Final Environmental Impact Report

The Gateway at Grand Terrace Specific Plan

SCH No. 2021020110

Lead Agency

City of Grand Terrace
Konrad Bolowich, City Manager
22795 Barton Road
Grand Terrace, CA 92313
(909) 824-6621

CONSULTANT

Kimley-Horn and Associates, Inc.
Kari Cano, Project Manager
3801 University Ave, Suite 300
Riverside, CA 92501

June 2024

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Section 1.0 Introduction

1.1 INTRODUCTION

The City of Grand Terrace (City) has prepared this Final Environmental Impact Report (FEIR) in compliance with the California Environmental Quality Act (CEQA) for The Gateway at Grand Terrace Specific Plan (Project). The City is required, after completion of a Draft EIR (DEIR), to consult with and obtain comments from public agencies having jurisdiction by law with respect to the Project and provide the general public with an opportunity to comment on the DEIR. This FEIR has been prepared to respond to comments received on the DEIR (State Clearinghouse No. 2021020110), which was circulated for public review from June 26, 2023 through August 14, 2023. The preceding Table of Contents provides a list of all persons, organizations, and public agencies who commented on the DEIR.

A Lead Agency will evaluate comments on environmental issues from persons who reviewed the DEIR and will prepare a written response, pursuant to CEQA Guidelines §15088(a). The written response must address any significant environmental issues raised. In addition, there must be a good faith and reasoned analysis in the written response. However, lead agencies need only respond to significant environmental issues associated with the Project and do not need to provide all the information requested by commenters, as long as a good faith effort at full disclosure is made in the EIR (State CEQA Guidelines §15204, §15088). Comments received on the DEIR for The Gateway at Grand Terrace Specific Plan are responded to in **Section 2.0, Comments on the Draft EIR and Responses to Comments**.

State CEQA Guidelines §15088 recommends that where a response to comment makes important changes in the information contain in the text of the DEIR, that the Lead Agency either revise the text of the DEIR or include marginal notes showing that information. Added or modified text is shown in **Section 3.0, Errata**, by underlining (<u>example</u>), while deleted text is shown by striking (~~example~~). The additional information, corrections, and clarifications are not considered to substantively affect the conclusions within the EIR and therefore the City has determined that recirculation of the DEIR is not required as none of the criteria for recirculation under CEQA Guidelines Section 15088.5 have been met.

CEQA Guidelines §15132 indicates that the contents of a FEIR shall consist of:

(a) The DEIR or a revision of the draft.

(b) Comments and recommendations received on the DEIR either verbatim or in summary.

(c) A list of persons, organizations, and public agencies commenting on the DEIR.

(d) The responses of the Lead Agency to significant environmental points raised in the review and consultation process.

(e) Any other information added by the Lead Agency.

Pursuant to CEQA Guidelines §15088(b), the City will provide written responses to comments to any public agency that commented on the DEIR, at least ten (10) days prior to the City of Grand Terrace City Council's consideration of certifying the EIR as adequate under CEQA. Written responses to comments will also be

provided to non-public agency individuals, organizations, and entities that commented on the DEIR. In addition, the FEIR will be made available to the general public at the City's Planning Division office and on the City's website for a minimum of 10 days prior to the City Council public hearing.

The FEIR, along with other relevant information and public testimony at the Planning Commission public hearings, will be considered by the City Council in determining whether or not to certify the EIR and approve the Project.

1.2 ORGANIZATION OF EIR

This FEIR provides the requisite information required under CEQA and is organized as follows:

- **Section 1.0: Introduction.** This section provides an introduction to the FEIR, including the requirements under CEQA, the organization of the document, as well as a brief summary of the CEQA process activities to date.
- **Section 2.0: Comments on the Draft EIR and Responses to Comments.** This section provides a list of public agencies, organizations, and individuals commenting on the DEIR, provides a copy of each written comment received, and any responses to significant environmental points raised.
- **Section 3.0: Errata to the Draft EIR.** This section presents clarifications, amplifications, and insignificant modifications to the Draft EIR, identifying revisions to the text of the document.

1.3 CEQA PROCESS HISTORY

The City has complied with relevant Public Resources Code provisions and CEQA Guidelines regarding the preparation and processing of the Project EIR. A brief summary of the Project's CEQA process is as follows:

- A Notice of Preparation (NOP) informing interested parties and agencies of the Project was originally distributed on April 26, 2018.
- An updated NOP informing interested parties and agencies of the updated Project was distributed on February 8, 2021.
- Written and verbal comments were given at a public scoping meeting held for the Project on February 22, 2021.
- The DEIR was distributed for public review and comment for a 50-day period, beginning June 26, 2023. The public review period closed on August 14, 2023.

1.4 CHANGES TO THE DRAFT EIR

In response to public comments, text changes have been made to DEIR sections to clarify and amplify the analysis or mitigation measures, and to make insignificant modifications to the DEIR. This information does not rise to the level of significant new information as the resulting impact analysis and alternatives considered remain essentially unchanged, and no new or more severe impacts have been identified. These changes do not warrant DEIR recirculation pursuant to California Public Resources Code §21092.1 and CEQA Guidelines §15088.5. As discussed herein and as elaborated upon in the respective Response to

Comments, none of the clarifications or changes made in the Errata reflect a new significant environmental impact, a "substantial increase" in the severity of an environmental impact for which mitigation is not proposed, or a new feasible alternative or mitigation measure that would clearly lessen significant environmental impacts. Nor do the Errata reflect a "fundamentally flawed" or "conclusory" DEIR. In all cases, as discussed in individual responses to comments and DEIR Errata, these minor clarifications and modifications do not identify new or substantially more severe environmental impacts that the City has not committed to mitigate. Therefore, the public has not been deprived of a meaningful opportunity to comment upon a substantial adverse environmental effect of the Project or a revised or new feasible Project alternative or mitigation measure. Instead, the information added supports the existing analysis and conclusions, and responds to inquiries made from commenters. Therefore, the DEIR is not subject to recirculation as defined in CEQA Guidelines §15088.5 prior to certification of the FEIR.

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Section 2.0 Comments and Responses to Draft EIR

This section includes all comments received by the City on the Draft Environmental Impact Report, including written comments and comments submitted via email to the City. The City circulated the Draft EIR for a minimum 45-day review period as required by CEQA. The review period ran from June 26, 2023 through August 14, 2023.

