       5.3588      1.14  Q          |          |          |         V|
   23+55       5.3666      1.13  Q          |          |          |         V|
   24+ 0       5.3743      1.12  Q          |          |          |         V|
   24+ 5       5.3808      0.94  Q          |          |          |         V|
   24+10       5.3827      0.27  Q          |          |          |         V|
   24+15       5.3829      0.03  Q          |          |          |         V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 4B
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 4BPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
20.70	1	0.60
Rainfall data for year 2		
20.70	6	0.70
Rainfall data for year 2		
20.70	24	1.20
Rainfall data for year 100		
20.70	1	1.00
Rainfall data for year 100		
20.70	6	1.90
Rainfall data for year 100		
20.70	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	20.70	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.07	0.100	69.0	69.0	4.49	0.263
18.63	0.900	98.0	98.0	0.20	0.931

Area-averaged catchment yield fraction, Y = 0.865
Area-averaged low loss fraction, Yb = 0.135
User entry of time of concentration = 0.190 (hours)
++
Watershed area = 20.70(Ac.)
Catchment Lag time = 0.152 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.370(In)
Computed peak 30-minute rainfall = 0.758(In)
Specified peak 1-hour rainfall = 1.000(In)
Computed peak 3-hour rainfall = 1.482(In)
Specified peak 6-hour rainfall = 1.900(In)
Specified peak 24-hour rainfall = 3.400(In)

Rainfall depth area reduction factors:
Using a total area of 20.70(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.370(In)
30-minute factor = 0.999 Adjusted rainfall = 0.757(In)
1-hour factor = 0.999 Adjusted rainfall = 0.999(In)
3-hour factor = 1.000 Adjusted rainfall = 1.482(In)
6-hour factor = 1.000 Adjusted rainfall = 1.900(In)
24-hour factor = 1.000 Adjusted rainfall = 3.400(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 250.34 (CFS))	
1	5.469	13.691
2	35.337	74.771
3	75.925	101.610
4	93.130	43.071
5	98.077	12.384
6	99.228	2.880
7	100.000	1.934

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3697	0.3697
2	0.4879	0.1181
3	0.5738	0.0859
4	0.6438	0.0700
5	0.7039	0.0601
6	0.7571	0.0533
7	0.8053	0.0482
8	0.8495	0.0442
9	0.8904	0.0410
10	0.9288	0.0383
11	0.9649	0.0361
12	0.9990	0.0342
13	1.0282	0.0291
14	1.0559	0.0277
15	1.0824	0.0265
16	1.1077	0.0254
17	1.1321	0.0244
18	1.1556	0.0235
19	1.1782	0.0226
20	1.2001	0.0219
21	1.2213	0.0212
22	1.2419	0.0206
23	1.2619	0.0200
24	1.2813	0.0194
25	1.3002	0.0189
26	1.3186	0.0184

27	1.3366	0.0180
28	1.3542	0.0176
29	1.3714	0.0172
30	1.3882	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4520	0.0155
35	1.4671	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5110	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5527	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0864	0.0098
91	2.0962	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1343	0.0095
96	2.1438	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091

102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6354	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7047	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1931	0.0054
249	3.1984	0.0054
250	3.2038	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2199	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3697	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 48.75(CFS)

++

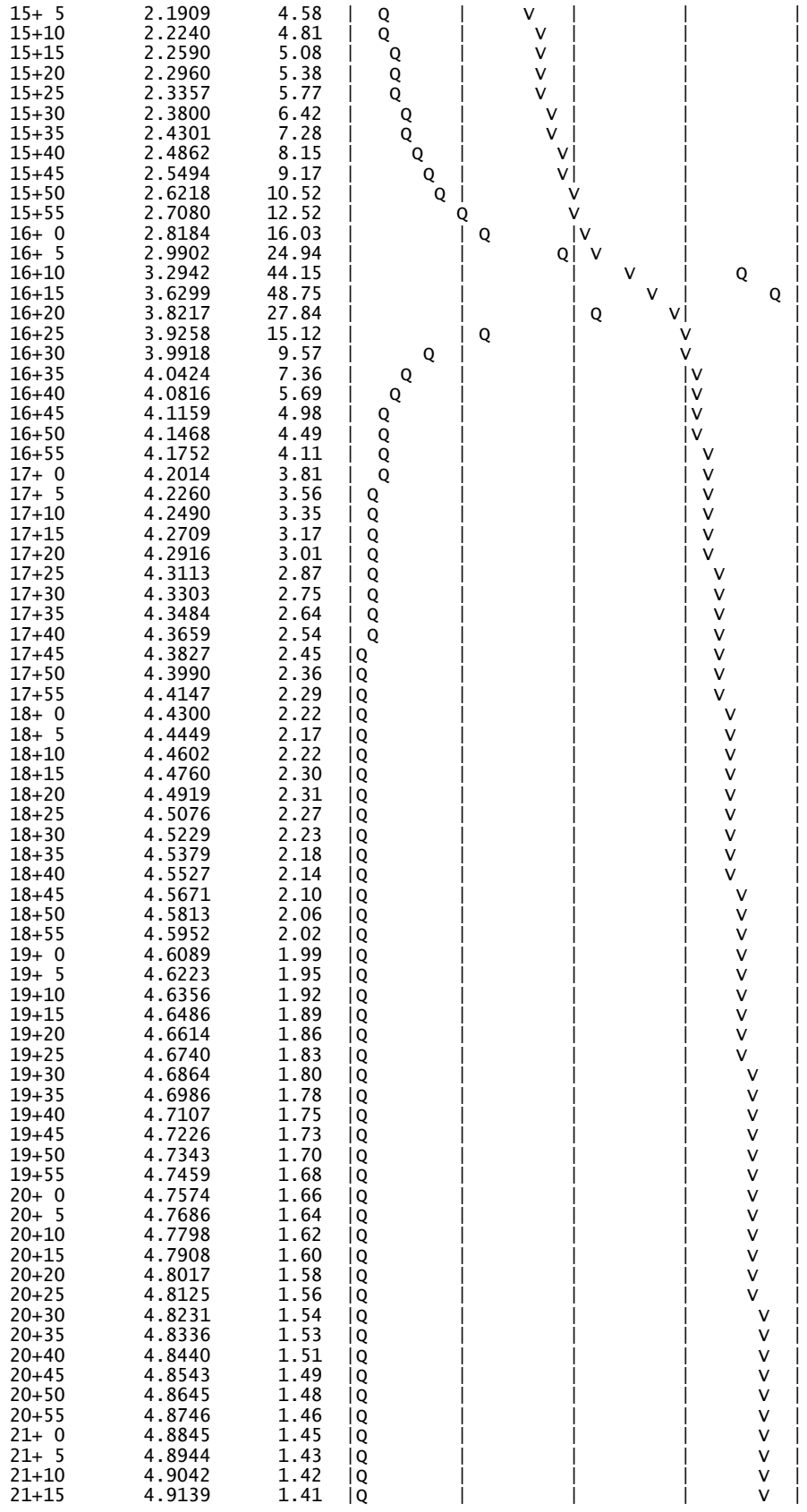
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0004	0.06	Q				
0+10	0.0030	0.38	Q				
0+15	0.0086	0.82	Q				
0+20	0.0155	1.00	Q				
0+25	0.0228	1.06	Q				
0+30	0.0302	1.08	Q				
0+35	0.0377	1.09	Q				
0+40	0.0452	1.09	Q				
0+45	0.0528	1.09	Q				
0+50	0.0603	1.10	Q				
0+55	0.0679	1.10	Q				
1+ 0	0.0755	1.10	Q				
1+ 5	0.0831	1.11	Q				
1+10	0.0908	1.11	Q				
1+15	0.0985	1.11	Q				
1+20	0.1062	1.12	Q				
1+25	0.1139	1.12	Q				
1+30	0.1216	1.13	Q				
1+35	0.1294	1.13	Q				
1+40	0.1372	1.13	QV				
1+45	0.1450	1.14	QV				
1+50	0.1529	1.14	QV				
1+55	0.1608	1.14	QV				
2+ 0	0.1687	1.15	QV				
2+ 5	0.1766	1.15	QV				
2+10	0.1846	1.16	QV				
2+15	0.1926	1.16	QV				
2+20	0.2006	1.16	QV				
2+25	0.2086	1.17	QV				
2+30	0.2167	1.17	QV				

```
2+35       0.2248      1.18  QV        |         |         |         |
2+40       0.2329      1.18  QV        |         |         |         |
2+45       0.2411      1.18  QV        |         |         |         |
2+50       0.2493      1.19  QV        |         |         |         |
2+55       0.2575      1.19  QV        |         |         |         |
3+ 0       0.2657      1.20  Q V       |         |         |         |
3+ 5       0.2740      1.20  Q V       |         |         |         |
3+10       0.2823      1.21  Q V       |         |         |         |
3+15       0.2907      1.21  Q V       |         |         |         |
3+20       0.2990      1.22  Q V       |         |         |         |
3+25       0.3075      1.22  Q V       |         |         |         |
3+30       0.3159      1.22  Q V       |         |         |         |
3+35       0.3244      1.23  Q V       |         |         |         |
3+40       0.3329      1.23  Q V       |         |         |         |
3+45       0.3414      1.24  Q V       |         |         |         |
3+50       0.3500      1.24  Q V       |         |         |         |
3+55       0.3586      1.25  Q V       |         |         |         |
4+ 0       0.3672      1.25  |QV       |         |         |         |
4+ 5       0.3759      1.26  |QV       |         |         |         |
4+10       0.3846      1.26  |QV       |         |         |         |
4+15       0.3933      1.27  |Q V      |         |         |         |
4+20       0.4021      1.27  |Q V      |         |         |         |
4+25       0.4109      1.28  |Q V      |         |         |         |
4+30       0.4197      1.28  |Q V      |         |         |         |
4+35       0.4286      1.29  |Q V      |         |         |         |
4+40       0.4375      1.30  |Q V      |         |         |         |
4+45       0.4465      1.30  |Q V      |         |         |         |
4+50       0.4555      1.31  |Q V      |         |         |         |
4+55       0.4645      1.31  |Q V      |         |         |         |
5+ 0       0.4736      1.32  |Q V      |         |         |         |
5+ 5       0.4827      1.32  |Q V      |         |         |         |
5+10       0.4918      1.33  |Q V      |         |         |         |
5+15       0.5010      1.33  |Q V      |         |         |         |
5+20       0.5103      1.34  |Q V      |         |         |         |
5+25       0.5195      1.35  |Q V      |         |         |         |
5+30       0.5289      1.35  |Q  V     |         |         |         |
5+35       0.5382      1.36  |Q  V     |         |         |         |
5+40       0.5476      1.36  |Q  V     |         |         |         |
5+45       0.5571      1.37  |Q  V     |         |         |         |
5+50       0.5665      1.38  |Q  V     |         |         |         |
5+55       0.5761      1.38  |Q  V     |         |         |         |
6+ 0       0.5856      1.39  |Q  V     |         |         |         |
6+ 5       0.5953      1.40  |Q  V     |         |         |         |
6+10       0.6049      1.40  |Q  V     |         |         |         |
6+15       0.6147      1.41  |Q  V     |         |         |         |
6+20       0.6244      1.42  |Q  V     |         |         |         |
6+25       0.6342      1.42  |Q  V     |         |         |         |
6+30       0.6441      1.43  |Q  V     |         |         |         |
6+35       0.6540      1.44  |Q   V    |         |         |         |
6+40       0.6639      1.45  |Q   V    |         |         |         |
6+45       0.6740      1.45  |Q   V    |         |         |         |
6+50       0.6840      1.46  |Q   V    |         |         |         |
6+55       0.6941      1.47  |Q   V    |         |         |         |
7+ 0       0.7043      1.48  |Q   V    |         |         |         |
7+ 5       0.7145      1.48  |Q   V    |         |         |         |
7+10       0.7248      1.49  |Q   V    |         |         |         |
7+15       0.7351      1.50  |Q   V    |         |         |         |
7+20       0.7455      1.51  |Q   V    |         |         |         |
7+25       0.7559      1.52  |Q   V    |         |         |         |
7+30       0.7664      1.52  |Q   V    |         |         |         |
7+35       0.7770      1.53  |Q   V    |         |         |         |
7+40       0.7876      1.54  |Q    V   |         |         |         |
7+45       0.7983      1.55  |Q    V   |         |         |         |
7+50       0.8090      1.56  |Q    V   |         |         |         |
7+55       0.8198      1.57  |Q    V   |         |         |         |
8+ 0       0.8307      1.58  |Q    V   |         |         |         |
8+ 5       0.8416      1.59  |Q    V   |         |         |         |
8+10       0.8526      1.60  |Q    V   |         |         |         |
8+15       0.8637      1.61  |Q    V   |         |         |         |
8+20       0.8748      1.62  |Q    V   |         |         |         |
8+25       0.8860      1.63  |Q    V   |         |         |         |
8+30       0.8973      1.64  |Q    V   |         |         |         |
8+35       0.9086      1.65  |Q    V   |         |         |         |
8+40       0.9200      1.66  |Q     V  |         |         |         |
8+45       0.9315      1.67  |Q     V  |         |         |         |
```

```
 8+50       0.9431      1.68  |Q     V  |          |          |          |
 8+55       0.9547      1.69  |Q     V  |          |          |          |
 9+ 0       0.9664      1.70  |Q     V  |          |          |          |
 9+ 5       0.9782      1.71  |Q     V  |          |          |          |
 9+10       0.9901      1.72  |Q     V  |          |          |          |
 9+15       1.0020      1.74  |Q     V  |          |          |          |
 9+20       1.0141      1.75  |Q     V  |          |          |          |
 9+25       1.0262      1.76  |Q     V  |          |          |          |
 9+30       1.0384      1.77  |Q     V  |          |          |          |
 9+35       1.0507      1.79  |Q      V |          |          |          |
 9+40       1.0631      1.80  |Q      V |          |          |          |
 9+45       1.0756      1.81  |Q      V |          |          |          |
 9+50       1.0882      1.83  |Q      V |          |          |          |
 9+55       1.1008      1.84  |Q      V |          |          |          |
10+ 0       1.1136      1.85  |Q      V |          |          |          |
10+ 5       1.1265      1.87  |Q      V |          |          |          |
10+10       1.1394      1.88  |Q      V |          |          |          |
10+15       1.1525      1.90  |Q      V |          |          |          |
10+20       1.1657      1.91  |Q      V |          |          |          |
10+25       1.1790      1.93  |Q       V|          |          |          |
10+30       1.1924      1.95  |Q       V|          |          |          |
10+35       1.2059      1.96  |Q       V|          |          |          |
10+40       1.2196      1.98  |Q       V|          |          |          |
10+45       1.2333      2.00  |Q       V|          |          |          |
10+50       1.2472      2.02  |Q       V|          |          |          |
10+55       1.2612      2.03  |Q       V|          |          |          |
11+ 0       1.2753      2.05  |Q       V|          |          |          |
11+ 5       1.2896      2.07  |Q       V|          |          |          |
11+10       1.3040      2.09  |Q        V          |          |          |
11+15       1.3185      2.11  |Q        V          |          |          |
11+20       1.3332      2.13  |Q        V          |          |          |
11+25       1.3481      2.15  |Q        V          |          |          |
11+30       1.3631      2.18  |Q        V          |          |          |
11+35       1.3782      2.20  |Q        V          |          |          |
11+40       1.3935      2.22  |Q        V          |          |          |
11+45       1.4090      2.25  |Q        V          |          |          |
11+50       1.4246      2.27  |Q        V          |          |          |
11+55       1.4404      2.30  |Q        |V         |          |          |
12+ 0       1.4564      2.32  |Q        |V         |          |          |
12+ 5       1.4724      2.33  |Q        |V         |          |          |
12+10       1.4879      2.25  |Q        |V         |          |          |
12+15       1.5027      2.14  |Q        |V         |          |          |
12+20       1.5172      2.11  |Q        |V         |          |          |
12+25       1.5317      2.12  |Q        |V         |          |          |
12+30       1.5465      2.14  |Q        |V         |          |          |
12+35       1.5615      2.17  |Q        |V         |          |          |
12+40       1.5766      2.20  |Q        | V        |          |          |
12+45       1.5921      2.24  |Q        | V        |          |          |
12+50       1.6077      2.27  |Q        | V        |          |          |
12+55       1.6236      2.31  |Q        | V        |          |          |
13+ 0       1.6398      2.35  |Q        | V        |          |          |
13+ 5       1.6562      2.39  |Q        | V        |          |          |
13+10       1.6730      2.43  |Q        | V        |          |          |
13+15       1.6900      2.47  |Q        | V        |          |          |
13+20       1.7074      2.52  | Q       |  V       |          |          |
13+25       1.7250      2.57  | Q       |  V       |          |          |
13+30       1.7430      2.62  | Q       |  V       |          |          |
13+35       1.7614      2.67  | Q       |  V       |          |          |
13+40       1.7802      2.72  | Q       |  V       |          |          |
13+45       1.7994      2.78  | Q       |  V       |          |          |
13+50       1.8189      2.84  | Q       |  V       |          |          |
13+55       1.8390      2.91  | Q       |   V      |          |          |
14+ 0       1.8595      2.98  | Q       |   V      |          |          |
14+ 5       1.8805      3.05  | Q       |   V      |          |          |
14+10       1.9021      3.13  | Q       |   V      |          |          |
14+15       1.9243      3.22  | Q       |   V      |          |          |
14+20       1.9471      3.31  | Q       |   V      |          |          |
14+25       1.9706      3.41  | Q       |    V     |          |          |
14+30       1.9948      3.51  | Q       |    V     |          |          |
14+35       2.0198      3.63  | Q       |    V     |          |          |
14+40       2.0457      3.75  |  Q      |    V     |          |          |
14+45       2.0724      3.89  |  Q      |    V     |          |          |
14+50       2.1002      4.03  |  Q      |     V    |          |          |
14+55       2.1291      4.20  |  Q      |     V    |          |          |
15+ 0       2.1593      4.38  |  Q      |     V    |          |          |
```



```
   21+20       4.9235      1.39  |Q        |         |         |      V  |
   21+25       4.9330      1.38  |Q        |         |         |      V  |
   21+30       4.9424      1.37  |Q        |         |         |      V  |
   21+35       4.9517      1.35  |Q        |         |         |       V |
   21+40       4.9609      1.34  |Q        |         |         |       V |
   21+45       4.9701      1.33  |Q        |         |         |       V |
   21+50       4.9792      1.32  |Q        |         |         |       V |
   21+55       4.9882      1.31  |Q        |         |         |       V |
   22+ 0       4.9971      1.30  |Q        |         |         |       V |
   22+ 5       5.0060      1.29  |Q        |         |         |       V |
   22+10       5.0148      1.28  |Q        |         |         |       V |
   22+15       5.0235      1.27  |Q        |         |         |       V |
   22+20       5.0321      1.26  |Q        |         |         |       V |
   22+25       5.0407      1.25  Q         |         |         |       V |
   22+30       5.0492      1.24  Q         |         |         |       V |
   22+35       5.0577      1.23  Q         |         |         |       V |
   22+40       5.0660      1.22  Q         |         |         |       V |
   22+45       5.0744      1.21  Q         |         |         |       V |
   22+50       5.0826      1.20  Q         |         |         |        V|
   22+55       5.0908      1.19  Q         |         |         |        V|
   23+ 0       5.0989      1.18  Q         |         |         |        V|
   23+ 5       5.1070      1.17  Q         |         |         |        V|
   23+10       5.1151      1.17  Q         |         |         |        V|
   23+15       5.1230      1.16  Q         |         |         |        V|
   23+20       5.1309      1.15  Q         |         |         |        V|
   23+25       5.1388      1.14  Q         |         |         |        V|
   23+30       5.1466      1.13  Q         |         |         |        V|
   23+35       5.1544      1.13  Q         |         |         |        V|
   23+40       5.1621      1.12  Q         |         |         |        V|
   23+45       5.1697      1.11  Q         |         |         |        V|
   23+50       5.1773      1.10  Q         |         |         |        V|
   23+55       5.1849      1.10  Q         |         |         |        V|
   24+ 0       5.1924      1.09  Q         |         |         |        V|
   24+ 5       5.1995      1.03  Q         |         |         |        V|
   24+10       5.2043      0.70  Q         |         |         |        V|
   24+15       5.2061      0.26  Q         |         |         |        V|
   24+20       5.2066      0.07  Q         |         |         |        V|
   24+25       5.2067      0.02  Q         |         |         |        V|
   24+30       5.2068      0.01  Q         |         |         |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 4C
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 4CPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
21.60	1	0.60
Rainfall data for year 2		
21.60	6	0.70
Rainfall data for year 2		
21.60	24	1.20
Rainfall data for year 100		
21.60	1	1.00
Rainfall data for year 100		
21.60	6	1.90
Rainfall data for year 100		
21.60	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	21.60	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.16	0.100	69.0	69.0	4.49	0.263
19.44	0.900	98.0	98.0	0.20	0.931

Area-averaged catchment yield fraction, Y = 0.865
Area-averaged low loss fraction, Yb = 0.135
User entry of time of concentration = 0.180 (hours)
++
Watershed area = 21.60(Ac.)
Catchment Lag time = 0.144 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 57.8704
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.370(In)
Computed peak 30-minute rainfall = 0.758(In)
Specified peak 1-hour rainfall = 1.000(In)
Computed peak 3-hour rainfall = 1.482(In)
Specified peak 6-hour rainfall = 1.900(In)
Specified peak 24-hour rainfall = 3.400(In)

Rainfall depth area reduction factors:
Using a total area of 21.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.370(In)
30-minute factor = 0.999 Adjusted rainfall = 0.757(In)
1-hour factor = 0.999 Adjusted rainfall = 0.999(In)
3-hour factor = 1.000 Adjusted rainfall = 1.482(In)
6-hour factor = 1.000 Adjusted rainfall = 1.900(In)
24-hour factor = 1.000 Adjusted rainfall = 3.400(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 261.23 (CFS))	
1	6.077	15.874
2	39.009	86.028
3	79.564	105.938
4	94.634	39.368
5	98.466	10.010
6	99.524	2.763
7	100.000	1.244

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3697	0.3697
2	0.4879	0.1181
3	0.5738	0.0859
4	0.6437	0.0700
5	0.7038	0.0601
6	0.7571	0.0532
7	0.8052	0.0482
8	0.8494	0.0442
9	0.8904	0.0410
10	0.9287	0.0383
11	0.9648	0.0361
12	0.9990	0.0342
13	1.0281	0.0291
14	1.0558	0.0277
15	1.0823	0.0265
16	1.1077	0.0254
17	1.1321	0.0244
18	1.1555	0.0235
19	1.1782	0.0227
20	1.2001	0.0219
21	1.2213	0.0212
22	1.2419	0.0206
23	1.2618	0.0200
24	1.2813	0.0194
25	1.3002	0.0189
26	1.3186	0.0184

27	1.3366	0.0180
28	1.3542	0.0176
29	1.3713	0.0172
30	1.3881	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4519	0.0155
35	1.4671	0.0152
36	1.4820	0.0149
37	1.4967	0.0146
38	1.5110	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5527	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6551	0.0122
50	1.6672	0.0120
51	1.6790	0.0119
52	1.6908	0.0117
53	1.7023	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091

102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4581	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6070	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6354	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6841	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7047	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9717	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0537	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2199	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3949	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0532	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3697	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0227	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 50.50(CFS)

++

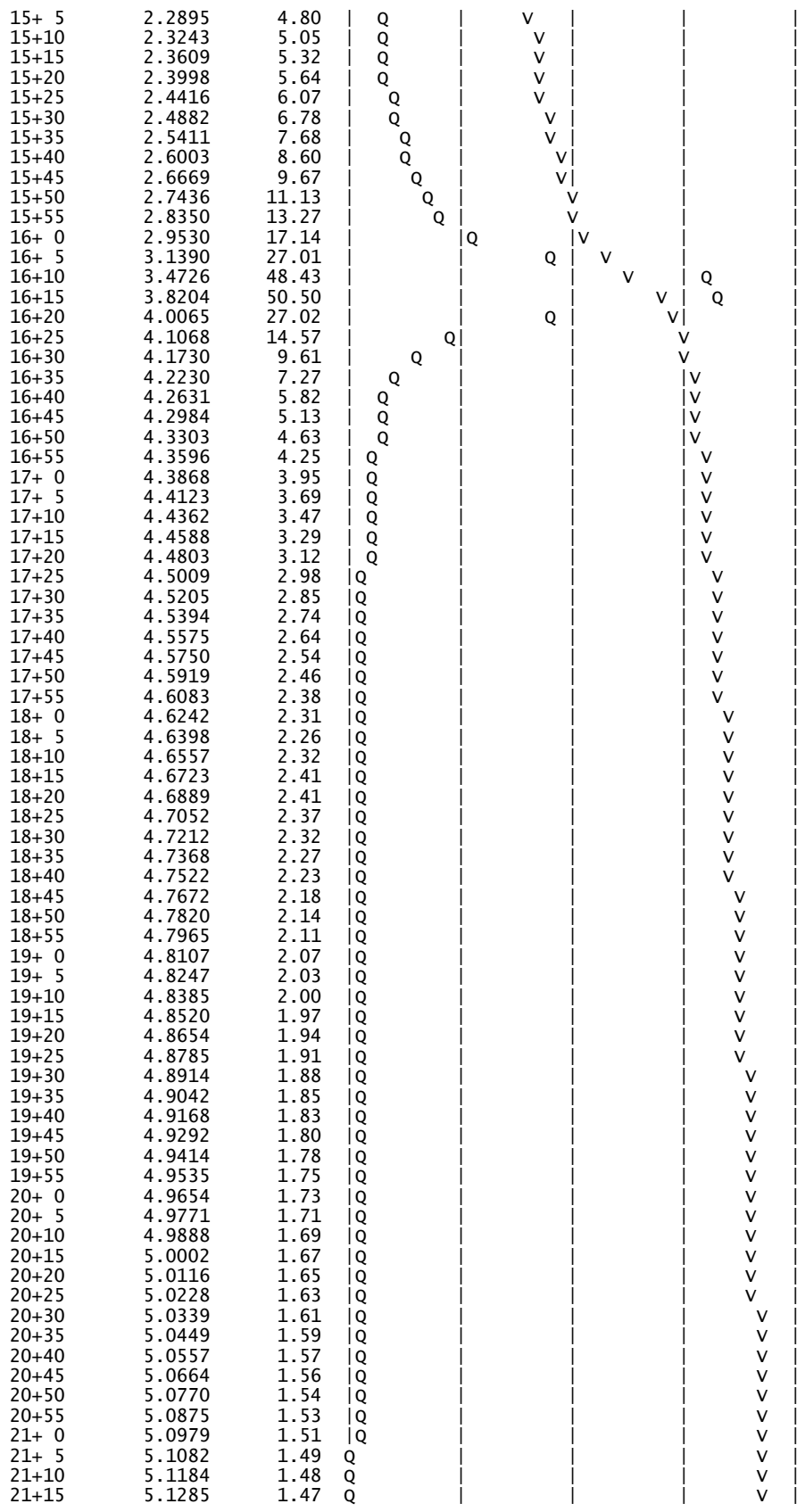
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0005	0.07	Q				
0+10	0.0035	0.44	Q				
0+15	0.0096	0.89	Q				
0+20	0.0170	1.06	Q				
0+25	0.0246	1.11	Q				
0+30	0.0324	1.13	Q				
0+35	0.0402	1.13	Q				
0+40	0.0480	1.14	Q				
0+45	0.0559	1.14	Q				
0+50	0.0637	1.14	Q				
0+55	0.0717	1.15	Q				
1+ 0	0.0796	1.15	Q				
1+ 5	0.0875	1.16	Q				
1+10	0.0955	1.16	Q				
1+15	0.1035	1.16	Q				
1+20	0.1116	1.17	Q				
1+25	0.1196	1.17	Q				
1+30	0.1277	1.17	Q				
1+35	0.1359	1.18	QV				
1+40	0.1440	1.18	QV				
1+45	0.1522	1.19	QV				
1+50	0.1604	1.19	QV				
1+55	0.1686	1.19	QV				
2+ 0	0.1768	1.20	QV				
2+ 5	0.1851	1.20	QV				
2+10	0.1934	1.21	QV				
2+15	0.2018	1.21	QV				
2+20	0.2101	1.22	QV				
2+25	0.2185	1.22	QV				
2+30	0.2270	1.22	QV				

```
2+35       0.2354      1.23  QV        |         |         |         |
2+40       0.2439      1.23  QV        |         |         |         |
2+45       0.2524      1.24  QV        |         |         |         |
2+50       0.2610      1.24  QV        |         |         |         |
2+55       0.2696      1.25  QV        |         |         |         |
3+ 0       0.2782      1.25  Q V       |         |         |         |
3+ 5       0.2868      1.25  Q V       |         |         |         |
3+10       0.2955      1.26  Q V       |         |         |         |
3+15       0.3042      1.26  Q V       |         |         |         |
3+20       0.3129      1.27  Q V       |         |         |         |
3+25       0.3217      1.27  Q V       |         |         |         |
3+30       0.3305      1.28  Q V       |         |         |         |
3+35       0.3394      1.28  Q V       |         |         |         |
3+40       0.3482      1.29  Q V       |         |         |         |
3+45       0.3571      1.29  Q V       |         |         |         |
3+50       0.3661      1.30  Q V       |         |         |         |
3+55       0.3751      1.30  Q V       |         |         |         |
4+ 0       0.3841      1.31  Q V       |         |         |         |
4+ 5       0.3931      1.31  Q V       |         |         |         |
4+10       0.4022      1.32  Q V       |         |         |         |
4+15       0.4113      1.32  Q  V      |         |         |         |
4+20       0.4205      1.33  Q  V      |         |         |         |
4+25       0.4297      1.34  Q  V      |         |         |         |
4+30       0.4389      1.34  Q  V      |         |         |         |
4+35       0.4482      1.35  Q  V      |         |         |         |
4+40       0.4575      1.35  Q  V      |         |         |         |
4+45       0.4668      1.36  Q  V      |         |         |         |
4+50       0.4762      1.36  Q  V      |         |         |         |
4+55       0.4857      1.37  Q  V      |         |         |         |
5+ 0       0.4951      1.38  Q  V      |         |         |         |
5+ 5       0.5046      1.38  Q  V      |         |         |         |
5+10       0.5142      1.39  Q  V      |         |         |         |
5+15       0.5238      1.39  Q  V      |         |         |         |
5+20       0.5334      1.40  Q  V      |         |         |         |
5+25       0.5431      1.41  Q  V      |         |         |         |
5+30       0.5528      1.41  Q   V     |         |         |         |
5+35       0.5626      1.42  Q   V     |         |         |         |
5+40       0.5724      1.42  Q   V     |         |         |         |
5+45       0.5823      1.43  Q   V     |         |         |         |
5+50       0.5922      1.44  Q   V     |         |         |         |
5+55       0.6021      1.44  Q   V     |         |         |         |
6+ 0       0.6121      1.45  Q   V     |         |         |         |
6+ 5       0.6222      1.46  Q   V     |         |         |         |
6+10       0.6323      1.47  Q   V     |         |         |         |
6+15       0.6424      1.47  Q   V     |         |         |         |
6+20       0.6526      1.48  Q   V     |         |         |         |
6+25       0.6628      1.49  Q   V     |         |         |         |
6+30       0.6731      1.49  Q   V     |         |         |         |
6+35       0.6835      1.50  |Q   V     |         |         |         |
6+40       0.6939      1.51  |Q   V     |         |         |         |
6+45       0.7043      1.52  |Q   V     |         |         |         |
6+50       0.7148      1.53  |Q   V     |         |         |         |
6+55       0.7254      1.53  |Q   V     |         |         |         |
7+ 0       0.7360      1.54  |Q   V     |         |         |         |
7+ 5       0.7467      1.55  |Q   V     |         |         |         |
7+10       0.7574      1.56  |Q   V     |         |         |         |
7+15       0.7682      1.57  |Q   V     |         |         |         |
7+20       0.7790      1.57  |Q   V     |         |         |         |
7+25       0.7899      1.58  |Q   V     |         |         |         |
7+30       0.8009      1.59  |Q   V     |         |         |         |
7+35       0.8119      1.60  |Q   V     |         |         |         |
7+40       0.8230      1.61  |Q    V    |         |         |         |
7+45       0.8341      1.62  |Q    V    |         |         |         |
7+50       0.8453      1.63  |Q    V    |         |         |         |
7+55       0.8566      1.64  |Q    V    |         |         |         |
8+ 0       0.8680      1.65  |Q    V    |         |         |         |
8+ 5       0.8794      1.66  |Q    V    |         |         |         |
8+10       0.8909      1.67  |Q    V    |         |         |         |
8+15       0.9024      1.68  |Q    V    |         |         |         |
8+20       0.9140      1.69  |Q    V    |         |         |         |
8+25       0.9257      1.70  |Q    V    |         |         |         |
8+30       0.9375      1.71  |Q    V    |         |         |         |
8+35       0.9493      1.72  |Q    V    |         |         |         |
8+40       0.9612      1.73  |Q     V   |         |         |         |
8+45       0.9732      1.74  |Q     V   |         |         |         |
```

8+50	0.9853	1.75	Q	V			
8+55	0.9974	1.76	Q	V			
9+ 0	1.0097	1.78	Q	V			
9+ 5	1.0220	1.79	Q	V			
9+10	1.0344	1.80	Q	V			
9+15	1.0469	1.81	Q	V			
9+20	1.0594	1.83	Q	V			
9+25	1.0721	1.84	Q	V			
9+30	1.0848	1.85	Q	V			
9+35	1.0977	1.86	Q	V			
9+40	1.1106	1.88	Q	V			
9+45	1.1237	1.89	Q	V			
9+50	1.1368	1.91	Q	V			
9+55	1.1500	1.92	Q	V			
10+ 0	1.1634	1.94	Q	V			
10+ 5	1.1768	1.95	Q	V			
10+10	1.1904	1.97	Q	V			
10+15	1.2040	1.98	Q	V			
10+20	1.2178	2.00	Q	V			
10+25	1.2317	2.02	Q	V			
10+30	1.2457	2.03	Q	V			
10+35	1.2598	2.05	Q	V			
10+40	1.2740	2.07	Q	V			
10+45	1.2884	2.09	Q	V			
10+50	1.3029	2.10	Q	V			
10+55	1.3175	2.12	Q	V			
11+ 0	1.3323	2.14	Q	V			
11+ 5	1.3472	2.16	Q	V			
11+10	1.3622	2.18	Q	V			
11+15	1.3774	2.21	Q	V			
11+20	1.3928	2.23	Q	V			
11+25	1.4082	2.25	Q	V			
11+30	1.4239	2.27	Q	V			
11+35	1.4397	2.30	Q	V			
11+40	1.4557	2.32	Q	V			
11+45	1.4718	2.35	Q	V			
11+50	1.4882	2.37	Q	V			
11+55	1.5047	2.40	Q	V			
12+ 0	1.5214	2.43	Q	V			
12+ 5	1.5381	2.43	Q	V			
12+10	1.5542	2.34	Q	V			
12+15	1.5695	2.22	Q	V			
12+20	1.5847	2.19	Q	V			
12+25	1.5999	2.21	Q	V			
12+30	1.6153	2.24	Q	V			
12+35	1.6309	2.27	Q	V			
12+40	1.6468	2.30	Q	V			
12+45	1.6629	2.34	Q	V			
12+50	1.6793	2.38	Q	V			
12+55	1.6959	2.41	Q	V			
13+ 0	1.7128	2.45	Q	V			
13+ 5	1.7300	2.50	Q	V			
13+10	1.7475	2.54	Q	V			
13+15	1.7653	2.59	Q	V			
13+20	1.7834	2.63	Q	V			
13+25	1.8019	2.68	Q	V			
13+30	1.8207	2.74	Q	V			
13+35	1.8400	2.79	Q	V			
13+40	1.8596	2.85	Q	V			
13+45	1.8796	2.91	Q	V			
13+50	1.9001	2.97	Q	V			
13+55	1.9211	3.04	Q	V			
14+ 0	1.9425	3.12	Q	V			
14+ 5	1.9645	3.19	Q	V			
14+10	1.9871	3.28	Q	V			
14+15	2.0103	3.37	Q	V			
14+20	2.0342	3.47	Q	V			
14+25	2.0588	3.57	Q	V			
14+30	2.0841	3.68	Q	V			
14+35	2.1103	3.80	Q	V			
14+40	2.1374	3.93	Q	V			
14+45	2.1654	4.07	Q	V			
14+50	2.1945	4.23	Q	V			
14+55	2.2248	4.40	Q	V			
15+ 0	2.2564	4.59	Q	V			



```
   21+20       5.1385      1.45  Q         |         |         |      V  |
   21+25       5.1484      1.44  Q         |         |         |      V  |
   21+30       5.1582      1.42  Q         |         |         |      V  |
   21+35       5.1680      1.41  Q         |         |         |       V |
   21+40       5.1776      1.40  Q         |         |         |       V |
   21+45       5.1871      1.39  Q         |         |         |       V |
   21+50       5.1966      1.38  Q         |         |         |       V |
   21+55       5.2060      1.36  Q         |         |         |       V |
   22+ 0       5.2153      1.35  Q         |         |         |       V |
   22+ 5       5.2245      1.34  Q         |         |         |       V |
   22+10       5.2337      1.33  Q         |         |         |       V |
   22+15       5.2428      1.32  Q         |         |         |       V |
   22+20       5.2518      1.31  Q         |         |         |       V |
   22+25       5.2607      1.30  Q         |         |         |       V |
   22+30       5.2696      1.29  Q         |         |         |       V |
   22+35       5.2784      1.28  Q         |         |         |       V |
   22+40       5.2872      1.27  Q         |         |         |       V |
   22+45       5.2958      1.26  Q         |         |         |       V |
   22+50       5.3044      1.25  Q         |         |         |        V|
   22+55       5.3130      1.24  Q         |         |         |        V|
   23+ 0       5.3215      1.23  Q         |         |         |        V|
   23+ 5       5.3299      1.22  Q         |         |         |        V|
   23+10       5.3383      1.22  Q         |         |         |        V|
   23+15       5.3466      1.21  Q         |         |         |        V|
   23+20       5.3548      1.20  Q         |         |         |        V|
   23+25       5.3630      1.19  Q         |         |         |        V|
   23+30       5.3712      1.18  Q         |         |         |        V|
   23+35       5.3793      1.17  Q         |         |         |        V|
   23+40       5.3873      1.17  Q         |         |         |        V|
   23+45       5.3953      1.16  Q         |         |         |        V|
   23+50       5.4032      1.15  Q         |         |         |        V|
   23+55       5.4111      1.14  Q         |         |         |        V|
   24+ 0       5.4190      1.14  Q         |         |         |        V|
   24+ 5       5.4263      1.06  Q         |         |         |        V|
   24+10       5.4310      0.69  Q         |         |         |        V|
   24+15       5.4326      0.23  Q         |         |         |        V|
   24+20       5.4330      0.06  Q         |         |         |        V|
   24+25       5.4331      0.02  Q         |         |         |        V|
   24+30       5.4332      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 4D
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 4DPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
18.10	1	0.60
Rainfall data for year 2		
18.10	6	0.70
Rainfall data for year 2		
18.10	24	1.20
Rainfall data for year 100		
18.10	1	1.00
Rainfall data for year 100		
18.10	6	1.90
Rainfall data for year 100		
18.10	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	18.10	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.81	0.100	69.0	69.0	4.49	0.263
16.29	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.200 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      18.10(Ac.)
Catchment Lag time =   0.160 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 52.0833
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      18.10(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       218.90 (CFS))

  1                4.951                  10.837
  2               32.173                  59.589
  3               71.993                  87.165
  4               91.514                  42.730
  5               97.565                  13.244
  6               98.956                   3.046
  7              100.000                   2.285
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3698              0.3698
  2              0.4879              0.1182
  3              0.5739              0.0859
  4              0.6438              0.0700
  5              0.7040              0.0601
  6              0.7572              0.0533
  7              0.8054              0.0482
  8              0.8496              0.0442
  9              0.8905              0.0410
 10              0.9289              0.0383
 11              0.9650              0.0361
 12              0.9992              0.0342
 13              1.0283              0.0291
 14              1.0560              0.0277
 15              1.0825              0.0265
 16              1.1078              0.0254
 17              1.1322              0.0244
 18              1.1557              0.0235
 19              1.1783              0.0226
 20              1.2002              0.0219
 21              1.2214              0.0212
 22              1.2420              0.0206
 23              1.2619              0.0200
 24              1.2814              0.0194
 25              1.3003              0.0189
 26              1.3187              0.0184
```

27	1.3367	0.0180
28	1.3542	0.0176
29	1.3714	0.0172
30	1.3882	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4520	0.0155
35	1.4672	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5111	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5528	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5926	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9754	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091

102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2612	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4269	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5416	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5710	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6910	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7115	0.0068
169	2.7182	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8426	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8741	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9478	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0132	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1877	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2038	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2199	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3549	0.0051
280	3.3600	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0814
192	0.1182	0.0046	0.1136
193	0.3698	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 42.42(CFS)

++

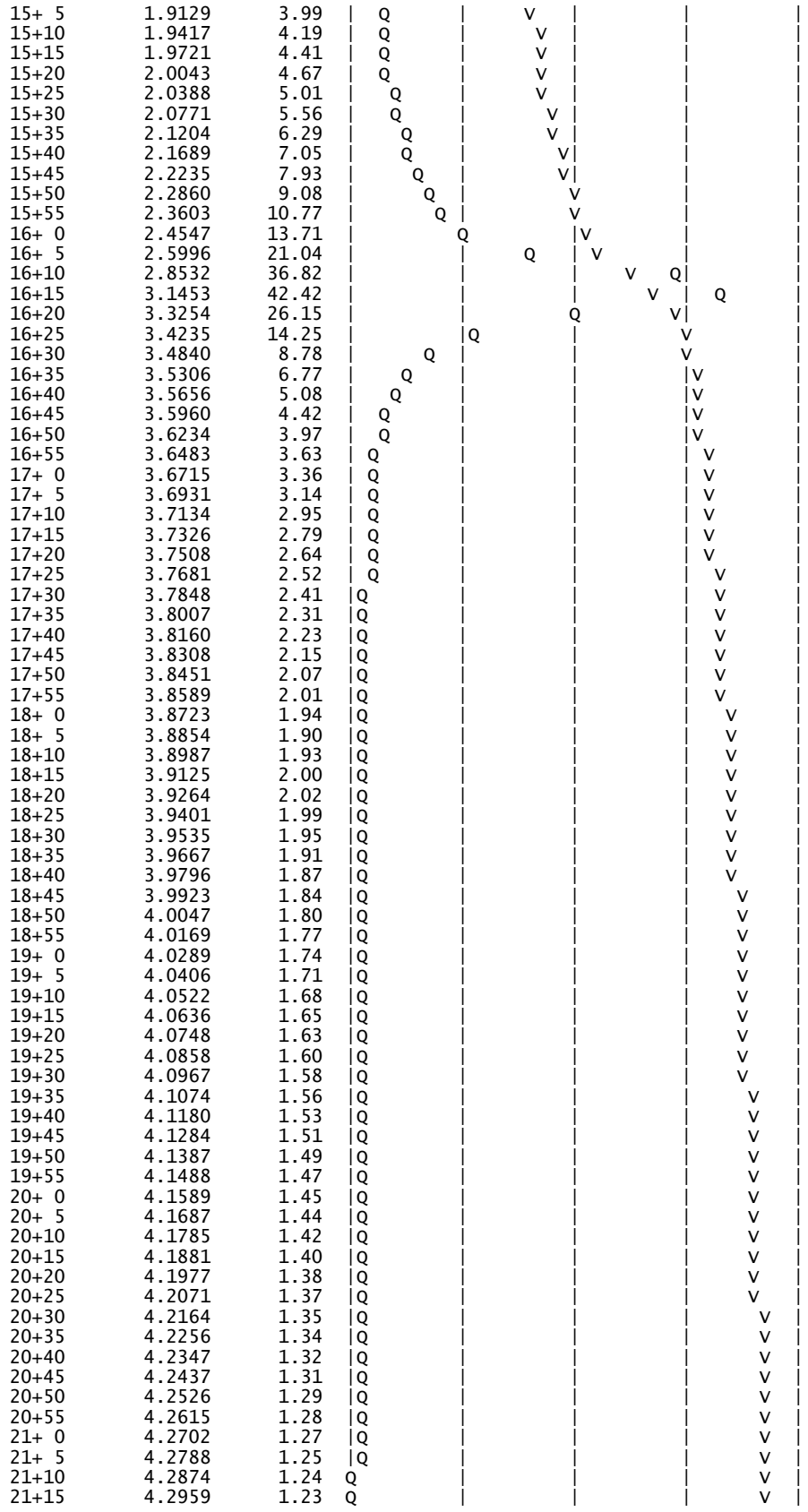
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0003	0.05	Q	|	|	|	|
0+10	0.0024	0.30	Q	|	|	|	|
0+15	0.0071	0.68	Q	|	|	|	|
0+20	0.0130	0.86	Q	|	|	|	|
0+25	0.0193	0.92	Q	|	|	|	|
0+30	0.0258	0.94	Q	|	|	|	|
0+35	0.0323	0.95	Q	|	|	|	|
0+40	0.0389	0.95	Q	|	|	|	|
0+45	0.0455	0.96	Q	|	|	|	|
0+50	0.0521	0.96	Q	|	|	|	|
0+55	0.0587	0.96	Q	|	|	|	|
1+ 0	0.0654	0.96	Q	|	|	|	|
1+ 5	0.0720	0.97	Q	|	|	|	|
1+10	0.0787	0.97	Q	|	|	|	|
1+15	0.0854	0.97	Q	|	|	|	|
1+20	0.0921	0.98	Q	|	|	|	|
1+25	0.0989	0.98	Q	|	|	|	|
1+30	0.1057	0.98	Q	|	|	|	|
1+35	0.1125	0.99	Q	|	|	|	|
1+40	0.1193	0.99	QV	|	|	|	|
1+45	0.1261	0.99	QV	|	|	|	|
1+50	0.1330	1.00	QV	|	|	|	|
1+55	0.1399	1.00	QV	|	|	|	|
2+ 0	0.1468	1.00	QV	|	|	|	|
2+ 5	0.1537	1.01	QV	|	|	|	|
2+10	0.1607	1.01	QV	|	|	|	|
2+15	0.1677	1.01	QV	|	|	|	|
2+20	0.1747	1.02	QV	|	|	|	|
2+25	0.1817	1.02	QV	|	|	|	|
2+30	0.1888	1.02	QV	|	|	|	|