2.1 INTRODUCTION TO COMMENTS AND RESPONSES

In accordance with CEQA Guidelines §15132, **Table 2-1: Comments from Public Agencies and Organizations** below provides a list of those parties that provided written comments on the Draft EIR during the public review period. Copies of the written comments are provided in this section and have been annotated with the assigned letter along with a number for each comment. Each comment is followed by a corresponding written response.

Table 2-1: Comments from Public Agencies and Organizations

Reference	Commenter	Date
A	Agua Caliente Band of Cahuilla Indians Claritsa Duarte, Cultural Resources Analyst	July 17, 2023
B	Augustine Band of Cahuilla Indians Geramy Martin, Tribal Secretary	June 30, 2023
C	City of Colton Mario Suarez, AICP, CNU-A	August 14, 2023
D	City of Riverside Matthew Taylor, Principal Planner	August 14, 2023
E	Colton Joint Unified School District Owen Chang, Director of Facilities Planning and Construction	August 14, 2023
F	Pala Band of Mission Indians John Pepper, Lead Cultural Resources Monitor Shasta C. Gaughen, PhD	August 10, 2023
G	San Manuel Band of Mission Indians Bonnie Bryant	June 29, 2023
H	South Coast Air Quality Management District Evelyn Aguilar, Air Quality Specialist, CEQA-IGR	June 30, 2023
I	Southwest Mountain States Regional Council of Carpenters Mitchell M. Tsai, Attorney At Law	June 26, 2023
J	Supporters Alliance for Environmental Responsibility Lozeau Drury LLP - Rebecca Davis	August 10, 2023

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Comment Letter A – Agua Caliente Band of Cahuilla Indians
Claritsa Duarte, Cultural Resources Analyst

AGUA CALIENTE BAND OF CAHUILLA INDIANS

TRIBAL HISTORIC PRESERVATION

03-087-2023-001

June 28, 2023

[VIA EMAIL TO:gatewaydeir@grandterrace-ca.gov]
City of Grand Terrace
Konrad Bolowich

Grand Terrace, CA 92313

Re: DEIR The Gateway at Grand Terrace Specific Plan

Dear Konrad Bolowich,

The Agua Caliente Band of Cahuilla Indians (ACBCI) appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in the The Gateway at Grand Terrace Specific Plan project. The project area is not located within the boundaries of the ACBCI Reservation. However, it is within the Tribe's Traditional Use Area. For this reason, the ACBCI THPO requests the following:

*A copy of the records search with associated survey reports and site records from the information center.

*Copies of any cultural resource documentation (report and site records) generated in connection with this project.

A-1

Again, the Agua Caliente appreciates your interest in our cultural heritage. If you have questions or require additional information, please call me at (760) 883-1134. You may also email me at ACBCI-THPO@aguacaliente.net.

Cordially,

Claritsa Duarte

Claritsa Duarte
Cultural Resources Analyst
Tribal Historic Preservation Office
AGUA CALIENTE BAND
OF CAHUILLA INDIANS

5401 DINAH SHORE DRIVE, PALM SPRINGS, CA 92264
T 760/699/6800 F 760/699/6924 WWW.AGUACALIENTE-NSN.GOV

From: Antonio Lopez <Alopez@grandterrace-ca.gov>
Sent: Friday, July 7, 2023 11:40 AM
To: THPO Consulting <ACBCI-THPO@aguacaliente.net>
Cc: Konrad Bolowich <Kbolowich@grandterrace-ca.gov>; waen.messner <waen.messner@lewismc.com>; Natalie Patty <natalie@lilburncorp.com>
Subject: Requested Documentation

** This Email came from an External Source **

Good morning, my name is Antonio, and I am the Planning Tech for the City of Grand Terrace. I wanted to confirm that we got the letter you sent Konrad and are now responding with the requested information. I've attached a Dropbox Link below where you can access the requested information as the files were too large to attach to this email. If you have any further questions, feel free to contact me through phone or email. A-2

https://www.dropbox.com/t/37DHMcWTxu9VUYku

Antonio Lopez
Planning Tech
City of Grand Terrace
22795 Barton Rd. Grand Terrace, Ca, 92313
Phone: (909) 954 5176
https://www.grandterrace-ca.gov/

From: THPO Consulting <ACBCI-THPO@aguacaliente.net>
Sent: Monday, July 17, 2023 8:35 AM
To: Antonio Lopez <Alopez@grandterrace-ca.gov>
Subject: RE: Requested Documentation

Good morning Antonio,

Thanks for confirming that you received the letter. Could you please resend the information in the Dropbox Link, unfortunately the link expired. A-3

Thank you,

Claritsa Duarte
Cultural Resources Analyst
cduarte@aguacaliente.net
C: (760) 985-7538 | D: (760) 883-1134
5401 Dinah Shore Drive, Palm Springs, CA 92264

From: Antonio Lopez <Alopez@grandterrace-ca.gov>
Sent: Tuesday, July 18, 2023 2:20 PM
To: THPO Consulting <ACBCI-THPO@aguacaliente.net>
Cc: Natalie Patty <natalie@lilburncorp.com>; Waen Messner <waen.messner@lewismc.com>; Konrad Bolowich <Kbolowich@grandterrace-ca.gov>
Subject: RE: Requested Documentation

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon, you can access the requested information from the link below.

A-4

https://www.dropbox.com/t/pXiGkCUhE234IQ0O

Best,
Antonio Lopez
Planning Tech
909-954-5176

Responses to Comment Letter A – Agua Caliente Band of Cahuilla Indians
Claritsa Duarte, Cultural Resources Analyst

A-1 The comment includes a request for a copy of the records search with associated survey reports and site records from the information center and a copy of any cultural resource document for the Project. No response is warranted.

A-2 The City provided the commentor a Dropbox link of the requested documents. No further response is warranted.

A-3 The commenter requested the files for a second time. No response is warranted.

A-4 The City provided the commentor another Dropbox link of the requested documents. No further response is warranted.

Comment Letter B – Augustine Band of Cahuilla Indians
Geramy Martin, Tribal Secretary

From: Anadalia Rios <ARios@augustinetribe.com>
Sent: Friday, June 30, 2023 11:55 AM
To: gatewaydeir@grandterrace-ca.gov
Subject: The Gateway at Grand Terrace Specific Plan
Attachments: K. Bolowich 06-30-2023.pdf

Hello,

Please see attached for response on The Gateway at Grand Terrace Specific Plan Project letter received via mail. B-1

Also, we have updated our mailing address. I would like for you to update the mailing address on your records to: B-2

Update:
Augustine Band of Cahuilla Indians
84001 AVENUE 54
TRIBAL ADMINISTRATION SUITE
COACHELLA, CA 92236-9780
United States

Previously:
Augustine Band of Cahuilla Indians
Po Box 846
Coachella, CA 92236-0846

Please send me confirmation that you have changed our address in your records.

Ana Rios
Administrative Assistant
Augustine Band of Cahuilla Indians

Office: (760) 398-4722 Ext 7498
Email: ARios@augustinetribe.com
Website: augustinetribe-nsn.gov

1

AUGUSTINE BAND OF CAHUILLA INDIANS
84-481 Avenue 54, Coachella CA 92236
Telephone: (760) 398-4722
Fax (760) 369-7161
Tribal Chairperson: Amanda Vance
Tribal Vice-Chairperson: Victoria Martin
Tribal Secretary: Geramy Martin

Date: 06/30/2023

Dear: Konrad Bolowich
City Manager/Acting Planning Director
City of Grand Terrace, Planning and Development Services Department

SUBJECT: The Gateway at Grand Terrace Specific Plan

Thank you for the opportunity to offer input concerning the development of the above-identified project. We appreciate your sensitivity to the cultural resources that may be impacted by your project and the importance of these cultural resources to the Native American peoples that have occupied the land surrounding the area of your project for thousands of years. Unfortunately, increased development and lack of sensitivity to cultural resources have resulted in many significant cultural resources being destroyed or substantially altered and impacted. Your invitation to consult on this project is greatly appreciated. B-3

At this time, we are unaware of specific cultural resources that may be affected by the proposed project, however, in the event, you should discover any cultural resources during the development of this project please contact our office immediately for further evaluation. B-4

Very truly yours,

Geramy Martin

Geramy Martin, Tribal Secretary
Augustine Band of Cahuilla Indians

Responses to Comment Letter B – Augustine Band of Cahuilla Indians
Geramy Martin

B-1 Email transmittal of Comment Letter. No response required.

B-2 This comment includes an updated mailing address. No response is warranted.

B-3 The comment acknowledges the City's effort to enter into consultation regarding the Project's potential to impact significant cultural resources. No response is warranted.

B-4 The commentor requested that the City notify the Augustine Band of Cahuilla Indians in the event that any cultural resources are discovered during the development of the Project. As stated in Draft EIR Section 4.16, Tribal Cultural Resources (page 4.16-10), the Project would implement **MM CUL-2**, and **MMs TCR-1** through **TCR-3** to reduce impacts to tribal cultural resources. As requested by the commentor, in the event that Native American cultural resources are discovered during project activities, **MM TCR-1** would require that all work in the immediate vicinity of the find (within a 60-foot buffer) the Augustine Band of Cahuilla Indians tribe will be notified and work will cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find.

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Comment Letter C – City of Colton

Mario Suarez, AICP, CNU-A

August 14, 2023 Via Email

Attn: Konrad Bolowich, City Manager/Acting Planning Director
City of Grand Terrace, Planning and Development Services Department
22795 Barton Road
Grandf Terrace, CA 92313

Re: Draft EIR for Zone Change No. 17-02, Specific Plan No. 00-17, Tentative Tract Map No. 18.01

Dear Mr. Bolowich:

The City of Colton has reviewed the proposed 'Draft Environmental Impacts Report for *The Gateway at Grand Terrace Specific Plan Project* and provide the following comments, concerns, and recommendations as part of project approval consideration: C-1

1. The City of Colton Planning Division request notification of all future public meetings, copies of future staff reports and CEQA responses to comments. C-1

Public Works – Water/Utilities:

2. Water/Utilities - the developer shall submit a wastewater collection system study specifically to the existing 10-inch and smaller for review and approval by the City of Colton. Additional infrastructure or further engineering review may be required by the developer based on the information provided in the study. C-2

3. Water/Utilities - The developer shall provide rehabilitation such as lining of the existing 18-inch sewer main crossing the i-215 freeway that conveys all the flow coming from the gateway development. C-3

Public Works – Engineering: Street Improvements (Traffic):

1. The Applicant (City of Grand Terrace) shall construct facilities to mitigate traffic impacts as identified by the Transportation Impact Analysis dated November 2022. C-4

2. The applicant shall optimize signal timing in the PM peak hour for the intersection of South La Cadena Dr. at Barton Road as required for the Opening Year (2024) Plus Project Phase One Conditions and identified in the Traffic Impact Analysis dated November 2022. C-5

3. The applicant shall implement the required improvements for Opening Year (2024) Plus Project Phase One at the intersection of South Iowa Avenue and Main Street as identified in the Traffic Impact Analysis dated November 2022 as follows: C-6

659 N. La Cadena Drive
Colton, CA 92324

1

a. Option 1:
   i. Add a second westbound left-turn lane.
   ii. Restripe the painted median on Iowa Avenue to a through lane to provide a receiving lane for the additional westbound left-turn lane.
b. Option 2:
   i. Convert the northbound right-turn lane to a shared through/right lane.
   ii. Restripe the receiving lane on the north leg to two lanes.

C-6 Cont.

It shall be noted that additional detailed analysis is needed during final design that considers turning movement volumes at adjacent intersection/driveways, evaluates site distance, and evaluates available gaps before the design should be implemented.

C-7

4. The applicant shall add a westbound left-turn lane at the intersection of South La Cadena Drive at Barton Road as required for Opening Year (2040) Plus Project Phase One and Two Conditions and identified in the Traffic Impact Analysis dated November 2022.

C-8

5. The applicant shall implement the required improvements for Opening Year (2040) Plus Project Phase One and Two Conditions at the intersection of South Iowa Avenue and Main Street as identified in the Traffic Impact Analysis dated November 2022 as follows:

   a. Add a northbound through lane.

   b. Restripe the receiving lane on the north leg to two lanes.