```
2+35       0.1959      1.03  QV        |         |         |         |
2+40       0.2030      1.03  QV        |         |         |         |
2+45       0.2101      1.04  QV        |         |         |         |
2+50       0.2173      1.04  QV        |         |         |         |
2+55       0.2244      1.04  QV        |         |         |         |
3+ 0       0.2316      1.05  Q V       |         |         |         |
3+ 5       0.2389      1.05  Q V       |         |         |         |
3+10       0.2461      1.05  Q V       |         |         |         |
3+15       0.2534      1.06  Q V       |         |         |         |
3+20       0.2608      1.06  Q V       |         |         |         |
3+25       0.2681      1.07  Q V       |         |         |         |
3+30       0.2755      1.07  Q V       |         |         |         |
3+35       0.2829      1.07  Q V       |         |         |         |
3+40       0.2903      1.08  Q V       |         |         |         |
3+45       0.2978      1.08  Q V       |         |         |         |
3+50       0.3052      1.09  Q V       |         |         |         |
3+55       0.3128      1.09  Q V       |         |         |         |
4+ 0       0.3203      1.10  Q V       |         |         |         |
4+ 5       0.3279      1.10  Q V       |         |         |         |
4+10       0.3355      1.10  Q V       |         |         |         |
4+15       0.3431      1.11  Q  V      |         |         |         |
4+20       0.3508      1.11  Q  V      |         |         |         |
4+25       0.3585      1.12  Q  V      |         |         |         |
4+30       0.3662      1.12  Q  V      |         |         |         |
4+35       0.3740      1.13  Q  V      |         |         |         |
4+40       0.3818      1.13  Q  V      |         |         |         |
4+45       0.3896      1.14  Q  V      |         |         |         |
4+50       0.3975      1.14  Q  V      |         |         |         |
4+55       0.4054      1.15  Q  V      |         |         |         |
5+ 0       0.4133      1.15  Q  V      |         |         |         |
5+ 5       0.4213      1.16  Q  V      |         |         |         |
5+10       0.4293      1.16  Q  V      |         |         |         |
5+15       0.4373      1.17  Q  V      |         |         |         |
5+20       0.4454      1.17  Q  V      |         |         |         |
5+25       0.4535      1.18  Q  V      |         |         |         |
5+30       0.4616      1.18  Q   V     |         |         |         |
5+35       0.4698      1.19  Q   V     |         |         |         |
5+40       0.4780      1.19  Q   V     |         |         |         |
5+45       0.4863      1.20  Q   V     |         |         |         |
5+50       0.4945      1.20  Q   V     |         |         |         |
5+55       0.5029      1.21  Q   V     |         |         |         |
6+ 0       0.5112      1.22  Q   V     |         |         |         |
6+ 5       0.5197      1.22  Q   V     |         |         |         |
6+10       0.5281      1.23  Q   V     |         |         |         |
6+15       0.5366      1.23  Q   V     |         |         |         |
6+20       0.5451      1.24  Q   V     |         |         |         |
6+25       0.5537      1.24  Q   V     |         |         |         |
6+30       0.5623      1.25  |Q  V     |         |         |         |
6+35       0.5710      1.26  |Q   V    |         |         |         |
6+40       0.5797      1.26  |Q   V    |         |         |         |
6+45       0.5884      1.27  |Q   V    |         |         |         |
6+50       0.5972      1.28  |Q   V    |         |         |         |
6+55       0.6061      1.28  |Q   V    |         |         |         |
7+ 0       0.6149      1.29  |Q   V    |         |         |         |
7+ 5       0.6239      1.30  |Q   V    |         |         |         |
7+10       0.6329      1.30  |Q   V    |         |         |         |
7+15       0.6419      1.31  |Q   V    |         |         |         |
7+20       0.6510      1.32  |Q   V    |         |         |         |
7+25       0.6601      1.32  |Q   V    |         |         |         |
7+30       0.6693      1.33  |Q   V    |         |         |         |
7+35       0.6785      1.34  |Q   V    |         |         |         |
7+40       0.6878      1.35  |Q    V   |         |         |         |
7+45       0.6971      1.35  |Q    V   |         |         |         |
7+50       0.7065      1.36  |Q    V   |         |         |         |
7+55       0.7159      1.37  |Q    V   |         |         |         |
8+ 0       0.7254      1.38  |Q    V   |         |         |         |
8+ 5       0.7350      1.39  |Q    V   |         |         |         |
8+10       0.7446      1.40  |Q    V   |         |         |         |
8+15       0.7542      1.40  |Q    V   |         |         |         |
8+20       0.7640      1.41  |Q    V   |         |         |         |
8+25       0.7737      1.42  |Q    V   |         |         |         |
8+30       0.7836      1.43  |Q    V   |         |         |         |
8+35       0.7935      1.44  |Q    V   |         |         |         |
8+40       0.8035      1.45  |Q     V  |         |         |         |
8+45       0.8135      1.46  |Q     V  |         |         |         |
```

```
 8+50       0.8236      1.47  |Q     V  |          |          |          |
 8+55       0.8338      1.48  |Q     V  |          |          |          |
 9+ 0       0.8440      1.49  |Q     V  |          |          |          |
 9+ 5       0.8543      1.50  |Q     V  |          |          |          |
 9+10       0.8647      1.51  |Q     V  |          |          |          |
 9+15       0.8751      1.52  |Q     V  |          |          |          |
 9+20       0.8856      1.53  |Q     V  |          |          |          |
 9+25       0.8962      1.54  |Q     V  |          |          |          |
 9+30       0.9069      1.55  |Q     V  |          |          |          |
 9+35       0.9177      1.56  |Q      V |          |          |          |
 9+40       0.9285      1.57  |Q      V |          |          |          |
 9+45       0.9394      1.58  |Q      V |          |          |          |
 9+50       0.9504      1.60  |Q      V |          |          |          |
 9+55       0.9614      1.61  |Q      V |          |          |          |
10+ 0       0.9726      1.62  |Q      V |          |          |          |
10+ 5       0.9839      1.63  |Q      V |          |          |          |
10+10       0.9952      1.65  |Q      V |          |          |          |
10+15       1.0066      1.66  |Q      V |          |          |          |
10+20       1.0181      1.67  |Q      V |          |          |          |
10+25       1.0297      1.69  |Q       V|          |          |          |
10+30       1.0415      1.70  |Q       V|          |          |          |
10+35       1.0533      1.72  |Q       V|          |          |          |
10+40       1.0652      1.73  |Q       V|          |          |          |
10+45       1.0772      1.75  |Q       V|          |          |          |
10+50       1.0893      1.76  |Q       V|          |          |          |
10+55       1.1016      1.78  |Q       V|          |          |          |
11+ 0       1.1139      1.79  |Q       V|          |          |          |
11+ 5       1.1264      1.81  |Q       V|          |          |          |
11+10       1.1390      1.83  |Q        V          |          |          |
11+15       1.1517      1.84  |Q        V          |          |          |
11+20       1.1645      1.86  |Q        V          |          |          |
11+25       1.1774      1.88  |Q        V          |          |          |
11+30       1.1905      1.90  |Q        V          |          |          |
11+35       1.2038      1.92  |Q        V          |          |          |
11+40       1.2171      1.94  |Q        V          |          |          |
11+45       1.2306      1.96  |Q        V          |          |          |
11+50       1.2443      1.98  |Q        V          |          |          |
11+55       1.2581      2.00  |Q        |V         |          |          |
12+ 0       1.2721      2.03  |Q        |V         |          |          |
12+ 5       1.2861      2.04  |Q        |V         |          |          |
12+10       1.2997      1.98  |Q        |V         |          |          |
12+15       1.3126      1.88  |Q        |V         |          |          |
12+20       1.3253      1.84  |Q        |V         |          |          |
12+25       1.3381      1.85  |Q        |V         |          |          |
12+30       1.3510      1.87  |Q        |V         |          |          |
12+35       1.3640      1.90  |Q        |V         |          |          |
12+40       1.3773      1.92  |Q        | V        |          |          |
12+45       1.3907      1.95  |Q        | V        |          |          |
12+50       1.4044      1.98  |Q        | V        |          |          |
12+55       1.4183      2.02  |Q        | V        |          |          |
13+ 0       1.4324      2.05  |Q        | V        |          |          |
13+ 5       1.4468      2.08  |Q        | V        |          |          |
13+10       1.4614      2.12  |Q        | V        |          |          |
13+15       1.4762      2.16  |Q        | V        |          |          |
13+20       1.4914      2.20  |Q        |  V       |          |          |
13+25       1.5068      2.24  |Q        |  V       |          |          |
13+30       1.5225      2.28  |Q        |  V       |          |          |
13+35       1.5386      2.33  |Q        |  V       |          |          |
13+40       1.5549      2.38  |Q        |  V       |          |          |
13+45       1.5717      2.43  |Q        |  V       |          |          |
13+50       1.5888      2.48  |Q        |  V       |          |          |
13+55       1.6062      2.54  | Q       |   V      |          |          |
14+ 0       1.6241      2.60  | Q       |   V      |          |          |
14+ 5       1.6425      2.66  | Q       |   V      |          |          |
14+10       1.6613      2.73  | Q       |   V      |          |          |
14+15       1.6807      2.81  | Q       |   V      |          |          |
14+20       1.7005      2.89  | Q       |   V      |          |          |
14+25       1.7210      2.97  | Q       |    V     |          |          |
14+30       1.7421      3.06  | Q       |    V     |          |          |
14+35       1.7639      3.16  | Q       |    V     |          |          |
14+40       1.7864      3.27  | Q       |    V     |          |          |
14+45       1.8097      3.39  | Q       |    V     |          |          |
14+50       1.8339      3.51  | Q       |     V    |          |          |
14+55       1.8591      3.66  | Q       |     V    |          |          |
15+ 0       1.8854      3.81  |  Q      |     V    |          |          |
```



```
   21+20       4.3042      1.22  Q          |          |          |      V  |
   21+25       4.3126      1.21  Q          |          |          |      V  |
   21+30       4.3208      1.20  Q          |          |          |      V  |
   21+35       4.3290      1.19  Q          |          |          |       V |
   21+40       4.3371      1.17  Q          |          |          |       V |
   21+45       4.3451      1.16  Q          |          |          |       V |
   21+50       4.3530      1.15  Q          |          |          |       V |
   21+55       4.3609      1.14  Q          |          |          |       V |
   22+ 0       4.3687      1.13  Q          |          |          |       V |
   22+ 5       4.3765      1.13  Q          |          |          |       V |
   22+10       4.3842      1.12  Q          |          |          |       V |
   22+15       4.3918      1.11  Q          |          |          |       V |
   22+20       4.3993      1.10  Q          |          |          |       V |
   22+25       4.4069      1.09  Q          |          |          |       V |
   22+30       4.4143      1.08  Q          |          |          |       V |
   22+35       4.4217      1.07  Q          |          |          |       V |
   22+40       4.4290      1.06  Q          |          |          |       V |
   22+45       4.4363      1.06  Q          |          |          |       V |
   22+50       4.4435      1.05  Q          |          |          |        V|
   22+55       4.4507      1.04  Q          |          |          |        V|
   23+ 0       4.4578      1.03  Q          |          |          |        V|
   23+ 5       4.4649      1.03  Q          |          |          |        V|
   23+10       4.4719      1.02  Q          |          |          |        V|
   23+15       4.4789      1.01  Q          |          |          |        V|
   23+20       4.4858      1.01  Q          |          |          |        V|
   23+25       4.4927      1.00  Q          |          |          |        V|
   23+30       4.4995      0.99  Q          |          |          |        V|
   23+35       4.5063      0.99  Q          |          |          |        V|
   23+40       4.5131      0.98  Q          |          |          |        V|
   23+45       4.5198      0.97  Q          |          |          |        V|
   23+50       4.5264      0.97  Q          |          |          |        V|
   23+55       4.5330      0.96  Q          |          |          |        V|
   24+ 0       4.5396      0.95  Q          |          |          |        V|
   24+ 5       4.5458      0.90  Q          |          |          |        V|
   24+10       4.5502      0.64  Q          |          |          |        V|
   24+15       4.5521      0.26  Q          |          |          |        V|
   24+20       4.5526      0.08  Q          |          |          |        V|
   24+25       4.5528      0.02  Q          |          |          |        V|
   24+30       4.5528      0.01  Q          |          |          |        V|
-------------------------------------------------------------------------
```

BUILDING 5

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 5A
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 5APROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
23.30	1	0.60
Rainfall data for year 2		
23.30	6	0.70
Rainfall data for year 2		
23.30	24	1.20
Rainfall data for year 100		
23.30	1	1.00
Rainfall data for year 100		
23.30	6	1.90
Rainfall data for year 100		
23.30	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	23.30	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.33	0.100	69.0	69.0	4.49	0.263
20.97	0.900	98.0	98.0	0.20	0.931

Area-averaged catchment yield fraction, Y = 0.865
Area-averaged low loss fraction, Yb = 0.135
User entry of time of concentration = 0.210 (hours)
++
Watershed area = 23.30(Ac.)
Catchment Lag time = 0.168 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 49.6032
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.370(In)
Computed peak 30-minute rainfall = 0.758(In)
Specified peak 1-hour rainfall = 1.000(In)
Computed peak 3-hour rainfall = 1.482(In)
Specified peak 6-hour rainfall = 1.900(In)
Specified peak 24-hour rainfall = 3.400(In)

Rainfall depth area reduction factors:
Using a total area of 23.30(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.370(In)
30-minute factor = 0.999 Adjusted rainfall = 0.757(In)
1-hour factor = 0.999 Adjusted rainfall = 0.999(In)
3-hour factor = 1.000 Adjusted rainfall = 1.482(In)
6-hour factor = 1.000 Adjusted rainfall = 1.900(In)
24-hour factor = 1.000 Adjusted rainfall = 3.400(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 281.78 (CFS))	
1	4.508	12.704
2	29.352	70.006
3	68.171	109.385
4	89.593	60.364
5	96.887	20.554
6	98.711	5.139
7	99.597	2.498
8	100.000	1.135

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3697	0.3697
2	0.4878	0.1181
3	0.5737	0.0859
4	0.6437	0.0700
5	0.7038	0.0601
6	0.7570	0.0532
7	0.8052	0.0481
8	0.8494	0.0442
9	0.8903	0.0410
10	0.9287	0.0383
11	0.9647	0.0361
12	0.9989	0.0342
13	1.0280	0.0291
14	1.0558	0.0277
15	1.0822	0.0265
16	1.1076	0.0254
17	1.1320	0.0244
18	1.1555	0.0235
19	1.1781	0.0227
20	1.2000	0.0219
21	1.2212	0.0212
22	1.2418	0.0206
23	1.2618	0.0200
24	1.2812	0.0194
25	1.3001	0.0189

26	1.3186	0.0184
27	1.3366	0.0180
28	1.3541	0.0176
29	1.3713	0.0172
30	1.3881	0.0168
31	1.4045	0.0164
32	1.4207	0.0161
33	1.4364	0.0158
34	1.4519	0.0155
35	1.4671	0.0152
36	1.4820	0.0149
37	1.4967	0.0146
38	1.5110	0.0144
39	1.5252	0.0141
40	1.5390	0.0139
41	1.5527	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6551	0.0122
50	1.6672	0.0120
51	1.6790	0.0119
52	1.6908	0.0117
53	1.7023	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8007	0.0105
63	1.8111	0.0104
64	1.8213	0.0102
65	1.8315	0.0101
66	1.8415	0.0100
67	1.8515	0.0099
68	1.8613	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9218	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0668	0.0099
89	2.0767	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092

101	2.1899	0.0091
102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2870	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3949	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4581	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5116	0.0075
141	2.5192	0.0075
142	2.5266	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6070	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6354	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6703	0.0069
163	2.6773	0.0069
164	2.6841	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7046	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7317	0.0067
172	2.7383	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066

176	2.7649	0.0066
177	2.7715	0.0066
178	2.7780	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8105	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9050	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9234	0.0061
202	2.9295	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9717	0.0060
210	2.9777	0.0060
211	2.9836	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0537	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1272	0.0056
237	3.1328	0.0056
238	3.1383	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054

251	3.2092	0.0054
252	3.2146	0.0054
253	3.2199	0.0053
254	3.2252	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2517	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3949	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047

33	0.0055	0.0007	0.0048
34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068

108	0.0080	0.0011	0.0069
109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211

183	0.0265	0.0036	0.0229
184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0532	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3697	0.0046	0.3651
194	0.0700	0.0046	0.0654
195	0.0481	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0227	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054

258	0.0062	0.0008	0.0054
259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 54.05(CFS)

++

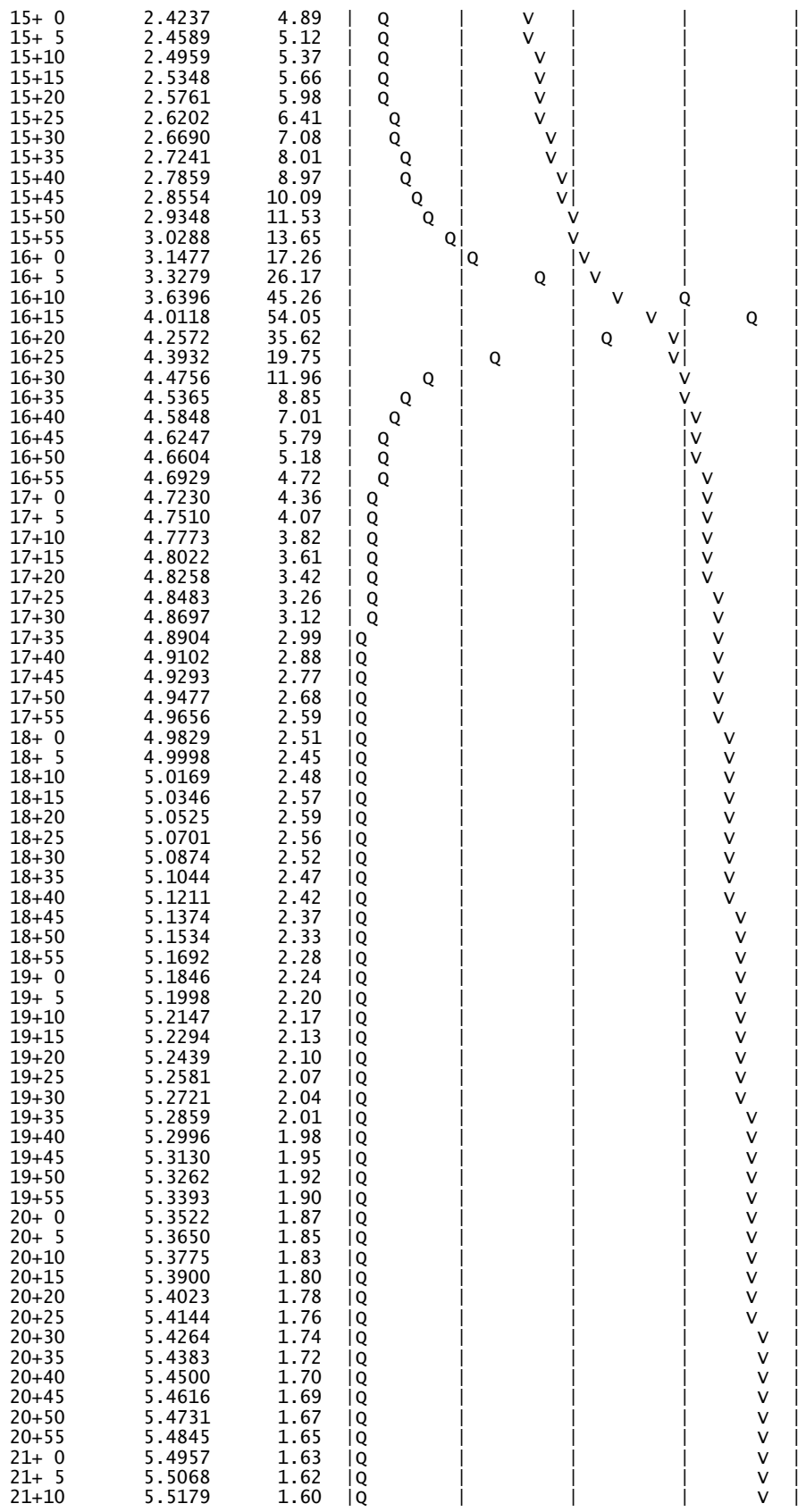
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0004	0.05	Q	|	|	|	|
0+10	0.0028	0.35	Q	|	|	|	|
0+15	0.0085	0.82	Q	|	|	|	|
0+20	0.0160	1.09	Q	|	|	|	|
0+25	0.0241	1.18	Q	|	|	|	|
0+30	0.0324	1.20	Q	|	|	|	|
0+35	0.0408	1.22	Q	|	|	|	|
0+40	0.0492	1.23	Q	|	|	|	|
0+45	0.0577	1.23	Q	|	|	|	|
0+50	0.0662	1.23	Q	|	|	|	|
0+55	0.0747	1.24	Q	|	|	|	|
1+ 0	0.0832	1.24	Q	|	|	|	|
1+ 5	0.0918	1.25	Q	|	|	|	|
1+10	0.1004	1.25	Q	|	|	|	|
1+15	0.1091	1.25	Q	|	|	|	|
1+20	0.1177	1.26	Q	|	|	|	|
1+25	0.1264	1.26	Q	|	|	|	|
1+30	0.1351	1.27	Q	|	|	|	|
1+35	0.1439	1.27	Q	|	|	|	|
1+40	0.1527	1.27	QV	|	|	|	|
1+45	0.1615	1.28	QV	|	|	|	|
1+50	0.1703	1.28	QV	|	|	|	|
1+55	0.1792	1.29	QV	|	|	|	|
2+ 0	0.1881	1.29	QV	|	|	|	|
2+ 5	0.1970	1.30	QV	|	|	|	|
2+10	0.2059	1.30	QV	|	|	|	|
2+15	0.2149	1.30	QV	|	|	|	|
2+20	0.2239	1.31	QV	|	|	|	|
2+25	0.2330	1.31	QV	|	|	|	|

```
2+30       0.2421      1.32  QV        |         |         |         |
2+35       0.2512      1.32  QV        |         |         |         |
2+40       0.2603      1.33  QV        |         |         |         |
2+45       0.2695      1.33  QV        |         |         |         |
2+50       0.2787      1.34  QV        |         |         |         |
2+55       0.2880      1.34  QV        |         |         |         |
3+ 0       0.2972      1.35  Q V       |         |         |         |
3+ 5       0.3066      1.35  Q V       |         |         |         |
3+10       0.3159      1.36  Q V       |         |         |         |
3+15       0.3253      1.36  Q V       |         |         |         |
3+20       0.3347      1.37  Q V       |         |         |         |
3+25       0.3441      1.37  Q V       |         |         |         |
3+30       0.3536      1.38  Q V       |         |         |         |
3+35       0.3632      1.38  Q V       |         |         |         |
3+40       0.3727      1.39  Q V       |         |         |         |
3+45       0.3823      1.39  Q V       |         |         |         |
3+50       0.3920      1.40  Q V       |         |         |         |
3+55       0.4016      1.40  Q V       |         |         |         |
4+ 0       0.4113      1.41  Q V       |         |         |         |
4+ 5       0.4211      1.42  Q V       |         |         |         |
4+10       0.4309      1.42  Q V       |         |         |         |
4+15       0.4407      1.43  Q  V      |         |         |         |
4+20       0.4506      1.43  Q  V      |         |         |         |
4+25       0.4605      1.44  Q  V      |         |         |         |
4+30       0.4704      1.44  Q  V      |         |         |         |
4+35       0.4804      1.45  Q  V      |         |         |         |
4+40       0.4904      1.46  Q  V      |         |         |         |
4+45       0.5005      1.46  Q  V      |         |         |         |
4+50       0.5106      1.47  Q  V      |         |         |         |
4+55       0.5208      1.48  Q  V      |         |         |         |
5+ 0       0.5310      1.48  Q  V      |         |         |         |
5+ 5       0.5412      1.49  Q  V      |         |         |         |
5+10       0.5515      1.49  Q  V      |         |         |         |
5+15       0.5619      1.50  |Q V      |         |         |         |
5+20       0.5722      1.51  |Q V      |         |         |         |
5+25       0.5827      1.51  |Q V      |         |         |         |
5+30       0.5932      1.52  |Q  V     |         |         |         |
5+35       0.6037      1.53  |Q  V     |         |         |         |
5+40       0.6142      1.53  |Q  V     |         |         |         |
5+45       0.6249      1.54  |Q  V     |         |         |         |
5+50       0.6355      1.55  |Q  V     |         |         |         |
5+55       0.6462      1.56  |Q  V     |         |         |         |
6+ 0       0.6570      1.56  |Q  V     |         |         |         |
6+ 5       0.6678      1.57  |Q  V     |         |         |         |
6+10       0.6787      1.58  |Q  V     |         |         |         |
6+15       0.6896      1.59  |Q  V     |         |         |         |
6+20       0.7006      1.59  |Q  V     |         |         |         |
6+25       0.7116      1.60  |Q  V     |         |         |         |
6+30       0.7227      1.61  |Q  V     |         |         |         |
6+35       0.7339      1.62  |Q   V    |         |         |         |
6+40       0.7451      1.63  |Q   V    |         |         |         |
6+45       0.7563      1.63  |Q   V    |         |         |         |
6+50       0.7676      1.64  |Q   V    |         |         |         |
6+55       0.7790      1.65  |Q   V    |         |         |         |
7+ 0       0.7904      1.66  |Q   V    |         |         |         |
7+ 5       0.8019      1.67  |Q   V    |         |         |         |
7+10       0.8135      1.68  |Q   V    |         |         |         |
7+15       0.8251      1.69  |Q   V    |         |         |         |
7+20       0.8368      1.70  |Q   V    |         |         |         |
7+25       0.8485      1.70  |Q   V    |         |         |         |
7+30       0.8603      1.71  |Q   V    |         |         |         |
7+35       0.8722      1.72  |Q   V    |         |         |         |
7+40       0.8841      1.73  |Q    V   |         |         |         |
7+45       0.8961      1.74  |Q    V   |         |         |         |
7+50       0.9082      1.75  |Q    V   |         |         |         |
7+55       0.9203      1.76  |Q    V   |         |         |         |
8+ 0       0.9326      1.77  |Q    V   |         |         |         |
8+ 5       0.9448      1.78  |Q    V   |         |         |         |
8+10       0.9572      1.79  |Q    V   |         |         |         |
8+15       0.9696      1.81  |Q    V   |         |         |         |
8+20       0.9822      1.82  |Q    V   |         |         |         |
8+25       0.9947      1.83  |Q    V   |         |         |         |
8+30       1.0074      1.84  |Q    V   |         |         |         |
8+35       1.0202      1.85  |Q    V   |         |         |         |
8+40       1.0330      1.86  |Q     V  |         |         |         |
```

8+45	1.0459	1.87	Q V				
8+50	1.0589	1.89	Q V				
8+55	1.0720	1.90	Q V				
9+ 0	1.0851	1.91	Q V				
9+ 5	1.0984	1.92	Q V				
9+10	1.1117	1.94	Q V				
9+15	1.1252	1.95	Q V				
9+20	1.1387	1.96	Q V				
9+25	1.1523	1.98	Q V				
9+30	1.1660	1.99	Q V				
9+35	1.1799	2.01	Q V				
9+40	1.1938	2.02	Q V				
9+45	1.2078	2.04	Q V				
9+50	1.2220	2.05	Q V				
9+55	1.2362	2.07	Q V				
10+ 0	1.2506	2.08	Q V				
10+ 5	1.2650	2.10	Q V				
10+10	1.2796	2.12	Q V				
10+15	1.2943	2.13	Q V				
10+20	1.3091	2.15	Q V				
10+25	1.3240	2.17	Q V				
10+30	1.3391	2.19	Q V				
10+35	1.3543	2.21	Q V				
10+40	1.3696	2.22	Q V				
10+45	1.3851	2.24	Q V				
10+50	1.4007	2.26	Q V				
10+55	1.4164	2.29	Q V				
11+ 0	1.4323	2.31	Q V				
11+ 5	1.4483	2.33	Q V				
11+10	1.4645	2.35	Q V				
11+15	1.4808	2.37	Q V				
11+20	1.4973	2.40	Q V				
11+25	1.5140	2.42	Q V				
11+30	1.5308	2.44	Q V				
11+35	1.5478	2.47	Q V				
11+40	1.5650	2.50	Q V				
11+45	1.5824	2.52	Q V				
11+50	1.5999	2.55	Q V				
11+55	1.6177	2.58	Q V				
12+ 0	1.6357	2.61	Q V				
12+ 5	1.6537	2.62	Q V				
12+10	1.6713	2.55	Q V				
12+15	1.6880	2.43	Q V				
12+20	1.7044	2.38	Q V				
12+25	1.7208	2.38	Q V				
12+30	1.7374	2.41	Q V				
12+35	1.7542	2.44	Q V				
12+40	1.7712	2.47	Q V				
12+45	1.7885	2.51	Q V				
12+50	1.8061	2.55	Q V				
12+55	1.8239	2.59	Q V				
13+ 0	1.8421	2.63	Q V				
13+ 5	1.8605	2.68	Q V				
13+10	1.8793	2.73	Q V				
13+15	1.8984	2.77	Q V				
13+20	1.9179	2.82	Q V				
13+25	1.9377	2.88	Q V				
13+30	1.9579	2.93	Q V				
13+35	1.9785	2.99	Q V				
13+40	1.9995	3.05	Q V				
13+45	2.0210	3.12	Q V				
13+50	2.0429	3.19	Q V				
13+55	2.0654	3.26	Q V				
14+ 0	2.0884	3.34	Q V				
14+ 5	2.1120	3.42	Q V				
14+10	2.1361	3.51	Q V				
14+15	2.1610	3.61	Q V				
14+20	2.1865	3.71	Q V				
14+25	2.2128	3.82	Q V				
14+30	2.2399	3.93	Q V				
14+35	2.2679	4.06	Q V				
14+40	2.2968	4.20	Q V				
14+45	2.3267	4.35	Q V				
14+50	2.3577	4.51	Q V				
14+55	2.3900	4.69	Q V				



```
  21+15       5.5288      1.59  |Q        |         |         |      V  |
  21+20       5.5396      1.57  |Q        |         |         |      V  |
  21+25       5.5503      1.56  |Q        |         |         |      V  |
  21+30       5.5609      1.54  |Q        |         |         |      V  |
  21+35       5.5715      1.53  |Q        |         |         |       V |
  21+40       5.5819      1.51  |Q        |         |         |       V |
  21+45       5.5922      1.50  |Q        |         |         |       V |
  21+50       5.6025      1.49  Q         |         |         |       V |
  21+55       5.6126      1.47  Q         |         |         |       V |
  22+ 0       5.6227      1.46  Q         |         |         |       V |
  22+ 5       5.6327      1.45  Q         |         |         |       V |
  22+10       5.6426      1.44  Q         |         |         |       V |
  22+15       5.6524      1.43  Q         |         |         |       V |
  22+20       5.6621      1.42  Q         |         |         |       V |
  22+25       5.6718      1.40  Q         |         |         |       V |
  22+30       5.6814      1.39  Q         |         |         |       V |
  22+35       5.6909      1.38  Q         |         |         |       V |
  22+40       5.7004      1.37  Q         |         |         |       V |
  22+45       5.7098      1.36  Q         |         |         |       V |
  22+50       5.7191      1.35  Q         |         |         |        V|
  22+55       5.7283      1.34  Q         |         |         |        V|
  23+ 0       5.7375      1.33  Q         |         |         |        V|
  23+ 5       5.7466      1.32  Q         |         |         |        V|
  23+10       5.7556      1.31  Q         |         |         |        V|
  23+15       5.7646      1.30  Q         |         |         |        V|
  23+20       5.7735      1.30  Q         |         |         |        V|
  23+25       5.7824      1.29  Q         |         |         |        V|
  23+30       5.7912      1.28  Q         |         |         |        V|
  23+35       5.7999      1.27  Q         |         |         |        V|
  23+40       5.8086      1.26  Q         |         |         |        V|
  23+45       5.8173      1.25  Q         |         |         |        V|
  23+50       5.8258      1.25  Q         |         |         |        V|
  23+55       5.8344      1.24  Q         |         |         |        V|
  24+ 0       5.8428      1.23  Q         |         |         |        V|
  24+ 5       5.8509      1.17  Q         |         |         |        V|
  24+10       5.8568      0.86  Q         |         |         |        V|
  24+15       5.8595      0.39  Q         |         |         |        V|
  24+20       5.8603      0.13  Q         |         |         |        V|
  24+25       5.8606      0.04  Q         |         |         |        V|
  24+30       5.8607      0.02  Q         |         |         |        V|
  24+35       5.8607      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 5B
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 5BPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
37.00	1	0.60
Rainfall data for year 2		
37.00	6	0.70
Rainfall data for year 2		
37.00	24	1.20
Rainfall data for year 100		
37.00	1	1.00
Rainfall data for year 100		
37.00	6	1.90
Rainfall data for year 100		
37.00	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	37.00	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
3.70	0.100	69.0	69.0	4.49	0.263
33.30	0.900	98.0	98.0	0.20	0.931

Area-averaged catchment yield fraction, Y = 0.865
Area-averaged low loss fraction, Yb = 0.135
User entry of time of concentration = 0.210 (hours)
++
Watershed area = 37.00(Ac.)
Catchment Lag time = 0.168 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 49.6032
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.370(In)
Computed peak 30-minute rainfall = 0.758(In)
Specified peak 1-hour rainfall = 1.000(In)
Computed peak 3-hour rainfall = 1.482(In)
Specified peak 6-hour rainfall = 1.900(In)
Specified peak 24-hour rainfall = 3.400(In)

Rainfall depth area reduction factors:
Using a total area of 37.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998 Adjusted rainfall = 0.369(In)
30-minute factor = 0.998 Adjusted rainfall = 0.757(In)
1-hour factor = 0.998 Adjusted rainfall = 0.998(In)
3-hour factor = 1.000 Adjusted rainfall = 1.482(In)
6-hour factor = 1.000 Adjusted rainfall = 1.900(In)
24-hour factor = 1.000 Adjusted rainfall = 3.400(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 447.47 (CFS))	
1	4.508	20.174
2	29.352	111.169
3	68.171	173.701
4	89.593	95.857
5	96.887	32.639
6	98.711	8.160
7	99.597	3.967
8	100.000	1.802

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3695	0.3695
2	0.4875	0.1180
3	0.5734	0.0858
4	0.6433	0.0699
5	0.7033	0.0601
6	0.7565	0.0532
7	0.8047	0.0481
8	0.8488	0.0441
9	0.8898	0.0409
10	0.9281	0.0383
11	0.9641	0.0361
12	0.9983	0.0341
13	1.0274	0.0292
14	1.0552	0.0277
15	1.0817	0.0265
16	1.1071	0.0254
17	1.1315	0.0244
18	1.1550	0.0235
19	1.1776	0.0227
20	1.1996	0.0219
21	1.2208	0.0212
22	1.2414	0.0206
23	1.2614	0.0200
24	1.2808	0.0195
25	1.2998	0.0189

26	1.3183	0.0185
27	1.3363	0.0180
28	1.3539	0.0176
29	1.3710	0.0172
30	1.3879	0.0168
31	1.4043	0.0165
32	1.4205	0.0161
33	1.4363	0.0158
34	1.4518	0.0155
35	1.4670	0.0152
36	1.4819	0.0149
37	1.4965	0.0146
38	1.5109	0.0144
39	1.5250	0.0141
40	1.5389	0.0139
41	1.5526	0.0137
42	1.5661	0.0135
43	1.5793	0.0133
44	1.5924	0.0131
45	1.6053	0.0129
46	1.6180	0.0127
47	1.6305	0.0125
48	1.6428	0.0123
49	1.6550	0.0122
50	1.6671	0.0120
51	1.6789	0.0119
52	1.6907	0.0117
53	1.7022	0.0116
54	1.7137	0.0114
55	1.7250	0.0113
56	1.7362	0.0112
57	1.7472	0.0110
58	1.7581	0.0109
59	1.7689	0.0108
60	1.7796	0.0107
61	1.7902	0.0106
62	1.8007	0.0105
63	1.8110	0.0104
64	1.8213	0.0102
65	1.8314	0.0101
66	1.8415	0.0100
67	1.8514	0.0100
68	1.8613	0.0099
69	1.8710	0.0098
70	1.8807	0.0097
71	1.8903	0.0096
72	1.8998	0.0095
73	1.9108	0.0110
74	1.9218	0.0109
75	1.9326	0.0109
76	1.9434	0.0108
77	1.9541	0.0107
78	1.9647	0.0106
79	1.9752	0.0105
80	1.9857	0.0105
81	1.9961	0.0104
82	2.0064	0.0103
83	2.0166	0.0102
84	2.0268	0.0102
85	2.0369	0.0101
86	2.0469	0.0100
87	2.0569	0.0100
88	2.0668	0.0099
89	2.0766	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1057	0.0096
93	2.1153	0.0096
94	2.1248	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1530	0.0093
98	2.1623	0.0093
99	2.1715	0.0092
100	2.1807	0.0092

101	2.1898	0.0091
102	2.1989	0.0091
103	2.2079	0.0090
104	2.2169	0.0090
105	2.2258	0.0089
106	2.2347	0.0089
107	2.2435	0.0088
108	2.2523	0.0088
109	2.2610	0.0087
110	2.2697	0.0087
111	2.2784	0.0086
112	2.2870	0.0086
113	2.2955	0.0086
114	2.3040	0.0085
115	2.3125	0.0085
116	2.3209	0.0084
117	2.3293	0.0084
118	2.3376	0.0083
119	2.3459	0.0083
120	2.3542	0.0083
121	2.3624	0.0082
122	2.3706	0.0082
123	2.3787	0.0081
124	2.3868	0.0081
125	2.3949	0.0081
126	2.4029	0.0080
127	2.4109	0.0080
128	2.4188	0.0080
129	2.4268	0.0079
130	2.4346	0.0079
131	2.4425	0.0078
132	2.4503	0.0078
133	2.4581	0.0078
134	2.4658	0.0077
135	2.4735	0.0077
136	2.4812	0.0077
137	2.4888	0.0076
138	2.4964	0.0076
139	2.5040	0.0076
140	2.5116	0.0075
141	2.5191	0.0075
142	2.5266	0.0075
143	2.5340	0.0075
144	2.5414	0.0074
145	2.5488	0.0074
146	2.5562	0.0074
147	2.5635	0.0073
148	2.5708	0.0073
149	2.5781	0.0073
150	2.5854	0.0072
151	2.5926	0.0072
152	2.5998	0.0072
153	2.6070	0.0072
154	2.6141	0.0071
155	2.6212	0.0071
156	2.6283	0.0071
157	2.6354	0.0071
158	2.6424	0.0070
159	2.6494	0.0070
160	2.6564	0.0070
161	2.6633	0.0070
162	2.6703	0.0069
163	2.6772	0.0069
164	2.6841	0.0069
165	2.6909	0.0069
166	2.6978	0.0068
167	2.7046	0.0068
168	2.7114	0.0068
169	2.7181	0.0068
170	2.7249	0.0067
171	2.7316	0.0067
172	2.7383	0.0067
173	2.7449	0.0067
174	2.7516	0.0067
175	2.7582	0.0066

176	2.7648	0.0066
177	2.7714	0.0066
178	2.7780	0.0066
179	2.7845	0.0065
180	2.7910	0.0065
181	2.7975	0.0065
182	2.8040	0.0065
183	2.8105	0.0065
184	2.8169	0.0064
185	2.8233	0.0064
186	2.8297	0.0064
187	2.8361	0.0064
188	2.8425	0.0064
189	2.8488	0.0063
190	2.8551	0.0063
191	2.8614	0.0063
192	2.8677	0.0063
193	2.8740	0.0063
194	2.8802	0.0062
195	2.8864	0.0062
196	2.8926	0.0062
197	2.8988	0.0062
198	2.9050	0.0062
199	2.9111	0.0062
200	2.9173	0.0061
201	2.9234	0.0061
202	2.9295	0.0061
203	2.9356	0.0061
204	2.9416	0.0061
205	2.9477	0.0060
206	2.9537	0.0060
207	2.9597	0.0060
208	2.9657	0.0060
209	2.9717	0.0060
210	2.9776	0.0060
211	2.9836	0.0059
212	2.9895	0.0059
213	2.9954	0.0059
214	3.0013	0.0059
215	3.0072	0.0059
216	3.0131	0.0059
217	3.0189	0.0058
218	3.0247	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0421	0.0058
222	3.0479	0.0058
223	3.0537	0.0058
224	3.0594	0.0057
225	3.0651	0.0057
226	3.0709	0.0057
227	3.0765	0.0057
228	3.0822	0.0057
229	3.0879	0.0057
230	3.0936	0.0057
231	3.0992	0.0056
232	3.1048	0.0056
233	3.1104	0.0056
234	3.1160	0.0056
235	3.1216	0.0056
236	3.1272	0.0056
237	3.1327	0.0056
238	3.1383	0.0055
239	3.1438	0.0055
240	3.1493	0.0055
241	3.1548	0.0055
242	3.1603	0.0055
243	3.1658	0.0055
244	3.1713	0.0055
245	3.1767	0.0054
246	3.1821	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054

251	3.2091	0.0054
252	3.2145	0.0054
253	3.2198	0.0053
254	3.2252	0.0053
255	3.2305	0.0053
256	3.2358	0.0053
257	3.2411	0.0053
258	3.2464	0.0053
259	3.2517	0.0053
260	3.2569	0.0053
261	3.2622	0.0053
262	3.2674	0.0052
263	3.2727	0.0052
264	3.2779	0.0052
265	3.2831	0.0052
266	3.2883	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3038	0.0052
270	3.3090	0.0052
271	3.3141	0.0051
272	3.3192	0.0051
273	3.3243	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3396	0.0051
277	3.3447	0.0051
278	3.3498	0.0051
279	3.3548	0.0051
280	3.3599	0.0050
281	3.3649	0.0050
282	3.3699	0.0050
283	3.3749	0.0050
284	3.3799	0.0050
285	3.3849	0.0050
286	3.3899	0.0050
287	3.3949	0.0050
288	3.3998	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047

33	0.0055	0.0007	0.0048
34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0067	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068

108	0.0080	0.0011	0.0069
109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0132
171	0.0158	0.0021	0.0137
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0149
175	0.0180	0.0024	0.0156
176	0.0185	0.0025	0.0160
177	0.0195	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0184
180	0.0219	0.0030	0.0190
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211