C-9

Sincerely,

Mario Suarez, AICP, CNU-A
Planning Manager
City of Colton

Cc Mark Tomich, Development Services Director
Victor Ortiz, P.E., Assistant PW Director/City Engineer
Jess Soto, P.E., Public Works Utilities Engineer

2

Responses to Comment Letter C – City of Colton

Mario Suarez, AICP, CNU-A

C-1 This comment includes introductory statements and a request for notification of all future public meetings, copies of future staff reports and CEQA responses to comments. The City will send all future notifications regarding the Project to the City of Colton.

C-2 The comment requests that a wastewater collection system study be submitted for review and approval by the City of Colton and states that additional infrastructure review may be required based on the results of the study. The Sewer Improvement Plan, prepared by KWC Engineers, was submitted to the City of Colton for review and approval on October 2, 2023. The Sewer System Analysis (May 2023), also prepared by KWC Engineers, was also submitted to the City of Colton on November 6, 2023. In addition, the DEIR also includes the same Sewer System Analysis in Appendix K2. The report in Appendix K2 (also attached) presents the planning criteria used to estimate the sewage flows and evaluate the recommended sewer system improvements required for the Project. The criteria utilized in the study are in accordance with the July 2016 City of Colton Sewer Master Plan. See DEIR pages 4.17-2 to -3; -11 to -14; DEIR **Appendix K2**. The results of the study indicate that the existing local collector sewers have adequate capacity to serve the project.

C-3 This comment states that the developer shall provide rehabilitation such as lining of the existing 18" sewer main crossing the i-215 freeway that coveys all flow coming from the Project. As future development projects are submitted to the City of Grand Terrace, the City will require developers to coordinate with the City of Colton regarding sewer system requirements which may include the re-lining of the existing 18" sewer main crossing the I-215 freeway that conveys flows from the City of Grand Terrace and the Project.

C-4 The comment states that the Applicant, which it identifies as the City of Grand Terrace, shall construct facilities to mitigate traffic impacts identified in the Transportation Impact Analysis (TIA). As explained in Section 3.3 of the DEIR, the Project applicant is Lewis Management Corporation. The City of Grand Terrace is the Lead Agency for purposes of CEQA. Pursuant to Draft EIR Section 4.15, Transportation, the TIA (Draft EIR Appendix J1) included recommended improvements for study intersections that would operate below applicable LOS policies in given jurisdictions. These recommendations include a combination of fee payments to established programs, construction of specific improvements, payment of a fair-share contribution toward future improvements, or a combination of these approaches. The improvements to operational conditions are consistent with Grand Terrace General Plan (GP) LOS policies. However, as explained in DEIR sections 4.15-1 to 2 and 4.15-7 to 8, LOS and similar measures of traffic congestion are no longer considered an impact under CEQA. The recommended improvements are not considered mitigation measures under CEQA but are considered by the City as part of its General Plan policies.

C-5 The comment states that the applicant shall optimize signal timing in the PM peak hour for the intersection of South La Cadena Drive at Barton Road as required for Opening Year (2024) plus Project Phase One Conditions. Refer to Response to Comment C-4 above.

C-6 The comment states that applicant shall implement the required improvements for Opening Year (2024) Plus Project Phase One at the intersection of South Iowa Avenue and Main Street. Refer to Response to Comment C-4 above.

C-7 The comment states that additional detailed analysis is needed during final design that considers turning movement volumes at adjacent intersection/driveways, evaluates site distance, and evaluates available gaps before the design should be implemented. Refer to Response to Comment C-4 above. The Project's Traffic Study (Appendix J1) noted that the identified intersection improvements are conceptual and are not required by CEQA but are considered by the City under its General Plan. Detailed design would be conducted should any of these improvements or others be selected for implementation based on future analyses.

C-8 The comment states that the applicant shall add a westbound left-turn lane at the intersection of South La Cadena Drive at Barton Road as required for Opening year (2024) Plus Project Phase One and Two Conditions. Refer to Response to Comment C-4 above.

C-9 The comment states that the applicant shall implement the required improvements for Opening Year (2040) Plus Project Phase One and Two Conditions at the intersection of South Iowa Avenue and Main Street. Refer to Response to Comment C-4 above.

Comment Letter D – City of Riverside

Matthew Taylor, Principal Planner

Community Development
Department
Planning Division

City of Arts & Innovation

August 14, 2023

Konrad Bolowich
City Manager/Acting Planning Director
Planning and Development Services Department
22795 Barton Road
Grand Terrace, CA 92313

Subject: City of Riverside's Review of a Draft Environmental Impact Report for The Gateway at Grand Terrace Specific Plan

Dear Mr. Bolowich:

Thank you for the opportunity to comment on the Notice of Availability of a Draft Environmental Impact Report (DEIR) for The Gateway at Grand Terrace Specific Plan project.

The City of Riverside (City) understands that the proposed Gateway at Grand Terrace Specific Plan project consists of several entitlements including a General Plan Amendment, Change of Zone, Specific Plan Amendment and Tentative Tract Map to support the development of commercial, residential, public utilities, and public park and open space uses; as well as associated on- and off-site infrastructure improvements. We also understand that the new specific plan will permit the development of approximately 695 residential units (43 acres), ~335,700 square feet of commercial space and open space dedicated for a future park. D-1

The City has reviewed the project scope, and we wish to provide the following comments:

<u>Community & Economic Development Department – Planning Division:</u>

- **Section 4.1 – Aesthetics**
  - The Draft Gateway Specific Plan, Section 5.5 (Placemaking), under the heading "Monumentation," states that the gateway "can include a large freeway-oriented sign, identifying the City of Grand Terrace and can include an electronic reader board that the City or property owner could manage advertising on." Such a sign is not included in Section 3.0 (Project Description) of the Draft EIR and it is unclear whether or not such a sign is proposed as part of the Project. If such a sign is indeed proposed as part of the Project, the Project Description should be revised to specify the proposed location, height, medium (static or electronic readerboard) and nature (on-site signage or off-site advertising for hire [i.e, billboard]), and Section 4.1 (Aesthetics) should be revised to assess potential impacts to aesthetics associated D-2 D-3

3900 Main Street, Riverside, CA 92522 | Phone: (951) 826-5371 | **RiversideCA.gov**

with large freeway-oriented signage. This should include but not be limited to design, location, orientation, visibility and lighting. Potential impacts should be identified and adequately mitigated or avoided. D-3 Cont.

- **Section 4.2 – Air Quality**
  - **MM AQ-2: Vehicle Trip Reduction**
    - **TDM Requirements for Non-Residential Uses:** TDM Requirements for Non-Residential Uses: Begins with "The Project Applicant shall consult with the local transit service provider" – Consultation is not an effective or adequate measure to reduce vehicle trip generation associated with the project. The actual reduction in vehicle trips generated by the act of "consultation" must be quantified. If this is not possible, the mitigation measure should be modified to require specific action on the part of the Project Applicant related to multimodal transit accessibility and/or readiness that can be shown to have a measurable effect on trip generation. D-4

- **Section 4.12 – Population and Housing**
  - **Impact 4.12-2:** The Specific Plan area include six existing residential units generally located on De Berry Street, in an area the Land Use Plan identifies for commercial uses. The Project Description does not address whether the Project intends to demolish these units; however, given that this proposed Specific Plan district is intended for commercial uses, it is reasonable to assume that the Project Proponent or a future developer would intend to demolish them. As such, the Draft EIR should address applicable California statutes related to preservation and replacement of existing housing units pursuant to Senate Bills 330 and 8 (Housing Crisis Act of 2019). Specifically, projects that propose to remove existing housing units are obligated to identify whether any of the units proposed for removal are Protected Units pursuant to the Statute and, if so, provide an accounting of the Households Income Level and plans for replacement of the removed housing units at the same income level. D-5

<u>Riverside Public Utilities – Water Division:</u>

- **Section 3.0 – Project Description**
  - **3.6 – Construction Phasing: Pages 3-12**
    - Phase One of the drainage improvements states that the large regional detention basin would be hydraulically connected with two outfalls: one providing outlet to the San Bernardino County Flood Control District (SBCFCD) drainage area and another providing a secondary outlet to the 'Gage Canal'. This facility is the Riverside Canal, which is not a storm flow conveyance facility. It is an irrigation canal that carries clean water to its irrigation customers. No connections (storm flow initiated or otherwise) are allowed to be made to the Riverside Canal. There are other County Flood channels that are expressly designed for that purpose and should be considered for such an endeavor. D-6
  - **Exhibit 3-11 – Conceptual Storm Drain Plan**
    - The exhibit presented is confusing and not consistent with the proposed drainage improvements described within the text of the document (see pages 3-12), which proposes a second connection from the basin into the 'Gage Canal'. Additionally, this exhibit is not consistent with what is D-7

presented in Appendix H1 (Hydrology and Hydraulics Report), which also proposes a second connection from the basin into the canal. The canal is not a storm drain facility and no connections into the City of Riverside's canal shall be allowed. D-7 Cont.

- **Stormwater and Drainage – Phase 1: Pages 4.17-14**
  - This section of the DEIR discusses the drainage improvements which include "…providing a secondary outlet to the Gage Canal." No connections shall be permitted into the canal by the City of Riverside. D-8

- **Appendix H1 – Hydrology and Hydraulics Report**
  - **Section 2.1 – Background: Page 3**
    - The Riverside Canal is treated as a storm drain facility in the flood routing analysis, but it is not designed to handle storm flows. It is an irrigation canal with a full-flow capacity of 100 cubic feet per second (CFS). The report proposes routing flows to the canal's 5'x8' RCB but fails to look at the consequences on the Riverside Canal downstream when these additional flows are discharged into a facility that was not designed to handle storm flows. The existing flows that currently enter the Riverside Canal were never permitted by the City of Riverside, and past severe storm events have resulted in damages to the canal as well as properties adjacent to the canal. D-9
  - **Section 2.6 – Proposed Condition Analyses: Page 9**
    - This project is proposing to use the Riverside Canal (POC#2/Node 200) to receive stormwater runoff. Stormwater runoff from Grand Terrace was never permitted to be discharged into the canal, or any of RPU's facilities. Likewise, permission for connections to discharge stormwater from the proposed development into the Riverside Canal has not been granted by RPU. This project shall demonstrate that runoff will not enter, nor impact RPU's facilities. D-10
  - **Exhibit 6 & 7**
    - The Gateway's project evaluation of runoff assumes that Cage Park would provide ponding during storm events and provides an interim storm drain connection, but this should be revised since the development of the Grand Terrace Energy Facility creates the potential for additional flows due to the loss of ponding at Cage Park. D-11

- **General Comments:**
  - In several locations throughout the DEIR and Appendix H1 documents, the Riverside Canal is incorrectly referred to as the 'Gage Canal'. D-12
  - Regarding Grand Terrace's Battery Energy Storage System Facility Project:
    - If a fire or severe flooding were to occur at the proposed facility, it is possible that hazardous runoff will likely enter the Riverside Canal and the Santa Ana Riverbed which would contaminate the water with hazardous substances. This waste would enter and contaminate the groundwater basin, which is used for water supply by local water wells. D-13
    - Chemical constituents from the proposed development are not allowed to enter the Canal and the above concerns need to be mitigated. Modeling will need to be done to show that stormflows from this site will not enter the Riverside Canal. The project should indicate what improvements will be installed to safeguard the Riverside Canal from any stormwater flow and any potential chemical and other flows that could runoff during a fire or storms. D-14

The City of Riverside appreciates your consideration of the comments provided in this letter. Should you have any questions regarding this letter, please contact me at (951) 826- 5944, or by e-mail at mtaylor@riversideca.gov.

We thank you again for the opportunity to provide comments on this proposal and look forward to working with you in the future. D-15

Sincerely,

Matthew Taylor
Principal Planner

cc: Patricia Lock Dawson, Mayor
Riverside City Council Members
Mike Futrell, City Manager
Rafael Guzman, Assistant City Manager
Jennifer A. Lilley, Community & Economic Development Director
Maribeth Tinio, City Planner
Todd Corbin, Public Utilities General Manager
Phaedra Norton, City Attorney

Responses to Comment Letter D – City of Riverside

Matthew Taylor, Principal Planner

D-1 This comment includes an introductory statement and a brief description of the Project reviewed by the City. No response is warranted.