183	0.0265	0.0036	0.0229
184	0.0277	0.0038	0.0240
185	0.0341	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0409	0.0046	0.0364
188	0.0441	0.0046	0.0396
189	0.0532	0.0046	0.0486
190	0.0601	0.0046	0.0555
191	0.0858	0.0046	0.0813
192	0.1180	0.0046	0.1135
193	0.3695	0.0046	0.3649
194	0.0699	0.0046	0.0654
195	0.0481	0.0046	0.0436
196	0.0383	0.0046	0.0337
197	0.0292	0.0039	0.0252
198	0.0254	0.0034	0.0220
199	0.0227	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0165	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0017	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0100	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054

258	0.0062	0.0008	0.0054
259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 85.78(CFS)

++

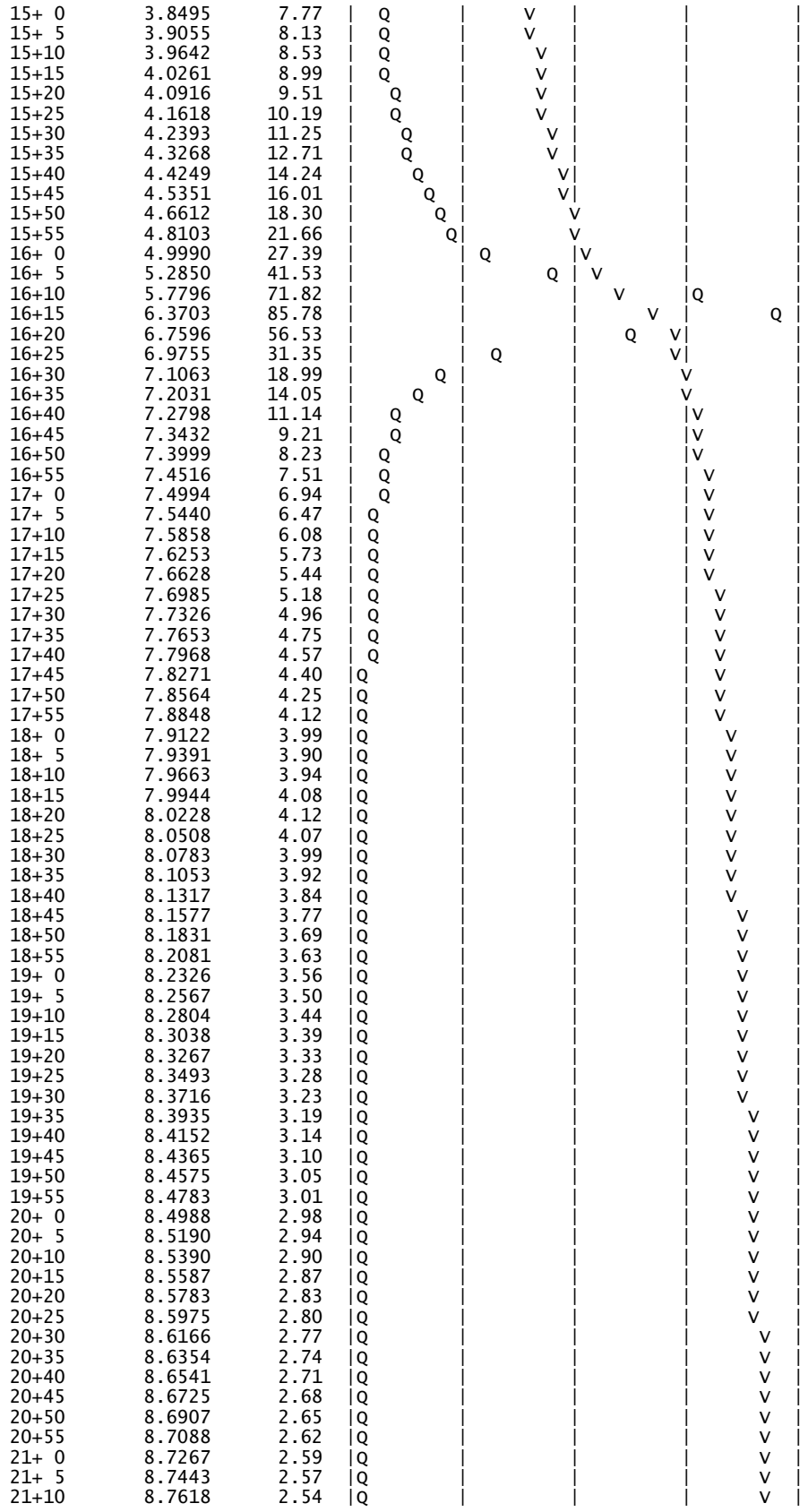
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	22.5	45.0	67.5	90.0
0+ 5	0.0006	0.09	Q	|	|	|	|
0+10	0.0045	0.56	Q	|	|	|	|
0+15	0.0135	1.31	Q	|	|	|	|
0+20	0.0254	1.72	Q	|	|	|	|
0+25	0.0383	1.87	Q	|	|	|	|
0+30	0.0514	1.91	Q	|	|	|	|
0+35	0.0647	1.93	Q	|	|	|	|
0+40	0.0781	1.95	Q	|	|	|	|
0+45	0.0916	1.95	Q	|	|	|	|
0+50	0.1051	1.96	Q	|	|	|	|
0+55	0.1186	1.97	Q	|	|	|	|
1+ 0	0.1322	1.97	Q	|	|	|	|
1+ 5	0.1458	1.98	Q	|	|	|	|
1+10	0.1595	1.98	Q	|	|	|	|
1+15	0.1732	1.99	Q	|	|	|	|
1+20	0.1870	2.00	Q	|	|	|	|
1+25	0.2008	2.00	Q	|	|	|	|
1+30	0.2146	2.01	Q	|	|	|	|
1+35	0.2285	2.02	Q	|	|	|	|
1+40	0.2424	2.02	QV	|	|	|	|
1+45	0.2564	2.03	QV	|	|	|	|
1+50	0.2704	2.04	QV	|	|	|	|
1+55	0.2845	2.04	QV	|	|	|	|
2+ 0	0.2986	2.05	QV	|	|	|	|
2+ 5	0.3128	2.06	QV	|	|	|	|
2+10	0.3270	2.06	QV	|	|	|	|
2+15	0.3413	2.07	QV	|	|	|	|
2+20	0.3556	2.08	QV	|	|	|	|
2+25	0.3700	2.09	QV	|	|	|	|

```
2+30       0.3844      2.09  QV        |         |         |         |
2+35       0.3989      2.10  QV        |         |         |         |
2+40       0.4134      2.11  QV        |         |         |         |
2+45       0.4280      2.12  QV        |         |         |         |
2+50       0.4426      2.12  QV        |         |         |         |
2+55       0.4573      2.13  QV        |         |         |         |
3+ 0       0.4720      2.14  Q V       |         |         |         |
3+ 5       0.4868      2.15  Q V       |         |         |         |
3+10       0.5017      2.16  Q V       |         |         |         |
3+15       0.5166      2.16  Q V       |         |         |         |
3+20       0.5315      2.17  Q V       |         |         |         |
3+25       0.5465      2.18  Q V       |         |         |         |
3+30       0.5616      2.19  Q V       |         |         |         |
3+35       0.5767      2.20  Q V       |         |         |         |
3+40       0.5919      2.20  Q V       |         |         |         |
3+45       0.6071      2.21  Q V       |         |         |         |
3+50       0.6224      2.22  Q V       |         |         |         |
3+55       0.6378      2.23  Q V       |         |         |         |
4+ 0       0.6532      2.24  Q V       |         |         |         |
4+ 5       0.6687      2.25  Q V       |         |         |         |
4+10       0.6842      2.26  |QV       |         |         |         |
4+15       0.6998      2.27  |Q V       |         |         |         |
4+20       0.7155      2.28  |Q V       |         |         |         |
4+25       0.7312      2.28  |Q V       |         |         |         |
4+30       0.7470      2.29  |Q V       |         |         |         |
4+35       0.7629      2.30  |Q V       |         |         |         |
4+40       0.7788      2.31  |Q V       |         |         |         |
4+45       0.7948      2.32  |Q V       |         |         |         |
4+50       0.8109      2.33  |Q V       |         |         |         |
4+55       0.8270      2.34  |Q V       |         |         |         |
5+ 0       0.8432      2.35  |Q V       |         |         |         |
5+ 5       0.8595      2.36  |Q V       |         |         |         |
5+10       0.8758      2.37  |Q V       |         |         |         |
5+15       0.8923      2.38  |Q V       |         |         |         |
5+20       0.9087      2.39  |Q V       |         |         |         |
5+25       0.9253      2.40  |Q V       |         |         |         |
5+30       0.9419      2.42  |Q  V      |         |         |         |
5+35       0.9586      2.43  |Q  V      |         |         |         |
5+40       0.9754      2.44  |Q  V      |         |         |         |
5+45       0.9923      2.45  |Q  V      |         |         |         |
5+50       1.0092      2.46  |Q  V      |         |         |         |
5+55       1.0263      2.47  |Q  V      |         |         |         |
6+ 0       1.0434      2.48  |Q  V      |         |         |         |
6+ 5       1.0605      2.49  |Q  V      |         |         |         |
6+10       1.0778      2.51  |Q  V      |         |         |         |
6+15       1.0952      2.52  |Q  V      |         |         |         |
6+20       1.1126      2.53  |Q  V      |         |         |         |
6+25       1.1301      2.54  |Q  V      |         |         |         |
6+30       1.1477      2.56  |Q  V      |         |         |         |
6+35       1.1654      2.57  |Q   V     |         |         |         |
6+40       1.1832      2.58  |Q   V     |         |         |         |
6+45       1.2011      2.60  |Q   V     |         |         |         |
6+50       1.2190      2.61  |Q   V     |         |         |         |
6+55       1.2371      2.62  |Q   V     |         |         |         |
7+ 0       1.2552      2.64  |Q   V     |         |         |         |
7+ 5       1.2735      2.65  |Q   V     |         |         |         |
7+10       1.2918      2.66  |Q   V     |         |         |         |
7+15       1.3103      2.68  |Q   V     |         |         |         |
7+20       1.3288      2.69  |Q   V     |         |         |         |
7+25       1.3474      2.71  |Q   V     |         |         |         |
7+30       1.3662      2.72  |Q   V     |         |         |         |
7+35       1.3850      2.74  |Q   V     |         |         |         |
7+40       1.4040      2.75  |Q    V    |         |         |         |
7+45       1.4231      2.77  |Q    V    |         |         |         |
7+50       1.4422      2.78  |Q    V    |         |         |         |
7+55       1.4615      2.80  |Q    V    |         |         |         |
8+ 0       1.4809      2.82  |Q    V    |         |         |         |
8+ 5       1.5004      2.83  |Q    V    |         |         |         |
8+10       1.5201      2.85  |Q    V    |         |         |         |
8+15       1.5398      2.87  |Q    V    |         |         |         |
8+20       1.5597      2.88  |Q    V    |         |         |         |
8+25       1.5797      2.90  |Q    V    |         |         |         |
8+30       1.5998      2.92  |Q    V    |         |         |         |
8+35       1.6200      2.94  |Q    V    |         |         |         |
8+40       1.6404      2.96  |Q     V   |         |         |         |
```

8+45	1.6609	2.98	Q	V			
8+50	1.6815	3.00	Q	V			
8+55	1.7023	3.02	Q	V			
9+ 0	1.7232	3.04	Q	V			
9+ 5	1.7443	3.06	Q	V			
9+10	1.7654	3.08	Q	V			
9+15	1.7868	3.10	Q	V			
9+20	1.8083	3.12	Q	V			
9+25	1.8299	3.14	Q	V			
9+30	1.8517	3.16	Q	V			
9+35	1.8737	3.19	Q	V			
9+40	1.8958	3.21	Q	V			
9+45	1.9180	3.23	Q	V			
9+50	1.9405	3.26	Q	V			
9+55	1.9631	3.28	Q	V			
10+ 0	1.9859	3.31	Q	V			
10+ 5	2.0089	3.34	Q	V			
10+10	2.0320	3.36	Q	V			
10+15	2.0554	3.39	Q	V			
10+20	2.0789	3.42	Q	V			
10+25	2.1026	3.44	Q	V			
10+30	2.1265	3.47	Q	V			
10+35	2.1506	3.50	Q	V			
10+40	2.1750	3.53	Q	V			
10+45	2.1995	3.56	Q	V			
10+50	2.2243	3.60	Q	V			
10+55	2.2493	3.63	Q	V			
11+ 0	2.2745	3.66	Q	V			
11+ 5	2.3000	3.70	Q	V			
11+10	2.3256	3.73	Q	V			
11+15	2.3516	3.77	Q	V			
11+20	2.3778	3.80	Q	V			
11+25	2.4043	3.84	Q	V			
11+30	2.4310	3.88	Q	V			
11+35	2.4580	3.92	Q	V			
11+40	2.4853	3.96	Q	V			
11+45	2.5129	4.00	Q	V			
11+50	2.5407	4.05	Q	V			
11+55	2.5689	4.09	Q	V			
12+ 0	2.5974	4.14	Q	V			
12+ 5	2.6261	4.16	Q	V			
12+10	2.6540	4.05	Q	V			
12+15	2.6806	3.86	Q	V			
12+20	2.7066	3.78	Q	V			
12+25	2.7326	3.78	Q	V			
12+30	2.7590	3.82	Q	V			
12+35	2.7857	3.87	Q	V			
12+40	2.8127	3.93	Q	V			
12+45	2.8402	3.99	Q	V			
12+50	2.8681	4.05	Q	V			
12+55	2.8964	4.12	Q	V			
13+ 0	2.9253	4.18	Q	V			
13+ 5	2.9546	4.25	Q	V			
13+10	2.9844	4.33	Q	V			
13+15	3.0147	4.41	Q	V			
13+20	3.0456	4.49	Q	V			
13+25	3.0771	4.57	Q	V			
13+30	3.1092	4.66	Q	V			
13+35	3.1419	4.75	Q	V			
13+40	3.1753	4.85	Q	V			
13+45	3.2094	4.95	Q	V			
13+50	3.2443	5.06	Q	V			
13+55	3.2799	5.18	Q	V			
14+ 0	3.3164	5.30	Q	V			
14+ 5	3.3539	5.43	Q	V			
14+10	3.3923	5.58	Q	V			
14+15	3.4318	5.73	Q	V			
14+20	3.4724	5.90	Q	V			
14+25	3.5142	6.07	Q	V			
14+30	3.5572	6.25	Q	V			
14+35	3.6017	6.46	Q	V			
14+40	3.6476	6.67	Q	V			
14+45	3.6952	6.91	Q	V			
14+50	3.7446	7.17	Q	V			
14+55	3.7960	7.46	Q	V			



```
  21+15       8.7792      2.52  |Q        |         |         |      V  |
  21+20       8.7964      2.49  |Q        |         |         |      V  |
  21+25       8.8134      2.47  |Q        |         |         |      V  |
  21+30       8.8302      2.45  |Q        |         |         |      V  |
  21+35       8.8469      2.43  |Q        |         |         |       V |
  21+40       8.8635      2.40  |Q        |         |         |       V |
  21+45       8.8799      2.38  |Q        |         |         |       V |
  21+50       8.8962      2.36  |Q        |         |         |       V |
  21+55       8.9123      2.34  |Q        |         |         |       V |
  22+ 0       8.9283      2.32  |Q        |         |         |       V |
  22+ 5       8.9441      2.30  |Q        |         |         |       V |
  22+10       8.9599      2.28  |Q        |         |         |       V |
  22+15       8.9755      2.27  |Q        |         |         |       V |
  22+20       8.9910      2.25  Q         |         |         |       V |
  22+25       9.0063      2.23  Q         |         |         |       V |
  22+30       9.0215      2.21  Q         |         |         |       V |
  22+35       9.0367      2.20  Q         |         |         |       V |
  22+40       9.0517      2.18  Q         |         |         |       V |
  22+45       9.0666      2.16  Q         |         |         |       V |
  22+50       9.0813      2.15  Q         |         |         |        V|
  22+55       9.0960      2.13  Q         |         |         |        V|
  23+ 0       9.1106      2.12  Q         |         |         |        V|
  23+ 5       9.1251      2.10  Q         |         |         |        V|
  23+10       9.1394      2.09  Q         |         |         |        V|
  23+15       9.1537      2.07  Q         |         |         |        V|
  23+20       9.1679      2.06  Q         |         |         |        V|
  23+25       9.1819      2.04  Q         |         |         |        V|
  23+30       9.1959      2.03  Q         |         |         |        V|
  23+35       9.2098      2.02  Q         |         |         |        V|
  23+40       9.2236      2.00  Q         |         |         |        V|
  23+45       9.2373      1.99  Q         |         |         |        V|
  23+50       9.2509      1.98  Q         |         |         |        V|
  23+55       9.2644      1.96  Q         |         |         |        V|
  24+ 0       9.2779      1.95  Q         |         |         |        V|
  24+ 5       9.2907      1.85  Q         |         |         |        V|
  24+10       9.3001      1.37  Q         |         |         |        V|
  24+15       9.3043      0.62  Q         |         |         |        V|
  24+20       9.3057      0.20  Q         |         |         |        V|
  24+25       9.3061      0.06  Q         |         |         |        V|
  24+30       9.3063      0.02  Q         |         |         |        V|
  24+35       9.3063      0.01  Q         |         |         |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 5C
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 5CPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
13.00	1	0.60
Rainfall data for year 2		
13.00	6	0.70
Rainfall data for year 2		
13.00	24	1.20
Rainfall data for year 100		
13.00	1	1.00
Rainfall data for year 100		
13.00	6	1.90
Rainfall data for year 100		
13.00	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	13.00	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.30	0.100	69.0	69.0	4.49	0.263
11.70	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      13.00(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      13.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       157.22 (CFS))

  1                5.469                   8.599
  2               35.337                  46.957
  3               75.925                  63.813
  4               93.130                  27.049
  5               98.077                   7.778
  6               99.228                   1.808
  7              100.000                   1.214
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3699              0.3699
  2              0.4881              0.1182
  3              0.5740              0.0859
  4              0.6440              0.0700
  5              0.7041              0.0601
  6              0.7574              0.0533
  7              0.8056              0.0482
  8              0.8498              0.0442
  9              0.8908              0.0410
 10              0.9291              0.0383
 11              0.9652              0.0361
 12              0.9994              0.0342
 13              1.0285              0.0291
 14              1.0562              0.0277
 15              1.0827              0.0265
 16              1.1080              0.0254
 17              1.1324              0.0244
 18              1.1558              0.0235
 19              1.1785              0.0226
 20              1.2004              0.0219
 21              1.2216              0.0212
 22              1.2421              0.0206
 23              1.2621              0.0200
 24              1.2815              0.0194
 25              1.3004              0.0189
 26              1.3188              0.0184
```

27	1.3368	0.0180
28	1.3544	0.0176
29	1.3715	0.0172
30	1.3883	0.0168
31	1.4047	0.0164
32	1.4208	0.0161
33	1.4366	0.0158
34	1.4520	0.0155
35	1.4672	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5111	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5528	0.0137
42	1.5663	0.0135
43	1.5795	0.0133
44	1.5926	0.0131
45	1.6055	0.0129
46	1.6182	0.0127
47	1.6307	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7139	0.0114
55	1.7252	0.0113
56	1.7363	0.0112
57	1.7474	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7798	0.0107
61	1.7904	0.0106
62	1.8008	0.0105
63	1.8112	0.0104
64	1.8214	0.0102
65	1.8316	0.0101
66	1.8416	0.0100
67	1.8516	0.0099
68	1.8614	0.0099
69	1.8712	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9110	0.0110
74	1.9219	0.0109
75	1.9328	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9754	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0168	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0471	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1717	0.0092
100	2.1808	0.0092
101	2.1900	0.0091

102	2.1991	0.0091
103	2.2081	0.0090
104	2.2171	0.0090
105	2.2260	0.0089
106	2.2349	0.0089
107	2.2437	0.0088
108	2.2525	0.0088
109	2.2612	0.0087
110	2.2699	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2957	0.0086
114	2.3042	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3378	0.0083
119	2.3461	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4190	0.0080
129	2.4269	0.0079
130	2.4348	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4890	0.0076
138	2.4966	0.0076
139	2.5042	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5342	0.0075
144	2.5416	0.0074
145	2.5490	0.0074
146	2.5563	0.0074
147	2.5637	0.0073
148	2.5710	0.0073
149	2.5783	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6635	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6911	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7115	0.0068
169	2.7182	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7451	0.0067
174	2.7517	0.0066
175	2.7584	0.0066
176	2.7650	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7912	0.0065
181	2.7977	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8235	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8426	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8741	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9113	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9357	0.0061
204	2.9417	0.0061
205	2.9478	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9778	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0132	0.0059
217	3.0190	0.0058
218	3.0249	0.0058
219	3.0307	0.0058
220	3.0365	0.0058
221	3.0423	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0653	0.0057
226	3.0710	0.0057
227	3.0767	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0937	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1714	0.0055
245	3.1768	0.0054
246	3.1823	0.0054
247	3.1877	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2039	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2200	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2571	0.0053
261	3.2623	0.0053
262	3.2676	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2988	0.0052
269	3.3039	0.0052
270	3.3091	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3245	0.0051
274	3.3296	0.0051
275	3.3347	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3549	0.0051
280	3.3600	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0095
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0556
191	0.0859	0.0046	0.0814
192	0.1182	0.0046	0.1136
193	0.3699	0.0046	0.3653
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0163
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 30.63(CFS)

++

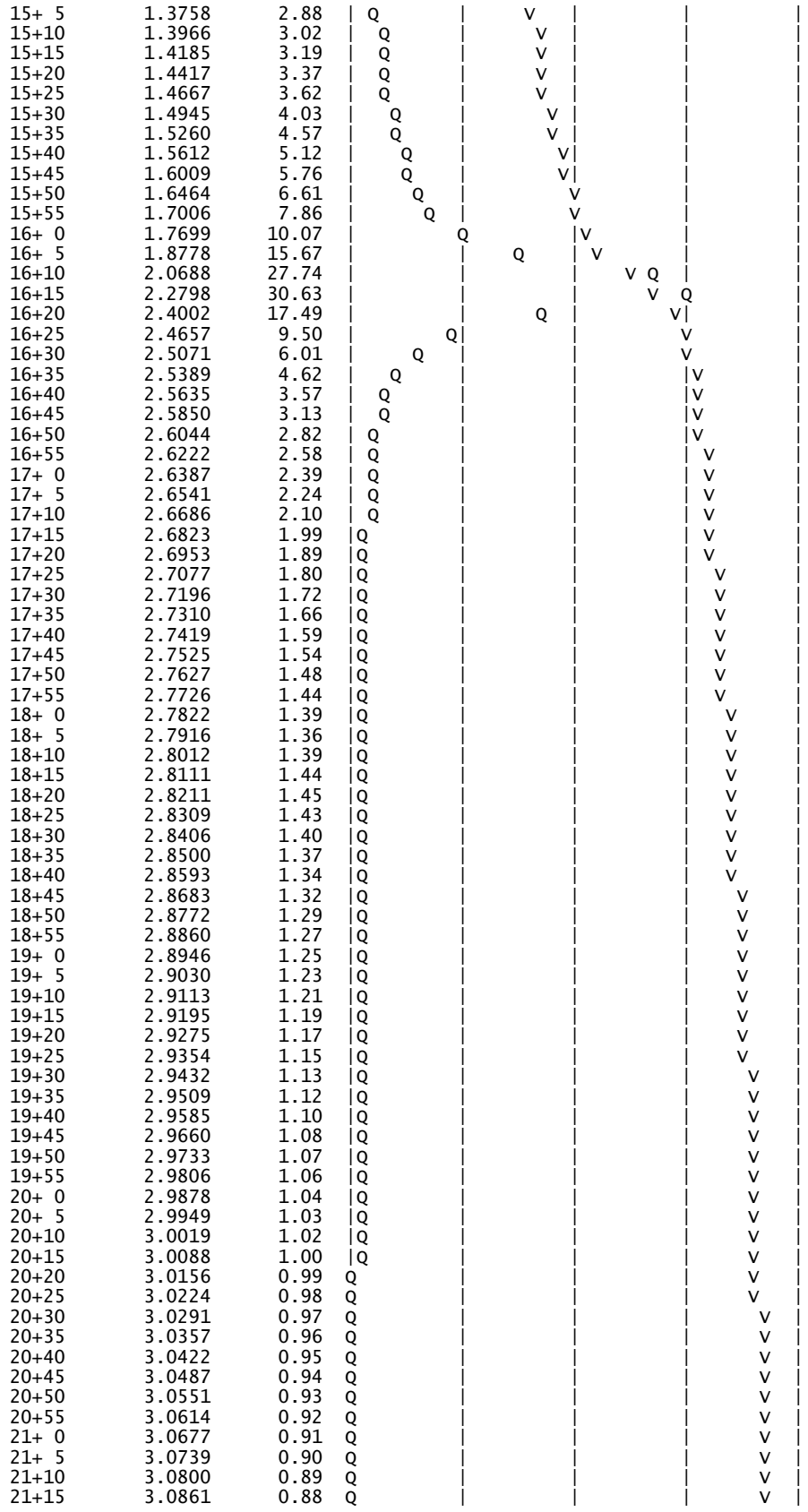
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0003	0.04	Q				
0+10	0.0019	0.24	Q				
0+15	0.0054	0.51	Q				
0+20	0.0098	0.63	Q				
0+25	0.0143	0.67	Q				
0+30	0.0190	0.68	Q				
0+35	0.0237	0.68	Q				
0+40	0.0284	0.68	Q				
0+45	0.0331	0.69	Q				
0+50	0.0379	0.69	Q				
0+55	0.0426	0.69	Q				
1+ 0	0.0474	0.69	Q				
1+ 5	0.0522	0.70	Q				
1+10	0.0570	0.70	Q				
1+15	0.0618	0.70	Q				
1+20	0.0667	0.70	Q				
1+25	0.0715	0.70	Q				
1+30	0.0764	0.71	Q				
1+35	0.0813	0.71	Q				
1+40	0.0862	0.71	QV				
1+45	0.0911	0.71	QV				
1+50	0.0960	0.72	QV				
1+55	0.1010	0.72	QV				
2+ 0	0.1059	0.72	QV				
2+ 5	0.1109	0.72	QV				
2+10	0.1159	0.73	QV				
2+15	0.1209	0.73	QV				
2+20	0.1260	0.73	QV				
2+25	0.1310	0.73	QV				
2+30	0.1361	0.74	QV				

```
2+35       0.1412      0.74  QV        |         |         |         |
2+40       0.1463      0.74  QV        |         |         |         |
2+45       0.1514      0.74  QV        |         |         |         |
2+50       0.1566      0.75  QV        |         |         |         |
2+55       0.1617      0.75  QV        |         |         |         |
3+ 0       0.1669      0.75  Q V       |         |         |         |
3+ 5       0.1721      0.75  Q V       |         |         |         |
3+10       0.1773      0.76  Q V       |         |         |         |
3+15       0.1825      0.76  Q V       |         |         |         |
3+20       0.1878      0.76  Q V       |         |         |         |
3+25       0.1931      0.77  Q V       |         |         |         |
3+30       0.1984      0.77  Q V       |         |         |         |
3+35       0.2037      0.77  Q V       |         |         |         |
3+40       0.2090      0.78  Q V       |         |         |         |
3+45       0.2144      0.78  Q V       |         |         |         |
3+50       0.2198      0.78  Q V       |         |         |         |
3+55       0.2252      0.78  Q V       |         |         |         |
4+ 0       0.2306      0.79  Q V       |         |         |         |
4+ 5       0.2360      0.79  Q V       |         |         |         |
4+10       0.2415      0.79  Q V       |         |         |         |
4+15       0.2470      0.80  Q  V      |         |         |         |
4+20       0.2525      0.80  Q  V      |         |         |         |
4+25       0.2580      0.80  Q  V      |         |         |         |
4+30       0.2636      0.81  Q  V      |         |         |         |
4+35       0.2692      0.81  Q  V      |         |         |         |
4+40       0.2748      0.81  Q  V      |         |         |         |
4+45       0.2804      0.82  Q  V      |         |         |         |
4+50       0.2860      0.82  Q  V      |         |         |         |
4+55       0.2917      0.82  Q  V      |         |         |         |
5+ 0       0.2974      0.83  Q  V      |         |         |         |
5+ 5       0.3031      0.83  Q  V      |         |         |         |
5+10       0.3089      0.83  Q  V      |         |         |         |
5+15       0.3147      0.84  Q  V      |         |         |         |
5+20       0.3205      0.84  Q  V      |         |         |         |
5+25       0.3263      0.85  Q  V      |         |         |         |
5+30       0.3321      0.85  Q   V     |         |         |         |
5+35       0.3380      0.85  Q   V     |         |         |         |
5+40       0.3439      0.86  Q   V     |         |         |         |
5+45       0.3498      0.86  Q   V     |         |         |         |
5+50       0.3558      0.87  Q   V     |         |         |         |
5+55       0.3618      0.87  Q   V     |         |         |         |
6+ 0       0.3678      0.87  Q   V     |         |         |         |
6+ 5       0.3738      0.88  Q   V     |         |         |         |
6+10       0.3799      0.88  Q   V     |         |         |         |
6+15       0.3860      0.89  Q   V     |         |         |         |
6+20       0.3921      0.89  Q   V     |         |         |         |
6+25       0.3983      0.89  Q   V     |         |         |         |
6+30       0.4045      0.90  Q   V     |         |         |         |
6+35       0.4107      0.90  Q    V    |         |         |         |
6+40       0.4170      0.91  Q    V    |         |         |         |
6+45       0.4233      0.91  Q    V    |         |         |         |
6+50       0.4296      0.92  Q    V    |         |         |         |
6+55       0.4359      0.92  Q    V    |         |         |         |
7+ 0       0.4423      0.93  Q    V    |         |         |         |
7+ 5       0.4487      0.93  Q    V    |         |         |         |
7+10       0.4552      0.94  Q    V    |         |         |         |
7+15       0.4617      0.94  Q    V    |         |         |         |
7+20       0.4682      0.95  Q    V    |         |         |         |
7+25       0.4747      0.95  Q    V    |         |         |         |
7+30       0.4813      0.96  Q    V    |         |         |         |
7+35       0.4880      0.96  Q    V    |         |         |         |
7+40       0.4946      0.97  Q     V   |         |         |         |
7+45       0.5013      0.97  Q     V   |         |         |         |
7+50       0.5081      0.98  Q     V   |         |         |         |
7+55       0.5149      0.98  Q     V   |         |         |         |
8+ 0       0.5217      0.99  Q     V   |         |         |         |
8+ 5       0.5286      1.00  Q     V   |         |         |         |
8+10       0.5355      1.00  |Q    V   |         |         |         |
8+15       0.5424      1.01  |Q    V   |         |         |         |
8+20       0.5494      1.01  |Q    V   |         |         |         |
8+25       0.5564      1.02  |Q    V   |         |         |         |
8+30       0.5635      1.03  |Q    V   |         |         |         |
8+35       0.5706      1.03  |Q    V   |         |         |         |
8+40       0.5778      1.04  |Q     V  |         |         |         |
8+45       0.5850      1.05  |Q     V  |         |         |         |
```

```
 8+50       0.5923      1.05  |Q     V  |          |          |          |
 8+55       0.5996      1.06  |Q     V  |          |          |          |
 9+ 0       0.6069      1.07  |Q     V  |          |          |          |
 9+ 5       0.6143      1.08  |Q     V  |          |          |          |
 9+10       0.6218      1.08  |Q     V  |          |          |          |
 9+15       0.6293      1.09  |Q     V  |          |          |          |
 9+20       0.6369      1.10  |Q     V  |          |          |          |
 9+25       0.6445      1.11  |Q     V  |          |          |          |
 9+30       0.6521      1.11  |Q     V  |          |          |          |
 9+35       0.6599      1.12  |Q      V |          |          |          |
 9+40       0.6676      1.13  |Q      V |          |          |          |
 9+45       0.6755      1.14  |Q      V |          |          |          |
 9+50       0.6834      1.15  |Q      V |          |          |          |
 9+55       0.6913      1.16  |Q      V |          |          |          |
10+ 0       0.6994      1.16  |Q      V |          |          |          |
10+ 5       0.7074      1.17  |Q      V |          |          |          |
10+10       0.7156      1.18  |Q      V |          |          |          |
10+15       0.7238      1.19  |Q      V |          |          |          |
10+20       0.7321      1.20  |Q      V |          |          |          |
10+25       0.7404      1.21  |Q       V|          |          |          |
10+30       0.7488      1.22  |Q       V|          |          |          |
10+35       0.7573      1.23  |Q       V|          |          |          |
10+40       0.7659      1.24  |Q       V|          |          |          |
10+45       0.7745      1.25  |Q       V|          |          |          |
10+50       0.7833      1.27  |Q       V|          |          |          |
10+55       0.7921      1.28  |Q       V|          |          |          |
11+ 0       0.8009      1.29  |Q       V|          |          |          |
11+ 5       0.8099      1.30  |Q       V|          |          |          |
11+10       0.8189      1.31  |Q        V          |          |          |
11+15       0.8281      1.33  |Q        V          |          |          |
11+20       0.8373      1.34  |Q        V          |          |          |
11+25       0.8466      1.35  |Q        V          |          |          |
11+30       0.8560      1.37  |Q        V          |          |          |
11+35       0.8655      1.38  |Q        V          |          |          |
11+40       0.8751      1.40  |Q        V          |          |          |
11+45       0.8848      1.41  |Q        V          |          |          |
11+50       0.8947      1.43  |Q        V          |          |          |
11+55       0.9046      1.44  |Q        |V         |          |          |
12+ 0       0.9146      1.46  |Q        |V         |          |          |
12+ 5       0.9247      1.46  |Q        |V         |          |          |
12+10       0.9344      1.41  |Q        |V         |          |          |
12+15       0.9437      1.34  |Q        |V         |          |          |
12+20       0.9528      1.32  |Q        |V         |          |          |
12+25       0.9620      1.33  |Q        |V         |          |          |
12+30       0.9712      1.35  |Q        |V         |          |          |
12+35       0.9806      1.36  |Q        |V         |          |          |
12+40       0.9902      1.38  |Q        | V        |          |          |
12+45       0.9998      1.41  |Q        | V        |          |          |
12+50       1.0097      1.43  |Q        | V        |          |          |
12+55       1.0197      1.45  |Q        | V        |          |          |
13+ 0       1.0298      1.47  |Q        | V        |          |          |
13+ 5       1.0401      1.50  |Q        | V        |          |          |
13+10       1.0506      1.53  |Q        | V        |          |          |
13+15       1.0613      1.55  |Q        | V        |          |          |
13+20       1.0722      1.58  |Q        |  V       |          |          |
13+25       1.0833      1.61  |Q        |  V       |          |          |
13+30       1.0946      1.64  |Q        |  V       |          |          |
13+35       1.1062      1.68  |Q        |  V       |          |          |
13+40       1.1180      1.71  |Q        |  V       |          |          |
13+45       1.1300      1.75  |Q        |  V       |          |          |
13+50       1.1423      1.79  |Q        |  V       |          |          |
13+55       1.1549      1.83  |Q        |   V      |          |          |
14+ 0       1.1678      1.87  |Q        |   V      |          |          |
14+ 5       1.1810      1.92  |Q        |   V      |          |          |
14+10       1.1945      1.97  |Q        |   V      |          |          |
14+15       1.2085      2.02  | Q       |   V      |          |          |
14+20       1.2228      2.08  | Q       |   V      |          |          |
14+25       1.2375      2.14  | Q       |    V     |          |          |
14+30       1.2527      2.21  | Q       |    V     |          |          |
14+35       1.2684      2.28  | Q       |    V     |          |          |
14+40       1.2846      2.35  | Q       |    V     |          |          |
14+45       1.3014      2.44  | Q       |    V     |          |          |
14+50       1.3189      2.53  | Q       |     V    |          |          |
14+55       1.3370      2.64  | Q       |     V    |          |          |
15+ 0       1.3559      2.75  | Q       |     V    |          |          |
```



```
   21+20       3.0921      0.87  Q          |          |          |      V  |
   21+25       3.0981      0.87  Q          |          |          |      V  |
   21+30       3.1040      0.86  Q          |          |          |      V  |
   21+35       3.1098      0.85  Q          |          |          |       V |
   21+40       3.1157      0.84  Q          |          |          |       V |
   21+45       3.1214      0.84  Q          |          |          |       V |
   21+50       3.1271      0.83  Q          |          |          |       V |
   21+55       3.1328      0.82  Q          |          |          |       V |
   22+ 0       3.1384      0.81  Q          |          |          |       V |
   22+ 5       3.1439      0.81  Q          |          |          |       V |
   22+10       3.1495      0.80  Q          |          |          |       V |
   22+15       3.1549      0.79  Q          |          |          |       V |
   22+20       3.1604      0.79  Q          |          |          |       V |
   22+25       3.1657      0.78  Q          |          |          |       V |
   22+30       3.1711      0.78  Q          |          |          |       V |
   22+35       3.1764      0.77  Q          |          |          |       V |
   22+40       3.1817      0.76  Q          |          |          |       V |
   22+45       3.1869      0.76  Q          |          |          |       V |
   22+50       3.1921      0.75  Q          |          |          |        V|
   22+55       3.1972      0.75  Q          |          |          |        V|
   23+ 0       3.2023      0.74  Q          |          |          |        V|
   23+ 5       3.2074      0.74  Q          |          |          |        V|
   23+10       3.2124      0.73  Q          |          |          |        V|
   23+15       3.2174      0.73  Q          |          |          |        V|
   23+20       3.2224      0.72  Q          |          |          |        V|
   23+25       3.2274      0.72  Q          |          |          |        V|
   23+30       3.2323      0.71  Q          |          |          |        V|
   23+35       3.2371      0.71  Q          |          |          |        V|
   23+40       3.2420      0.70  Q          |          |          |        V|
   23+45       3.2468      0.70  Q          |          |          |        V|
   23+50       3.2516      0.69  Q          |          |          |        V|
   23+55       3.2563      0.69  Q          |          |          |        V|
   24+ 0       3.2610      0.69  Q          |          |          |        V|
   24+ 5       3.2655      0.64  Q          |          |          |        V|
   24+10       3.2685      0.44  Q          |          |          |        V|
   24+15       3.2696      0.16  Q          |          |          |        V|
   24+20       3.2699      0.05  Q          |          |          |        V|
   24+25       3.2700      0.01  Q          |          |          |        V|
   24+30       3.2701      0.01  Q          |          |          |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 5D
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 5DPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
28.50	1	0.60
Rainfall data for year 2		
28.50	6	0.70
Rainfall data for year 2		
28.50	24	1.20
Rainfall data for year 100		
28.50	1	1.00
Rainfall data for year 100		
28.50	6	1.90
Rainfall data for year 100		
28.50	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	28.50	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.85	0.100	69.0	69.0	4.49	0.263
25.65	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.220 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      28.50(Ac.)
Catchment Lag time =   0.176 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 47.3485
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      28.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       344.67 (CFS))

  1                4.127                  14.225
  2               26.887                  78.448
  3               64.399                 129.292
  4               87.458                  79.479
  5               96.010                  29.475
  6               98.485                   8.533
  7               99.340                   2.945
  8              100.000                   2.276
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3696              0.3696
  2              0.4877              0.1181
  3              0.5736              0.0859
  4              0.6435              0.0700
  5              0.7036              0.0601
  6              0.7568              0.0532
  7              0.8050              0.0481
  8              0.8491              0.0442
  9              0.8901              0.0410
 10              0.9284              0.0383
 11              0.9645              0.0361
 12              0.9987              0.0342
 13              1.0278              0.0291
 14              1.0555              0.0277
 15              1.0820              0.0265
 16              1.1074              0.0254
 17              1.1318              0.0244
 18              1.1553              0.0235
 19              1.1779              0.0227
 20              1.1999              0.0219
 21              1.2211              0.0212
 22              1.2416              0.0206
 23              1.2616              0.0200
 24              1.2811              0.0194
 25              1.3000              0.0189
```

26	1.3185	0.0184
27	1.3365	0.0180
28	1.3540	0.0176
29	1.3712	0.0172
30	1.3880	0.0168
31	1.4045	0.0164
32	1.4206	0.0161
33	1.4364	0.0158
34	1.4519	0.0155
35	1.4671	0.0152
36	1.4820	0.0149
37	1.4966	0.0146
38	1.5110	0.0144
39	1.5251	0.0141
40	1.5390	0.0139
41	1.5527	0.0137
42	1.5661	0.0135
43	1.5794	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6180	0.0127
47	1.6306	0.0125
48	1.6429	0.0123
49	1.6551	0.0122
50	1.6671	0.0120
51	1.6790	0.0119
52	1.6907	0.0117
53	1.7023	0.0116
54	1.7137	0.0114
55	1.7250	0.0113
56	1.7362	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7902	0.0106
62	1.8007	0.0105
63	1.8111	0.0104
64	1.8213	0.0102
65	1.8315	0.0101
66	1.8415	0.0100
67	1.8515	0.0100
68	1.8613	0.0099
69	1.8711	0.0098
70	1.8807	0.0097
71	1.8903	0.0096
72	1.8998	0.0095
73	1.9109	0.0110
74	1.9218	0.0109
75	1.9327	0.0109
76	1.9434	0.0108
77	1.9541	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9857	0.0105
81	1.9961	0.0104
82	2.0064	0.0103
83	2.0167	0.0102
84	2.0268	0.0102
85	2.0369	0.0101
86	2.0470	0.0100
87	2.0569	0.0100
88	2.0668	0.0099
89	2.0766	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1057	0.0096
93	2.1153	0.0096
94	2.1248	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1531	0.0093
98	2.1623	0.0093
99	2.1716	0.0092
100	2.1808	0.0092

101	2.1899	0.0091
102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2784	0.0086
112	2.2870	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3125	0.0085
116	2.3210	0.0084
117	2.3293	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3542	0.0083
121	2.3624	0.0082
122	2.3706	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3949	0.0081
126	2.4029	0.0080
127	2.4109	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4425	0.0078
132	2.4503	0.0078
133	2.4581	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4812	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5116	0.0075
141	2.5191	0.0075
142	2.5266	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5854	0.0072
151	2.5926	0.0072
152	2.5998	0.0072
153	2.6070	0.0072
154	2.6141	0.0071
155	2.6213	0.0071
156	2.6283	0.0071
157	2.6354	0.0071
158	2.6424	0.0070
159	2.6494	0.0070
160	2.6564	0.0070
161	2.6634	0.0070
162	2.6703	0.0069
163	2.6772	0.0069
164	2.6841	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7046	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7316	0.0067
172	2.7383	0.0067
173	2.7450	0.0067
174	2.7516	0.0066
175	2.7583	0.0066

176	2.7649	0.0066
177	2.7715	0.0066
178	2.7780	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8105	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8361	0.0064
188	2.8425	0.0064
189	2.8488	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8677	0.0063
193	2.8740	0.0063
194	2.8802	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9050	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9234	0.0061
202	2.9295	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9537	0.0060
207	2.9597	0.0060
208	2.9657	0.0060
209	2.9717	0.0060
210	2.9777	0.0060
211	2.9836	0.0059
212	2.9895	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0072	0.0059
216	3.0131	0.0059
217	3.0189	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0537	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0879	0.0057
230	3.0936	0.0057
231	3.0992	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1272	0.0056
237	3.1328	0.0056
238	3.1383	0.0055
239	3.1438	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1658	0.0055
244	3.1713	0.0055
245	3.1767	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054

251	3.2092	0.0054
252	3.2145	0.0054
253	3.2199	0.0053
254	3.2252	0.0053
255	3.2305	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2464	0.0053
259	3.2517	0.0053
260	3.2570	0.0053
261	3.2622	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2779	0.0052
265	3.2831	0.0052
266	3.2883	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3038	0.0052
270	3.3090	0.0052
271	3.3141	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3447	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3649	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3899	0.0050
287	3.3949	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047

33	0.0055	0.0007	0.0048
34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068

108	0.0080	0.0011	0.0069
109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0137
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0149
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0160
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211

183	0.0265	0.0036	0.0229
184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0532	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1135
193	0.3696	0.0046	0.3650
194	0.0700	0.0046	0.0654
195	0.0481	0.0046	0.0436
196	0.0383	0.0046	0.0337
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0227	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0100	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054

258	0.0062	0.0008	0.0054
259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 65.07(CFS)

++

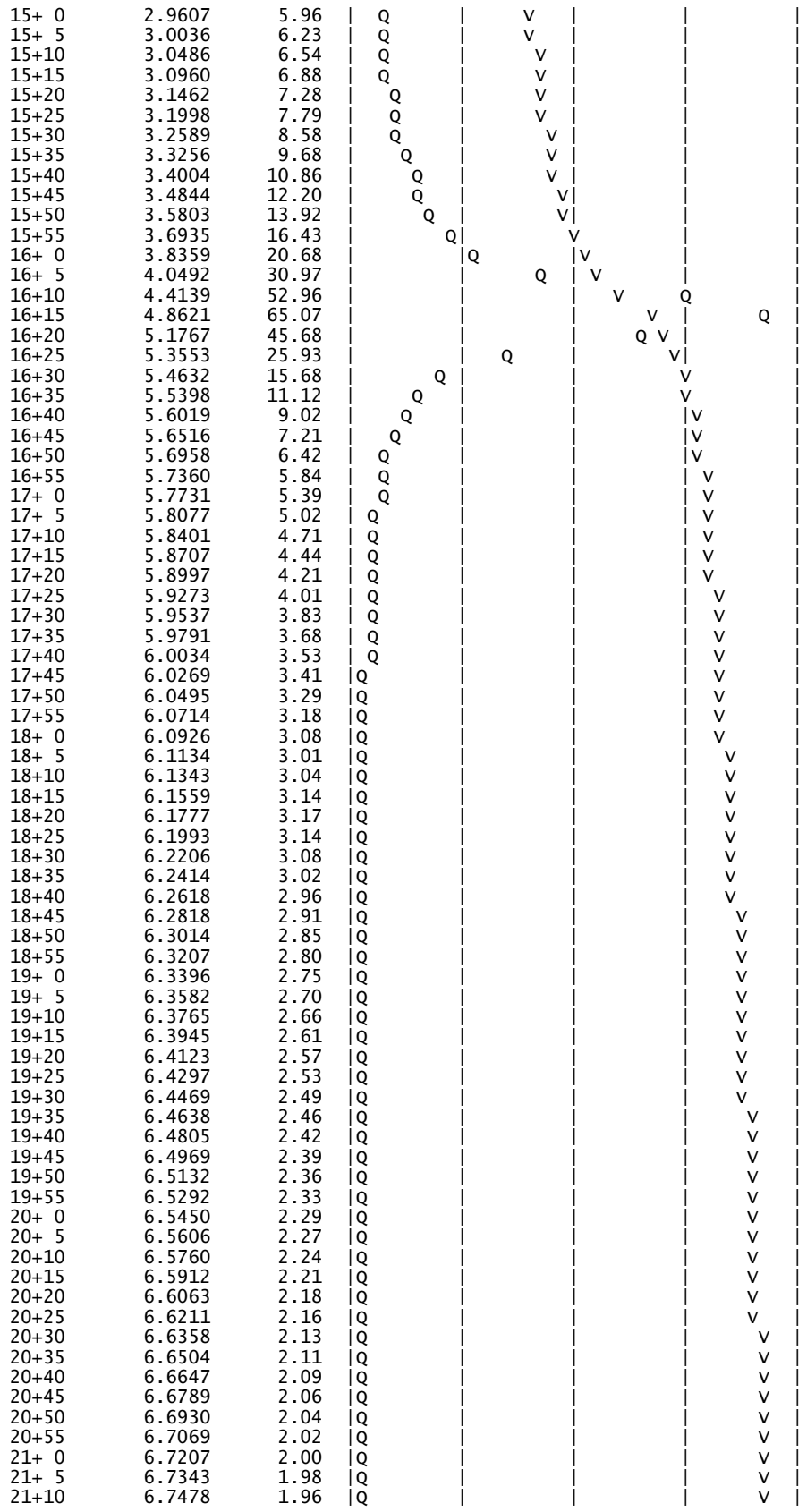
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	17.5	35.0	52.5	70.0
0+ 5	0.0004	0.06	Q	|	|	|	|
0+10	0.0032	0.40	Q	|	|	|	|
0+15	0.0097	0.95	Q	|	|	|	|
0+20	0.0187	1.30	Q	|	|	|	|
0+25	0.0285	1.43	Q	|	|	|	|
0+30	0.0386	1.47	Q	|	|	|	|
0+35	0.0488	1.49	Q	|	|	|	|
0+40	0.0591	1.50	Q	|	|	|	|
0+45	0.0695	1.50	Q	|	|	|	|
0+50	0.0799	1.51	Q	|	|	|	|
0+55	0.0903	1.51	Q	|	|	|	|
1+ 0	0.1008	1.52	Q	|	|	|	|
1+ 5	0.1113	1.52	Q	|	|	|	|
1+10	0.1218	1.53	Q	|	|	|	|
1+15	0.1323	1.53	Q	|	|	|	|
1+20	0.1429	1.54	Q	|	|	|	|
1+25	0.1536	1.54	Q	|	|	|	|
1+30	0.1642	1.55	Q	|	|	|	|
1+35	0.1749	1.55	Q	|	|	|	|
1+40	0.1856	1.56	QV	|	|	|	|
1+45	0.1964	1.56	QV	|	|	|	|
1+50	0.2072	1.57	QV	|	|	|	|
1+55	0.2181	1.57	QV	|	|	|	|
2+ 0	0.2289	1.58	QV	|	|	|	|
2+ 5	0.2398	1.58	QV	|	|	|	|
2+10	0.2508	1.59	QV	|	|	|	|
2+15	0.2618	1.60	QV	|	|	|	|
2+20	0.2728	1.60	QV	|	|	|	|
2+25	0.2839	1.61	QV	|	|	|	|

```
2+30       0.2950      1.61  QV        |         |         |         |
2+35       0.3061      1.62  QV        |         |         |         |
2+40       0.3173      1.62  QV        |         |         |         |
2+45       0.3285      1.63  QV        |         |         |         |
2+50       0.3398      1.64  QV        |         |         |         |
2+55       0.3511      1.64  QV        |         |         |         |
3+ 0       0.3624      1.65  Q V       |         |         |         |
3+ 5       0.3738      1.65  Q V       |         |         |         |
3+10       0.3852      1.66  Q V       |         |         |         |
3+15       0.3967      1.67  Q V       |         |         |         |
3+20       0.4082      1.67  Q V       |         |         |         |
3+25       0.4198      1.68  Q V       |         |         |         |
3+30       0.4314      1.68  Q V       |         |         |         |
3+35       0.4430      1.69  Q V       |         |         |         |
3+40       0.4547      1.70  Q V       |         |         |         |
3+45       0.4665      1.70  Q V       |         |         |         |
3+50       0.4782      1.71  Q V       |         |         |         |
3+55       0.4901      1.72  Q V       |         |         |         |
4+ 0       0.5019      1.72  Q V       |         |         |         |
4+ 5       0.5139      1.73  Q V       |         |         |         |
4+10       0.5258      1.74  Q V       |         |         |         |
4+15       0.5378      1.74  Q  V      |         |         |         |
4+20       0.5499      1.75  |Q V      |         |         |         |
4+25       0.5620      1.76  |Q V      |         |         |         |
4+30       0.5742      1.77  |Q V      |         |         |         |
4+35       0.5864      1.77  |Q V      |         |         |         |
4+40       0.5987      1.78  |Q V      |         |         |         |
4+45       0.6110      1.79  |Q V      |         |         |         |
4+50       0.6233      1.80  |Q V      |         |         |         |
4+55       0.6358      1.80  |Q V      |         |         |         |
5+ 0       0.6482      1.81  |Q V      |         |         |         |
5+ 5       0.6608      1.82  |Q V      |         |         |         |
5+10       0.6733      1.83  |Q V      |         |         |         |
5+15       0.6860      1.84  |Q V      |         |         |         |
5+20       0.6987      1.84  |Q V      |         |         |         |
5+25       0.7114      1.85  |Q V      |         |         |         |
5+30       0.7242      1.86  |Q  V     |         |         |         |
5+35       0.7371      1.87  |Q  V     |         |         |         |
5+40       0.7500      1.88  |Q  V     |         |         |         |
5+45       0.7630      1.89  |Q  V     |         |         |         |
5+50       0.7761      1.89  |Q  V     |         |         |         |
5+55       0.7892      1.90  |Q  V     |         |         |         |
6+ 0       0.8023      1.91  |Q  V     |         |         |         |
6+ 5       0.8156      1.92  |Q  V     |         |         |         |
6+10       0.8288      1.93  |Q  V     |         |         |         |
6+15       0.8422      1.94  |Q  V     |         |         |         |
6+20       0.8556      1.95  |Q  V     |         |         |         |
6+25       0.8691      1.96  |Q  V     |         |         |         |
6+30       0.8827      1.97  |Q  V     |         |         |         |
6+35       0.8963      1.98  |Q   V    |         |         |         |
6+40       0.9100      1.99  |Q   V    |         |         |         |
6+45       0.9237      2.00  |Q   V    |         |         |         |
6+50       0.9376      2.01  |Q   V    |         |         |         |
6+55       0.9515      2.02  |Q   V    |         |         |         |
7+ 0       0.9654      2.03  |Q   V    |         |         |         |
7+ 5       0.9795      2.04  |Q   V    |         |         |         |
7+10       0.9936      2.05  |Q   V    |         |         |         |
7+15       1.0078      2.06  |Q   V    |         |         |         |
7+20       1.0221      2.07  |Q   V    |         |         |         |
7+25       1.0364      2.08  |Q   V    |         |         |         |
7+30       1.0509      2.10  |Q   V    |         |         |         |
7+35       1.0654      2.11  |Q   V    |         |         |         |
7+40       1.0800      2.12  |Q    V   |         |         |         |
7+45       1.0946      2.13  |Q    V   |         |         |         |
7+50       1.1094      2.14  |Q    V   |         |         |         |
7+55       1.1242      2.16  |Q    V   |         |         |         |
8+ 0       1.1392      2.17  |Q    V   |         |         |         |
8+ 5       1.1542      2.18  |Q    V   |         |         |         |
8+10       1.1693      2.19  |Q    V   |         |         |         |
8+15       1.1845      2.21  |Q    V   |         |         |         |
8+20       1.1998      2.22  |Q    V   |         |         |         |
8+25       1.2152      2.23  |Q    V   |         |         |         |
8+30       1.2307      2.25  |Q    V   |         |         |         |
8+35       1.2463      2.26  |Q    V   |         |         |         |
8+40       1.2619      2.28  |Q     V  |         |         |         |
```

8+45	1.2777	2.29	Q V				
8+50	1.2936	2.31	Q V				
8+55	1.3096	2.32	Q V				
9+ 0	1.3257	2.34	Q V				
9+ 5	1.3419	2.35	Q V				
9+10	1.3582	2.37	Q V				
9+15	1.3746	2.38	Q V				
9+20	1.3912	2.40	Q V				
9+25	1.4078	2.42	Q V				
9+30	1.4246	2.44	Q V				
9+35	1.4415	2.45	Q V				
9+40	1.4585	2.47	Q V				
9+45	1.4757	2.49	Q V				
9+50	1.4929	2.51	Q V				
9+55	1.5103	2.53	Q V				
10+ 0	1.5279	2.55	Q V				
10+ 5	1.5456	2.57	Q V				
10+10	1.5634	2.59	Q V				
10+15	1.5813	2.61	Q V				
10+20	1.5994	2.63	Q V				
10+25	1.6177	2.65	Q V				
10+30	1.6361	2.67	Q V				
10+35	1.6547	2.70	Q V				
10+40	1.6734	2.72	Q V				
10+45	1.6923	2.74	Q V				
10+50	1.7114	2.77	Q V				
10+55	1.7306	2.79	Q V				
11+ 0	1.7500	2.82	Q V				
11+ 5	1.7696	2.84	Q V				
11+10	1.7894	2.87	Q V				
11+15	1.8093	2.90	Q V				
11+20	1.8295	2.93	Q V				
11+25	1.8498	2.96	Q V				
11+30	1.8704	2.99	Q V				
11+35	1.8912	3.02	Q V				
11+40	1.9122	3.05	Q V				
11+45	1.9334	3.08	Q V				
11+50	1.9549	3.11	Q V				
11+55	1.9766	3.15	Q V				
12+ 0	1.9985	3.19	Q V				
12+ 5	2.0205	3.20	Q V				
12+10	2.0421	3.13	Q V				
12+15	2.0627	2.99	Q V				
12+20	2.0827	2.91	Q V				
12+25	2.1028	2.91	Q V				
12+30	2.1231	2.94	Q V				
12+35	2.1436	2.98	Q V				
12+40	2.1644	3.02	Q V				
12+45	2.1855	3.07	Q V				
12+50	2.2070	3.12	Q V				
12+55	2.2288	3.17	Q V				
13+ 0	2.2510	3.22	Q V				
13+ 5	2.2735	3.27	Q V				
13+10	2.2964	3.33	Q V				
13+15	2.3197	3.39	Q V				
13+20	2.3435	3.45	Q V				
13+25	2.3677	3.51	Q V				
13+30	2.3924	3.58	Q V				
13+35	2.4175	3.65	Q V				
13+40	2.4432	3.73	Q V				
13+45	2.4694	3.81	Q V				
13+50	2.4962	3.89	Q V				
13+55	2.5236	3.98	Q V				
14+ 0	2.5517	4.07	Q V				
14+ 5	2.5804	4.17	Q V				
14+10	2.6099	4.28	Q V				
14+15	2.6402	4.40	Q V				
14+20	2.6714	4.53	Q V				
14+25	2.7035	4.66	Q V				
14+30	2.7365	4.80	Q V				
14+35	2.7707	4.95	Q V				
14+40	2.8059	5.12	Q V				
14+45	2.8424	5.30	Q V				
14+50	2.8803	5.50	Q V				
14+55	2.9196	5.72	Q V				



```
  21+15       6.7612      1.94  |Q        |         |         |      V  |
  21+20       6.7744      1.92  |Q        |         |         |      V  |
  21+25       6.7876      1.90  |Q        |         |         |      V  |
  21+30       6.8006      1.89  |Q        |         |         |      V  |
  21+35       6.8134      1.87  |Q        |         |         |       V |
  21+40       6.8262      1.85  |Q        |         |         |       V |
  21+45       6.8389      1.84  |Q        |         |         |       V |
  21+50       6.8514      1.82  |Q        |         |         |       V |
  21+55       6.8638      1.81  |Q        |         |         |       V |
  22+ 0       6.8762      1.79  |Q        |         |         |       V |
  22+ 5       6.8884      1.78  |Q        |         |         |       V |
  22+10       6.9005      1.76  |Q        |         |         |       V |
  22+15       6.9125      1.75  Q         |         |         |       V |
  22+20       6.9245      1.73  Q         |         |         |       V |
  22+25       6.9363      1.72  Q         |         |         |       V |
  22+30       6.9480      1.71  Q         |         |         |       V |
  22+35       6.9597      1.69  Q         |         |         |       V |
  22+40       6.9713      1.68  Q         |         |         |       V |
  22+45       6.9827      1.67  Q         |         |         |       V |
  22+50       6.9941      1.65  Q         |         |         |        V|
  22+55       7.0055      1.64  Q         |         |         |        V|
  23+ 0       7.0167      1.63  Q         |         |         |        V|
  23+ 5       7.0278      1.62  Q         |         |         |        V|
  23+10       7.0389      1.61  Q         |         |         |        V|
  23+15       7.0499      1.60  Q         |         |         |        V|
  23+20       7.0608      1.59  Q         |         |         |        V|
  23+25       7.0717      1.58  Q         |         |         |        V|
  23+30       7.0824      1.56  Q         |         |         |        V|
  23+35       7.0931      1.55  Q         |         |         |        V|
  23+40       7.1038      1.54  Q         |         |         |        V|
  23+45       7.1143      1.53  Q         |         |         |        V|
  23+50       7.1248      1.52  Q         |         |         |        V|
  23+55       7.1353      1.51  Q         |         |         |        V|
  24+ 0       7.1456      1.51  Q         |         |         |        V|
  24+ 5       7.1555      1.43  Q         |         |         |        V|
  24+10       7.1630      1.09  Q         |         |         |        V|
  24+15       7.1667      0.53  Q         |         |         |        V|
  24+20       7.1680      0.19  Q         |         |         |        V|
  24+25       7.1684      0.06  Q         |         |         |        V|
  24+30       7.1685      0.02  Q         |         |         |        V|
  24+35       7.1686      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

BUILDING 6

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/11/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 6A
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 6APROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
21.10	1	0.60
Rainfall data for year 2		
21.10	6	0.70
Rainfall data for year 2		
21.10	24	1.20
Rainfall data for year 100		
21.10	1	1.00
Rainfall data for year 100		
21.10	6	1.90
Rainfall data for year 100		
21.10	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	21.10	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.11	0.100	69.0	69.0	4.49	0.263
18.99	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      21.10(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      21.10(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       255.18 (CFS))

  1                5.469                  13.956
  2               35.337                  76.216
  3               75.925                 103.573
  4               93.130                  43.903
  5               98.077                  12.624
  6               99.228                   2.935
  7              100.000                   1.971
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3697              0.3697
  2              0.4879              0.1181
  3              0.5738              0.0859
  4              0.6438              0.0700
  5              0.7039              0.0601
  6              0.7571              0.0532
  7              0.8053              0.0482
  8              0.8494              0.0442
  9              0.8904              0.0410
 10              0.9287              0.0383
 11              0.9648              0.0361
 12              0.9990              0.0342
 13              1.0281              0.0291
 14              1.0559              0.0277
 15              1.0823              0.0265
 16              1.1077              0.0254
 17              1.1321              0.0244
 18              1.1556              0.0235
 19              1.1782              0.0226
 20              1.2001              0.0219
 21              1.2213              0.0212
 22              1.2419              0.0206
 23              1.2619              0.0200
 24              1.2813              0.0194
 25              1.3002              0.0189
 26              1.3186              0.0184
```

27	1.3366	0.0180
28	1.3542	0.0176
29	1.3714	0.0172
30	1.3881	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4519	0.0155
35	1.4671	0.0152
36	1.4820	0.0149
37	1.4967	0.0146
38	1.5110	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5527	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6790	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091

102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6070	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6354	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7047	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0537	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2199	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3949	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0532	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3697	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 49.69(CFS)

++

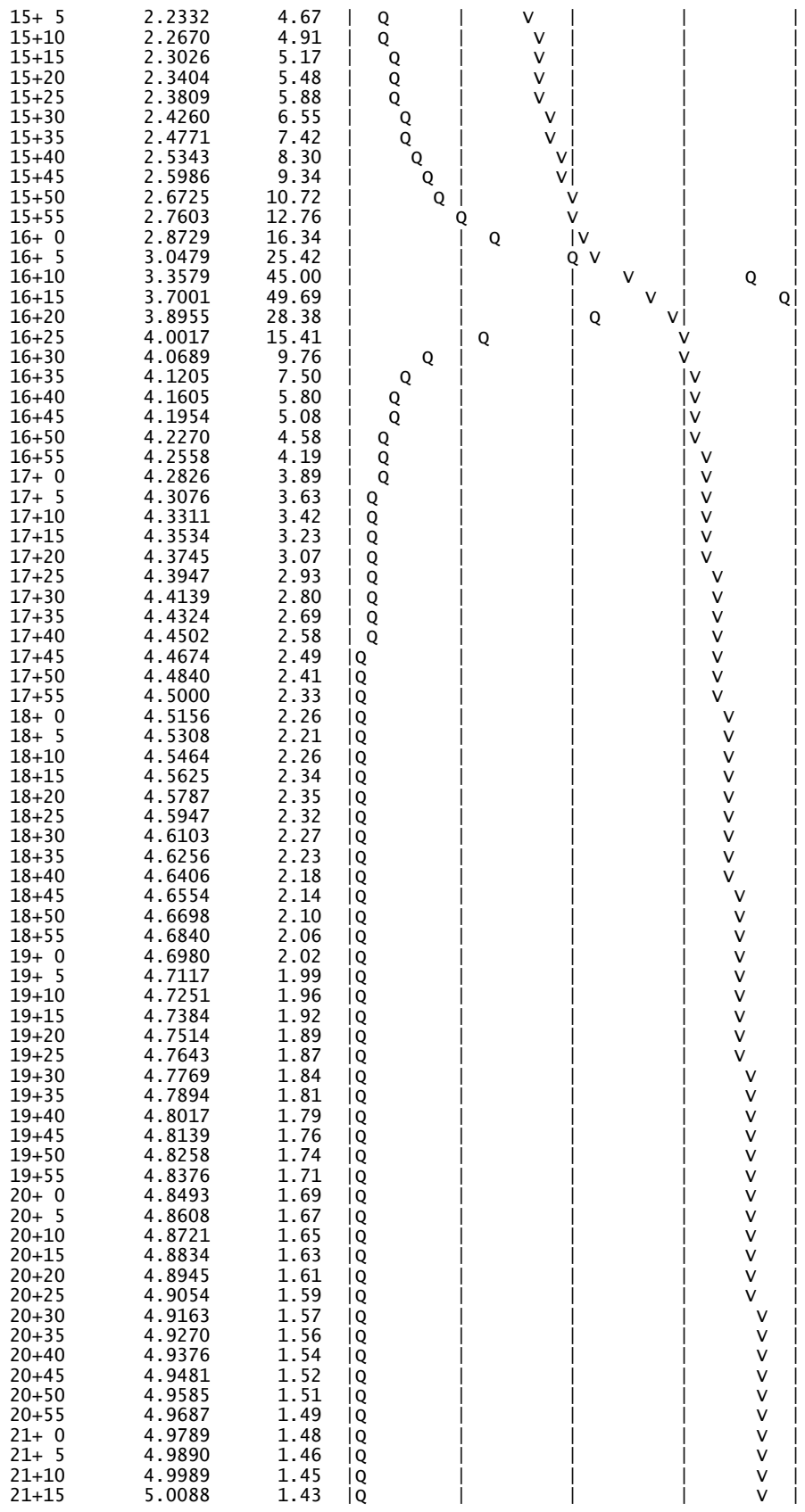
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0004	0.06	Q	|	|	|	|
0+10	0.0031	0.39	Q	|	|	|	|
0+15	0.0088	0.83	Q	|	|	|	|
0+20	0.0158	1.02	Q	|	|	|	|
0+25	0.0233	1.08	Q	|	|	|	|
0+30	0.0308	1.10	Q	|	|	|	|
0+35	0.0385	1.11	Q	|	|	|	|
0+40	0.0461	1.11	Q	|	|	|	|
0+45	0.0538	1.11	Q	|	|	|	|
0+50	0.0615	1.12	Q	|	|	|	|
0+55	0.0692	1.12	Q	|	|	|	|
1+ 0	0.0770	1.13	Q	|	|	|	|
1+ 5	0.0847	1.13	Q	|	|	|	|
1+10	0.0925	1.13	Q	|	|	|	|
1+15	0.1004	1.14	Q	|	|	|	|
1+20	0.1082	1.14	Q	|	|	|	|
1+25	0.1161	1.14	Q	|	|	|	|
1+30	0.1240	1.15	Q	|	|	|	|
1+35	0.1319	1.15	Q	|	|	|	|
1+40	0.1399	1.15	QV	|	|	|	|
1+45	0.1478	1.16	QV	|	|	|	|
1+50	0.1558	1.16	QV	|	|	|	|
1+55	0.1639	1.17	QV	|	|	|	|
2+ 0	0.1719	1.17	QV	|	|	|	|
2+ 5	0.1800	1.17	QV	|	|	|	|
2+10	0.1881	1.18	QV	|	|	|	|
2+15	0.1963	1.18	QV	|	|	|	|
2+20	0.2045	1.19	QV	|	|	|	|
2+25	0.2127	1.19	QV	|	|	|	|
2+30	0.2209	1.19	QV	|	|	|	|

```
2+35       0.2291      1.20  QV        |         |         |         |
2+40       0.2374      1.20  QV        |         |         |         |
2+45       0.2457      1.21  QV        |         |         |         |
2+50       0.2541      1.21  QV        |         |         |         |
2+55       0.2625      1.22  QV        |         |         |         |
3+ 0       0.2709      1.22  Q V       |         |         |         |
3+ 5       0.2793      1.23  Q V       |         |         |         |
3+10       0.2878      1.23  Q V       |         |         |         |
3+15       0.2963      1.23  Q V       |         |         |         |
3+20       0.3048      1.24  Q V       |         |         |         |
3+25       0.3134      1.24  Q V       |         |         |         |
3+30       0.3220      1.25  Q V       |         |         |         |
3+35       0.3306      1.25  |QV       |         |         |         |
3+40       0.3393      1.26  |QV       |         |         |         |
3+45       0.3480      1.26  |QV       |         |         |         |
3+50       0.3567      1.27  |QV       |         |         |         |
3+55       0.3655      1.27  |QV       |         |         |         |
4+ 0       0.3743      1.28  |QV       |         |         |         |
4+ 5       0.3831      1.28  |QV       |         |         |         |
4+10       0.3920      1.29  |QV       |         |         |         |
4+15       0.4009      1.29  |Q V       |         |         |         |
4+20       0.4098      1.30  |Q V       |         |         |         |
4+25       0.4188      1.30  |Q V       |         |         |         |
4+30       0.4278      1.31  |Q V       |         |         |         |
4+35       0.4369      1.31  |Q V       |         |         |         |
4+40       0.4460      1.32  |Q V       |         |         |         |
4+45       0.4551      1.33  |Q V       |         |         |         |
4+50       0.4643      1.33  |Q V       |         |         |         |
4+55       0.4735      1.34  |Q V       |         |         |         |
5+ 0       0.4827      1.34  |Q V       |         |         |         |
5+ 5       0.4920      1.35  |Q V       |         |         |         |
5+10       0.5013      1.35  |Q V       |         |         |         |
5+15       0.5107      1.36  |Q V       |         |         |         |
5+20       0.5201      1.37  |Q V       |         |         |         |
5+25       0.5296      1.37  |Q V       |         |         |         |
5+30       0.5391      1.38  |Q  V      |         |         |         |
5+35       0.5486      1.38  |Q  V      |         |         |         |
5+40       0.5582      1.39  |Q  V      |         |         |         |
5+45       0.5678      1.40  |Q  V      |         |         |         |
5+50       0.5775      1.40  |Q  V      |         |         |         |
5+55       0.5872      1.41  |Q  V      |         |         |         |
6+ 0       0.5970      1.42  |Q  V      |         |         |         |
6+ 5       0.6068      1.42  |Q  V      |         |         |         |
6+10       0.6166      1.43  |Q  V      |         |         |         |
6+15       0.6265      1.44  |Q  V      |         |         |         |
6+20       0.6365      1.44  |Q  V      |         |         |         |
6+25       0.6465      1.45  |Q  V      |         |         |         |
6+30       0.6565      1.46  |Q  V      |         |         |         |
6+35       0.6666      1.47  |Q   V     |         |         |         |
6+40       0.6768      1.47  |Q   V     |         |         |         |
6+45       0.6870      1.48  |Q   V     |         |         |         |
6+50       0.6972      1.49  |Q   V     |         |         |         |
6+55       0.7075      1.50  |Q   V     |         |         |         |
7+ 0       0.7179      1.50  |Q   V     |         |         |         |
7+ 5       0.7283      1.51  |Q   V     |         |         |         |
7+10       0.7388      1.52  |Q   V     |         |         |         |
7+15       0.7493      1.53  |Q   V     |         |         |         |
7+20       0.7599      1.54  |Q   V     |         |         |         |
7+25       0.7706      1.55  |Q   V     |         |         |         |
7+30       0.7813      1.55  |Q   V     |         |         |         |
7+35       0.7920      1.56  |Q   V     |         |         |         |
7+40       0.8028      1.57  |Q    V    |         |         |         |
7+45       0.8137      1.58  |Q    V    |         |         |         |
7+50       0.8247      1.59  |Q    V    |         |         |         |
7+55       0.8357      1.60  |Q    V    |         |         |         |
8+ 0       0.8468      1.61  |Q    V    |         |         |         |
8+ 5       0.8579      1.62  |Q    V    |         |         |         |
8+10       0.8691      1.63  |Q    V    |         |         |         |
8+15       0.8804      1.64  |Q    V    |         |         |         |
8+20       0.8917      1.65  |Q    V    |         |         |         |
8+25       0.9031      1.66  |Q    V    |         |         |         |
8+30       0.9146      1.67  |Q    V    |         |         |         |
8+35       0.9262      1.68  |Q    V    |         |         |         |
8+40       0.9378      1.69  |Q     V   |         |         |         |
8+45       0.9495      1.70  |Q     V   |         |         |         |
```

8+50	0.9613	1.71	Q	V			
8+55	0.9732	1.72	Q	V			
9+ 0	0.9851	1.73	Q	V			
9+ 5	0.9971	1.75	Q	V			
9+10	1.0092	1.76	Q	V			
9+15	1.0214	1.77	Q	V			
9+20	1.0337	1.78	Q	V			
9+25	1.0460	1.79	Q	V			
9+30	1.0585	1.81	Q	V			
9+35	1.0710	1.82	Q	V			
9+40	1.0836	1.83	Q	V			
9+45	1.0964	1.85	Q	V			
9+50	1.1092	1.86	Q	V			
9+55	1.1221	1.88	Q	V			
10+ 0	1.1351	1.89	Q	V			
10+ 5	1.1482	1.90	Q	V			
10+10	1.1615	1.92	Q	V			
10+15	1.1748	1.94	Q	V			
10+20	1.1882	1.95	Q	V			
10+25	1.2018	1.97	Q	V			
10+30	1.2154	1.98	Q	V			
10+35	1.2292	2.00	Q	V			
10+40	1.2431	2.02	Q	V			
10+45	1.2571	2.04	Q	V			
10+50	1.2713	2.05	Q	V			
10+55	1.2856	2.07	Q	V			
11+ 0	1.3000	2.09	Q	V			
11+ 5	1.3145	2.11	Q	V			
11+10	1.3292	2.13	Q	V			
11+15	1.3440	2.15	Q	V			
11+20	1.3590	2.17	Q	V			
11+25	1.3741	2.20	Q	V			
11+30	1.3894	2.22	Q	V			
11+35	1.4048	2.24	Q	V			
11+40	1.4204	2.26	Q	V			
11+45	1.4362	2.29	Q	V			
11+50	1.4521	2.31	Q	V			
11+55	1.4682	2.34	Q	V			
12+ 0	1.4845	2.37	Q	V			
12+ 5	1.5009	2.37	Q	V			
12+10	1.5167	2.30	Q	V			
12+15	1.5317	2.18	Q	V			
12+20	1.5465	2.15	Q	V			
12+25	1.5613	2.16	Q	V			
12+30	1.5764	2.18	Q	V			
12+35	1.5916	2.21	Q	V			
12+40	1.6071	2.25	Q	V			
12+45	1.6228	2.28	Q	V			
12+50	1.6388	2.32	Q	V			
12+55	1.6550	2.35	Q	V			
13+ 0	1.6715	2.39	Q	V			
13+ 5	1.6883	2.43	Q	V			
13+10	1.7053	2.48	Q	V			
13+15	1.7227	2.52	Q	V			
13+20	1.7403	2.57	Q	V			
13+25	1.7584	2.62	Q	V			
13+30	1.7767	2.67	Q	V			
13+35	1.7955	2.72	Q	V			
13+40	1.8146	2.78	Q	V			
13+45	1.8341	2.84	Q	V			
13+50	1.8541	2.90	Q	V			
13+55	1.8745	2.97	Q	V			
14+ 0	1.8954	3.04	Q	V			
14+ 5	1.9169	3.11	Q	V			
14+10	1.9389	3.19	Q	V			
14+15	1.9615	3.28	Q	V			
14+20	1.9848	3.38	Q	V			
14+25	2.0087	3.48	Q	V			
14+30	2.0334	3.58	Q	V			
14+35	2.0589	3.70	Q	V			
14+40	2.0852	3.82	Q	V			
14+45	2.1125	3.96	Q	V			
14+50	2.1408	4.11	Q	V			
14+55	2.1703	4.28	Q	V			
15+ 0	2.2010	4.46	Q	V			



```
  21+20       5.0186      1.42  |Q        |         |         |      V  |
  21+25       5.0283      1.41  |Q        |         |         |      V  |
  21+30       5.0379      1.39  |Q        |         |         |      V  |
  21+35       5.0474      1.38  |Q        |         |         |       V |
  21+40       5.0568      1.37  |Q        |         |         |       V |
  21+45       5.0661      1.36  |Q        |         |         |       V |
  21+50       5.0754      1.34  |Q        |         |         |       V |
  21+55       5.0846      1.33  |Q        |         |         |       V |
  22+ 0       5.0937      1.32  |Q        |         |         |       V |
  22+ 5       5.1027      1.31  |Q        |         |         |       V |
  22+10       5.1117      1.30  |Q        |         |         |       V |
  22+15       5.1205      1.29  |Q        |         |         |       V |
  22+20       5.1294      1.28  |Q        |         |         |       V |
  22+25       5.1381      1.27  |Q        |         |         |       V |
  22+30       5.1468      1.26  |Q        |         |         |       V |
  22+35       5.1554      1.25  Q         |         |         |       V |
  22+40       5.1639      1.24  Q         |         |         |       V |
  22+45       5.1724      1.23  Q         |         |         |       V |
  22+50       5.1808      1.22  Q         |         |         |        V|
  22+55       5.1892      1.21  Q         |         |         |        V|
  23+ 0       5.1975      1.20  Q         |         |         |        V|
  23+ 5       5.2057      1.20  Q         |         |         |        V|
  23+10       5.2139      1.19  Q         |         |         |        V|
  23+15       5.2220      1.18  Q         |         |         |        V|
  23+20       5.2301      1.17  Q         |         |         |        V|
  23+25       5.2381      1.16  Q         |         |         |        V|
  23+30       5.2461      1.16  Q         |         |         |        V|
  23+35       5.2540      1.15  Q         |         |         |        V|
  23+40       5.2618      1.14  Q         |         |         |        V|
  23+45       5.2696      1.13  Q         |         |         |        V|
  23+50       5.2774      1.13  Q         |         |         |        V|
  23+55       5.2851      1.12  Q         |         |         |        V|
  24+ 0       5.2927      1.11  Q         |         |         |        V|
  24+ 5       5.2999      1.05  Q         |         |         |        V|
  24+10       5.3049      0.71  Q         |         |         |        V|
  24+15       5.3067      0.27  Q         |         |         |        V|
  24+20       5.3072      0.08  Q         |         |         |        V|
  24+25       5.3074      0.02  Q         |         |         |        V|
  24+30       5.3074      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/12/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 6B
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 6BPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
19.10	1	0.60
Rainfall data for year 2		
19.10	6	0.70
Rainfall data for year 2		
19.10	24	1.20
Rainfall data for year 100		
19.10	1	1.00
Rainfall data for year 100		
19.10	6	1.90
Rainfall data for year 100		
19.10	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	19.10	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.91	0.100	69.0	69.0	4.49	0.263
17.19	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      19.10(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      19.10(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       230.99 (CFS))

  1                5.469                  12.633
  2               35.337                  68.991
  3               75.925                  93.756
  4               93.130                  39.742
  5               98.077                  11.427
  6               99.228                   2.657
  7              100.000                   1.784
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3698              0.3698
  2              0.4879              0.1181
  3              0.5738              0.0859
  4              0.6438              0.0700
  5              0.7039              0.0601
  6              0.7572              0.0533
  7              0.8053              0.0482
  8              0.8495              0.0442
  9              0.8905              0.0410
 10              0.9288              0.0383
 11              0.9649              0.0361
 12              0.9991              0.0342
 13              1.0282              0.0291
 14              1.0559              0.0277
 15              1.0824              0.0265
 16              1.1078              0.0254
 17              1.1322              0.0244
 18              1.1556              0.0235
 19              1.1783              0.0226
 20              1.2002              0.0219
 21              1.2214              0.0212
 22              1.2419              0.0206
 23              1.2619              0.0200
 24              1.2813              0.0194
 25              1.3002              0.0189
 26              1.3187              0.0184
```

27	1.3367	0.0180
28	1.3542	0.0176
29	1.3714	0.0172
30	1.3882	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4520	0.0155
35	1.4672	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5111	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5528	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5926	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091

102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2612	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4269	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6910	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7115	0.0068
169	2.7182	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8426	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9478	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2038	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2199	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3698	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 44.98(CFS)

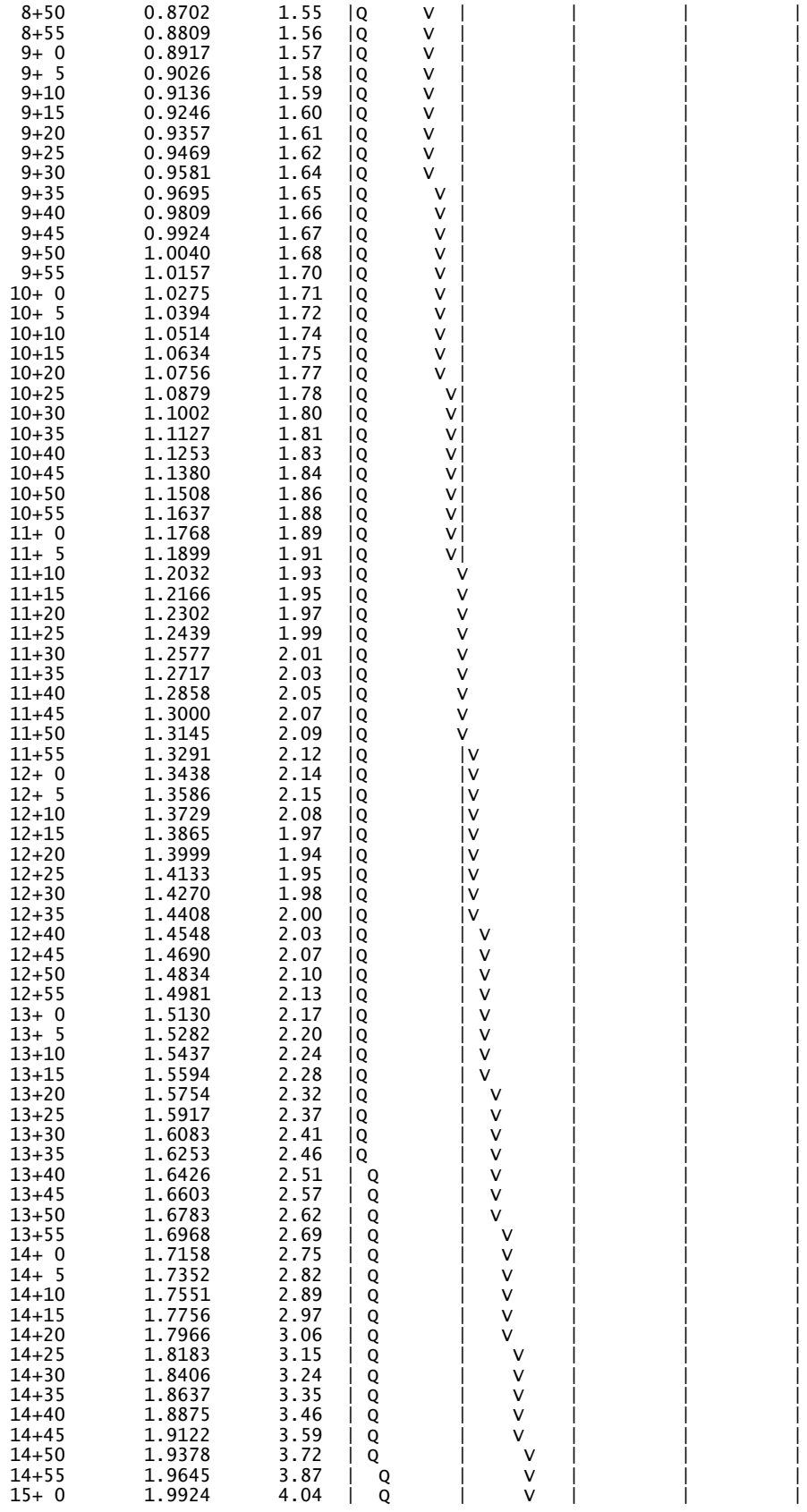
++

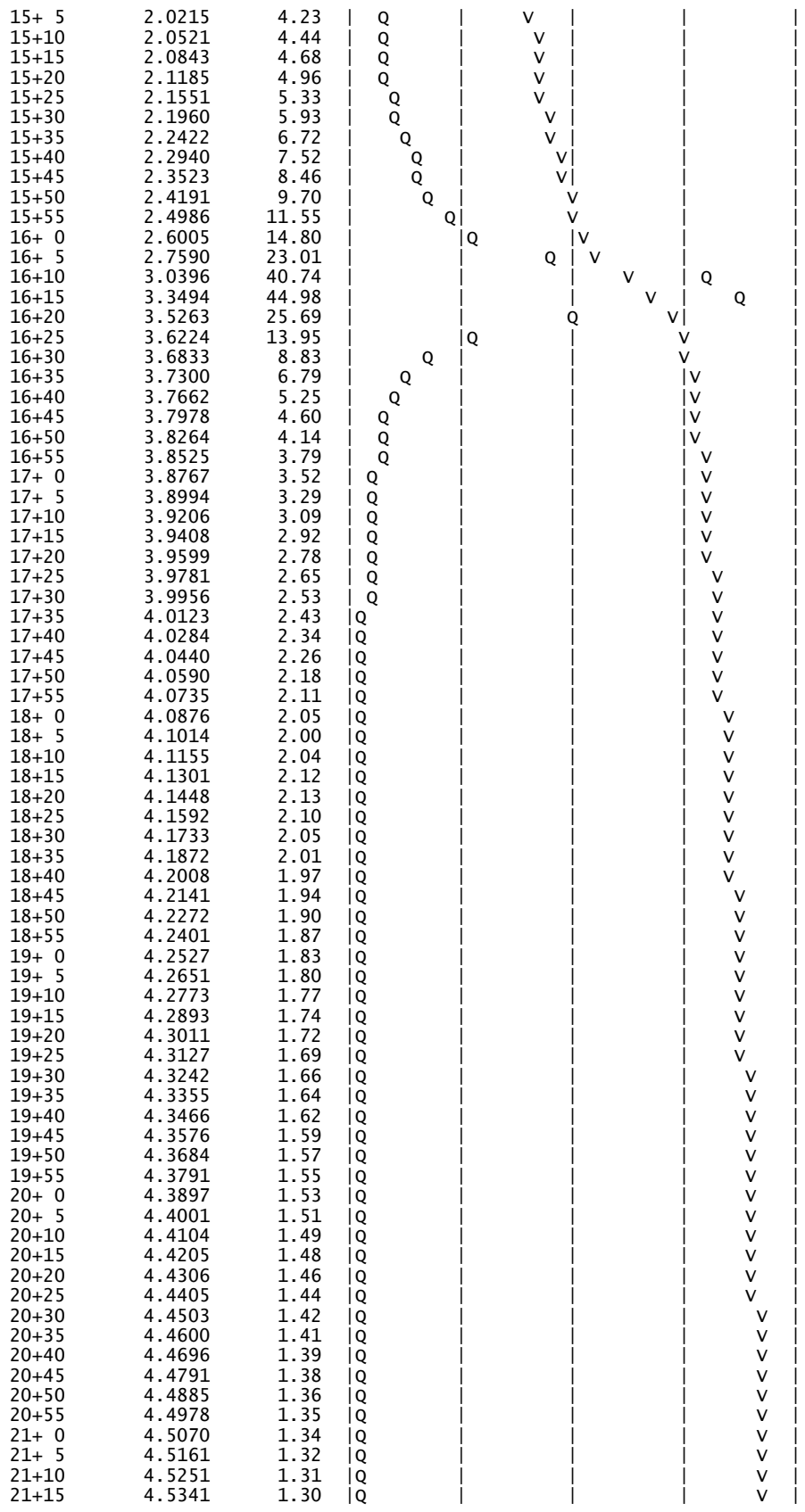
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0004	0.05	Q	|	|	|	|
0+10	0.0028	0.35	Q	|	|	|	|
0+15	0.0080	0.75	Q	|	|	|	|
0+20	0.0143	0.93	Q	|	|	|	|
0+25	0.0211	0.98	Q	|	|	|	|
0+30	0.0279	0.99	Q	|	|	|	|
0+35	0.0348	1.00	Q	|	|	|	|
0+40	0.0417	1.01	Q	|	|	|	|
0+45	0.0487	1.01	Q	|	|	|	|
0+50	0.0557	1.01	Q	|	|	|	|
0+55	0.0627	1.02	Q	|	|	|	|
1+ 0	0.0697	1.02	Q	|	|	|	|
1+ 5	0.0767	1.02	Q	|	|	|	|
1+10	0.0838	1.02	Q	|	|	|	|
1+15	0.0908	1.03	Q	|	|	|	|
1+20	0.0979	1.03	Q	|	|	|	|
1+25	0.1051	1.04	Q	|	|	|	|
1+30	0.1122	1.04	Q	|	|	|	|
1+35	0.1194	1.04	Q	|	|	|	|
1+40	0.1266	1.05	QV	|	|	|	|
1+45	0.1338	1.05	QV	|	|	|	|
1+50	0.1411	1.05	QV	|	|	|	|
1+55	0.1483	1.06	QV	|	|	|	|
2+ 0	0.1556	1.06	QV	|	|	|	|
2+ 5	0.1630	1.06	QV	|	|	|	|
2+10	0.1703	1.07	QV	|	|	|	|
2+15	0.1777	1.07	QV	|	|	|	|
2+20	0.1851	1.07	QV	|	|	|	|
2+25	0.1925	1.08	QV	|	|	|	|
2+30	0.1999	1.08	QV	|	|	|	|

```
2+35       0.2074      1.09  QV        |         |         |         |
2+40       0.2149      1.09  QV        |         |         |         |
2+45       0.2225      1.09  QV        |         |         |         |
2+50       0.2300      1.10  QV        |         |         |         |
2+55       0.2376      1.10  QV        |         |         |         |
3+ 0       0.2452      1.11  Q V       |         |         |         |
3+ 5       0.2528      1.11  Q V       |         |         |         |
3+10       0.2605      1.11  Q V       |         |         |         |
3+15       0.2682      1.12  Q V       |         |         |         |
3+20       0.2759      1.12  Q V       |         |         |         |
3+25       0.2837      1.13  Q V       |         |         |         |
3+30       0.2915      1.13  Q V       |         |         |         |
3+35       0.2993      1.13  Q V       |         |         |         |
3+40       0.3071      1.14  Q V       |         |         |         |
3+45       0.3150      1.14  Q V       |         |         |         |
3+50       0.3229      1.15  Q V       |         |         |         |
3+55       0.3308      1.15  Q V       |         |         |         |
4+ 0       0.3388      1.16  Q V       |         |         |         |
4+ 5       0.3468      1.16  Q V       |         |         |         |
4+10       0.3548      1.17  Q V       |         |         |         |
4+15       0.3629      1.17  Q  V      |         |         |         |
4+20       0.3710      1.18  Q  V      |         |         |         |
4+25       0.3791      1.18  Q  V      |         |         |         |
4+30       0.3873      1.19  Q  V      |         |         |         |
4+35       0.3955      1.19  Q  V      |         |         |         |
4+40       0.4037      1.19  Q  V      |         |         |         |
4+45       0.4120      1.20  Q  V      |         |         |         |
4+50       0.4203      1.21  Q  V      |         |         |         |
4+55       0.4286      1.21  Q  V      |         |         |         |
5+ 0       0.4370      1.22  Q  V      |         |         |         |
5+ 5       0.4454      1.22  Q  V      |         |         |         |
5+10       0.4538      1.23  Q  V      |         |         |         |
5+15       0.4623      1.23  Q  V      |         |         |         |
5+20       0.4708      1.24  Q  V      |         |         |         |
5+25       0.4794      1.24  Q  V      |         |         |         |
5+30       0.4880      1.25  Q   V     |         |         |         |
5+35       0.4966      1.25  |Q  V     |         |         |         |
5+40       0.5053      1.26  |Q  V     |         |         |         |
5+45       0.5140      1.27  |Q  V     |         |         |         |
5+50       0.5227      1.27  |Q  V     |         |         |         |
5+55       0.5315      1.28  |Q  V     |         |         |         |
6+ 0       0.5404      1.28  |Q  V     |         |         |         |
6+ 5       0.5493      1.29  |Q  V     |         |         |         |
6+10       0.5582      1.30  |Q  V     |         |         |         |
6+15       0.5671      1.30  |Q  V     |         |         |         |
6+20       0.5761      1.31  |Q  V     |         |         |         |
6+25       0.5852      1.31  |Q  V     |         |         |         |
6+30       0.5943      1.32  |Q  V     |         |         |         |
6+35       0.6034      1.33  |Q   V    |         |         |         |
6+40       0.6126      1.33  |Q   V    |         |         |         |
6+45       0.6219      1.34  |Q   V    |         |         |         |
6+50       0.6311      1.35  |Q   V    |         |         |         |
6+55       0.6405      1.35  |Q   V    |         |         |         |
7+ 0       0.6499      1.36  |Q   V    |         |         |         |
7+ 5       0.6593      1.37  |Q   V    |         |         |         |
7+10       0.6688      1.38  |Q   V    |         |         |         |
7+15       0.6783      1.38  |Q   V    |         |         |         |
7+20       0.6879      1.39  |Q   V    |         |         |         |
7+25       0.6975      1.40  |Q   V    |         |         |         |
7+30       0.7072      1.41  |Q   V    |         |         |         |
7+35       0.7169      1.41  |Q   V    |         |         |         |
7+40       0.7267      1.42  |Q    V   |         |         |         |
7+45       0.7366      1.43  |Q    V   |         |         |         |
7+50       0.7465      1.44  |Q    V   |         |         |         |
7+55       0.7565      1.45  |Q    V   |         |         |         |
8+ 0       0.7665      1.46  |Q    V   |         |         |         |
8+ 5       0.7766      1.46  |Q    V   |         |         |         |
8+10       0.7867      1.47  |Q    V   |         |         |         |
8+15       0.7969      1.48  |Q    V   |         |         |         |
8+20       0.8072      1.49  |Q    V   |         |         |         |
8+25       0.8175      1.50  |Q    V   |         |         |         |
8+30       0.8279      1.51  |Q    V   |         |         |         |
8+35       0.8384      1.52  |Q    V   |         |         |         |
8+40       0.8489      1.53  |Q     V  |         |         |         |
8+45       0.8595      1.54  |Q     V  |         |         |         |
```