D-2 This comment states the large freeway-oriented sign identified in the Specific Plan Section 5.5 is not included in Draft EIR Project Description (Section 3.0) and it is unclear whether or not the sign is proposed as part of the Project. The comment also states that if the sign is proposed as part of the Project, the Project Description should be revised to specify the proposed location, height, medium, and nature of the sign.

Although The Gateway at Grand Terrace Specific Plan states that the Specific Plan area *can* contain a large freeway-oriented sign; no sign would be developed upon approval of the Project or certification of this FEIR. Analysis of any such sign in the Draft EIR would therefore have been speculative. Pursuant to The Gateway at Grand Terrace Specific Plan Section 1.4, Specific Plan Authority, it is intended that site and architectural review, grading permits and building permits, or any other action requiring ministerial or discretionary approval be consistent with the Specific Plan. Therefore, if a future applicant decides to construct the large freeway-oriented sign, the sign would be designed in accordance with The Gateway at Grand Terrace Specific Plan zone development standards and guidelines, regulations, and infrastructure requirements, and require City (and possibly Caltrans) review and approval under Grand Terrace MC §18.80.060 (Sign Permit).

D-3 The comment states that Draft EIR Section 4.1 Aesthetics should be revised to assess potential impacts to aesthetics associated with the large freeway-oriented sign. Refer to Response to Comment D-2 above. As explained in Draft EIR Section 4.1, Aesthetics (page 4.1-11), all future Project development would be subject to Grand Terrace MC §§18.60.040, 18.74.080, 18.80060 and 18.80.140 which establish lighting standards and illumination requirements for sign permits that would reduce the impacts from light and glare. Under these code provisions, "no sign, or lighting fixture would create illumination on adjacent property that exceeded three foot-candles." Draft EIR at p. 4.1-11; Grand Terrace MC 18.74.080. Any future development proposal that would include a freeway-oriented sign would be required to prepare a Sign Plan inclusive of lighting for City review and approval pursuant to the cited Grand Terrace MC provisions. Therefore, any impacts from a future potential freeway-oriented sign, which is not currently proposed, would not have aesthetic impacts and if a sign were to be proposed in the future that does not comply with these standards, CEQA review would occur at that time.

D-4 The commenter states that consultation with the local transit service provider as part of **MM AQ-2** "is not an effective or adequate measure to reduce vehicle trip generation associated with the Project." Requiring the Project Applicant to consult with local transit service provider is only one step in the development of an effective TDM plan, and enables the transit provider to identify potential transit access needs. See DEIR 4.2-26. The language of MM AQ-2 does more than require consultation, it also requires the Project to develop a

Transportation Demand Management (TDM) plan to reduce mobile emissions from commuter trips by encouraging alternative modes of transportation such as carpooling, taking transit, walking and biking. **MM AQ-2** requires the TDM to provide ride-matching assistance, carpooling, and bicycle facilities. The emissions reductions from **MM AQ-2** were quantified in CalEEMod 2022 using the methods, criteria, and formulas within the California Air Pollution Control Officers Association (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emissions Reduction, Assessing Climate Vulnerabilities, and Advancing Health and Equity: Designed for Local Governments, Communities, and Project Developers* (2021) (Draft EIR at p. 4.7-18), and result in less than 1% reduction in operational emissions. **MM AQ-2** has been refined to require the emissions reduction shown in Table 4.2-10. The TDM plan shall reduce emissions consistent with Table 4.2-10 and be approved by the City of Grand Terrace prior to the issuance of building permits and incorporated into the Project's Codes Covenants and Restrictions (CC&Rs). Refer to **FEIR Section 3.0, Errata to the Draft EIR**. Despite adopting all identified feasible mitigation measures, the operational emissions remain significant and unavoidable, see Table 4.7-3. The City of Grand Terrace must approve the requirements of a future TDM plan prior to issuing building permits, ensuring the Applicant will develop a TDM plan that meets the EIR requirements.

D-5 The comment states that the Project Description does not address whether the Project intends to demolish the on-site housing units and that the Draft EIR needs to address applicable California statutes related to the preservation and replacement of the existing housing. The Project's impacts concerning the six existing residential homes and displacement of the associated population were disclosed and analyzed in Draft EIR Section 4.12, Population and Housing. The correct number of existing nonconforming residential structures is five and the correction has been made and clarified in the **Errata of the Draft EIR**. All five structures are considered nonconforming as they are located in the area zoned as Commercial Manufacturing (CM). As noted in the **Errata to the Draft EIR**, only four of the five existing nonconforming residential structures within the Specific Plan boundary are occupied. The fifth nonconforming structure is unoccupied and boarded up. One of the residences, located on Van Buren Street, is not expected to be part of future residential development and will not be affected. The other three occupied units in the current CM zone are within the proposed commercial area of the Specific Plan. Currently, the landowners these three nonconforming residences are not participating in the Specific Plan and no specific development is proposed on those parcels and no demolition of those units is proposed at this time which has been clarified in the **Errata to the Draft EIR**. As to whether these units are protected units under SB 8 and SB 330, these units are not listed or registered as participating in any affordable housing program and are not deed restricted as affordable units. Since the landowner of those units is not participating, the income of the current residents cannot be obtained. If and when that landowner proposes a nonresidential use and demolition of those residents, the SB 8 and SB 330 provisions will apply at that time. As to no net loss of the two residential units that will be demolished, they are not protected units and the Specific Plan provides for the future development of up to 695 housing units, therefore, the requirement for no net loss in the number of residential units is more than met by the project. Refer to Draft EIR Section 4.12, Impact 4.12-2, for further information.

D-6 The comment states that the reference of the Gage Canal is incorrect. Additionally, the comment states that the Riverside Canal is not a storm flow conveyance facility, and other County Flood channels should be considered for storm water conveyance. The incorrect mention of the 'Gage Canal' in Draft EIR Section 3.0 has been revised in **FEIR Section 3.0, Errata to the Draft EIR**. Per **Appendix A, Hydrology and Hydraulics Report Update,** no discharge is proposed to flow into the Riverside Canal and the canal will not receive any regional runoff after the proposed basin is implemented. The existing connection will be removed after construction of the proposed basin.