8+50 0.8702 1.55
8+55 0.8809 1.56
9+ 0 0.8917 1.57
9+ 5 0.9026 1.58
9+10 0.9136 1.59
9+15 0.9246 1.60
9+20 0.9357 1.61
9+25 0.9469 1.62
9+30 0.9581 1.64
9+35 0.9695 1.65
9+40 0.9809 1.66
9+45 0.9924 1.67
9+50 1.0040 1.68
9+55 1.0157 1.70
10+ 0 1.0275 1.71
10+ 5 1.0394 1.72
10+10 1.0514 1.74
10+15 1.0634 1.75
10+20 1.0756 1.77
10+25 1.0879 1.78
10+30 1.1002 1.80
10+35 1.1127 1.81
10+40 1.1253 1.83
10+45 1.1380 1.84
10+50 1.1508 1.86
10+55 1.1637 1.88
11+ 0 1.1768 1.89
11+ 5 1.1899 1.91
11+10 1.2032 1.93
11+15 1.2166 1.95
11+20 1.2302 1.97
11+25 1.2439 1.99
11+30 1.2577 2.01
11+35 1.2717 2.03
11+40 1.2858 2.05
11+45 1.3000 2.07
11+50 1.3145 2.09
11+55 1.3291 2.12
12+ 0 1.3438 2.14
12+ 5 1.3586 2.15
12+10 1.3729 2.08
12+15 1.3865 1.97
12+20 1.3999 1.94
12+25 1.4133 1.95
12+30 1.4270 1.98
12+35 1.4408 2.00
12+40 1.4548 2.03
12+45 1.4690 2.07
12+50 1.4834 2.10
12+55 1.4981 2.13
13+ 0 1.5130 2.17
13+ 5 1.5282 2.20
13+10 1.5437 2.24
13+15 1.5594 2.28
13+20 1.5754 2.32
13+25 1.5917 2.37
13+30 1.6083 2.41
13+35 1.6253 2.46
13+40 1.6426 2.51
13+45 1.6603 2.57
13+50 1.6783 2.62
13+55 1.6968 2.69
14+ 0 1.7158 2.75
14+ 5 1.7352 2.82
14+10 1.7551 2.89
14+15 1.7756 2.97
14+20 1.7966 3.06
14+25 1.8183 3.15
14+30 1.8406 3.24
14+35 1.8637 3.35
14+40 1.8875 3.46
14+45 1.9122 3.59
14+50 1.9378 3.72
14+55 1.9645 3.87
15+ 0 1.9924 4.04



```
   21+20       4.5429      1.28  |Q        |         |         |      V  |
   21+25       4.5517      1.27  |Q        |         |         |      V  |
   21+30       4.5604      1.26  |Q        |         |         |      V  |
   21+35       4.5690      1.25  Q         |         |         |       V |
   21+40       4.5775      1.24  Q         |         |         |       V |
   21+45       4.5860      1.23  Q         |         |         |       V |
   21+50       4.5943      1.22  Q         |         |         |       V |
   21+55       4.6027      1.21  Q         |         |         |       V |
   22+ 0       4.6109      1.20  Q         |         |         |       V |
   22+ 5       4.6191      1.19  Q         |         |         |       V |
   22+10       4.6272      1.18  Q         |         |         |       V |
   22+15       4.6352      1.17  Q         |         |         |       V |
   22+20       4.6432      1.16  Q         |         |         |       V |
   22+25       4.6511      1.15  Q         |         |         |       V |
   22+30       4.6590      1.14  Q         |         |         |       V |
   22+35       4.6667      1.13  Q         |         |         |       V |
   22+40       4.6745      1.12  Q         |         |         |       V |
   22+45       4.6822      1.11  Q         |         |         |       V |
   22+50       4.6898      1.11  Q         |         |         |        V|
   22+55       4.6973      1.10  Q         |         |         |        V|
   23+ 0       4.7049      1.09  Q         |         |         |        V|
   23+ 5       4.7123      1.08  Q         |         |         |        V|
   23+10       4.7197      1.08  Q         |         |         |        V|
   23+15       4.7271      1.07  Q         |         |         |        V|
   23+20       4.7344      1.06  Q         |         |         |        V|
   23+25       4.7416      1.05  Q         |         |         |        V|
   23+30       4.7488      1.05  Q         |         |         |        V|
   23+35       4.7560      1.04  Q         |         |         |        V|
   23+40       4.7631      1.03  Q         |         |         |        V|
   23+45       4.7702      1.03  Q         |         |         |        V|
   23+50       4.7772      1.02  Q         |         |         |        V|
   23+55       4.7842      1.01  Q         |         |         |        V|
   24+ 0       4.7911      1.01  Q         |         |         |        V|
   24+ 5       4.7976      0.95  Q         |         |         |        V|
   24+10       4.8021      0.65  Q         |         |         |        V|
   24+15       4.8037      0.24  Q         |         |         |        V|
   24+20       4.8042      0.07  Q         |         |         |        V|
   24+25       4.8043      0.02  Q         |         |         |        V|
   24+30       4.8044      0.01  Q         |         |         |         V
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 6C
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 6CPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
18.20	1	0.60
Rainfall data for year 2		
18.20	6	0.70
Rainfall data for year 2		
18.20	24	1.20
Rainfall data for year 100		
18.20	1	1.00
Rainfall data for year 100		
18.20	6	1.90
Rainfall data for year 100		
18.20	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	18.20	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.82	0.100	69.0	69.0	4.49	0.263
16.38	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.180 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      18.20(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.8704
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      18.20(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       220.11 (CFS))

  1                6.077                  13.375
  2               39.009                  72.487
  3               79.564                  89.263
  4               94.634                  33.171
  5               98.466                   8.434
  6               99.524                   2.328
  7              100.000                   1.048
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3698              0.3698
  2              0.4879              0.1182
  3              0.5739              0.0859
  4              0.6438              0.0700
  5              0.7040              0.0601
  6              0.7572              0.0533
  7              0.8054              0.0482
  8              0.8496              0.0442
  9              0.8905              0.0410
 10              0.9289              0.0383
 11              0.9650              0.0361
 12              0.9991              0.0342
 13              1.0283              0.0291
 14              1.0560              0.0277
 15              1.0825              0.0265
 16              1.1078              0.0254
 17              1.1322              0.0244
 18              1.1557              0.0235
 19              1.1783              0.0226
 20              1.2002              0.0219
 21              1.2214              0.0212
 22              1.2420              0.0206
 23              1.2619              0.0200
 24              1.2814              0.0194
 25              1.3003              0.0189
 26              1.3187              0.0184
```

27	1.3367	0.0180
28	1.3542	0.0176
29	1.3714	0.0172
30	1.3882	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4365	0.0158
34	1.4520	0.0155
35	1.4672	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5111	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5528	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5926	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9754	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091

102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2612	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4269	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5416	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5710	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6910	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7115	0.0068
169	2.7182	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8426	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8741	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9478	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1877	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2038	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2199	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3549	0.0051
280	3.3600	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0814
192	0.1182	0.0046	0.1136
193	0.3698	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 42.56(CFS)

++

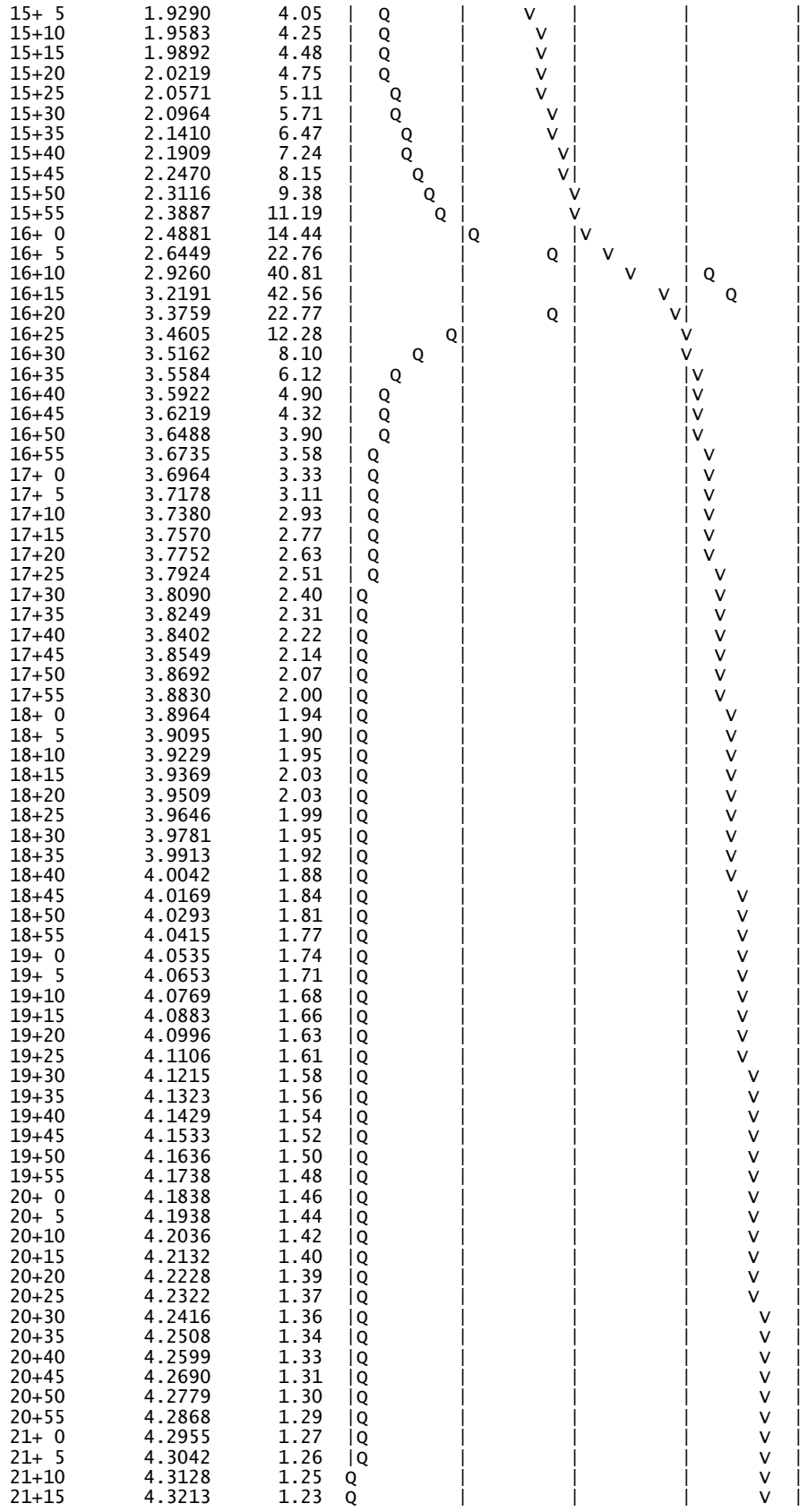
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0004	0.06	Q	|	|	|	|
0+10	0.0029	0.37	Q	|	|	|	|
0+15	0.0081	0.75	Q	|	|	|	|
0+20	0.0143	0.90	Q	|	|	|	|
0+25	0.0207	0.94	Q	|	|	|	|
0+30	0.0273	0.95	Q	|	|	|	|
0+35	0.0338	0.96	Q	|	|	|	|
0+40	0.0404	0.96	Q	|	|	|	|
0+45	0.0471	0.96	Q	|	|	|	|
0+50	0.0537	0.96	Q	|	|	|	|
0+55	0.0604	0.97	Q	|	|	|	|
1+ 0	0.0671	0.97	Q	|	|	|	|
1+ 5	0.0738	0.97	Q	|	|	|	|
1+10	0.0805	0.98	Q	|	|	|	|
1+15	0.0872	0.98	Q	|	|	|	|
1+20	0.0940	0.98	Q	|	|	|	|
1+25	0.1008	0.99	Q	|	|	|	|
1+30	0.1076	0.99	Q	|	|	|	|
1+35	0.1145	0.99	QV	|	|	|	|
1+40	0.1213	1.00	QV	|	|	|	|
1+45	0.1282	1.00	QV	|	|	|	|
1+50	0.1351	1.00	QV	|	|	|	|
1+55	0.1421	1.01	QV	|	|	|	|
2+ 0	0.1490	1.01	QV	|	|	|	|
2+ 5	0.1560	1.01	QV	|	|	|	|
2+10	0.1630	1.02	QV	|	|	|	|
2+15	0.1700	1.02	QV	|	|	|	|
2+20	0.1771	1.02	QV	|	|	|	|
2+25	0.1841	1.03	QV	|	|	|	|
2+30	0.1912	1.03	QV	|	|	|	|

2+35	0.1984	1.03	QV	|	|	|	|
2+40	0.2055	1.04	QV	|	|	|	|
2+45	0.2127	1.04	QV	|	|	|	|
2+50	0.2199	1.05	QV	|	|	|	|
2+55	0.2271	1.05	QV	|	|	|	|
3+ 0	0.2344	1.05	Q V	|	|	|	|
3+ 5	0.2417	1.06	Q V	|	|	|	|
3+10	0.2490	1.06	Q V	|	|	|	|
3+15	0.2563	1.07	Q V	|	|	|	|
3+20	0.2637	1.07	Q V	|	|	|	|
3+25	0.2711	1.07	Q V	|	|	|	|
3+30	0.2785	1.08	Q V	|	|	|	|
3+35	0.2859	1.08	Q V	|	|	|	|
3+40	0.2934	1.09	Q V	|	|	|	|
3+45	0.3009	1.09	Q V	|	|	|	|
3+50	0.3084	1.09	Q V	|	|	|	|
3+55	0.3160	1.10	Q V	|	|	|	|
4+ 0	0.3236	1.10	Q V	|	|	|	|
4+ 5	0.3312	1.11	Q V	|	|	|	|
4+10	0.3389	1.11	Q V	|	|	|	|
4+15	0.3466	1.12	Q V	|	|	|	|
4+20	0.3543	1.12	Q V	|	|	|	|
4+25	0.3620	1.13	Q V	|	|	|	|
4+30	0.3698	1.13	Q V	|	|	|	|
4+35	0.3776	1.13	Q V	|	|	|	|
4+40	0.3855	1.14	Q V	|	|	|	|
4+45	0.3934	1.14	Q V	|	|	|	|
4+50	0.4013	1.15	Q V	|	|	|	|
4+55	0.4092	1.15	Q V	|	|	|	|
5+ 0	0.4172	1.16	Q V	|	|	|	|
5+ 5	0.4252	1.16	Q V	|	|	|	|
5+10	0.4333	1.17	Q V	|	|	|	|
5+15	0.4413	1.17	Q V	|	|	|	|
5+20	0.4495	1.18	Q V	|	|	|	|
5+25	0.4576	1.18	Q V	|	|	|	|
5+30	0.4658	1.19	Q V	|	|	|	|
5+35	0.4740	1.20	Q V	|	|	|	|
5+40	0.4823	1.20	Q V	|	|	|	|
5+45	0.4906	1.21	Q V	|	|	|	|
5+50	0.4990	1.21	Q V	|	|	|	|
5+55	0.5073	1.22	Q V	|	|	|	|
6+ 0	0.5158	1.22	Q V	|	|	|	|
6+ 5	0.5242	1.23	Q V	|	|	|	|
6+10	0.5327	1.23	Q V	|	|	|	|
6+15	0.5413	1.24	Q V	|	|	|	|
6+20	0.5499	1.25	Q V	|	|	|	|
6+25	0.5585	1.25	|Q V	|	|	|	|
6+30	0.5672	1.26	|Q V	|	|	|	|
6+35	0.5759	1.27	|Q V	|	|	|	|
6+40	0.5846	1.27	|Q V	|	|	|	|
6+45	0.5935	1.28	|Q V	|	|	|	|
6+50	0.6023	1.28	|Q V	|	|	|	|
6+55	0.6112	1.29	|Q V	|	|	|	|
7+ 0	0.6201	1.30	|Q V	|	|	|	|
7+ 5	0.6291	1.31	|Q V	|	|	|	|
7+10	0.6382	1.31	|Q V	|	|	|	|
7+15	0.6473	1.32	|Q V	|	|	|	|
7+20	0.6564	1.33	|Q V	|	|	|	|
7+25	0.6656	1.33	|Q V	|	|	|	|
7+30	0.6748	1.34	|Q V	|	|	|	|
7+35	0.6841	1.35	|Q V	|	|	|	|
7+40	0.6934	1.36	|Q V	|	|	|	|
7+45	0.7028	1.36	|Q V	|	|	|	|
7+50	0.7123	1.37	|Q V	|	|	|	|
7+55	0.7218	1.38	|Q V	|	|	|	|
8+ 0	0.7313	1.39	|Q V	|	|	|	|
8+ 5	0.7410	1.40	|Q V	|	|	|	|
8+10	0.7506	1.40	|Q V	|	|	|	|
8+15	0.7604	1.41	|Q V	|	|	|	|
8+20	0.7701	1.42	|Q V	|	|	|	|
8+25	0.7800	1.43	|Q V	|	|	|	|
8+30	0.7899	1.44	|Q V	|	|	|	|
8+35	0.7999	1.45	|Q V	|	|	|	|
8+40	0.8099	1.46	|Q V	|	|	|	|
8+45	0.8200	1.47	|Q V	|	|	|	|

```
 8+50       0.8302      1.48  |Q     V  |          |          |          |
 8+55       0.8404      1.49  |Q     V  |          |          |          |
 9+ 0       0.8507      1.50  |Q     V  |          |          |          |
 9+ 5       0.8611      1.51  |Q     V  |          |          |          |
 9+10       0.8716      1.52  |Q     V  |          |          |          |
 9+15       0.8821      1.53  |Q     V  |          |          |          |
 9+20       0.8927      1.54  |Q     V  |          |          |          |
 9+25       0.9033      1.55  |Q     V  |          |          |          |
 9+30       0.9141      1.56  |Q     V  |          |          |          |
 9+35       0.9249      1.57  |Q      V |          |          |          |
 9+40       0.9358      1.58  |Q      V |          |          |          |
 9+45       0.9468      1.59  |Q      V |          |          |          |
 9+50       0.9579      1.61  |Q      V |          |          |          |
 9+55       0.9690      1.62  |Q      V |          |          |          |
10+ 0       0.9802      1.63  |Q      V |          |          |          |
10+ 5       0.9916      1.64  |Q      V |          |          |          |
10+10       1.0030      1.66  |Q      V |          |          |          |
10+15       1.0145      1.67  |Q      V |          |          |          |
10+20       1.0261      1.68  |Q      V |          |          |          |
10+25       1.0378      1.70  |Q       V|          |          |          |
10+30       1.0496      1.71  |Q       V|          |          |          |
10+35       1.0615      1.73  |Q       V|          |          |          |
10+40       1.0735      1.74  |Q       V|          |          |          |
10+45       1.0856      1.76  |Q       V|          |          |          |
10+50       1.0978      1.77  |Q       V|          |          |          |
10+55       1.1101      1.79  |Q       V|          |          |          |
11+ 0       1.1226      1.81  |Q       V|          |          |          |
11+ 5       1.1351      1.82  |Q       V|          |          |          |
11+10       1.1478      1.84  |Q        V          |          |          |
11+15       1.1606      1.86  |Q        V          |          |          |
11+20       1.1735      1.88  |Q        V          |          |          |
11+25       1.1866      1.90  |Q        V          |          |          |
11+30       1.1998      1.91  |Q        V          |          |          |
11+35       1.2131      1.93  |Q        V          |          |          |
11+40       1.2266      1.96  |Q        V          |          |          |
11+45       1.2402      1.98  |Q        V          |          |          |
11+50       1.2539      2.00  |Q        V          |          |          |
11+55       1.2678      2.02  |Q        |V         |          |          |
12+ 0       1.2819      2.04  |Q        |V         |          |          |
12+ 5       1.2960      2.05  |Q        |V         |          |          |
12+10       1.3096      1.97  |Q        |V         |          |          |
12+15       1.3225      1.87  |Q        |V         |          |          |
12+20       1.3352      1.85  |Q        |V         |          |          |
12+25       1.3480      1.86  |Q        |V         |          |          |
12+30       1.3610      1.89  |Q        |V         |          |          |
12+35       1.3742      1.91  |Q        | V        |          |          |
12+40       1.3876      1.94  |Q        | V        |          |          |
12+45       1.4011      1.97  |Q        | V        |          |          |
12+50       1.4149      2.00  |Q        | V        |          |          |
12+55       1.4289      2.03  |Q        | V        |          |          |
13+ 0       1.4432      2.07  |Q        | V        |          |          |
13+ 5       1.4577      2.10  |Q        | V        |          |          |
13+10       1.4724      2.14  |Q        | V        |          |          |
13+15       1.4874      2.18  |Q        | V        |          |          |
13+20       1.5027      2.22  |Q        |  V       |          |          |
13+25       1.5183      2.26  |Q        |  V       |          |          |
13+30       1.5341      2.30  |Q        |  V       |          |          |
13+35       1.5503      2.35  |Q        |  V       |          |          |
13+40       1.5669      2.40  |Q        |  V       |          |          |
13+45       1.5837      2.45  |Q        |  V       |          |          |
13+50       1.6010      2.51  | Q       |  V       |          |          |
13+55       1.6187      2.56  | Q       |   V      |          |          |
14+ 0       1.6368      2.63  | Q       |   V      |          |          |
14+ 5       1.6553      2.69  | Q       |   V      |          |          |
14+10       1.6743      2.76  | Q       |   V      |          |          |
14+15       1.6939      2.84  | Q       |   V      |          |          |
14+20       1.7140      2.92  | Q       |   V      |          |          |
14+25       1.7347      3.01  | Q       |    V     |          |          |
14+30       1.7560      3.10  | Q       |    V     |          |          |
14+35       1.7781      3.20  | Q       |    V     |          |          |
14+40       1.8009      3.31  | Q       |    V     |          |          |
14+45       1.8245      3.43  | Q       |    V     |          |          |
14+50       1.8490      3.56  | Q       |     V    |          |          |
14+55       1.8745      3.71  | Q       |     V    |          |          |
15+ 0       1.9011      3.87  |  Q      |     V    |          |          |
```



```
  21+20       4.3297      1.22  Q         |         |         |      V  |
  21+25       4.3381      1.21  Q         |         |         |      V  |
  21+30       4.3463      1.20  Q         |         |         |      V  |
  21+35       4.3545      1.19  Q         |         |         |       V |
  21+40       4.3627      1.18  Q         |         |         |       V |
  21+45       4.3707      1.17  Q         |         |         |       V |
  21+50       4.3787      1.16  Q         |         |         |       V |
  21+55       4.3866      1.15  Q         |         |         |       V |
  22+ 0       4.3944      1.14  Q         |         |         |       V |
  22+ 5       4.4022      1.13  Q         |         |         |       V |
  22+10       4.4099      1.12  Q         |         |         |       V |
  22+15       4.4176      1.11  Q         |         |         |       V |
  22+20       4.4252      1.10  Q         |         |         |       V |
  22+25       4.4327      1.09  Q         |         |         |       V |
  22+30       4.4402      1.09  Q         |         |         |       V |
  22+35       4.4476      1.08  Q         |         |         |       V |
  22+40       4.4550      1.07  Q         |         |         |       V |
  22+45       4.4623      1.06  Q         |         |         |       V |
  22+50       4.4695      1.05  Q         |         |         |        V|
  22+55       4.4767      1.05  Q         |         |         |        V|
  23+ 0       4.4839      1.04  Q         |         |         |        V|
  23+ 5       4.4910      1.03  Q         |         |         |        V|
  23+10       4.4980      1.02  Q         |         |         |        V|
  23+15       4.5050      1.02  Q         |         |         |        V|
  23+20       4.5120      1.01  Q         |         |         |        V|
  23+25       4.5189      1.00  Q         |         |         |        V|
  23+30       4.5258      1.00  Q         |         |         |        V|
  23+35       4.5326      0.99  Q         |         |         |        V|
  23+40       4.5394      0.98  Q         |         |         |        V|
  23+45       4.5461      0.98  Q         |         |         |        V|
  23+50       4.5528      0.97  Q         |         |         |        V|
  23+55       4.5594      0.96  Q         |         |         |        V|
  24+ 0       4.5660      0.96  Q         |         |         |        V|
  24+ 5       4.5722      0.90  Q         |         |         |        V|
  24+10       4.5762      0.58  Q         |         |         |        V|
  24+15       4.5775      0.19  Q         |         |         |        V|
  24+20       4.5779      0.05  Q         |         |         |        V|
  24+25       4.5780      0.01  Q         |         |         |        V|
  24+30       4.5780      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 03/12/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6586

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 6D
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 6DPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
16.50	1	0.60
Rainfall data for year 2		
16.50	6	0.70
Rainfall data for year 2		
16.50	24	1.20
Rainfall data for year 100		
16.50	1	1.00
Rainfall data for year 100		
16.50	6	1.90
Rainfall data for year 100		
16.50	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	16.50	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.65	0.100	69.0	69.0	4.49	0.263
14.85	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.170 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      16.50(Ac.)
Catchment Lag time =   0.136 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 61.2745
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      16.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       199.55 (CFS))

  1                6.789                  13.548
  2               43.210                  72.677
  3               82.892                  79.184
  4               95.987                  26.130
  5               98.763                   5.540
  6              100.000                   2.468
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3698              0.3698
  2              0.4880              0.1182
  3              0.5739              0.0859
  4              0.6439              0.0700
  5              0.7040              0.0601
  6              0.7573              0.0533
  7              0.8054              0.0482
  8              0.8496              0.0442
  9              0.8906              0.0410
 10              0.9289              0.0383
 11              0.9650              0.0361
 12              0.9992              0.0342
 13              1.0283              0.0291
 14              1.0561              0.0277
 15              1.0825              0.0265
 16              1.1079              0.0254
 17              1.1323              0.0244
 18              1.1557              0.0235
 19              1.1784              0.0226
 20              1.2003              0.0219
 21              1.2215              0.0212
 22              1.2420              0.0206
 23              1.2620              0.0200
 24              1.2814              0.0194
 25              1.3003              0.0189
 26              1.3187              0.0184
 27              1.3367              0.0180
```

28	1.3543	0.0176
29	1.3714	0.0172
30	1.3882	0.0168
31	1.4047	0.0164
32	1.4208	0.0161
33	1.4365	0.0158
34	1.4520	0.0155
35	1.4672	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5111	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5528	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5926	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6307	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7798	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8416	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8712	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9219	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9754	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1900	0.0091
102	2.1990	0.0091

103	2.2081	0.0090
104	2.2170	0.0090
105	2.2260	0.0089
106	2.2348	0.0089
107	2.2437	0.0088
108	2.2524	0.0088
109	2.2612	0.0087
110	2.2699	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4190	0.0080
129	2.4269	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4966	0.0076
139	2.5041	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5341	0.0075
144	2.5416	0.0074
145	2.5490	0.0074
146	2.5563	0.0074
147	2.5637	0.0073
148	2.5710	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6635	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6910	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7115	0.0068
169	2.7182	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7451	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066
177	2.7715	0.0066

178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8426	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8741	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9357	0.0061
204	2.9417	0.0061
205	2.9478	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9777	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0132	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0307	0.0058
220	3.0365	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0710	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0937	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1877	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2039	0.0054
251	3.2092	0.0054
252	3.2146	0.0054

253	3.2199	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3091	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3549	0.0051
280	3.3600	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048
34	0.0055	0.0007	0.0048

35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069
109	0.0080	0.0011	0.0069

110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229
184	0.0277	0.0038	0.0240

185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0814
192	0.1182	0.0046	0.1136
193	0.3698	0.0046	0.3653
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0163
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054
259	0.0062	0.0008	0.0053

260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 38.98(CFS)

++

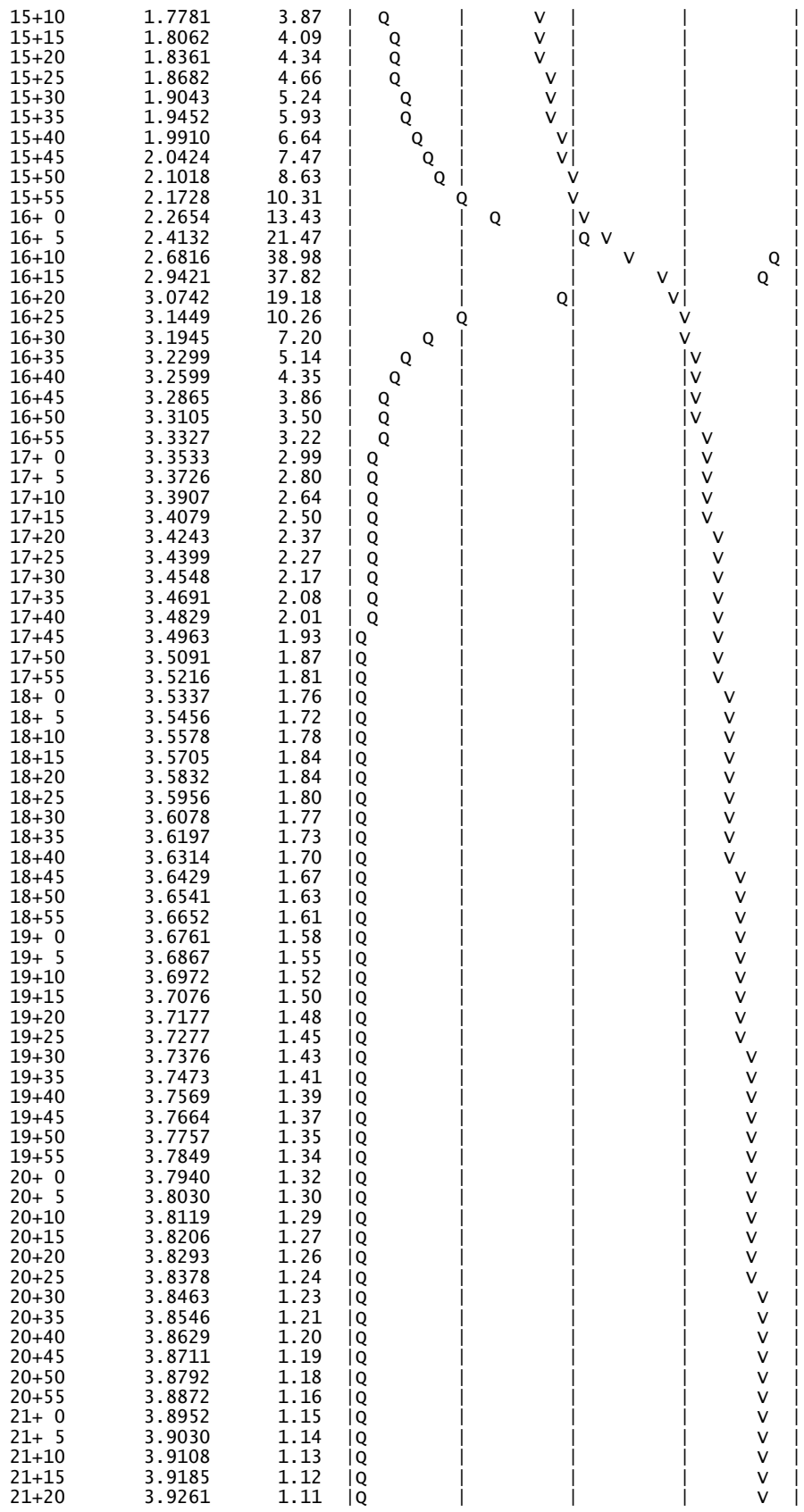
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0004	0.06	Q				
0+10	0.0029	0.37	Q				
0+15	0.0078	0.71	Q				
0+20	0.0135	0.82	Q				
0+25	0.0194	0.85	Q				
0+30	0.0253	0.86	Q				
0+35	0.0313	0.87	Q				
0+40	0.0373	0.87	Q				
0+45	0.0433	0.87	Q				
0+50	0.0493	0.87	Q				
0+55	0.0554	0.88	Q				
1+ 0	0.0614	0.88	Q				
1+ 5	0.0675	0.88	Q				
1+10	0.0736	0.89	Q				
1+15	0.0797	0.89	Q				
1+20	0.0859	0.89	Q				
1+25	0.0920	0.89	Q				
1+30	0.0982	0.90	Q				
1+35	0.1044	0.90	QV				
1+40	0.1106	0.90	QV				
1+45	0.1169	0.91	QV				
1+50	0.1232	0.91	QV				
1+55	0.1294	0.91	QV				
2+ 0	0.1357	0.92	QV				
2+ 5	0.1421	0.92	QV				
2+10	0.1484	0.92	QV				
2+15	0.1548	0.93	QV				
2+20	0.1612	0.93	QV				
2+25	0.1676	0.93	QV				
2+30	0.1740	0.94	QV				
2+35	0.1805	0.94	QV				

```
2+40       0.1870      0.94  QV         |          |          |          |
2+45       0.1935      0.95  QV         |          |          |          |
2+50       0.2000      0.95  QV         |          |          |          |
2+55       0.2066      0.95  QV         |          |          |          |
3+ 0       0.2132      0.96  Q V        |          |          |          |
3+ 5       0.2198      0.96  Q V        |          |          |          |
3+10       0.2264      0.96  Q V        |          |          |          |
3+15       0.2331      0.97  Q V        |          |          |          |
3+20       0.2397      0.97  Q V        |          |          |          |
3+25       0.2464      0.97  Q V        |          |          |          |
3+30       0.2532      0.98  Q V        |          |          |          |
3+35       0.2599      0.98  Q V        |          |          |          |
3+40       0.2667      0.98  Q V        |          |          |          |
3+45       0.2735      0.99  Q V        |          |          |          |
3+50       0.2803      0.99  Q V        |          |          |          |
3+55       0.2872      1.00  Q V        |          |          |          |
4+ 0       0.2941      1.00  |QV        |          |          |          |
4+ 5       0.3010      1.00  |QV        |          |          |          |
4+10       0.3080      1.01  |QV        |          |          |          |
4+15       0.3149      1.01  |Q V       |          |          |          |
4+20       0.3219      1.02  |Q V       |          |          |          |
4+25       0.3289      1.02  |Q V       |          |          |          |
4+30       0.3360      1.02  |Q V       |          |          |          |
4+35       0.3431      1.03  |Q V       |          |          |          |
4+40       0.3502      1.03  |Q V       |          |          |          |
4+45       0.3574      1.04  |Q V       |          |          |          |
4+50       0.3645      1.04  |Q V       |          |          |          |
4+55       0.3717      1.05  |Q V       |          |          |          |
5+ 0       0.3790      1.05  |Q V       |          |          |          |
5+ 5       0.3862      1.06  |Q V       |          |          |          |
5+10       0.3935      1.06  |Q V       |          |          |          |
5+15       0.4009      1.06  |Q V       |          |          |          |
5+20       0.4082      1.07  |Q V       |          |          |          |
5+25       0.4156      1.07  |Q  V      |          |          |          |
5+30       0.4231      1.08  |Q  V      |          |          |          |
5+35       0.4305      1.08  |Q  V      |          |          |          |
5+40       0.4380      1.09  |Q  V      |          |          |          |
5+45       0.4456      1.09  |Q  V      |          |          |          |
5+50       0.4531      1.10  |Q  V      |          |          |          |
5+55       0.4607      1.10  |Q  V      |          |          |          |
6+ 0       0.4684      1.11  |Q  V      |          |          |          |
6+ 5       0.4761      1.11  |Q  V      |          |          |          |
6+10       0.4838      1.12  |Q  V      |          |          |          |
6+15       0.4915      1.13  |Q  V      |          |          |          |
6+20       0.4993      1.13  |Q  V      |          |          |          |
6+25       0.5071      1.14  |Q  V      |          |          |          |
6+30       0.5150      1.14  |Q  V      |          |          |          |
6+35       0.5229      1.15  |Q   V     |          |          |          |
6+40       0.5309      1.15  |Q   V     |          |          |          |
6+45       0.5388      1.16  |Q   V     |          |          |          |
6+50       0.5469      1.17  |Q   V     |          |          |          |
6+55       0.5549      1.17  |Q   V     |          |          |          |
7+ 0       0.5631      1.18  |Q   V     |          |          |          |
7+ 5       0.5712      1.18  |Q   V     |          |          |          |
7+10       0.5794      1.19  |Q   V     |          |          |          |
7+15       0.5876      1.20  |Q   V     |          |          |          |
7+20       0.5959      1.20  |Q   V     |          |          |          |
7+25       0.6043      1.21  |Q   V     |          |          |          |
7+30       0.6126      1.22  |Q   V     |          |          |          |
7+35       0.6211      1.22  |Q   V     |          |          |          |
7+40       0.6295      1.23  |Q    V    |          |          |          |
7+45       0.6381      1.24  |Q    V    |          |          |          |
7+50       0.6466      1.24  |Q    V    |          |          |          |
7+55       0.6553      1.25  |Q    V    |          |          |          |
8+ 0       0.6639      1.26  |Q    V    |          |          |          |
8+ 5       0.6726      1.27  |Q    V    |          |          |          |
8+10       0.6814      1.27  |Q    V    |          |          |          |
8+15       0.6902      1.28  |Q    V    |          |          |          |
8+20       0.6991      1.29  |Q    V    |          |          |          |
8+25       0.7081      1.30  |Q    V    |          |          |          |
8+30       0.7171      1.31  |Q    V    |          |          |          |
8+35       0.7261      1.31  |Q    V    |          |          |          |
8+40       0.7352      1.32  |Q     V   |          |          |          |
8+45       0.7444      1.33  |Q     V   |          |          |          |
8+50       0.7536      1.34  |Q     V   |          |          |          |
```

```
 8+55       0.7629      1.35  |Q     V  |          |          |          |
 9+ 0       0.7722      1.36  |Q     V  |          |          |          |
 9+ 5       0.7817      1.37  |Q     V  |          |          |          |
 9+10       0.7911      1.38  |Q     V  |          |          |          |
 9+15       0.8007      1.39  |Q     V  |          |          |          |
 9+20       0.8103      1.40  |Q     V  |          |          |          |
 9+25       0.8200      1.41  |Q     V  |          |          |          |
 9+30       0.8297      1.42  |Q     V  |          |          |          |
 9+35       0.8395      1.43  |Q      V |          |          |          |
 9+40       0.8494      1.44  |Q      V |          |          |          |
 9+45       0.8594      1.45  |Q      V |          |          |          |
 9+50       0.8694      1.46  |Q      V |          |          |          |
 9+55       0.8795      1.47  |Q      V |          |          |          |
10+ 0       0.8897      1.48  |Q      V |          |          |          |
10+ 5       0.9000      1.49  |Q      V |          |          |          |
10+10       0.9104      1.50  |Q      V |          |          |          |
10+15       0.9208      1.52  |Q      V |          |          |          |
10+20       0.9313      1.53  |Q      V |          |          |          |
10+25       0.9419      1.54  |Q       V|          |          |          |
10+30       0.9527      1.55  |Q       V|          |          |          |
10+35       0.9634      1.57  |Q       V|          |          |          |
10+40       0.9743      1.58  |Q       V|          |          |          |
10+45       0.9853      1.60  |Q       V|          |          |          |
10+50       0.9964      1.61  |Q       V|          |          |          |
10+55       1.0076      1.62  |Q       V|          |          |          |
11+ 0       1.0189      1.64  |Q       V|          |          |          |
11+ 5       1.0303      1.65  |Q       V|          |          |          |
11+10       1.0418      1.67  |Q        V          |          |          |
11+15       1.0534      1.69  |Q        V          |          |          |
11+20       1.0651      1.70  |Q        V          |          |          |
11+25       1.0770      1.72  |Q        V          |          |          |
11+30       1.0889      1.74  |Q        V          |          |          |
11+35       1.1010      1.76  |Q        V          |          |          |
11+40       1.1132      1.77  |Q        V          |          |          |
11+45       1.1256      1.79  |Q        V          |          |          |
11+50       1.1381      1.81  |Q        V          |          |          |
11+55       1.1507      1.83  |Q        |V         |          |          |
12+ 0       1.1635      1.85  |Q        |V         |          |          |
12+ 5       1.1763      1.86  |Q        |V         |          |          |
12+10       1.1885      1.78  |Q        |V         |          |          |
12+15       1.2002      1.69  |Q        |V         |          |          |
12+20       1.2117      1.68  |Q        |V         |          |          |
12+25       1.2233      1.69  |Q        |V         |          |          |
12+30       1.2351      1.71  |Q        |V         |          |          |
12+35       1.2471      1.74  |Q        | V        |          |          |
12+40       1.2592      1.76  |Q        | V        |          |          |
12+45       1.2715      1.79  |Q        | V        |          |          |
12+50       1.2841      1.82  |Q        | V        |          |          |
12+55       1.2968      1.85  |Q        | V        |          |          |
13+ 0       1.3097      1.88  |Q        | V        |          |          |
13+ 5       1.3229      1.91  |Q        | V        |          |          |
13+10       1.3363      1.94  |Q        | V        |          |          |
13+15       1.3499      1.98  |Q        |  V       |          |          |
13+20       1.3638      2.02  | Q       |  V       |          |          |
13+25       1.3779      2.05  | Q       |  V       |          |          |
13+30       1.3923      2.09  | Q       |  V       |          |          |
13+35       1.4070      2.14  | Q       |  V       |          |          |
13+40       1.4221      2.18  | Q       |  V       |          |          |
13+45       1.4374      2.23  | Q       |  V       |          |          |
13+50       1.4531      2.28  | Q       |   V      |          |          |
13+55       1.4691      2.33  | Q       |   V      |          |          |
14+ 0       1.4856      2.39  | Q       |   V      |          |          |
14+ 5       1.5024      2.45  | Q       |   V      |          |          |
14+10       1.5197      2.51  | Q       |   V      |          |          |
14+15       1.5375      2.58  | Q       |   V      |          |          |
14+20       1.5558      2.65  | Q       |   V      |          |          |
14+25       1.5746      2.73  | Q       |    V     |          |          |
14+30       1.5940      2.82  | Q       |    V     |          |          |
14+35       1.6140      2.91  | Q       |    V     |          |          |
14+40       1.6348      3.01  |  Q      |    V     |          |          |
14+45       1.6563      3.12  |  Q      |    V     |          |          |
14+50       1.6786      3.24  |  Q      |     V    |          |          |
14+55       1.7018      3.37  |  Q      |     V    |          |          |
15+ 0       1.7260      3.52  |  Q      |     V    |          |          |
15+ 5       1.7514      3.69  |  Q      |     V    |          |          |
```



```
  21+25       3.9337      1.10  |Q        |         |         |      V  |
  21+30       3.9412      1.09  |Q        |         |         |      V  |
  21+35       3.9486      1.08  |Q        |         |         |       V |
  21+40       3.9559      1.07  |Q        |         |         |       V |
  21+45       3.9632      1.06  |Q        |         |         |       V |
  21+50       3.9705      1.05  |Q        |         |         |       V |
  21+55       3.9776      1.04  |Q        |         |         |       V |
  22+ 0       3.9847      1.03  |Q        |         |         |       V |
  22+ 5       3.9918      1.02  |Q        |         |         |       V |
  22+10       3.9988      1.01  |Q        |         |         |       V |
  22+15       4.0057      1.01  |Q        |         |         |       V |
  22+20       4.0126      1.00  Q         |         |         |       V |
  22+25       4.0194      0.99  Q         |         |         |       V |
  22+30       4.0262      0.98  Q         |         |         |       V |
  22+35       4.0329      0.98  Q         |         |         |       V |
  22+40       4.0396      0.97  Q         |         |         |       V |
  22+45       4.0462      0.96  Q         |         |         |       V |
  22+50       4.0528      0.95  Q         |         |         |        V|
  22+55       4.0593      0.95  Q         |         |         |        V|
  23+ 0       4.0658      0.94  Q         |         |         |        V|
  23+ 5       4.0722      0.93  Q         |         |         |        V|
  23+10       4.0786      0.93  Q         |         |         |        V|
  23+15       4.0849      0.92  Q         |         |         |        V|
  23+20       4.0912      0.91  Q         |         |         |        V|
  23+25       4.0975      0.91  Q         |         |         |        V|
  23+30       4.1037      0.90  Q         |         |         |        V|
  23+35       4.1099      0.90  Q         |         |         |        V|
  23+40       4.1160      0.89  Q         |         |         |        V|
  23+45       4.1221      0.89  Q         |         |         |        V|
  23+50       4.1282      0.88  Q         |         |         |        V|
  23+55       4.1342      0.87  Q         |         |         |        V|
  24+ 0       4.1402      0.87  Q         |         |         |        V|
  24+ 5       4.1457      0.81  Q         |         |         |        V|
  24+10       4.1491      0.49  Q         |         |         |        V|
  24+15       4.1501      0.15  Q         |         |         |        V|
  24+20       4.1503      0.03  Q         |         |         |        V|
  24+25       4.1504      0.01  Q         |         |         |        V|
-------------------------------------------------------------------------
```