D-7 The comment states that 3.11 – Conceptual Storm Drain Plan is not consistent with the Draft EIR text at page 3-12 or in Appendix H1. The text in the Draft EIR that refers to a second connection from the basin in the Gage Canal has been revised; there would be no impacts to the Gage Canal or the Riverside Canal, but to the Highgrove Storm Channel located adjacently to the upstream end of the Riverside Canal. Refer to **FEIR Section 3.0, Errata to the Draft EIR**, to see the revisions.

D-8 The comment states that no connections shall be permitted into the canal by the City of Riverside. See Response to Comment D-7 above.

D-9 This comment states that Draft EIR Appendix H1's flood routing analysis treats the Riverside Canal as storm drain facility. Pursuant to Section 3.0, Errata, **Appendix A, Hydrology and Hydraulics Report Update** of this FEIR, the flood routing analysis has been revised to remove the Riverside Canal as a storm drain facility. No discharge is proposed to flow into the Riverside Canal and the existing connection will be removed. Additionally, see FEIR Section 3.0 for errata changes.

D-10 The comment states that the Project is proposing to use the Riverside Canal via POC#2/Node 200 to receive stormwater runoff, although stormwater runoff from Grand Terrace was never permitted to be discharged into the canal. The City acknowledges that stormwater runoff from Grand Terrace was never permitted to be discharged into the canal, or any of Riverside Public Utility's facilities. Refer to the updated **Appendix A, Hydrology and Hydraulics Report Update,** found in Section 3.0, Errata, of this Final EIR, does not propose to use or connect to the Riverside Canal. The Project will not discharge into the Riverside Canal.

D-11 The comment states that Exhibits 6 and 7 of Draft EIR Appendix H1 should be revised. The exhibits have been updated in **Appendix A, Hydrology and Hydraulics Report Update** and no longer display storm drain connections and ponding at Cage Park.

D-12 The comment states that the Riverside Canal is incorrectly referred to as the 'Gage Canal.' Edits have been made to reflect the correction from "Gage Canal" to "Riverside Canal" where applicable. Refer to **Section 3.0** of this FEIR for those changes.

D-13 The comment states that, if a fire or severe flooding were to occur at Grand Terrace's Battery Energy Storage Facility Project, hazardous runoff could enter the Riverside Canal and Santa Ana Riverbed, which could contaminate the groundwater basin used for water supply by local

water wells. This comment has been noted. The Battery Storage System Facility Project is a separate project by a different applicant. It is not located within the boundaries of The Gateway at Grand Terrace Specific Plan area and is not part of the Project.

D-14 The comment refers to the hazards described in Comment D-13 and states that mitigation is required to address these concerns. Please refer to Response to Comment D-13.

D-15 This comment contains concluding statements and therefore, no response is warranted.

Comment Letter E – Colton Joint Unified School District
Owen Chang, Director of Facilities Planning and Construction

Colton Joint Unified School District
Frank Miranda, Ed.D., Superintendent
Gregory Fromm, Assistant Superintendent, Business Services Division
Owen Chang, Director of Facilities and Energy Management

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August 14, 2023

Konrad Bolowich
City Manager/Acting Planning Director
City of Grand Terrace
Planning and Development Services Department
22795 Barton Road
Grand Terrace, CA 92313

Transmitted Via Email: gatewaydeir@grandterrace-ca.gov

SUBJECT: Comments on the Draft Environmental Impact Report (EIR) for The Gateway at Grand Terrace Specific Plan (State Clearinghouse No. 2021020110)

Dear Mr. Bolowich,

The Colton Joint Unified School District (District) appreciates the opportunity to submit comments on the Draft EIR for The Gateway at Grand Terrace Specific Plan, dated June 2023 (State Clearinghouse No. 2021020110). The proposed Specific Plan would change the land uses of 112 acres in southwest Grand Terrace from Commercial Manufacturing, Restricted Manufacturing, and Industrial to The Gateway at Grand Terrace Specific Plan, which includes a mix of commercial, residential, public facilities, park, and open space uses (Project). Residential development would be allowed on 43 acres at a density between 4 and 20 dwelling units (DU) per acre. Accordingly, the Project could result in a maximum development of 786 DUs. However, due to site constraints, the proposed development standards, roads, and infrastructure, the Project anticipates a "realistic" maximum development of approximately 695 DUs. The proposed residential uses would be developed in the first of the two-phased Project. E-1

The District will provide public educational services to students and families from the Project. Students would attend Grand Terrace Elementary School (12066 Vivienda Avenue), Terrace Hills Middle School (22579 DeBerry Street), and Grand Terrace High School (21810 Main Street) in the City of Grand Terrace. E-2

The District evaluated the potential residential buildout of the Project and projected the anticipated number of students to be generated. Due to the above-mentioned constraints, density range, and size of the residential area of the Specific Plan, it is likely that a higher percentage of the DUs would be multi-family. With the assumption of hypothetical housing development mixes of 30 percent single- and 70 E-3

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percent multifamily, 50 percent of each of single- and multifamily, and 100 percent multifamily, the District used its most recently adopted student generation rates. As shown below, the worst-case development scenario of 786 DUs would result in the generation of up to 417 students, including 221 elementary students. Under the realistic development scenario, up to 368 students would be generated, including 196 elementary students. The projected number of elementary students would make up about one-third of the enrollment capacity at Grand Terrace Elementary.

Scenario	Maximum # of Units	% SF Units (SGR: 0.70)	% MF Units (SGR: 0.36)	Grade Level			Total # of Students Generated
				K-6	7-8	9-12	
786 Dwelling Unit Maximum							
1	786	50%	50%	221	65	131	417
2	786	30%	70%	194	57	112	363
3	786	0%	100%	154	43	86	283
695 Dwelling Unit (Realistic) Maximum							
4	695	50%	50%	196	57	115	368
5	695	30%	70%	171	50	100	321
6	695	0%	100%	137	38	76	251

E-3 Cont.