BUILDING 7

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 7A
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 7APROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
22.50	1	0.60
Rainfall data for year 2		
22.50	6	0.70
Rainfall data for year 2		
22.50	24	1.20
Rainfall data for year 100		
22.50	1	1.00
Rainfall data for year 100		
22.50	6	1.90
Rainfall data for year 100		
22.50	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	22.50	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.25	0.100	69.0	69.0	4.49	0.263
20.25	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.190 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      22.50(Ac.)
Catchment Lag time =   0.152 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 54.8246
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      22.50(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
----------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       272.11 (CFS))

  1                5.469                  14.882
  2               35.337                  81.273
  3               75.925                 110.445
  4               93.130                  46.816
  5               98.077                  13.461
  6               99.228                   3.130
  7              100.000                   2.102
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3697              0.3697
  2              0.4878              0.1181
  3              0.5737              0.0859
  4              0.6437              0.0700
  5              0.7038              0.0601
  6              0.7571              0.0532
  7              0.8052              0.0481
  8              0.8494              0.0442
  9              0.8904              0.0410
 10              0.9287              0.0383
 11              0.9648              0.0361
 12              0.9989              0.0342
 13              1.0281              0.0291
 14              1.0558              0.0277
 15              1.0823              0.0265
 16              1.1077              0.0254
 17              1.1320              0.0244
 18              1.1555              0.0235
 19              1.1782              0.0227
 20              1.2001              0.0219
 21              1.2213              0.0212
 22              1.2418              0.0206
 23              1.2618              0.0200
 24              1.2812              0.0194
 25              1.3002              0.0189
 26              1.3186              0.0184
```

27	1.3366	0.0180
28	1.3542	0.0176
29	1.3713	0.0172
30	1.3881	0.0168
31	1.4046	0.0164
32	1.4207	0.0161
33	1.4364	0.0158
34	1.4519	0.0155
35	1.4671	0.0152
36	1.4820	0.0149
37	1.4967	0.0146
38	1.5110	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5527	0.0137
42	1.5662	0.0135
43	1.5795	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6430	0.0123
49	1.6551	0.0122
50	1.6672	0.0120
51	1.6790	0.0119
52	1.6908	0.0117
53	1.7023	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7363	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8008	0.0105
63	1.8111	0.0104
64	1.8214	0.0102
65	1.8315	0.0101
66	1.8415	0.0100
67	1.8515	0.0099
68	1.8614	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9109	0.0110
74	1.9218	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0570	0.0100
88	2.0668	0.0099
89	2.0767	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091

102	2.1990	0.0091
103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4581	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5116	0.0075
141	2.5192	0.0075
142	2.5266	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6070	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6354	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6634	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6841	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7046	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8105	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9235	0.0061
202	2.9295	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9717	0.0060
210	2.9777	0.0060
211	2.9836	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0537	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1272	0.0056
237	3.1328	0.0056
238	3.1383	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2199	0.0053
254	3.2252	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2517	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3949	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0532	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1136
193	0.3697	0.0046	0.3652
194	0.0700	0.0046	0.0654
195	0.0481	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0227	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 52.98(CFS)

++

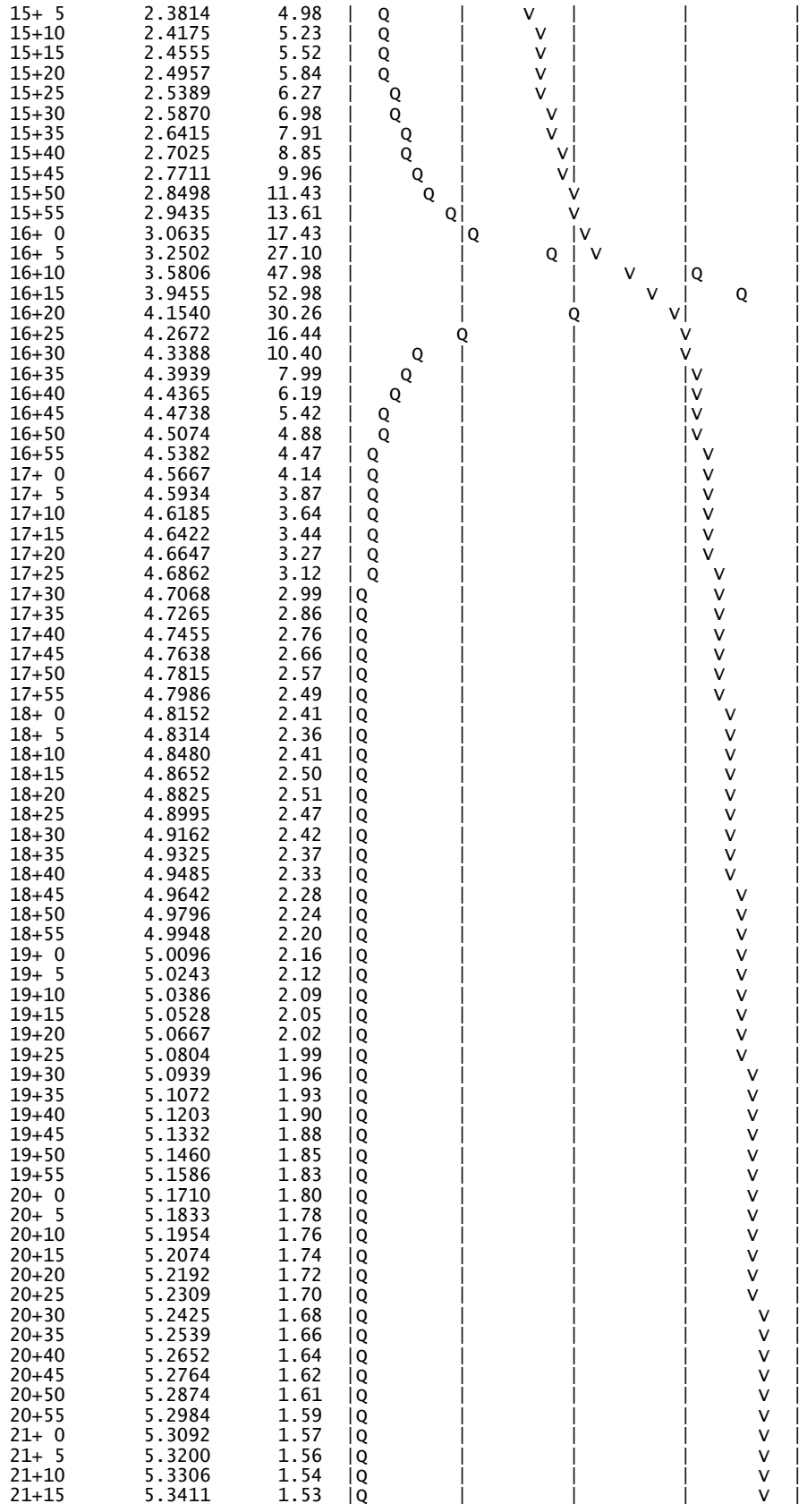
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0004	0.06	Q	|	|	|	|
0+10	0.0033	0.41	Q	|	|	|	|
0+15	0.0094	0.89	Q	|	|	|	|
0+20	0.0169	1.09	Q	|	|	|	|
0+25	0.0248	1.15	Q	|	|	|	|
0+30	0.0329	1.17	Q	|	|	|	|
0+35	0.0410	1.18	Q	|	|	|	|
0+40	0.0492	1.18	Q	|	|	|	|
0+45	0.0574	1.19	Q	|	|	|	|
0+50	0.0656	1.19	Q	|	|	|	|
0+55	0.0738	1.20	Q	|	|	|	|
1+ 0	0.0821	1.20	Q	|	|	|	|
1+ 5	0.0904	1.20	Q	|	|	|	|
1+10	0.0987	1.21	Q	|	|	|	|
1+15	0.1070	1.21	Q	|	|	|	|
1+20	0.1154	1.22	Q	|	|	|	|
1+25	0.1238	1.22	Q	|	|	|	|
1+30	0.1322	1.22	Q	|	|	|	|
1+35	0.1407	1.23	Q	|	|	|	|
1+40	0.1491	1.23	QV	|	|	|	|
1+45	0.1576	1.24	QV	|	|	|	|
1+50	0.1662	1.24	QV	|	|	|	|
1+55	0.1748	1.24	QV	|	|	|	|
2+ 0	0.1833	1.25	QV	|	|	|	|
2+ 5	0.1920	1.25	QV	|	|	|	|
2+10	0.2006	1.26	QV	|	|	|	|
2+15	0.2093	1.26	QV	|	|	|	|
2+20	0.2180	1.27	QV	|	|	|	|
2+25	0.2268	1.27	QV	|	|	|	|
2+30	0.2355	1.27	QV	|	|	|	|

2+35	0.2443	1.28	QV	|	|	|	|
2+40	0.2532	1.28	QV	|	|	|	|
2+45	0.2621	1.29	QV	|	|	|	|
2+50	0.2710	1.29	QV	|	|	|	|
2+55	0.2799	1.30	QV	|	|	|	|
3+ 0	0.2889	1.30	Q V	|	|	|	|
3+ 5	0.2979	1.31	Q V	|	|	|	|
3+10	0.3069	1.31	Q V	|	|	|	|
3+15	0.3160	1.32	Q V	|	|	|	|
3+20	0.3251	1.32	Q V	|	|	|	|
3+25	0.3342	1.33	Q V	|	|	|	|
3+30	0.3434	1.33	Q V	|	|	|	|
3+35	0.3526	1.34	Q V	|	|	|	|
3+40	0.3618	1.34	Q V	|	|	|	|
3+45	0.3711	1.35	Q V	|	|	|	|
3+50	0.3804	1.35	Q V	|	|	|	|
3+55	0.3897	1.36	Q V	|	|	|	|
4+ 0	0.3991	1.36	Q V	|	|	|	|
4+ 5	0.4085	1.37	Q V	|	|	|	|
4+10	0.4180	1.37	Q V	|	|	|	|
4+15	0.4275	1.38	Q V	|	|	|	|
4+20	0.4370	1.38	Q V	|	|	|	|
4+25	0.4466	1.39	Q V	|	|	|	|
4+30	0.4562	1.40	Q V	|	|	|	|
4+35	0.4659	1.40	Q V	|	|	|	|
4+40	0.4756	1.41	Q V	|	|	|	|
4+45	0.4853	1.41	Q V	|	|	|	|
4+50	0.4951	1.42	Q V	|	|	|	|
4+55	0.5049	1.43	Q V	|	|	|	|
5+ 0	0.5148	1.43	Q V	|	|	|	|
5+ 5	0.5247	1.44	Q V	|	|	|	|
5+10	0.5346	1.44	Q V	|	|	|	|
5+15	0.5446	1.45	Q V	|	|	|	|
5+20	0.5546	1.46	Q V	|	|	|	|
5+25	0.5647	1.46	Q V	|	|	|	|
5+30	0.5748	1.47	Q V	|	|	|	|
5+35	0.5850	1.48	Q V	|	|	|	|
5+40	0.5952	1.48	Q V	|	|	|	|
5+45	0.6055	1.49	Q V	|	|	|	|
5+50	0.6158	1.50	Q V	|	|	|	|
5+55	0.6262	1.50	|Q V	|	|	|	|
6+ 0	0.6366	1.51	|Q V	|	|	|	|
6+ 5	0.6470	1.52	|Q V	|	|	|	|
6+10	0.6575	1.53	|Q V	|	|	|	|
6+15	0.6681	1.53	|Q V	|	|	|	|
6+20	0.6787	1.54	|Q V	|	|	|	|
6+25	0.6894	1.55	|Q V	|	|	|	|
6+30	0.7001	1.56	|Q V	|	|	|	|
6+35	0.7109	1.56	|Q V	|	|	|	|
6+40	0.7217	1.57	|Q V	|	|	|	|
6+45	0.7326	1.58	|Q V	|	|	|	|
6+50	0.7435	1.59	|Q V	|	|	|	|
6+55	0.7545	1.60	|Q V	|	|	|	|
7+ 0	0.7655	1.60	|Q V	|	|	|	|
7+ 5	0.7767	1.61	|Q V	|	|	|	|
7+10	0.7878	1.62	|Q V	|	|	|	|
7+15	0.7990	1.63	|Q V	|	|	|	|
7+20	0.8103	1.64	|Q V	|	|	|	|
7+25	0.8217	1.65	|Q V	|	|	|	|
7+30	0.8331	1.66	|Q V	|	|	|	|
7+35	0.8446	1.67	|Q V	|	|	|	|
7+40	0.8561	1.68	|Q V	|	|	|	|
7+45	0.8677	1.69	|Q V	|	|	|	|
7+50	0.8794	1.69	|Q V	|	|	|	|
7+55	0.8911	1.70	|Q V	|	|	|	|
8+ 0	0.9029	1.71	|Q V	|	|	|	|
8+ 5	0.9148	1.72	|Q V	|	|	|	|
8+10	0.9268	1.74	|Q V	|	|	|	|
8+15	0.9388	1.75	|Q V	|	|	|	|
8+20	0.9509	1.76	|Q V	|	|	|	|
8+25	0.9631	1.77	|Q V	|	|	|	|
8+30	0.9753	1.78	|Q V	|	|	|	|
8+35	0.9876	1.79	|Q V	|	|	|	|
8+40	1.0000	1.80	|Q V	|	|	|	|
8+45	1.0125	1.81	|Q V	|	|	|	|

8+50	1.0251	1.82	Q	V			
8+55	1.0377	1.84	Q	V			
9+ 0	1.0505	1.85	Q	V			
9+ 5	1.0633	1.86	Q	V			
9+10	1.0762	1.87	Q	V			
9+15	1.0892	1.89	Q	V			
9+20	1.1023	1.90	Q	V			
9+25	1.1154	1.91	Q	V			
9+30	1.1287	1.93	Q	V			
9+35	1.1421	1.94	Q	V			
9+40	1.1555	1.96	Q	V			
9+45	1.1691	1.97	Q	V			
9+50	1.1828	1.98	Q	V			
9+55	1.1966	2.00	Q	V			
10+ 0	1.2104	2.02	Q	V			
10+ 5	1.2244	2.03	Q	V			
10+10	1.2385	2.05	Q	V			
10+15	1.2527	2.06	Q	V			
10+20	1.2671	2.08	Q	V			
10+25	1.2815	2.10	Q	V			
10+30	1.2961	2.12	Q	V			
10+35	1.3108	2.13	Q	V			
10+40	1.3256	2.15	Q	V			
10+45	1.3406	2.17	Q	V			
10+50	1.3556	2.19	Q	V			
10+55	1.3709	2.21	Q	V			
11+ 0	1.3862	2.23	Q	V			
11+ 5	1.4017	2.25	Q	V			
11+10	1.4174	2.27	Q	V			
11+15	1.4332	2.30	Q	V			
11+20	1.4492	2.32	Q	V			
11+25	1.4653	2.34	Q	V			
11+30	1.4816	2.36	Q	V			
11+35	1.4980	2.39	Q	V			
11+40	1.5147	2.41	Q	V			
11+45	1.5315	2.44	Q	V			
11+50	1.5485	2.47	Q	V			
11+55	1.5657	2.50	Q	V			
12+ 0	1.5830	2.52	Q	V			
12+ 5	1.6005	2.53	Q	V			
12+10	1.6173	2.45	Q	V			
12+15	1.6333	2.32	Q	V			
12+20	1.6491	2.29	Q	V			
12+25	1.6649	2.30	Q	V			
12+30	1.6810	2.33	Q	V			
12+35	1.6972	2.36	Q	V			
12+40	1.7137	2.40	Q	V			
12+45	1.7305	2.43	Q	V			
12+50	1.7475	2.47	Q	V			
12+55	1.7648	2.51	Q	V			
13+ 0	1.7824	2.55	Q	V			
13+ 5	1.8003	2.60	Q	V			
13+10	1.8185	2.64	Q	V			
13+15	1.8370	2.69	Q	V			
13+20	1.8558	2.74	Q	V			
13+25	1.8750	2.79	Q	V			
13+30	1.8946	2.84	Q	V			
13+35	1.9146	2.90	Q	V			
13+40	1.9350	2.96	Q	V			
13+45	1.9558	3.03	Q	V			
13+50	1.9771	3.09	Q	V			
13+55	1.9989	3.16	Q	V			
14+ 0	2.0212	3.24	Q	V			
14+ 5	2.0441	3.32	Q	V			
14+10	2.0675	3.41	Q	V			
14+15	2.0917	3.50	Q	V			
14+20	2.1165	3.60	Q	V			
14+25	2.1420	3.71	Q	V			
14+30	2.1683	3.82	Q	V			
14+35	2.1955	3.95	Q	V			
14+40	2.2236	4.08	Q	V			
14+45	2.2527	4.23	Q	V			
14+50	2.2829	4.39	Q	V			
14+55	2.3143	4.56	Q	V			
15+ 0	2.3471	4.76	Q	V			



```
   21+20       5.3515      1.51  |Q        |         |         |      V  |
   21+25       5.3619      1.50  Q        |         |         |      V  |
   21+30       5.3721      1.49  Q        |         |         |      V  |
   21+35       5.3822      1.47  Q        |         |         |       V |
   21+40       5.3923      1.46  Q        |         |         |       V |
   21+45       5.4022      1.45  Q        |         |         |       V |
   21+50       5.4121      1.43  Q        |         |         |       V |
   21+55       5.4219      1.42  Q        |         |         |       V |
   22+ 0       5.4316      1.41  Q        |         |         |       V |
   22+ 5       5.4412      1.40  Q        |         |         |       V |
   22+10       5.4508      1.39  Q        |         |         |       V |
   22+15       5.4603      1.38  Q        |         |         |       V |
   22+20       5.4697      1.36  Q        |         |         |       V |
   22+25       5.4790      1.35  Q        |         |         |       V |
   22+30       5.4882      1.34  Q        |         |         |       V |
   22+35       5.4974      1.33  Q        |         |         |       V |
   22+40       5.5065      1.32  Q        |         |         |       V |
   22+45       5.5156      1.31  Q        |         |         |       V |
   22+50       5.5245      1.30  Q        |         |         |        V|
   22+55       5.5335      1.29  Q        |         |         |        V|
   23+ 0       5.5423      1.28  Q        |         |         |        V|
   23+ 5       5.5511      1.28  Q        |         |         |        V|
   23+10       5.5598      1.27  Q        |         |         |        V|
   23+15       5.5685      1.26  Q        |         |         |        V|
   23+20       5.5771      1.25  Q        |         |         |        V|
   23+25       5.5856      1.24  Q        |         |         |        V|
   23+30       5.5941      1.23  Q        |         |         |        V|
   23+35       5.6025      1.22  Q        |         |         |        V|
   23+40       5.6109      1.22  Q        |         |         |        V|
   23+45       5.6192      1.21  Q        |         |         |        V|
   23+50       5.6275      1.20  Q        |         |         |        V|
   23+55       5.6357      1.19  Q        |         |         |        V|
   24+ 0       5.6439      1.19  Q        |         |         |        V|
   24+ 5       5.6516      1.11  Q        |         |         |        V|
   24+10       5.6568      0.76  Q        |         |         |        V|
   24+15       5.6588      0.28  Q        |         |         |        V|
   24+20       5.6593      0.08  Q        |         |         |        V|
   24+25       5.6595      0.02  Q        |         |         |        V|
   24+30       5.6595      0.01  Q        |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 7B
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 7BPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
9.40	1	0.60
Rainfall data for year 2		
9.40	6	0.70
Rainfall data for year 2		
9.40	24	1.20
Rainfall data for year 100		
9.40	1	1.00
Rainfall data for year 100		
9.40	6	1.90
Rainfall data for year 100		
9.40	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	9.40	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.94	0.100	69.0	69.0	4.49	0.263
8.46	0.900	98.0	98.0	0.20	0.931

Area-averaged catchment yield fraction, Y = 0.865
Area-averaged low loss fraction, Yb = 0.135
User entry of time of concentration = 0.180 (hours)
++
Watershed area = 9.40(Ac.)
Catchment Lag time = 0.144 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 57.8704
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.370(In)
Computed peak 30-minute rainfall = 0.758(In)
Specified peak 1-hour rainfall = 1.000(In)
Computed peak 3-hour rainfall = 1.482(In)
Specified peak 6-hour rainfall = 1.900(In)
Specified peak 24-hour rainfall = 3.400(In)

Rainfall depth area reduction factors:
Using a total area of 9.40(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.370(In)
30-minute factor = 1.000 Adjusted rainfall = 0.758(In)
1-hour factor = 1.000 Adjusted rainfall = 1.000(In)
3-hour factor = 1.000 Adjusted rainfall = 1.482(In)
6-hour factor = 1.000 Adjusted rainfall = 1.900(In)
24-hour factor = 1.000 Adjusted rainfall = 3.400(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 113.68 (CFS))	
1	6.077	6.908
2	39.009	37.438
3	79.564	46.103
4	94.634	17.132
5	98.466	4.356
6	99.524	1.202
7	100.000	0.541

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3699	0.3699
2	0.4881	0.1182
3	0.5741	0.0860
4	0.6441	0.0700
5	0.7042	0.0601
6	0.7575	0.0533
7	0.8057	0.0482
8	0.8499	0.0442
9	0.8909	0.0410
10	0.9293	0.0383
11	0.9654	0.0361
12	0.9996	0.0342
13	1.0287	0.0291
14	1.0564	0.0277
15	1.0828	0.0265
16	1.1082	0.0254
17	1.1325	0.0244
18	1.1560	0.0235
19	1.1786	0.0226
20	1.2005	0.0219
21	1.2217	0.0212
22	1.2422	0.0205
23	1.2622	0.0200
24	1.2816	0.0194
25	1.3005	0.0189
26	1.3189	0.0184

27	1.3369	0.0180
28	1.3544	0.0175
29	1.3716	0.0172
30	1.3884	0.0168
31	1.4048	0.0164
32	1.4209	0.0161
33	1.4366	0.0158
34	1.4521	0.0155
35	1.4673	0.0152
36	1.4822	0.0149
37	1.4968	0.0146
38	1.5111	0.0144
39	1.5253	0.0141
40	1.5392	0.0139
41	1.5528	0.0137
42	1.5663	0.0135
43	1.5796	0.0133
44	1.5926	0.0131
45	1.6055	0.0129
46	1.6182	0.0127
47	1.6307	0.0125
48	1.6431	0.0123
49	1.6552	0.0122
50	1.6673	0.0120
51	1.6791	0.0119
52	1.6909	0.0117
53	1.7024	0.0116
54	1.7139	0.0114
55	1.7252	0.0113
56	1.7364	0.0112
57	1.7474	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7798	0.0107
61	1.7904	0.0106
62	1.8008	0.0105
63	1.8112	0.0104
64	1.8214	0.0102
65	1.8316	0.0101
66	1.8416	0.0100
67	1.8516	0.0099
68	1.8614	0.0099
69	1.8712	0.0098
70	1.8809	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9110	0.0110
74	1.9219	0.0109
75	1.9328	0.0109
76	1.9436	0.0108
77	1.9543	0.0107
78	1.9649	0.0106
79	1.9754	0.0105
80	1.9859	0.0105
81	1.9962	0.0104
82	2.0066	0.0103
83	2.0168	0.0102
84	2.0270	0.0102
85	2.0370	0.0101
86	2.0471	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0768	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1059	0.0096
93	2.1154	0.0096
94	2.1250	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1532	0.0093
98	2.1625	0.0093
99	2.1717	0.0092
100	2.1809	0.0092
101	2.1900	0.0091

102	2.1991	0.0091
103	2.2081	0.0090
104	2.2171	0.0090
105	2.2260	0.0089
106	2.2349	0.0089
107	2.2437	0.0088
108	2.2525	0.0088
109	2.2612	0.0087
110	2.2699	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2957	0.0086
114	2.3042	0.0085
115	2.3126	0.0085
116	2.3211	0.0084
117	2.3294	0.0084
118	2.3378	0.0083
119	2.3461	0.0083
120	2.3543	0.0083
121	2.3626	0.0082
122	2.3707	0.0082
123	2.3789	0.0081
124	2.3870	0.0081
125	2.3950	0.0081
126	2.4031	0.0080
127	2.4110	0.0080
128	2.4190	0.0080
129	2.4269	0.0079
130	2.4348	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4660	0.0077
135	2.4737	0.0077
136	2.4813	0.0077
137	2.4890	0.0076
138	2.4966	0.0076
139	2.5042	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5342	0.0075
144	2.5416	0.0074
145	2.5490	0.0074
146	2.5564	0.0074
147	2.5637	0.0073
148	2.5710	0.0073
149	2.5783	0.0073
150	2.5855	0.0072
151	2.5928	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6143	0.0071
155	2.6214	0.0071
156	2.6285	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6496	0.0070
160	2.6565	0.0070
161	2.6635	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6911	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7115	0.0068
169	2.7183	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7451	0.0067
174	2.7517	0.0066
175	2.7584	0.0066
176	2.7650	0.0066

177	2.7716	0.0066
178	2.7781	0.0066
179	2.7847	0.0065
180	2.7912	0.0065
181	2.7977	0.0065
182	2.8042	0.0065
183	2.8106	0.0065
184	2.8171	0.0064
185	2.8235	0.0064
186	2.8299	0.0064
187	2.8362	0.0064
188	2.8426	0.0064
189	2.8489	0.0063
190	2.8553	0.0063
191	2.8616	0.0063
192	2.8678	0.0063
193	2.8741	0.0063
194	2.8803	0.0062
195	2.8866	0.0062
196	2.8928	0.0062
197	2.8990	0.0062
198	2.9051	0.0062
199	2.9113	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9357	0.0061
204	2.9418	0.0061
205	2.9478	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9778	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9956	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0132	0.0059
217	3.0190	0.0058
218	3.0249	0.0058
219	3.0307	0.0058
220	3.0365	0.0058
221	3.0423	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0653	0.0057
226	3.0710	0.0057
227	3.0767	0.0057
228	3.0824	0.0057
229	3.0880	0.0057
230	3.0937	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1106	0.0056
234	3.1162	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1329	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1495	0.0055
241	3.1550	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1714	0.0055
245	3.1768	0.0054
246	3.1823	0.0054
247	3.1877	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2039	0.0054
251	3.2093	0.0054

252	3.2146	0.0054
253	3.2200	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2571	0.0053
261	3.2623	0.0053
262	3.2676	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2988	0.0052
269	3.3039	0.0052
270	3.3091	0.0052
271	3.3142	0.0051
272	3.3194	0.0051
273	3.3245	0.0051
274	3.3296	0.0051
275	3.3347	0.0051
276	3.3398	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3549	0.0051
280	3.3600	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3751	0.0050
284	3.3801	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.4000	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0095
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0556
191	0.0860	0.0046	0.0814
192	0.1182	0.0046	0.1136
193	0.3699	0.0046	0.3654
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0205	0.0028	0.0178
201	0.0189	0.0026	0.0163
202	0.0175	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 21.99(CFS)

++

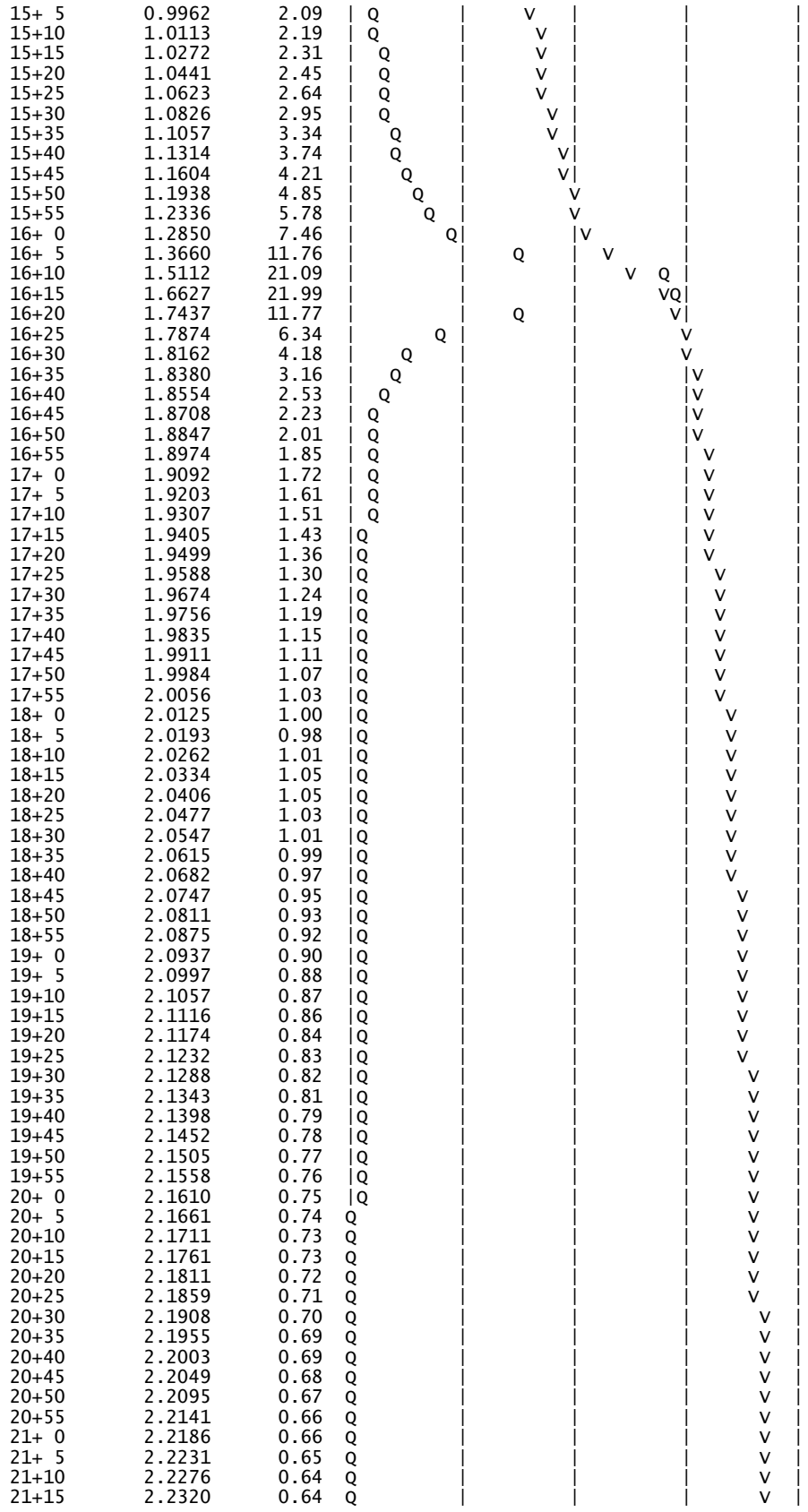
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q	|	|	|	|
0+10	0.0015	0.19	Q	|	|	|	|
0+15	0.0042	0.39	Q	|	|	|	|
0+20	0.0074	0.46	Q	|	|	|	|
0+25	0.0107	0.48	Q	|	|	|	|
0+30	0.0141	0.49	Q	|	|	|	|
0+35	0.0175	0.49	Q	|	|	|	|
0+40	0.0209	0.50	Q	|	|	|	|
0+45	0.0243	0.50	Q	|	|	|	|
0+50	0.0277	0.50	Q	|	|	|	|
0+55	0.0312	0.50	Q	|	|	|	|
1+ 0	0.0346	0.50	Q	|	|	|	|
1+ 5	0.0381	0.50	Q	|	|	|	|
1+10	0.0416	0.50	Q	|	|	|	|
1+15	0.0451	0.51	Q	|	|	|	|
1+20	0.0486	0.51	Q	|	|	|	|
1+25	0.0521	0.51	Q	|	|	|	|
1+30	0.0556	0.51	Q	|	|	|	|
1+35	0.0591	0.51	QV	|	|	|	|
1+40	0.0627	0.51	QV	|	|	|	|
1+45	0.0662	0.52	QV	|	|	|	|
1+50	0.0698	0.52	QV	|	|	|	|
1+55	0.0734	0.52	QV	|	|	|	|
2+ 0	0.0770	0.52	QV	|	|	|	|
2+ 5	0.0806	0.52	QV	|	|	|	|
2+10	0.0842	0.53	QV	|	|	|	|
2+15	0.0878	0.53	QV	|	|	|	|
2+20	0.0915	0.53	QV	|	|	|	|
2+25	0.0951	0.53	QV	|	|	|	|
2+30	0.0988	0.53	QV	|	|	|	|

2+35	0.1025	0.53	QV	|	|	|	|
2+40	0.1061	0.54	QV	|	|	|	|
2+45	0.1099	0.54	QV	|	|	|	|
2+50	0.1136	0.54	QV	|	|	|	|
2+55	0.1173	0.54	QV	|	|	|	|
3+ 0	0.1211	0.54	Q V	|	|	|	|
3+ 5	0.1248	0.55	Q V	|	|	|	|
3+10	0.1286	0.55	Q V	|	|	|	|
3+15	0.1324	0.55	Q V	|	|	|	|
3+20	0.1362	0.55	Q V	|	|	|	|
3+25	0.1400	0.55	Q V	|	|	|	|
3+30	0.1438	0.56	Q V	|	|	|	|
3+35	0.1477	0.56	Q V	|	|	|	|
3+40	0.1515	0.56	Q V	|	|	|	|
3+45	0.1554	0.56	Q V	|	|	|	|
3+50	0.1593	0.57	Q V	|	|	|	|
3+55	0.1632	0.57	Q V	|	|	|	|
4+ 0	0.1671	0.57	Q V	|	|	|	|
4+ 5	0.1711	0.57	Q V	|	|	|	|
4+10	0.1750	0.57	Q V	|	|	|	|
4+15	0.1790	0.58	Q V	|	|	|	|
4+20	0.1830	0.58	Q V	|	|	|	|
4+25	0.1870	0.58	Q V	|	|	|	|
4+30	0.1910	0.58	Q V	|	|	|	|
4+35	0.1950	0.59	Q V	|	|	|	|
4+40	0.1991	0.59	Q V	|	|	|	|
4+45	0.2032	0.59	Q V	|	|	|	|
4+50	0.2072	0.59	Q V	|	|	|	|
4+55	0.2113	0.60	Q V	|	|	|	|
5+ 0	0.2155	0.60	Q V	|	|	|	|
5+ 5	0.2196	0.60	Q V	|	|	|	|
5+10	0.2238	0.60	Q V	|	|	|	|
5+15	0.2279	0.61	Q V	|	|	|	|
5+20	0.2321	0.61	Q V	|	|	|	|
5+25	0.2363	0.61	Q V	|	|	|	|
5+30	0.2406	0.61	Q V	|	|	|	|
5+35	0.2448	0.62	Q V	|	|	|	|
5+40	0.2491	0.62	Q V	|	|	|	|
5+45	0.2534	0.62	Q V	|	|	|	|
5+50	0.2577	0.63	Q V	|	|	|	|
5+55	0.2620	0.63	Q V	|	|	|	|
6+ 0	0.2664	0.63	Q V	|	|	|	|
6+ 5	0.2708	0.63	Q V	|	|	|	|
6+10	0.2751	0.64	Q V	|	|	|	|
6+15	0.2796	0.64	Q V	|	|	|	|
6+20	0.2840	0.64	Q V	|	|	|	|
6+25	0.2885	0.65	Q V	|	|	|	|
6+30	0.2929	0.65	Q V	|	|	|	|
6+35	0.2974	0.65	Q V	|	|	|	|
6+40	0.3020	0.66	Q V	|	|	|	|
6+45	0.3065	0.66	Q V	|	|	|	|
6+50	0.3111	0.66	Q V	|	|	|	|
6+55	0.3157	0.67	Q V	|	|	|	|
7+ 0	0.3203	0.67	Q V	|	|	|	|
7+ 5	0.3249	0.67	Q V	|	|	|	|
7+10	0.3296	0.68	Q V	|	|	|	|
7+15	0.3343	0.68	Q V	|	|	|	|
7+20	0.3390	0.69	Q V	|	|	|	|
7+25	0.3438	0.69	Q V	|	|	|	|
7+30	0.3485	0.69	Q V	|	|	|	|
7+35	0.3533	0.70	Q V	|	|	|	|
7+40	0.3581	0.70	Q V	|	|	|	|
7+45	0.3630	0.70	Q V	|	|	|	|
7+50	0.3679	0.71	Q V	|	|	|	|
7+55	0.3728	0.71	Q V	|	|	|	|
8+ 0	0.3777	0.72	Q V	|	|	|	|
8+ 5	0.3827	0.72	Q V	|	|	|	|
8+10	0.3877	0.73	Q V	|	|	|	|
8+15	0.3927	0.73	Q V	|	|	|	|
8+20	0.3978	0.73	Q V	|	|	|	|
8+25	0.4029	0.74	Q V	|	|	|	|
8+30	0.4080	0.74	Q V	|	|	|	|
8+35	0.4131	0.75	Q V	|	|	|	|
8+40	0.4183	0.75	|Q V	|	|	|	|
8+45	0.4235	0.76	|Q V	|	|	|	|

```
 8+50       0.4288      0.76  |Q     V  |          |          |          |
 8+55       0.4341      0.77  |Q     V  |          |          |          |
 9+ 0       0.4394      0.77  |Q     V  |          |          |          |
 9+ 5       0.4447      0.78  |Q     V  |          |          |          |
 9+10       0.4501      0.78  |Q     V  |          |          |          |
 9+15       0.4556      0.79  |Q     V  |          |          |          |
 9+20       0.4610      0.79  |Q     V  |          |          |          |
 9+25       0.4666      0.80  |Q     V  |          |          |          |
 9+30       0.4721      0.81  |Q     V  |          |          |          |
 9+35       0.4777      0.81  |Q      V |          |          |          |
 9+40       0.4833      0.82  |Q      V |          |          |          |
 9+45       0.4890      0.82  |Q      V |          |          |          |
 9+50       0.4947      0.83  |Q      V |          |          |          |
 9+55       0.5005      0.84  |Q      V |          |          |          |
10+ 0       0.5063      0.84  |Q      V |          |          |          |
10+ 5       0.5121      0.85  |Q      V |          |          |          |
10+10       0.5180      0.86  |Q      V |          |          |          |
10+15       0.5240      0.86  |Q      V |          |          |          |
10+20       0.5300      0.87  |Q      V |          |          |          |
10+25       0.5360      0.88  |Q       V|          |          |          |
10+30       0.5421      0.88  |Q       V|          |          |          |
10+35       0.5482      0.89  |Q       V|          |          |          |
10+40       0.5544      0.90  |Q       V|          |          |          |
10+45       0.5607      0.91  |Q       V|          |          |          |
10+50       0.5670      0.92  |Q       V|          |          |          |
10+55       0.5734      0.92  |Q       V|          |          |          |
11+ 0       0.5798      0.93  |Q       V|          |          |          |
11+ 5       0.5863      0.94  |Q       V|          |          |          |
11+10       0.5928      0.95  |Q        V          |          |          |
11+15       0.5994      0.96  |Q        V          |          |          |
11+20       0.6061      0.97  |Q        V          |          |          |
11+25       0.6128      0.98  |Q        V          |          |          |
11+30       0.6197      0.99  |Q        V          |          |          |
11+35       0.6265      1.00  |Q        V          |          |          |
11+40       0.6335      1.01  |Q        V          |          |          |
11+45       0.6405      1.02  |Q        V          |          |          |
11+50       0.6476      1.03  |Q        V          |          |          |
11+55       0.6548      1.04  |Q        |V         |          |          |
12+ 0       0.6621      1.06  |Q        |V         |          |          |
12+ 5       0.6694      1.06  |Q        |V         |          |          |
12+10       0.6764      1.02  |Q        |V         |          |          |
12+15       0.6830      0.97  |Q        |V         |          |          |
12+20       0.6896      0.95  |Q        |V         |          |          |
12+25       0.6962      0.96  |Q        |V         |          |          |
12+30       0.7029      0.97  |Q        |V         |          |          |
12+35       0.7097      0.99  |Q        | V        |          |          |
12+40       0.7166      1.00  |Q        | V        |          |          |
12+45       0.7237      1.02  |Q        | V        |          |          |
12+50       0.7308      1.03  |Q        | V        |          |          |
12+55       0.7380      1.05  |Q        | V        |          |          |
13+ 0       0.7454      1.07  |Q        | V        |          |          |
13+ 5       0.7529      1.09  |Q        | V        |          |          |
13+10       0.7605      1.11  |Q        | V        |          |          |
13+15       0.7682      1.12  |Q        | V        |          |          |
13+20       0.7761      1.15  |Q        |  V       |          |          |
13+25       0.7841      1.17  |Q        |  V       |          |          |
13+30       0.7923      1.19  |Q        |  V       |          |          |
13+35       0.8007      1.21  |Q        |  V       |          |          |
13+40       0.8092      1.24  |Q        |  V       |          |          |
13+45       0.8180      1.27  |Q        |  V       |          |          |
13+50       0.8269      1.29  |Q        |  V       |          |          |
13+55       0.8360      1.32  |Q        |   V      |          |          |
14+ 0       0.8453      1.36  |Q        |   V      |          |          |
14+ 5       0.8549      1.39  |Q        |   V      |          |          |
14+10       0.8647      1.43  |Q        |   V      |          |          |
14+15       0.8748      1.47  |Q        |   V      |          |          |
14+20       0.8852      1.51  | Q       |   V      |          |          |
14+25       0.8959      1.55  | Q       |    V     |          |          |
14+30       0.9069      1.60  | Q       |    V     |          |          |
14+35       0.9183      1.65  | Q       |    V     |          |          |
14+40       0.9300      1.71  | Q       |    V     |          |          |
14+45       0.9422      1.77  | Q       |    V     |          |          |
14+50       0.9549      1.84  | Q       |     V    |          |          |
14+55       0.9681      1.91  | Q       |     V    |          |          |
15+ 0       0.9818      2.00  | Q       |     V    |          |          |
```



```
   21+20       2.2363      0.63  Q          |          |          |      V  |
   21+25       2.2406      0.63  Q          |          |          |      V  |
   21+30       2.2449      0.62  Q          |          |          |      V  |
   21+35       2.2491      0.61  Q          |          |          |       V |
   21+40       2.2533      0.61  Q          |          |          |       V |
   21+45       2.2575      0.60  Q          |          |          |       V |
   21+50       2.2616      0.60  Q          |          |          |       V |
   21+55       2.2657      0.59  Q          |          |          |       V |
   22+ 0       2.2697      0.59  Q          |          |          |       V |
   22+ 5       2.2737      0.58  Q          |          |          |       V |
   22+10       2.2777      0.58  Q          |          |          |       V |
   22+15       2.2817      0.57  Q          |          |          |       V |
   22+20       2.2856      0.57  Q          |          |          |       V |
   22+25       2.2895      0.57  Q          |          |          |       V |
   22+30       2.2934      0.56  Q          |          |          |       V |
   22+35       2.2972      0.56  Q          |          |          |       V |
   22+40       2.3010      0.55  Q          |          |          |       V |
   22+45       2.3048      0.55  Q          |          |          |       V |
   22+50       2.3085      0.54  Q          |          |          |        V|
   22+55       2.3122      0.54  Q          |          |          |        V|
   23+ 0       2.3159      0.54  Q          |          |          |        V|
   23+ 5       2.3196      0.53  Q          |          |          |        V|
   23+10       2.3232      0.53  Q          |          |          |        V|
   23+15       2.3269      0.53  Q          |          |          |        V|
   23+20       2.3304      0.52  Q          |          |          |        V|
   23+25       2.3340      0.52  Q          |          |          |        V|
   23+30       2.3376      0.51  Q          |          |          |        V|
   23+35       2.3411      0.51  Q          |          |          |        V|
   23+40       2.3446      0.51  Q          |          |          |        V|
   23+45       2.3480      0.50  Q          |          |          |        V|
   23+50       2.3515      0.50  Q          |          |          |        V|
   23+55       2.3549      0.50  Q          |          |          |        V|
   24+ 0       2.3583      0.50  Q          |          |          |        V|
   24+ 5       2.3615      0.46  Q          |          |          |        V|
   24+10       2.3636      0.30  Q          |          |          |        V|
   24+15       2.3643      0.10  Q          |          |          |        V|
   24+20       2.3645      0.03  Q          |          |          |        V|
   24+25       2.3645      0.01  Q          |          |          |        V|
   24+30       2.3645      0.00  Q          |          |          |         V
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 7C
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 7CPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
25.90	1	0.60
Rainfall data for year 2		
25.90	6	0.70
Rainfall data for year 2		
25.90	24	1.20
Rainfall data for year 100		
25.90	1	1.00
Rainfall data for year 100		
25.90	6	1.90
Rainfall data for year 100		
25.90	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	25.90	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.59	0.100	69.0	69.0	4.49	0.263
23.31	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.160 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      25.90(Ac.)
Catchment Lag time =   0.128 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 65.1042
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      25.90(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
----------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
               (K =       313.23 (CFS))

  1                7.634                  23.911
  2               47.879                 126.061
  3               85.995                 119.388
  4               97.049                  34.624
  5               99.073                   6.342
  6              100.000                   2.902
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3697              0.3697
  2              0.4878              0.1181
  3              0.5737              0.0859
  4              0.6436              0.0700
  5              0.7037              0.0601
  6              0.7569              0.0532
  7              0.8051              0.0481
  8              0.8493              0.0442
  9              0.8902              0.0410
 10              0.9285              0.0383
 11              0.9646              0.0361
 12              0.9988              0.0342
 13              1.0279              0.0291
 14              1.0556              0.0277
 15              1.0821              0.0265
 16              1.1075              0.0254
 17              1.1319              0.0244
 18              1.1554              0.0235
 19              1.1780              0.0227
 20              1.1999              0.0219
 21              1.2212              0.0212
 22              1.2417              0.0206
 23              1.2617              0.0200
 24              1.2811              0.0194
 25              1.3001              0.0189
 26              1.3185              0.0184
 27              1.3365              0.0180
```

28	1.3541	0.0176
29	1.3713	0.0172
30	1.3881	0.0168
31	1.4045	0.0164
32	1.4206	0.0161
33	1.4364	0.0158
34	1.4519	0.0155
35	1.4671	0.0152
36	1.4820	0.0149
37	1.4966	0.0146
38	1.5110	0.0144
39	1.5251	0.0141
40	1.5390	0.0139
41	1.5527	0.0137
42	1.5662	0.0135
43	1.5794	0.0133
44	1.5925	0.0131
45	1.6054	0.0129
46	1.6181	0.0127
47	1.6306	0.0125
48	1.6429	0.0123
49	1.6551	0.0122
50	1.6671	0.0120
51	1.6790	0.0119
52	1.6907	0.0117
53	1.7023	0.0116
54	1.7138	0.0114
55	1.7251	0.0113
56	1.7362	0.0112
57	1.7473	0.0110
58	1.7582	0.0109
59	1.7690	0.0108
60	1.7797	0.0107
61	1.7903	0.0106
62	1.8007	0.0105
63	1.8111	0.0104
64	1.8213	0.0102
65	1.8315	0.0101
66	1.8415	0.0100
67	1.8515	0.0099
68	1.8613	0.0099
69	1.8711	0.0098
70	1.8808	0.0097
71	1.8903	0.0096
72	1.8998	0.0095
73	1.9109	0.0110
74	1.9218	0.0109
75	1.9327	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9753	0.0105
80	1.9858	0.0105
81	1.9961	0.0104
82	2.0065	0.0103
83	2.0167	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0470	0.0100
87	2.0569	0.0100
88	2.0668	0.0099
89	2.0767	0.0098
90	2.0864	0.0098
91	2.0961	0.0097
92	2.1058	0.0096
93	2.1153	0.0096
94	2.1249	0.0095
95	2.1343	0.0095
96	2.1437	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1716	0.0092
100	2.1808	0.0092
101	2.1899	0.0091
102	2.1990	0.0091

103	2.2080	0.0090
104	2.2170	0.0090
105	2.2259	0.0089
106	2.2348	0.0089
107	2.2436	0.0088
108	2.2524	0.0088
109	2.2611	0.0087
110	2.2698	0.0087
111	2.2784	0.0086
112	2.2870	0.0086
113	2.2956	0.0086
114	2.3041	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3377	0.0083
119	2.3460	0.0083
120	2.3542	0.0083
121	2.3625	0.0082
122	2.3706	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3949	0.0081
126	2.4030	0.0080
127	2.4109	0.0080
128	2.4189	0.0080
129	2.4268	0.0079
130	2.4347	0.0079
131	2.4425	0.0078
132	2.4503	0.0078
133	2.4581	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4889	0.0076
138	2.4965	0.0076
139	2.5041	0.0076
140	2.5116	0.0075
141	2.5191	0.0075
142	2.5266	0.0075
143	2.5341	0.0075
144	2.5415	0.0074
145	2.5489	0.0074
146	2.5563	0.0074
147	2.5636	0.0073
148	2.5709	0.0073
149	2.5782	0.0073
150	2.5854	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6070	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6354	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6564	0.0070
161	2.6634	0.0070
162	2.6703	0.0069
163	2.6772	0.0069
164	2.6841	0.0069
165	2.6910	0.0069
166	2.6978	0.0068
167	2.7046	0.0068
168	2.7114	0.0068
169	2.7182	0.0068
170	2.7249	0.0067
171	2.7316	0.0067
172	2.7383	0.0067
173	2.7450	0.0067
174	2.7517	0.0066
175	2.7583	0.0066
176	2.7649	0.0066
177	2.7715	0.0066

178	2.7780	0.0066
179	2.7846	0.0065
180	2.7911	0.0065
181	2.7976	0.0065
182	2.8041	0.0065
183	2.8105	0.0065
184	2.8170	0.0064
185	2.8234	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8425	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8677	0.0063
193	2.8740	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9050	0.0062
199	2.9112	0.0062
200	2.9173	0.0061
201	2.9234	0.0061
202	2.9295	0.0061
203	2.9356	0.0061
204	2.9417	0.0061
205	2.9477	0.0060
206	2.9537	0.0060
207	2.9598	0.0060
208	2.9657	0.0060
209	2.9717	0.0060
210	2.9777	0.0060
211	2.9836	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0072	0.0059
216	3.0131	0.0059
217	3.0190	0.0058
218	3.0248	0.0058
219	3.0306	0.0058
220	3.0364	0.0058
221	3.0422	0.0058
222	3.0480	0.0058
223	3.0537	0.0058
224	3.0595	0.0057
225	3.0652	0.0057
226	3.0709	0.0057
227	3.0766	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0936	0.0057
231	3.0992	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1272	0.0056
237	3.1328	0.0056
238	3.1383	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1658	0.0055
244	3.1713	0.0055
245	3.1768	0.0054
246	3.1822	0.0054
247	3.1876	0.0054
248	3.1930	0.0054
249	3.1984	0.0054
250	3.2038	0.0054
251	3.2092	0.0054
252	3.2145	0.0054

253	3.2199	0.0053
254	3.2252	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2517	0.0053
260	3.2570	0.0053
261	3.2623	0.0053
262	3.2675	0.0052
263	3.2727	0.0052
264	3.2779	0.0052
265	3.2831	0.0052
266	3.2883	0.0052
267	3.2935	0.0052
268	3.2987	0.0052
269	3.3039	0.0052
270	3.3090	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3244	0.0051
274	3.3295	0.0051
275	3.3346	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3498	0.0051
279	3.3549	0.0051
280	3.3599	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3949	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048
34	0.0055	0.0007	0.0048

35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069
109	0.0080	0.0011	0.0069

110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0096
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0137
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0156
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229
184	0.0277	0.0038	0.0240

185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0532	0.0046	0.0487
190	0.0601	0.0046	0.0555
191	0.0859	0.0046	0.0813
192	0.1181	0.0046	0.1135
193	0.3697	0.0046	0.3651
194	0.0700	0.0046	0.0654
195	0.0481	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0227	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0164
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054
259	0.0062	0.0008	0.0053

260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 64.45(CFS)

++

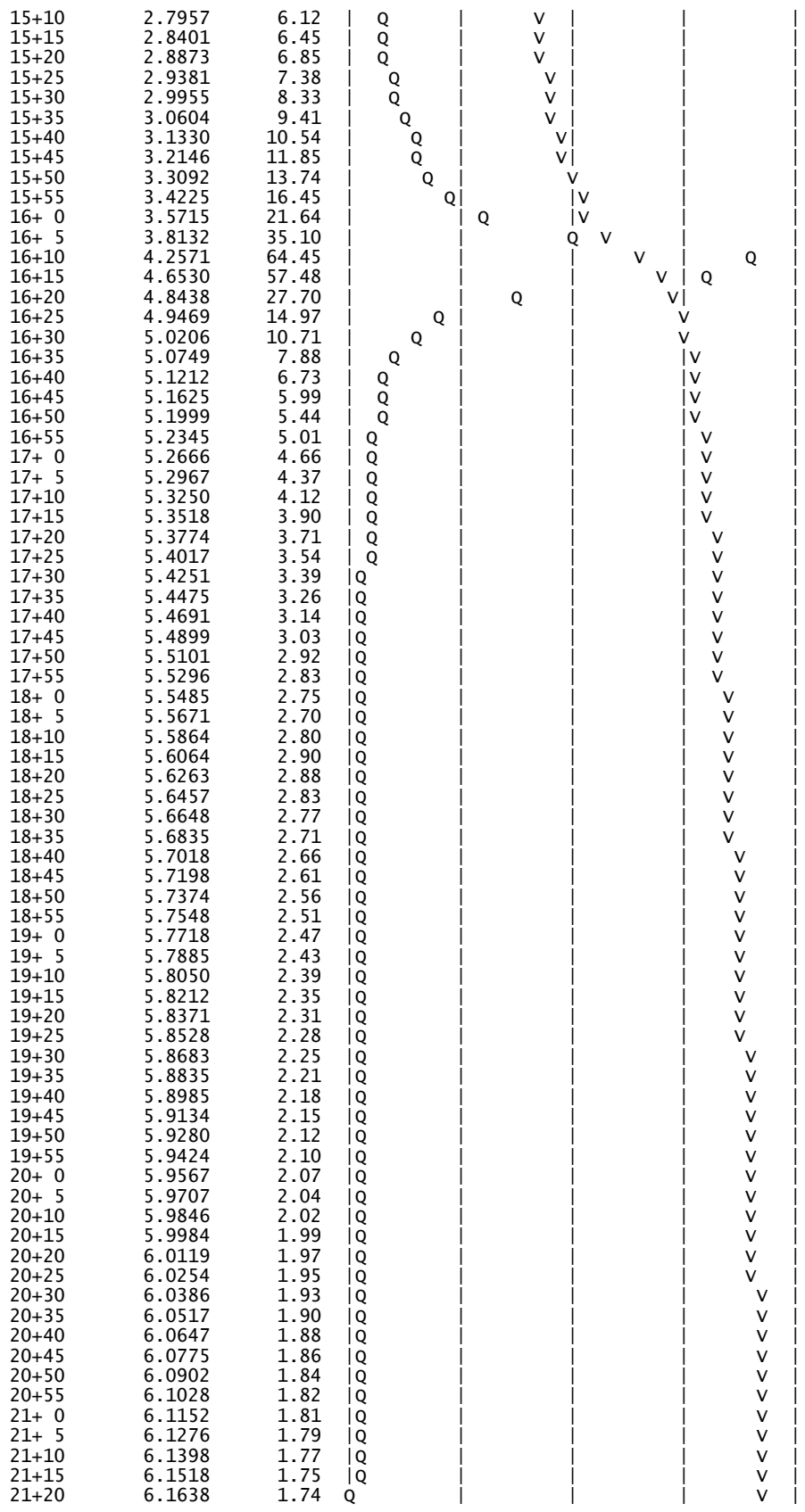
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	17.5	35.0	52.5	70.0
0+ 5	0.0007	0.10	Q	|	|	|	|
0+10	0.0051	0.64	Q	|	|	|	|
0+15	0.0131	1.16	Q	|	|	|	|
0+20	0.0221	1.31	Q	|	|	|	|
0+25	0.0314	1.34	Q	|	|	|	|
0+30	0.0407	1.36	Q	|	|	|	|
0+35	0.0501	1.36	Q	|	|	|	|
0+40	0.0595	1.37	Q	|	|	|	|
0+45	0.0689	1.37	Q	|	|	|	|
0+50	0.0784	1.37	Q	|	|	|	|
0+55	0.0879	1.38	Q	|	|	|	|
1+ 0	0.0974	1.38	Q	|	|	|	|
1+ 5	0.1069	1.39	Q	|	|	|	|
1+10	0.1165	1.39	Q	|	|	|	|
1+15	0.1261	1.40	Q	|	|	|	|
1+20	0.1358	1.40	Q	|	|	|	|
1+25	0.1454	1.40	Q	|	|	|	|
1+30	0.1551	1.41	Q	|	|	|	|
1+35	0.1649	1.41	QV	|	|	|	|
1+40	0.1747	1.42	QV	|	|	|	|
1+45	0.1845	1.42	QV	|	|	|	|
1+50	0.1943	1.43	QV	|	|	|	|
1+55	0.2042	1.43	QV	|	|	|	|
2+ 0	0.2141	1.44	QV	|	|	|	|
2+ 5	0.2240	1.44	QV	|	|	|	|
2+10	0.2340	1.45	QV	|	|	|	|
2+15	0.2440	1.45	QV	|	|	|	|
2+20	0.2540	1.46	QV	|	|	|	|
2+25	0.2641	1.46	QV	|	|	|	|
2+30	0.2742	1.47	QV	|	|	|	|
2+35	0.2844	1.47	QV	|	|	|	|

```
2+40       0.2945      1.48  QV        |         |         |         |
2+45       0.3048      1.48  QV        |         |         |         |
2+50       0.3150      1.49  QV        |         |         |         |
2+55       0.3253      1.49  QV        |         |         |         |
3+ 0       0.3357      1.50  Q V       |         |         |         |
3+ 5       0.3460      1.51  Q V       |         |         |         |
3+10       0.3564      1.51  Q V       |         |         |         |
3+15       0.3669      1.52  Q V       |         |         |         |
3+20       0.3774      1.52  Q V       |         |         |         |
3+25       0.3879      1.53  Q V       |         |         |         |
3+30       0.3985      1.53  Q V       |         |         |         |
3+35       0.4091      1.54  Q V       |         |         |         |
3+40       0.4197      1.55  Q V       |         |         |         |
3+45       0.4304      1.55  Q V       |         |         |         |
3+50       0.4411      1.56  Q V       |         |         |         |
3+55       0.4519      1.56  Q V       |         |         |         |
4+ 0       0.4627      1.57  Q V       |         |         |         |
4+ 5       0.4736      1.58  Q V       |         |         |         |
4+10       0.4845      1.58  Q V       |         |         |         |
4+15       0.4954      1.59  Q  V      |         |         |         |
4+20       0.5064      1.60  Q  V      |         |         |         |
4+25       0.5175      1.60  Q  V      |         |         |         |
4+30       0.5285      1.61  Q  V      |         |         |         |
4+35       0.5397      1.62  Q  V      |         |         |         |
4+40       0.5508      1.62  Q  V      |         |         |         |
4+45       0.5621      1.63  Q  V      |         |         |         |
4+50       0.5733      1.64  Q  V      |         |         |         |
4+55       0.5846      1.64  Q  V      |         |         |         |
5+ 0       0.5960      1.65  Q  V      |         |         |         |
5+ 5       0.6074      1.66  Q  V      |         |         |         |
5+10       0.6189      1.66  Q  V      |         |         |         |
5+15       0.6304      1.67  Q  V      |         |         |         |
5+20       0.6420      1.68  Q  V      |         |         |         |
5+25       0.6536      1.69  Q   V     |         |         |         |
5+30       0.6653      1.69  Q   V     |         |         |         |
5+35       0.6770      1.70  Q   V     |         |         |         |
5+40       0.6888      1.71  Q   V     |         |         |         |
5+45       0.7006      1.72  Q   V     |         |         |         |
5+50       0.7125      1.73  Q   V     |         |         |         |
5+55       0.7244      1.73  Q   V     |         |         |         |
6+ 0       0.7364      1.74  Q   V     |         |         |         |
6+ 5       0.7485      1.75  |Q  V     |         |         |         |
6+10       0.7606      1.76  |Q  V     |         |         |         |
6+15       0.7728      1.77  |Q  V     |         |         |         |
6+20       0.7850      1.78  |Q  V     |         |         |         |
6+25       0.7973      1.78  |Q  V     |         |         |         |
6+30       0.8097      1.79  |Q  V     |         |         |         |
6+35       0.8221      1.80  |Q   V    |         |         |         |
6+40       0.8345      1.81  |Q   V    |         |         |         |
6+45       0.8471      1.82  |Q   V    |         |         |         |
6+50       0.8597      1.83  |Q   V    |         |         |         |
6+55       0.8724      1.84  |Q   V    |         |         |         |
7+ 0       0.8851      1.85  |Q   V    |         |         |         |
7+ 5       0.8979      1.86  |Q   V    |         |         |         |
7+10       0.9108      1.87  |Q   V    |         |         |         |
7+15       0.9237      1.88  |Q   V    |         |         |         |
7+20       0.9367      1.89  |Q   V    |         |         |         |
7+25       0.9498      1.90  |Q   V    |         |         |         |
7+30       0.9630      1.91  |Q   V    |         |         |         |
7+35       0.9762      1.92  |Q   V    |         |         |         |
7+40       0.9895      1.93  |Q    V   |         |         |         |
7+45       1.0029      1.94  |Q    V   |         |         |         |
7+50       1.0164      1.95  |Q    V   |         |         |         |
7+55       1.0299      1.97  |Q    V   |         |         |         |
8+ 0       1.0435      1.98  |Q    V   |         |         |         |
8+ 5       1.0572      1.99  |Q    V   |         |         |         |
8+10       1.0710      2.00  |Q    V   |         |         |         |
8+15       1.0849      2.01  |Q    V   |         |         |         |
8+20       1.0988      2.03  |Q    V   |         |         |         |
8+25       1.1129      2.04  |Q    V   |         |         |         |
8+30       1.1270      2.05  |Q    V   |         |         |         |
8+35       1.1412      2.06  |Q     V  |         |         |         |
8+40       1.1555      2.08  |Q     V  |         |         |         |
8+45       1.1699      2.09  |Q     V  |         |         |         |
8+50       1.1844      2.10  |Q     V  |         |         |         |
```

```
 8+55       1.1990      2.12  |Q     V  |          |          |          |
 9+ 0       1.2137      2.13  |Q     V  |          |          |          |
 9+ 5       1.2285      2.15  |Q     V  |          |          |          |
 9+10       1.2433      2.16  |Q     V  |          |          |          |
 9+15       1.2583      2.18  |Q     V  |          |          |          |
 9+20       1.2734      2.19  |Q     V  |          |          |          |
 9+25       1.2886      2.21  |Q     V  |          |          |          |
 9+30       1.3039      2.22  |Q      V |          |          |          |
 9+35       1.3194      2.24  |Q      V |          |          |          |
 9+40       1.3349      2.26  |Q      V |          |          |          |
 9+45       1.3506      2.27  |Q      V |          |          |          |
 9+50       1.3663      2.29  |Q      V |          |          |          |
 9+55       1.3822      2.31  |Q      V |          |          |          |
10+ 0       1.3982      2.33  |Q      V |          |          |          |
10+ 5       1.4144      2.34  |Q      V |          |          |          |
10+10       1.4306      2.36  |Q      V |          |          |          |
10+15       1.4470      2.38  |Q      V |          |          |          |
10+20       1.4636      2.40  |Q      V |          |          |          |
10+25       1.4803      2.42  |Q       V|          |          |          |
10+30       1.4971      2.44  |Q       V|          |          |          |
10+35       1.5140      2.46  |Q       V|          |          |          |
10+40       1.5311      2.48  |Q       V|          |          |          |
10+45       1.5484      2.51  |Q       V|          |          |          |
10+50       1.5658      2.53  |Q       V|          |          |          |
10+55       1.5834      2.55  |Q       V|          |          |          |
11+ 0       1.6011      2.58  |Q       V|          |          |          |
11+ 5       1.6190      2.60  |Q       V|          |          |          |
11+10       1.6371      2.62  |Q        V          |          |          |
11+15       1.6553      2.65  |Q        V          |          |          |
11+20       1.6738      2.68  |Q        V          |          |          |
11+25       1.6924      2.70  |Q        V          |          |          |
11+30       1.7112      2.73  |Q        V          |          |          |
11+35       1.7302      2.76  |Q        V          |          |          |
11+40       1.7494      2.79  |Q        V          |          |          |
11+45       1.7688      2.82  |Q        V          |          |          |
11+50       1.7884      2.85  |Q        V          |          |          |
11+55       1.8083      2.88  |Q        |V         |          |          |
12+ 0       1.8284      2.91  |Q        |V         |          |          |
12+ 5       1.8484      2.91  |Q        |V         |          |          |
12+10       1.8675      2.77  |Q        |V         |          |          |
12+15       1.8857      2.64  |Q        |V         |          |          |
12+20       1.9038      2.63  |Q        |V         |          |          |
12+25       1.9221      2.66  |Q        |V         |          |          |
12+30       1.9406      2.69  |Q        |V         |          |          |
12+35       1.9594      2.73  |Q        | V        |          |          |
12+40       1.9785      2.77  |Q        | V        |          |          |
12+45       1.9979      2.81  |Q        | V        |          |          |
12+50       2.0176      2.86  |Q        | V        |          |          |
12+55       2.0376      2.90  |Q        | V        |          |          |
13+ 0       2.0579      2.95  |Q        | V        |          |          |
13+ 5       2.0786      3.00  |Q        | V        |          |          |
13+10       2.0997      3.06  |Q        | V        |          |          |
13+15       2.1211      3.11  |Q        |  V       |          |          |
13+20       2.1429      3.17  |Q        |  V       |          |          |
13+25       2.1652      3.23  |Q        |  V       |          |          |
13+30       2.1878      3.29  |Q        |  V       |          |          |
13+35       2.2110      3.36  |Q        |  V       |          |          |
13+40       2.2346      3.43  |Q        |  V       |          |          |
13+45       2.2587      3.50  | Q       |  V       |          |          |
13+50       2.2834      3.58  | Q       |   V      |          |          |
13+55       2.3087      3.67  | Q       |   V      |          |          |
14+ 0       2.3345      3.76  | Q       |   V      |          |          |
14+ 5       2.3610      3.85  | Q       |   V      |          |          |
14+10       2.3883      3.96  | Q       |   V      |          |          |
14+15       2.4163      4.06  | Q       |   V      |          |          |
14+20       2.4451      4.18  | Q       |    V     |          |          |
14+25       2.4747      4.31  | Q       |    V     |          |          |
14+30       2.5053      4.44  | Q       |    V     |          |          |
14+35       2.5369      4.59  | Q       |    V     |          |          |
14+40       2.5696      4.75  | Q       |    V     |          |          |
14+45       2.6035      4.92  | Q       |    V     |          |          |
14+50       2.6386      5.11  | Q       |     V    |          |          |
14+55       2.6753      5.32  |  Q      |     V    |          |          |
15+ 0       2.7135      5.56  |  Q      |     V    |          |          |
15+ 5       2.7536      5.81  |  Q      |     V    |          |          |
```



```
   21+25       6.1756      1.72  Q          |          |          |      V  |
   21+30       6.1874      1.71  Q          |          |          |      V  |
   21+35       6.1990      1.69  Q          |          |          |       V |
   21+40       6.2106      1.67  Q          |          |          |       V |
   21+45       6.2220      1.66  Q          |          |          |       V |
   21+50       6.2333      1.65  Q          |          |          |       V |
   21+55       6.2446      1.63  Q          |          |          |       V |
   22+ 0       6.2557      1.62  Q          |          |          |       V |
   22+ 5       6.2668      1.60  Q          |          |          |       V |
   22+10       6.2777      1.59  Q          |          |          |       V |
   22+15       6.2886      1.58  Q          |          |          |       V |
   22+20       6.2994      1.57  Q          |          |          |       V |
   22+25       6.3101      1.55  Q          |          |          |       V |
   22+30       6.3207      1.54  Q          |          |          |       V |
   22+35       6.3313      1.53  Q          |          |          |       V |
   22+40       6.3417      1.52  Q          |          |          |       V |
   22+45       6.3521      1.51  Q          |          |          |        V|
   22+50       6.3624      1.50  Q          |          |          |        V|
   22+55       6.3727      1.49  Q          |          |          |        V|
   23+ 0       6.3828      1.48  Q          |          |          |        V|
   23+ 5       6.3929      1.47  Q          |          |          |        V|
   23+10       6.4029      1.45  Q          |          |          |        V|
   23+15       6.4129      1.44  Q          |          |          |        V|
   23+20       6.4228      1.44  Q          |          |          |        V|
   23+25       6.4326      1.43  Q          |          |          |        V|
   23+30       6.4423      1.42  Q          |          |          |        V|
   23+35       6.4520      1.41  Q          |          |          |        V|
   23+40       6.4617      1.40  Q          |          |          |        V|
   23+45       6.4712      1.39  Q          |          |          |        V|
   23+50       6.4807      1.38  Q          |          |          |        V|
   23+55       6.4902      1.37  Q          |          |          |        V|
   24+ 0       6.4995      1.36  Q          |          |          |        V|
   24+ 5       6.5082      1.25  Q          |          |          |        V|
   24+10       6.5130      0.70  Q          |          |          |        V|
   24+15       6.5143      0.19  Q          |          |          |        V|
   24+20       6.5146      0.04  Q          |          |          |        V|
   24+25       6.5147      0.01  Q          |          |          |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0

Study date 04/14/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6585

24-0505 - ADELANTO INDUSTRIAL PARK
ONSITE UNIT HYDROGRAPH ANALYSIS, 7D
PROPOSED CONDITION, 100-YEAR 24-HOUR
FN: 7DPROPUH100.OUT - ABE

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
13.00	1	0.60
Rainfall data for year 2		
13.00	6	0.70
Rainfall data for year 2		
13.00	24	1.20
Rainfall data for year 100		
13.00	1	1.00
Rainfall data for year 100		
13.00	6	1.90
Rainfall data for year 100		
13.00	24	3.40

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	69.0	13.00	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.30	0.100	69.0	69.0	4.49	0.263
11.70	0.900	98.0	98.0	0.20	0.931

```
Area-averaged catchment yield fraction, Y =  0.865
Area-averaged low loss fraction, Yb =  0.135
User entry of time of concentration  =   0.200 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      13.00(Ac.)
Catchment Lag time =   0.160 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 52.0833
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.135 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.370(In)
Computed peak 30-minute rainfall =  0.758(In)
Specified peak 1-hour rainfall =  1.000(In)
Computed peak 3-hour rainfall =  1.482(In)
Specified peak 6-hour rainfall =  1.900(In)
Specified peak 24-hour rainfall =  3.400(In)


Rainfall depth area reduction factors:
Using a total area of      13.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.370(In)
30-minute factor = 0.999    Adjusted rainfall =  0.757(In)
1-hour factor = 0.999       Adjusted rainfall =  0.999(In)
3-hour factor = 1.000       Adjusted rainfall =  1.482(In)
6-hour factor = 1.000       Adjusted rainfall =  1.900(In)
24-hour factor = 1.000      Adjusted rainfall =  3.400(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       157.22 (CFS))

  1                4.951                   7.783
  2               32.173                  42.799
  3               71.993                  62.605
  4               91.514                  30.690
  5               97.565                   9.512
  6               98.956                   2.188
  7              100.000                   1.641
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3699              0.3699
  2              0.4881              0.1182
  3              0.5740              0.0859
  4              0.6440              0.0700
  5              0.7041              0.0601
  6              0.7574              0.0533
  7              0.8056              0.0482
  8              0.8498              0.0442
  9              0.8908              0.0410
 10              0.9291              0.0383
 11              0.9652              0.0361
 12              0.9994              0.0342
 13              1.0285              0.0291
 14              1.0562              0.0277
 15              1.0827              0.0265
 16              1.1080              0.0254
 17              1.1324              0.0244
 18              1.1558              0.0235
 19              1.1785              0.0226
 20              1.2004              0.0219
 21              1.2216              0.0212
 22              1.2421              0.0206
 23              1.2621              0.0200
 24              1.2815              0.0194
 25              1.3004              0.0189
 26              1.3188              0.0184
```

27	1.3368	0.0180
28	1.3544	0.0176
29	1.3715	0.0172
30	1.3883	0.0168
31	1.4047	0.0164
32	1.4208	0.0161
33	1.4366	0.0158
34	1.4520	0.0155
35	1.4672	0.0152
36	1.4821	0.0149
37	1.4967	0.0146
38	1.5111	0.0144
39	1.5252	0.0141
40	1.5391	0.0139
41	1.5528	0.0137
42	1.5663	0.0135
43	1.5795	0.0133
44	1.5926	0.0131
45	1.6055	0.0129
46	1.6182	0.0127
47	1.6307	0.0125
48	1.6430	0.0123
49	1.6552	0.0122
50	1.6672	0.0120
51	1.6791	0.0119
52	1.6908	0.0117
53	1.7024	0.0116
54	1.7139	0.0114
55	1.7252	0.0113
56	1.7363	0.0112
57	1.7474	0.0110
58	1.7583	0.0109
59	1.7691	0.0108
60	1.7798	0.0107
61	1.7904	0.0106
62	1.8008	0.0105
63	1.8112	0.0104
64	1.8214	0.0102
65	1.8316	0.0101
66	1.8416	0.0100
67	1.8516	0.0099
68	1.8614	0.0099
69	1.8712	0.0098
70	1.8808	0.0097
71	1.8904	0.0096
72	1.8999	0.0095
73	1.9110	0.0110
74	1.9219	0.0109
75	1.9328	0.0109
76	1.9435	0.0108
77	1.9542	0.0107
78	1.9648	0.0106
79	1.9754	0.0105
80	1.9858	0.0105
81	1.9962	0.0104
82	2.0065	0.0103
83	2.0168	0.0102
84	2.0269	0.0102
85	2.0370	0.0101
86	2.0471	0.0100
87	2.0570	0.0100
88	2.0669	0.0099
89	2.0767	0.0098
90	2.0865	0.0098
91	2.0962	0.0097
92	2.1058	0.0096
93	2.1154	0.0096
94	2.1249	0.0095
95	2.1344	0.0095
96	2.1438	0.0094
97	2.1531	0.0093
98	2.1624	0.0093
99	2.1717	0.0092
100	2.1808	0.0092
101	2.1900	0.0091

102	2.1991	0.0091
103	2.2081	0.0090
104	2.2171	0.0090
105	2.2260	0.0089
106	2.2349	0.0089
107	2.2437	0.0088
108	2.2525	0.0088
109	2.2612	0.0087
110	2.2699	0.0087
111	2.2785	0.0086
112	2.2871	0.0086
113	2.2957	0.0086
114	2.3042	0.0085
115	2.3126	0.0085
116	2.3210	0.0084
117	2.3294	0.0084
118	2.3378	0.0083
119	2.3461	0.0083
120	2.3543	0.0083
121	2.3625	0.0082
122	2.3707	0.0082
123	2.3788	0.0081
124	2.3869	0.0081
125	2.3950	0.0081
126	2.4030	0.0080
127	2.4110	0.0080
128	2.4190	0.0080
129	2.4269	0.0079
130	2.4348	0.0079
131	2.4426	0.0078
132	2.4504	0.0078
133	2.4582	0.0078
134	2.4659	0.0077
135	2.4736	0.0077
136	2.4813	0.0077
137	2.4890	0.0076
138	2.4966	0.0076
139	2.5042	0.0076
140	2.5117	0.0075
141	2.5192	0.0075
142	2.5267	0.0075
143	2.5342	0.0075
144	2.5416	0.0074
145	2.5490	0.0074
146	2.5563	0.0074
147	2.5637	0.0073
148	2.5710	0.0073
149	2.5783	0.0073
150	2.5855	0.0072
151	2.5927	0.0072
152	2.5999	0.0072
153	2.6071	0.0072
154	2.6142	0.0071
155	2.6213	0.0071
156	2.6284	0.0071
157	2.6355	0.0071
158	2.6425	0.0070
159	2.6495	0.0070
160	2.6565	0.0070
161	2.6635	0.0070
162	2.6704	0.0069
163	2.6773	0.0069
164	2.6842	0.0069
165	2.6911	0.0069
166	2.6979	0.0068
167	2.7047	0.0068
168	2.7115	0.0068
169	2.7182	0.0068
170	2.7250	0.0067
171	2.7317	0.0067
172	2.7384	0.0067
173	2.7451	0.0067
174	2.7517	0.0066
175	2.7584	0.0066
176	2.7650	0.0066

177	2.7715	0.0066
178	2.7781	0.0066
179	2.7846	0.0065
180	2.7912	0.0065
181	2.7977	0.0065
182	2.8041	0.0065
183	2.8106	0.0065
184	2.8170	0.0064
185	2.8235	0.0064
186	2.8298	0.0064
187	2.8362	0.0064
188	2.8426	0.0064
189	2.8489	0.0063
190	2.8552	0.0063
191	2.8615	0.0063
192	2.8678	0.0063
193	2.8741	0.0063
194	2.8803	0.0062
195	2.8865	0.0062
196	2.8927	0.0062
197	2.8989	0.0062
198	2.9051	0.0062
199	2.9113	0.0062
200	2.9174	0.0061
201	2.9235	0.0061
202	2.9296	0.0061
203	2.9357	0.0061
204	2.9417	0.0061
205	2.9478	0.0060
206	2.9538	0.0060
207	2.9598	0.0060
208	2.9658	0.0060
209	2.9718	0.0060
210	2.9778	0.0060
211	2.9837	0.0059
212	2.9896	0.0059
213	2.9955	0.0059
214	3.0014	0.0059
215	3.0073	0.0059
216	3.0132	0.0059
217	3.0190	0.0058
218	3.0249	0.0058
219	3.0307	0.0058
220	3.0365	0.0058
221	3.0423	0.0058
222	3.0480	0.0058
223	3.0538	0.0058
224	3.0595	0.0057
225	3.0653	0.0057
226	3.0710	0.0057
227	3.0767	0.0057
228	3.0823	0.0057
229	3.0880	0.0057
230	3.0937	0.0057
231	3.0993	0.0056
232	3.1049	0.0056
233	3.1105	0.0056
234	3.1161	0.0056
235	3.1217	0.0056
236	3.1273	0.0056
237	3.1328	0.0056
238	3.1384	0.0055
239	3.1439	0.0055
240	3.1494	0.0055
241	3.1549	0.0055
242	3.1604	0.0055
243	3.1659	0.0055
244	3.1714	0.0055
245	3.1768	0.0054
246	3.1823	0.0054
247	3.1877	0.0054
248	3.1931	0.0054
249	3.1985	0.0054
250	3.2039	0.0054
251	3.2092	0.0054

252	3.2146	0.0054
253	3.2200	0.0053
254	3.2253	0.0053
255	3.2306	0.0053
256	3.2359	0.0053
257	3.2412	0.0053
258	3.2465	0.0053
259	3.2518	0.0053
260	3.2571	0.0053
261	3.2623	0.0053
262	3.2676	0.0052
263	3.2728	0.0052
264	3.2780	0.0052
265	3.2832	0.0052
266	3.2884	0.0052
267	3.2936	0.0052
268	3.2988	0.0052
269	3.3039	0.0052
270	3.3091	0.0052
271	3.3142	0.0051
272	3.3193	0.0051
273	3.3245	0.0051
274	3.3296	0.0051
275	3.3347	0.0051
276	3.3397	0.0051
277	3.3448	0.0051
278	3.3499	0.0051
279	3.3549	0.0051
280	3.3600	0.0050
281	3.3650	0.0050
282	3.3700	0.0050
283	3.3750	0.0050
284	3.3800	0.0050
285	3.3850	0.0050
286	3.3900	0.0050
287	3.3950	0.0050
288	3.3999	0.0050

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0050	0.0007	0.0043
2	0.0050	0.0007	0.0043
3	0.0050	0.0007	0.0043
4	0.0050	0.0007	0.0043
5	0.0050	0.0007	0.0043
6	0.0050	0.0007	0.0044
7	0.0051	0.0007	0.0044
8	0.0051	0.0007	0.0044
9	0.0051	0.0007	0.0044
10	0.0051	0.0007	0.0044
11	0.0051	0.0007	0.0044
12	0.0051	0.0007	0.0044
13	0.0052	0.0007	0.0045
14	0.0052	0.0007	0.0045
15	0.0052	0.0007	0.0045
16	0.0052	0.0007	0.0045
17	0.0052	0.0007	0.0045
18	0.0052	0.0007	0.0045
19	0.0053	0.0007	0.0045
20	0.0053	0.0007	0.0046
21	0.0053	0.0007	0.0046
22	0.0053	0.0007	0.0046
23	0.0053	0.0007	0.0046
24	0.0053	0.0007	0.0046
25	0.0054	0.0007	0.0046
26	0.0054	0.0007	0.0046
27	0.0054	0.0007	0.0047
28	0.0054	0.0007	0.0047
29	0.0054	0.0007	0.0047
30	0.0054	0.0007	0.0047
31	0.0055	0.0007	0.0047
32	0.0055	0.0007	0.0047
33	0.0055	0.0007	0.0048

34	0.0055	0.0007	0.0048
35	0.0056	0.0008	0.0048
36	0.0056	0.0008	0.0048
37	0.0056	0.0008	0.0048
38	0.0056	0.0008	0.0049
39	0.0056	0.0008	0.0049
40	0.0057	0.0008	0.0049
41	0.0057	0.0008	0.0049
42	0.0057	0.0008	0.0049
43	0.0057	0.0008	0.0050
44	0.0057	0.0008	0.0050
45	0.0058	0.0008	0.0050
46	0.0058	0.0008	0.0050
47	0.0058	0.0008	0.0050
48	0.0058	0.0008	0.0050
49	0.0059	0.0008	0.0051
50	0.0059	0.0008	0.0051
51	0.0059	0.0008	0.0051
52	0.0059	0.0008	0.0051
53	0.0060	0.0008	0.0052
54	0.0060	0.0008	0.0052
55	0.0060	0.0008	0.0052
56	0.0060	0.0008	0.0052
57	0.0061	0.0008	0.0052
58	0.0061	0.0008	0.0053
59	0.0061	0.0008	0.0053
60	0.0061	0.0008	0.0053
61	0.0062	0.0008	0.0053
62	0.0062	0.0008	0.0053
63	0.0062	0.0008	0.0054
64	0.0062	0.0008	0.0054
65	0.0063	0.0009	0.0054
66	0.0063	0.0009	0.0054
67	0.0063	0.0009	0.0055
68	0.0064	0.0009	0.0055
69	0.0064	0.0009	0.0055
70	0.0064	0.0009	0.0055
71	0.0065	0.0009	0.0056
72	0.0065	0.0009	0.0056
73	0.0065	0.0009	0.0056
74	0.0065	0.0009	0.0057
75	0.0066	0.0009	0.0057
76	0.0066	0.0009	0.0057
77	0.0066	0.0009	0.0057
78	0.0067	0.0009	0.0058
79	0.0067	0.0009	0.0058
80	0.0067	0.0009	0.0058
81	0.0068	0.0009	0.0059
82	0.0068	0.0009	0.0059
83	0.0069	0.0009	0.0059
84	0.0069	0.0009	0.0060
85	0.0069	0.0009	0.0060
86	0.0070	0.0009	0.0060
87	0.0070	0.0009	0.0061
88	0.0070	0.0010	0.0061
89	0.0071	0.0010	0.0061
90	0.0071	0.0010	0.0061
91	0.0072	0.0010	0.0062
92	0.0072	0.0010	0.0062
93	0.0072	0.0010	0.0063
94	0.0073	0.0010	0.0063
95	0.0073	0.0010	0.0063
96	0.0074	0.0010	0.0064
97	0.0074	0.0010	0.0064
98	0.0075	0.0010	0.0064
99	0.0075	0.0010	0.0065
100	0.0075	0.0010	0.0065
101	0.0076	0.0010	0.0066
102	0.0076	0.0010	0.0066
103	0.0077	0.0010	0.0067
104	0.0077	0.0010	0.0067
105	0.0078	0.0011	0.0068
106	0.0078	0.0011	0.0068
107	0.0079	0.0011	0.0068
108	0.0080	0.0011	0.0069

109	0.0080	0.0011	0.0069
110	0.0081	0.0011	0.0070
111	0.0081	0.0011	0.0070
112	0.0082	0.0011	0.0071
113	0.0083	0.0011	0.0071
114	0.0083	0.0011	0.0072
115	0.0084	0.0011	0.0072
116	0.0084	0.0011	0.0073
117	0.0085	0.0012	0.0074
118	0.0086	0.0012	0.0074
119	0.0086	0.0012	0.0075
120	0.0087	0.0012	0.0075
121	0.0088	0.0012	0.0076
122	0.0088	0.0012	0.0076
123	0.0089	0.0012	0.0077
124	0.0090	0.0012	0.0078
125	0.0091	0.0012	0.0078
126	0.0091	0.0012	0.0079
127	0.0092	0.0013	0.0080
128	0.0093	0.0013	0.0080
129	0.0094	0.0013	0.0081
130	0.0095	0.0013	0.0082
131	0.0096	0.0013	0.0083
132	0.0096	0.0013	0.0083
133	0.0098	0.0013	0.0084
134	0.0098	0.0013	0.0085
135	0.0100	0.0013	0.0086
136	0.0100	0.0014	0.0087
137	0.0102	0.0014	0.0088
138	0.0102	0.0014	0.0088
139	0.0104	0.0014	0.0090
140	0.0105	0.0014	0.0090
141	0.0106	0.0014	0.0092
142	0.0107	0.0014	0.0092
143	0.0109	0.0015	0.0094
144	0.0109	0.0015	0.0095
145	0.0095	0.0013	0.0082
146	0.0096	0.0013	0.0083
147	0.0098	0.0013	0.0084
148	0.0099	0.0013	0.0085
149	0.0100	0.0014	0.0087
150	0.0101	0.0014	0.0088
151	0.0104	0.0014	0.0090
152	0.0105	0.0014	0.0090
153	0.0107	0.0014	0.0092
154	0.0108	0.0015	0.0093
155	0.0110	0.0015	0.0095
156	0.0112	0.0015	0.0097
157	0.0114	0.0015	0.0099
158	0.0116	0.0016	0.0100
159	0.0119	0.0016	0.0103
160	0.0120	0.0016	0.0104
161	0.0123	0.0017	0.0107
162	0.0125	0.0017	0.0108
163	0.0129	0.0017	0.0111
164	0.0131	0.0018	0.0113
165	0.0135	0.0018	0.0116
166	0.0137	0.0019	0.0118
167	0.0141	0.0019	0.0122
168	0.0144	0.0019	0.0124
169	0.0149	0.0020	0.0129
170	0.0152	0.0021	0.0131
171	0.0158	0.0021	0.0136
172	0.0161	0.0022	0.0139
173	0.0168	0.0023	0.0145
174	0.0172	0.0023	0.0148
175	0.0180	0.0024	0.0155
176	0.0184	0.0025	0.0159
177	0.0194	0.0026	0.0168
178	0.0200	0.0027	0.0173
179	0.0212	0.0029	0.0183
180	0.0219	0.0030	0.0189
181	0.0235	0.0032	0.0203
182	0.0244	0.0033	0.0211
183	0.0265	0.0036	0.0229

184	0.0277	0.0038	0.0240
185	0.0342	0.0046	0.0296
186	0.0361	0.0046	0.0315
187	0.0410	0.0046	0.0364
188	0.0442	0.0046	0.0396
189	0.0533	0.0046	0.0487
190	0.0601	0.0046	0.0556
191	0.0859	0.0046	0.0814
192	0.1182	0.0046	0.1136
193	0.3699	0.0046	0.3653
194	0.0700	0.0046	0.0654
195	0.0482	0.0046	0.0436
196	0.0383	0.0046	0.0338
197	0.0291	0.0039	0.0252
198	0.0254	0.0034	0.0219
199	0.0226	0.0031	0.0196
200	0.0206	0.0028	0.0178
201	0.0189	0.0026	0.0163
202	0.0176	0.0024	0.0152
203	0.0164	0.0022	0.0142
204	0.0155	0.0021	0.0134
205	0.0146	0.0020	0.0126
206	0.0139	0.0019	0.0120
207	0.0133	0.0018	0.0115
208	0.0127	0.0017	0.0110
209	0.0122	0.0016	0.0105
210	0.0117	0.0016	0.0101
211	0.0113	0.0015	0.0098
212	0.0109	0.0015	0.0094
213	0.0106	0.0014	0.0091
214	0.0102	0.0014	0.0089
215	0.0099	0.0013	0.0086
216	0.0097	0.0013	0.0084
217	0.0110	0.0015	0.0095
218	0.0108	0.0015	0.0093
219	0.0105	0.0014	0.0091
220	0.0103	0.0014	0.0089
221	0.0101	0.0014	0.0087
222	0.0099	0.0013	0.0086
223	0.0097	0.0013	0.0084
224	0.0095	0.0013	0.0082
225	0.0093	0.0013	0.0081
226	0.0092	0.0012	0.0079
227	0.0090	0.0012	0.0078
228	0.0089	0.0012	0.0077
229	0.0087	0.0012	0.0075
230	0.0086	0.0012	0.0074
231	0.0085	0.0011	0.0073
232	0.0083	0.0011	0.0072
233	0.0082	0.0011	0.0071
234	0.0081	0.0011	0.0070
235	0.0080	0.0011	0.0069
236	0.0079	0.0011	0.0068
237	0.0078	0.0011	0.0067
238	0.0077	0.0010	0.0066
239	0.0076	0.0010	0.0066
240	0.0075	0.0010	0.0065
241	0.0074	0.0010	0.0064
242	0.0073	0.0010	0.0063
243	0.0072	0.0010	0.0062
244	0.0071	0.0010	0.0062
245	0.0071	0.0010	0.0061
246	0.0070	0.0009	0.0060
247	0.0069	0.0009	0.0060
248	0.0068	0.0009	0.0059
249	0.0068	0.0009	0.0058
250	0.0067	0.0009	0.0058
251	0.0066	0.0009	0.0057
252	0.0066	0.0009	0.0057
253	0.0065	0.0009	0.0056
254	0.0064	0.0009	0.0056
255	0.0064	0.0009	0.0055
256	0.0063	0.0009	0.0055
257	0.0063	0.0008	0.0054
258	0.0062	0.0008	0.0054

259	0.0062	0.0008	0.0053
260	0.0061	0.0008	0.0053
261	0.0060	0.0008	0.0052
262	0.0060	0.0008	0.0052
263	0.0059	0.0008	0.0051
264	0.0059	0.0008	0.0051
265	0.0058	0.0008	0.0051
266	0.0058	0.0008	0.0050
267	0.0058	0.0008	0.0050
268	0.0057	0.0008	0.0049
269	0.0057	0.0008	0.0049
270	0.0056	0.0008	0.0049
271	0.0056	0.0008	0.0048
272	0.0055	0.0008	0.0048
273	0.0055	0.0007	0.0048
274	0.0055	0.0007	0.0047
275	0.0054	0.0007	0.0047
276	0.0054	0.0007	0.0047
277	0.0053	0.0007	0.0046
278	0.0053	0.0007	0.0046
279	0.0053	0.0007	0.0046
280	0.0052	0.0007	0.0045
281	0.0052	0.0007	0.0045
282	0.0052	0.0007	0.0045
283	0.0051	0.0007	0.0044
284	0.0051	0.0007	0.0044
285	0.0051	0.0007	0.0044
286	0.0050	0.0007	0.0044
287	0.0050	0.0007	0.0043
288	0.0050	0.0007	0.0043

Total soil rain loss = 0.38(In)
Total effective rainfall = 3.02(In)
Peak flow rate in flood hydrograph = 30.47(CFS)

++

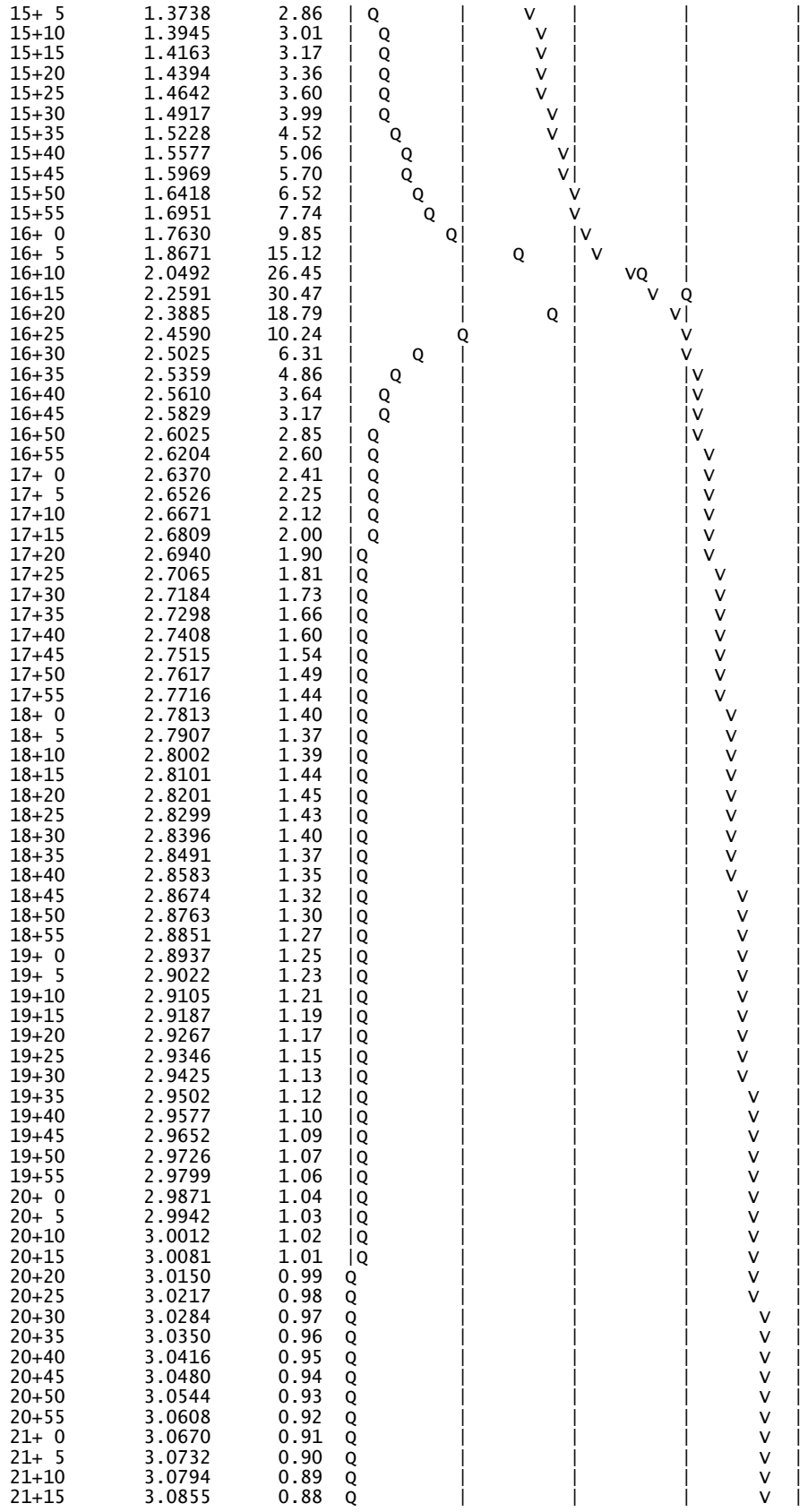
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0002	0.03	Q				
0+10	0.0017	0.22	Q				
0+15	0.0051	0.49	Q				
0+20	0.0093	0.62	Q				
0+25	0.0139	0.66	Q				
0+30	0.0185	0.67	Q				
0+35	0.0232	0.68	Q				
0+40	0.0279	0.68	Q				
0+45	0.0327	0.69	Q				
0+50	0.0374	0.69	Q				
0+55	0.0422	0.69	Q				
1+ 0	0.0469	0.69	Q				
1+ 5	0.0517	0.70	Q				
1+10	0.0565	0.70	Q				
1+15	0.0613	0.70	Q				
1+20	0.0662	0.70	Q				
1+25	0.0710	0.70	Q				
1+30	0.0759	0.71	Q				
1+35	0.0808	0.71	Q				
1+40	0.0857	0.71	QV				
1+45	0.0906	0.71	QV				
1+50	0.0955	0.72	QV				
1+55	0.1005	0.72	QV				
2+ 0	0.1054	0.72	QV				
2+ 5	0.1104	0.72	QV				
2+10	0.1154	0.73	QV				
2+15	0.1204	0.73	QV				
2+20	0.1255	0.73	QV				
2+25	0.1305	0.73	QV				
2+30	0.1356	0.74	QV				

2+35	0.1407	0.74	QV	|	|	|	|
2+40	0.1458	0.74	QV	|	|	|	|
2+45	0.1509	0.74	QV	|	|	|	|
2+50	0.1560	0.75	QV	|	|	|	|
2+55	0.1612	0.75	QV	|	|	|	|
3+ 0	0.1664	0.75	Q V	|	|	|	|
3+ 5	0.1716	0.75	Q V	|	|	|	|
3+10	0.1768	0.76	Q V	|	|	|	|
3+15	0.1820	0.76	Q V	|	|	|	|
3+20	0.1873	0.76	Q V	|	|	|	|
3+25	0.1926	0.77	Q V	|	|	|	|
3+30	0.1979	0.77	Q V	|	|	|	|
3+35	0.2032	0.77	Q V	|	|	|	|
3+40	0.2085	0.77	Q V	|	|	|	|
3+45	0.2139	0.78	Q V	|	|	|	|
3+50	0.2192	0.78	Q V	|	|	|	|
3+55	0.2246	0.78	Q V	|	|	|	|
4+ 0	0.2301	0.79	Q V	|	|	|	|
4+ 5	0.2355	0.79	Q V	|	|	|	|
4+10	0.2410	0.79	Q V	|	|	|	|
4+15	0.2464	0.80	Q V	|	|	|	|
4+20	0.2520	0.80	Q V	|	|	|	|
4+25	0.2575	0.80	Q V	|	|	|	|
4+30	0.2630	0.81	Q V	|	|	|	|
4+35	0.2686	0.81	Q V	|	|	|	|
4+40	0.2742	0.81	Q V	|	|	|	|
4+45	0.2798	0.82	Q V	|	|	|	|
4+50	0.2855	0.82	Q V	|	|	|	|
4+55	0.2911	0.82	Q V	|	|	|	|
5+ 0	0.2968	0.83	Q V	|	|	|	|
5+ 5	0.3026	0.83	Q V	|	|	|	|
5+10	0.3083	0.83	Q V	|	|	|	|
5+15	0.3141	0.84	Q V	|	|	|	|
5+20	0.3199	0.84	Q V	|	|	|	|
5+25	0.3257	0.85	Q V	|	|	|	|
5+30	0.3315	0.85	Q V	|	|	|	|
5+35	0.3374	0.85	Q V	|	|	|	|
5+40	0.3433	0.86	Q V	|	|	|	|
5+45	0.3492	0.86	Q V	|	|	|	|
5+50	0.3552	0.86	Q V	|	|	|	|
5+55	0.3612	0.87	Q V	|	|	|	|
6+ 0	0.3672	0.87	Q V	|	|	|	|
6+ 5	0.3732	0.88	Q V	|	|	|	|
6+10	0.3793	0.88	Q V	|	|	|	|
6+15	0.3854	0.89	Q V	|	|	|	|
6+20	0.3915	0.89	Q V	|	|	|	|
6+25	0.3977	0.89	Q V	|	|	|	|
6+30	0.4039	0.90	Q V	|	|	|	|
6+35	0.4101	0.90	Q V	|	|	|	|
6+40	0.4163	0.91	Q V	|	|	|	|
6+45	0.4226	0.91	Q V	|	|	|	|
6+50	0.4289	0.92	Q V	|	|	|	|
6+55	0.4353	0.92	Q V	|	|	|	|
7+ 0	0.4417	0.93	Q V	|	|	|	|
7+ 5	0.4481	0.93	Q V	|	|	|	|
7+10	0.4545	0.94	Q V	|	|	|	|
7+15	0.4610	0.94	Q V	|	|	|	|
7+20	0.4675	0.95	Q V	|	|	|	|
7+25	0.4741	0.95	Q V	|	|	|	|
7+30	0.4807	0.96	Q V	|	|	|	|
7+35	0.4873	0.96	Q V	|	|	|	|
7+40	0.4940	0.97	Q V	|	|	|	|
7+45	0.5007	0.97	Q V	|	|	|	|
7+50	0.5074	0.98	Q V	|	|	|	|
7+55	0.5142	0.98	Q V	|	|	|	|
8+ 0	0.5210	0.99	Q V	|	|	|	|
8+ 5	0.5279	1.00	Q V	|	|	|	|
8+10	0.5348	1.00	|Q V	|	|	|	|
8+15	0.5417	1.01	|Q V	|	|	|	|
8+20	0.5487	1.01	|Q V	|	|	|	|
8+25	0.5557	1.02	|Q V	|	|	|	|
8+30	0.5628	1.03	|Q V	|	|	|	|
8+35	0.5699	1.03	|Q V	|	|	|	|
8+40	0.5771	1.04	|Q V	|	|	|	|
8+45	0.5843	1.05	|Q V	|	|	|	|

```
 8+50       0.5915      1.05  |Q     V  |          |          |          |
 8+55       0.5988      1.06  |Q     V  |          |          |          |
 9+ 0       0.6062      1.07  |Q     V  |          |          |          |
 9+ 5       0.6136      1.07  |Q     V  |          |          |          |
 9+10       0.6210      1.08  |Q     V  |          |          |          |
 9+15       0.6285      1.09  |Q     V  |          |          |          |
 9+20       0.6361      1.10  |Q     V  |          |          |          |
 9+25       0.6437      1.10  |Q     V  |          |          |          |
 9+30       0.6514      1.11  |Q     V  |          |          |          |
 9+35       0.6591      1.12  |Q      V |          |          |          |
 9+40       0.6669      1.13  |Q      V |          |          |          |
 9+45       0.6747      1.14  |Q      V |          |          |          |
 9+50       0.6826      1.15  |Q      V |          |          |          |
 9+55       0.6905      1.15  |Q      V |          |          |          |
10+ 0       0.6986      1.16  |Q      V |          |          |          |
10+ 5       0.7066      1.17  |Q      V |          |          |          |
10+10       0.7148      1.18  |Q      V |          |          |          |
10+15       0.7230      1.19  |Q      V |          |          |          |
10+20       0.7312      1.20  |Q      V |          |          |          |
10+25       0.7396      1.21  |Q       V|          |          |          |
10+30       0.7480      1.22  |Q       V|          |          |          |
10+35       0.7565      1.23  |Q       V|          |          |          |
10+40       0.7650      1.24  |Q       V|          |          |          |
10+45       0.7737      1.25  |Q       V|          |          |          |
10+50       0.7824      1.26  |Q       V|          |          |          |
10+55       0.7912      1.28  |Q       V|          |          |          |
11+ 0       0.8000      1.29  |Q       V|          |          |          |
11+ 5       0.8090      1.30  |Q       V|          |          |          |
11+10       0.8180      1.31  |Q        V          |          |          |
11+15       0.8272      1.32  |Q        V          |          |          |
11+20       0.8364      1.34  |Q        V          |          |          |
11+25       0.8457      1.35  |Q        V          |          |          |
11+30       0.8551      1.36  |Q        V          |          |          |
11+35       0.8646      1.38  |Q        V          |          |          |
11+40       0.8742      1.39  |Q        V          |          |          |
11+45       0.8839      1.41  |Q        V          |          |          |
11+50       0.8937      1.42  |Q        V          |          |          |
11+55       0.9036      1.44  |Q        |V         |          |          |
12+ 0       0.9136      1.46  |Q        |V         |          |          |
12+ 5       0.9237      1.46  |Q        |V         |          |          |
12+10       0.9335      1.42  |Q        |V         |          |          |
12+15       0.9428      1.35  |Q        |V         |          |          |
12+20       0.9519      1.32  |Q        |V         |          |          |
12+25       0.9610      1.33  |Q        |V         |          |          |
12+30       0.9703      1.34  |Q        |V         |          |          |
12+35       0.9797      1.36  |Q        |V         |          |          |
12+40       0.9892      1.38  |Q        | V        |          |          |
12+45       0.9989      1.40  |Q        | V        |          |          |
12+50       1.0087      1.43  |Q        | V        |          |          |
12+55       1.0187      1.45  |Q        | V        |          |          |
13+ 0       1.0288      1.47  |Q        | V        |          |          |
13+ 5       1.0391      1.50  |Q        | V        |          |          |
13+10       1.0496      1.52  |Q        | V        |          |          |
13+15       1.0603      1.55  |Q        | V        |          |          |
13+20       1.0711      1.58  |Q        |  V       |          |          |
13+25       1.0822      1.61  |Q        |  V       |          |          |
13+30       1.0935      1.64  |Q        |  V       |          |          |
13+35       1.1050      1.67  |Q        |  V       |          |          |
13+40       1.1168      1.71  |Q        |  V       |          |          |
13+45       1.1288      1.74  |Q        |  V       |          |          |
13+50       1.1411      1.78  |Q        |  V       |          |          |
13+55       1.1536      1.82  |Q        |   V      |          |          |
14+ 0       1.1665      1.87  |Q        |   V      |          |          |
14+ 5       1.1797      1.91  |Q        |   V      |          |          |
14+10       1.1932      1.96  |Q        |   V      |          |          |
14+15       1.2071      2.02  | Q       |   V      |          |          |
14+20       1.2214      2.07  | Q       |   V      |          |          |
14+25       1.2361      2.13  | Q       |    V     |          |          |
14+30       1.2512      2.20  | Q       |    V     |          |          |
14+35       1.2668      2.27  | Q       |    V     |          |          |
14+40       1.2830      2.35  | Q       |    V     |          |          |
14+45       1.2997      2.43  | Q       |    V     |          |          |
14+50       1.3171      2.52  | Q       |     V    |          |          |
14+55       1.3352      2.63  | Q       |     V    |          |          |
15+ 0       1.3541      2.74  | Q       |     V    |          |          |
```



```
   21+20       3.0915      0.88  Q          |          |          |      V  |
   21+25       3.0975      0.87  Q          |          |          |      V  |
   21+30       3.1034      0.86  Q          |          |          |      V  |
   21+35       3.1093      0.85  Q          |          |          |       V |
   21+40       3.1151      0.84  Q          |          |          |       V |
   21+45       3.1208      0.84  Q          |          |          |       V |
   21+50       3.1265      0.83  Q          |          |          |       V |
   21+55       3.1322      0.82  Q          |          |          |       V |
   22+ 0       3.1378      0.82  Q          |          |          |       V |
   22+ 5       3.1434      0.81  Q          |          |          |       V |
   22+10       3.1489      0.80  Q          |          |          |       V |
   22+15       3.1544      0.80  Q          |          |          |       V |
   22+20       3.1598      0.79  Q          |          |          |       V |
   22+25       3.1652      0.78  Q          |          |          |       V |
   22+30       3.1705      0.78  Q          |          |          |       V |
   22+35       3.1759      0.77  Q          |          |          |       V |
   22+40       3.1811      0.76  Q          |          |          |       V |
   22+45       3.1864      0.76  Q          |          |          |       V |
   22+50       3.1915      0.75  Q          |          |          |        V|
   22+55       3.1967      0.75  Q          |          |          |        V|
   23+ 0       3.2018      0.74  Q          |          |          |        V|
   23+ 5       3.2069      0.74  Q          |          |          |        V|
   23+10       3.2119      0.73  Q          |          |          |        V|
   23+15       3.2169      0.73  Q          |          |          |        V|
   23+20       3.2219      0.72  Q          |          |          |        V|
   23+25       3.2269      0.72  Q          |          |          |        V|
   23+30       3.2318      0.71  Q          |          |          |        V|
   23+35       3.2366      0.71  Q          |          |          |        V|
   23+40       3.2415      0.70  Q          |          |          |        V|
   23+45       3.2463      0.70  Q          |          |          |        V|
   23+50       3.2511      0.69  Q          |          |          |        V|
   23+55       3.2558      0.69  Q          |          |          |        V|
   24+ 0       3.2605      0.69  Q          |          |          |        V|
   24+ 5       3.2650      0.65  Q          |          |          |        V|
   24+10       3.2682      0.46  Q          |          |          |        V|
   24+15       3.2695      0.19  Q          |          |          |        V|
   24+20       3.2699      0.06  Q          |          |          |        V|
   24+25       3.2700      0.02  Q          |          |          |        V|
   24+30       3.2701      0.01  Q          |          |          |         V
-------------------------------------------------------------------------
```

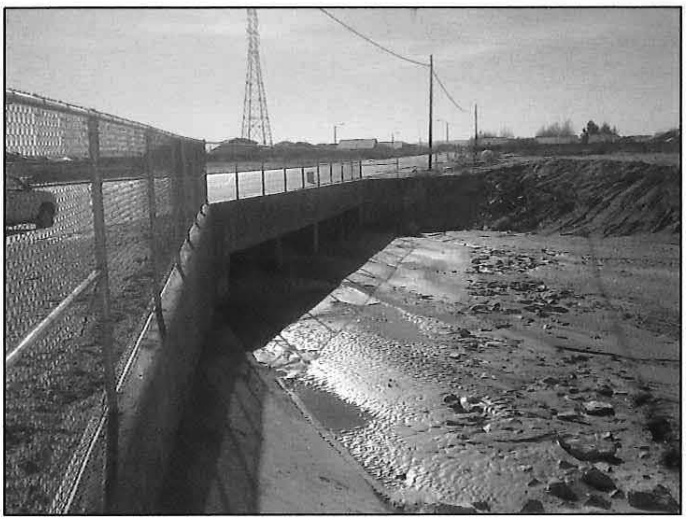
APPENDIX E – REFERENCES

EXCERPTS OF CITY OF ADELANTO DRAINAGE MASTER PLAN (UPDATED MAY 2012)

CITY OF ADELANTO

DRAINAGE MASTER PLAN UPDATE

EXCERPTS





FINAL REPORT

May 2012

Prepared By:

So & Associates Engineers, Inc.

16209 Kamana Road Apple Valley, CA 92307 (760) 242-2365

CHAPTER 2
HYDROLOGIC/HYDRAULIC MODELING

HYDROLOGY

Defining the drainage areas contributing stormwater runoff to the drainage system is an important aspect in determining contributing sources and in accurate assessment of the capacity of the existing or proposed drainage system. Based on the existing topography, drainage area parameters, such as slopes, land use and imperviousness was determined. After the drainage area boundaries have been identified, the discharge from each drainage area was calculated using CIVILCADD software. CIVILCADD is a widely-used computer program created for San Bernardino County that allows flexibility for modeling the quantity of stormwater runoff from basins and drainage systems. SWMM 5.0 contains both Rational method and Unit Hydrograph method analysis. The preparation of a base hydrology model began with the collection of standard and assumed parameters. These were then incorporated into the CIVILCADD software package. After the base model was developed and an appropriate design storm selected, a hydrologic simulation was generated. The output of the simulation was reviewed and compared to standard Rational Method hand calculations to determine difference/percent error between methods.

HYDROLOGY DESIGN CRITERION

City of Adelanto sets the San Bernardino County Hydrology Manual. Figures 2-1 and 2-2 are the isohytels maps for 10-year and 100-year respectively for the desert area identified as Figures B-9 and B-10 respectively in County of San Bernardino Hydrology Manual. Figure 2-3 shows the hydrologic soil group map for the region.

The value for C is dependent on the type of surface material. The San Bernardino County Hydrology Manual includes a procedure for determining the value for rainfall intensity. The 1-hour precipitation from a county wide isohytels map was used to select an Intensity-Duration

curve that can determine the rainfall intensity. The flow rate, Q, from the drainage area into the drainage system was determined using the following relationship:

$$Q = CIA$$

where Q = Flow rate, cubic feet per second
C = Storm water runoff coefficient, dimensionless
I = Historical rainfall intensity, inch per day
A = Surface area of drainage basin, square feet

The following design parameters were used in the hydrologic calculations:

- Runoff Coefficient "C" Value = 0.3
- Soil Group = C (sandy clay loam soil)
- Slope Used for Rainfall Intensity Curve "b" Value = 0.7
- SCS Curve Number for Soil (AMC 2) = 56
- Rainfall Intensity "i" Value for 100 Year Design Storm = 1.15 inch/hr
- Rainfall Intensity "i" Value for 10 Year Design Storm = 0.75 inch/hr
- Unit Hydrograph lag time = 0.8 t_c (time of concentration)

HYDROLOGIC MODELING

Hydrologic analysis was performed using "CIVILCADD – San Bernardino County Rational Hydrology and Unit Hydrograph" software. The preparation of the model began with the collection of standard and assumed parameters. These were then incorporated into the standard hydrology system model within the CIVILCADD software package. After the model was developed and an appropriate design storm year event selected, a simulation was generated. The software utilized the information to determine the runoff produced by a sub-watershed. Two hydrology methods were used to do the analysis:

- Rational Method:

  According to the Hydrology Manual, the rational method is used for tributary areas smaller than 640 acres (1 square mile). Whenever the tributary area exceeded more than 640 acres, Unit Hydrograph method was used. Both 10-year (1 hour) and 100-year (1 hour) storm events flow calculations were performed. The analysis reports are attached in Appendix A of this report.

- Unit Hydrograph Method

  As mentioned above, the Unit Hydrograph method was analyzed when the tributary areas exceeded 640 acres. The rational method was run up to 640 acres and from that point, the unit hydrograph analysis was continued downstream using the information from rational method analysis up to the point. Unit Hydrograph analysis was done for both 10-year and 100-year storm events. The analysis results are attaché din the appendix at the end of the report. A proposed system map showing the tributary areas is attached in Appendix A.

HYDRAULICS

The existing and proposed drainage systems within the City of Adelanto typically consist of open channels, culverts and associated outfalls. For this investigation, an outfall is identified as the point at which storm water is discharged from the drainage system into an existing wash. Drainage systems must adequately convey peak storm water flows during its design life. Peak flows anticipated for each drainage basin were determined and the ability for the pertinent, existing drainage system to convey the peak flows evaluated. Flows contributed by future connections were also considered when evaluating existing systems. Hydraulic assessment of the drainage systems included the following:

- the dimension and shape of the conveyance structures;
- the slope of the conveyance structures;
- the conveyance structure materials;
- the surface or finished grade elevations; and
- the flow line or invert elevations and flow capacity of systems.

HYDRAULIC DESIGN CRITERIA

The Manning's roughness coefficient "n" (Manning's n) for the sub-watershed pervious and impervious areas represents the roughness characteristics of the surface and is influenced by vegetation, channel irregularities, channel alignment, and scouring. LA County Flood Control District Hydraulic Design Manual was used for the hydraulic analysis. The following design parameters were used in the hydraulic calculations:

- Side Slope for the trapezoidal channel = 1:1
- Manning's Roughness Coefficient "n" = 0.015
- Minimum freeboard = 2.5
- Channel Height = 1.5 x Normal depth + Free Board

Stormwater runoff that is generated from upstream sub-watersheds flows to the low point, along with the accumulating precipitation. The surface runoff (Q) flowing to the channel is given by Manning's equation.

$$Q = (1.49/n)(AR^{2/3} S^{1/2})$$

where: Q = discharge, in cubic feet per second

A = cross-sectional area of flow, in square feet

R = hydraulic radius, A/P, in feet

P = wetted perimeter of flow, in feet

S = slope of the energy gradient

n = Manning's roughness coefficient

HYDRAULIC MODELING

The peak flow capacity calculated from hydrologic analysis as mentioned above was used to size the proposed drainage open channel. Online hydraulic calculator was used to determine the normal depth based on the peak design flow and assumed side slopes. The same base width as proposed in the 1992 Drainage Master Plan was considered for the calculation. The hydraulic calculations were performed at each channel segments whenever there was significant change in the direction of the channel and when other sub-channel(s) get connected to the channels. The channel slopes in each segment of the channel was projected from 2-feet contour maps provided by the City.

The typical drainage system requires and entrance and exit (nodes and links) as well as their respective parameters such as elevations, slopes, etc. Topographic maps with two-foot contours were utilized to determine ground line elevations for input into the model. City design standards were used as guide to determine typical roadway widths, slopes and curb and gutter geometry. where appropriate, to provide a means for determining appropriate sizing of junctions and depth of cover for assumed pipe networks. The conveyance systems developed for this project as well as the assumptions made for the completion of a pipe network are discussed in Section 3 of this report. The main components that describe nodes are the invert elevation and the height or depth from invert to ground surface, channel height. The City's 1992 Master Plan provided some of this critical information at existing drainage locations. Other information was collected from field investigation. The assumption of three feet of cover as the depth of fill, and usage of standard structures would results in a uniform cost estimate that is dependent on depths and footprint of excavation. The conveyance component of the model that comprise of peak flow, pipes, culverts, concrete channels, and natural channels. Channel slopes were determined by the conduit lengths and the difference in elevation between the upstream and downstream nodes. All pipes and culverts were modeled as trapezoidal channels.

In addition to inlets, culverts and channels, the City's storm drain system recommends the use of on-site detention basins. The purpose of a detention basin is to store storm water runoff flows for the attenuation the peak–flow resulting from a storm event. The typical detention basin is composed of an entrance conveyance. The basin is recommended to have a peak flow at 10 year storm event (Q_{10}). The basin can be a can be man-made of earth or concrete. The outlet of a basin can be designed to meter out the contained storm water by a flow metering device at a specified depth. The hydraulic calculations are presented in Appendix B attached at the end of this report.

CHAPTER 3
STORM DRAINAGE SYSTEM

EXISTING TOPOGRAPHY AND HYDROLOGY

Elevations within the City range approximately between 2,700 and 3,200 feet above mean sea level. The terrain generally slopes from southwest to northeast. The terrain has allowed the development to occur mostly in Assessment District 1A and towards the northern end of the City. The City's southern drainage area includes steep slopes and distinct drainage courses in comparison to the northern area that slopes approximately at a one percent (1%) gradient. The preliminary proposed slopes generally follow the contours of the area topography referencing the 2-feet contour maps provided by the City. Runoff through the drainage area eventually reaches Fremont Wash which lies within northwestern region of the City. The City's ground cover consists of scattered brush, grasses and Joshua tree.

Adelanto's climate is arid, typical of the southwest desert areas with an average annual rainfall of approximately 5.5 inches, and an average annual temperature of 63 degrees Fahrenheit.

PROPOSED DRAINAGE CHANNEL SYSTEMS

This update mostly confines the same channel configurations and numbering identified in the 1992 Drainage Master Plan as some developments have already occurred and some rights of way for the proposed channel in the previous master plan have been dedicated. However, this update has considered the existing sub-drainage areas, change in previous alignment due to development etc and has made the necessary changes accordingly. As shown in Figure 3-1, the analysis incorporates the downstream flows based on the drainage study by Victor Valley Developer's Association (VVDA), which proposes four (4) discharge points from the drainage area south of Palmdale Road and also the discharges shown in the Baldy Mesa Master Plan of Drainage (MPD). In addition, Figure

3-2 attached at the end of this Chapter shows the assigned tributary areas for hydrological analysis of the proposed drainage system.

The channels were designed for the difference between peak flow for 100 year and 10 year storm events ($Q_{100} - Q_{10}$). The 10 year storm flow (Q_{10}) is proposed to be retained by local facilities by development. Table 3-1 attached at the end of this Chapter shows the proposed design parameters of different channel sections based on the hydrology and hydraulic model analysis as described in Chapter 2. However, the analysis was also conducted for the proposed drainage system without including the flows from VVDA and Baldy Mesa MPD studies to evaluate the effect without the tributary flows from Victorville. This will help the City staff to discuss with City of Victorville staff as to funding and construction of the future channels. Table 3-2 at the end of this Chapter presents the proposed design parameters without including the upstream flows from outside the City boundary as dicussed above.

The proposed three main channel systems are assigned as Channels 1, 2 and 3 are described as follows:

Channel 1A

This is a proposed regional channel running along Adelanto Road from Rancho Road to Crippen Avenue connecting to a junction with Channel 1. The design capacity of the sub-channel is 1,028 cfs with a bottom width of 12 feet and a channel depth of 12 feet. The total tributary area served by Channel 1A is approximately 2.3 square miles.

Channel 1

It runs along northwesterly from Rancho Road to discharge storm water to Fremont Wash downstream. The maximum design capacity of the channel is 4,430 cfs with bottom widths varying from 25 feet to 50 feet and the channel depths from 4 feet to 8 feet. The total tributary area served by Channel 1 is approximately 11.14 square miles not including the flow that from Channel 1A.

TABLE 3-1: PROPOSED RUNOFF QUANTITY, RETENTION STORAGE AND REVISED CHANNEL DESIGN (INCLUDING VVDA & BALDY MESA MPD FLOW)

Notes:

[1] Proposed peak flow based on 10 year & 100 year-flood events

[1] Calculated Using "CIVILCADD -San Bernardino County Rational Hydrology and Unit Hydrograph Programs"

[1]Runoff Coefficient "C" Value = 0.3 (unimproved area)

[1]Rainfall Intensity "i" Value for 100 Year Design Storm = 1.15 inch/hr, 10 Year Design =0.75 inch/hr.

[1]Soil Group = C (sandy clay loam soil); Slope Used for Rainfall Intensity Curve "b" Value = 0.7; SCS Curve Number for Soil (AMC 2) = 56

[2] By Development

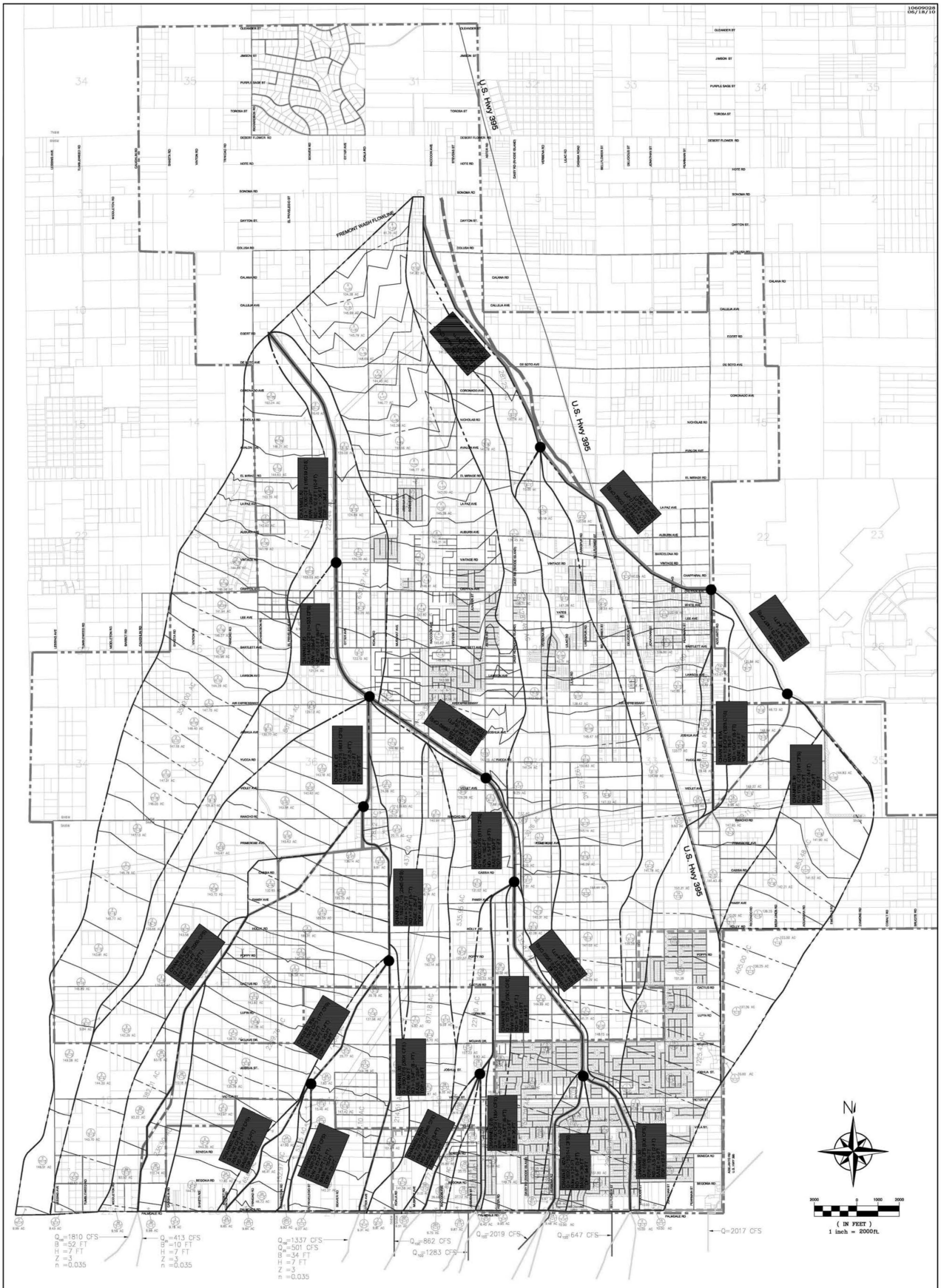
[3]Based on "Adelanto Master Plan of Drainage-November 1992" and County Drainage Master Plan

[4] Based on Required Total Cumulative Flow calculated (refer to column 8)

[5] Same as designed in the previous master plan, side slope assumed as 1:1

[6] Channel Height = 1.5 x normal depth + 2.5' (per LA County Flood Control District Hydraulic Design Manual)

Tributary Area No.	Peak Flow[1] Q (cfs)		Study Area A (ac.)	Req. Retention Vol[2]; Q_{10} (cfs)	Required Drainage Channel Flow			Drainage Channel Design Data per Previous Master Plan[3]			Revised Drainage Channel Design Data[4]					
					Cum.(Q_{100} - Q_{10}) (cfs)	Q_{100} from VVDA & Baldy Mesa MPD (cfs)	Total Cum. Flow (cfs)	Flow Cap. (cfs)	Base Width (ft.)	Water Depth (ft.)	Design Flow (cfs)	Base Width[5] (ft.)	Normal Depth (ft.)	Critical Depth (ft.)	Channel Height[6] (ft.)	Top Width (ft.)
Channel 1A																
Reach 1	Q_{100}	1800.00	1225.16	880	920	-	920	158	12	10	920	-	-	-	-	-
	Q_{10}	880.00														
Reach 2	Q_{100}	103.59	153.45	39	65	-	985	158	12	10	985	-	-	-	-	-
	Q_{10}	39.08														
Reach 3	Q_{100}	75.38	101.20	32	43	-	1028	158	12	10	1028	12	6	5	12	36
	Q_{10}	32.27														
Channel 1																
Reach 1	Q_{100}	1419.00	1263.90	638	781	-	781	1789	25	8.5	781	25	4	3	9	43
	Q_{10}	638.45														
Reach 2	Q_{100}	1149.00	1039.29	443	706	-	1487	1937	50	8.5	1487	50	4	3	9	68
	Q_{10}	442.80														
						Flow from Channel 1A	1028									
Reach 3	Q_{100}	727.95	697.00	298	430	-	2944	2376	50	7.5	2944	-	-	-	-	-
	Q_{10}	298.34														



LEGEND

- CHANNEL PER MASTER PLAN OF DRAINAGE
- OLD CHANNEL ALLIGNMENT
- CHANNEL TRIBUTARY AREAS
- TRIBUTARY SUB-AREAS
- CHANNEL NO., TRIB. AREA NO., SUBAREA NO., SUB AREA ACREAGE

MAP FOR APPENDIX A
CHANNEL TRIBUTARY SUB-AREAS

CITY OF ADELANTO
DRAINAGE MASTER PLAN
UPDATE

PREPARED BY:
So & Associates
Engineers Inc.