School Facilities (EIR Impact 4.13-1)

Using the District's adopted student classroom loading factor of 24 students per classroom for elementary schools and 32 students per classroom for middle and high schools, students generated from the Project would occupy up to 10 classrooms at Grand Terrace Elementary, about 2 classrooms at Terrace Hills Middle, and 4 classrooms at Grand Terrace High.

Grand Terrace Elementary and Terrace Hills Middle were both built in the 1950s and were last modernized in the 2000s. Both schools are designated "Category 3," which indicates they require "major modernization, reconfiguration, and/or complete replacement." Grand Terrace High was built in 2012, and has a "Category 0" status, which means campus facilities are in generally good condition.

E-4

It should be further noted that currently more than 50 percent of Grand Terrace Elementary students are housed in portables, and as the school is located next to I-215 and next to an extremely busy intersection, it is not an ideal location for a school. Moreover, approximately 75 percent of Terrace Hills Middle students are in portable buildings, and permanent buildings are aged and need to be modernized.

Plans are underway to upgrade Grand Terrace Elementary and Terrace Hills Middle. However, due to limited funds, the approved improvements at Grand Terrace Elementary include only those that would bring the existing facilities to current code, improve traffic circulation and pedestrian safety, and reduce the student-to-teacher classroom ratio to adopted standards. Similarly, due to limited funds, only half of the proposed improvements envisioned in the Terrace Hills Middle School Master Plan (April 2021) have been submitted to the Division of State Architect for approval. The facilities at Grand Terrace Elementary and Terrace Hills Middle will require additional improvements to accommodate new students generated from the Project.

E-5

While the Project's payment of school impact fees would help fund some of the needed improvements, these funds are limited, and the school impact fees collected from the Project would be insufficient to

E-6

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Gregory Fromm, Assistant Superintendent, Business Services Division
Owen Chang, Director of Facilities and Energy Management

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modernize Grand Terrace Elementary and Terrace Hills Middle with state-of-the-art facilities. The District's Fee Justification Report provides additional background on the costs for school construction as compared to the allowed maximum school impact fee that the District can collect under Education Code Section 17620. Therefore, the District requests the City and developer to consider the formation of a Mello-Roos District for the Project. Mello-Roos funds would supplement District funds and be directly used to improve and maintain Grand Terrace Elementary and Terrace Hills Middle, as well as Grand Terrace High School for students generated by the Project. E-6 Cont.

Goals, Policies, and Program Concerning Pedestrian Facilities for Safe Routes To Schools (EIR Impact 4.15-1)

Due to the Project's close proximity to the schools that would serve its students, it is very likely that many students would walk to school. As measured from the northern boundary of the Specific Plan area, Grand Terrace Elementary is 725 feet to the north; Terrace Hills Middle is slightly over one-half mile to the east; and Grand Terrace High is immediately south of the Project site. The EIR states on pages 4.13-4 and 4.13-13 that Grand Terrace Elementary is 3 miles northeast of the Project site. The distance stated should be corrected. E-7

The Project proposes pedestrian facilities, including sidewalks and bike lanes, within the Project site. The Project would also include roadway and pedestrian facility improvements along Taylor Street and Commerce Way between Main Street and Michigan Avenue. It is unclear whether the Project would improve missing pedestrian facilities off-site, outside the Project site, along routes to schools. Students generated by the Project who walk to school would use Van Buren Street, De Berry Street, and Michigan Street to get to Grand Terrace Elementary, Terrace Hills Middle, and Grand Terrace High. These segments have missing pedestrian facilities. Specifically, De Berry Street and Van Buren Street between their current western terminus and Michigan Street are missing sidewalks. E-8

According to the Transportation Impact Study (EIR Appendix J1), one or both sides of the sidewalks on Michigan Street between Commerce Way and Pico Street are not continuous. Further, EIR Impact 4.15-1 inaccurately states that De Berry Street west of Michigan Street and Van Buren Street west of Michigan Street provide continuous sidewalks. As shown below, there are missing sidewalk segments on both sides of De Berry Street, immediately west of Michigan Street. The EIR and Transportation Impact Study should be updated to accurately identify these missing pedestrian linkages. E-9

The City of Grand Terrace Active Transportation Plan (ATP) includes Safe Routes to Schools Recommendations. As the ATP was prepared in 2018, its analysis and recommendations do not incorporate those required for the Project. Figure 5-4: Grand Terrace Elementary Existing Conditions, E-10

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and Figure 5-6: Terrace Hills Middle Existing Conditions, should be updated to reflect the required pedestrian facilities directly caused by the Project. Similarly, the recommendations for traffic calming, increased safety, and pedestrian and bicycle infrastructure for Grand Terrace Elementary (ATP, page 80) and Terrace Hills Middle (ATP, page 84) should be updated.

E-10 Cont.



As the Project would directly contribute to the need for these off-site pedestrian facilities, the City should require the Project to include a Project-specific Safe Routes to School Plan that would amend the ATP and that will identify off-site pedestrian facility improvement recommendations along De Berry Street, Van Buren Street, and Michigan Street that would be required by the Project. These off-site pedestrian facility improvements, similar to the Project's proposed off-site roadway improvements, should be conditioned as a part of Project approval. Their implementation should be completed during Phase 1 of the Project when the proposed residential development would occur. Moreover, as shown on Table 8-1: Funding Sources, on pages 139 and 140 of the ATP, it is possible that funding for these improvements could be through private development agreements and Mello Roos Districts, as suggested above for the proposed school facility improvements.

E-11

E-12

E-13

The finding of EIR Impact 4.15-1 that the Project would be compliant with the City's ATP concerning pedestrian facilities is not substantiated. As demonstrated above, the Project has not demonstrated how the Project would meet General Plan Circulation Element Goal 3.3 concerning how the Project would provide for a safe circulation system, including off-site pedestrian facilities for students walking to school, and Goal 3.5 for the provision of efficient alternative modes of travel for students to school.

E-14

Increased Pedestrian Safety Hazards and Pedestrian-Vehicle Conflicts (EIR Impact 4.15-3)

Project implementation without the off-site improvements along routes to Grand Terrace Elementary, Terrace Hills Middle, and Grand Terrace High would increase pedestrian safety hazards. The EIR summarily provides that the Project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses. It does not substantiate how the Project would not cause or increase hazards. School routes with missing sidewalks would require students to walk alongside vehicles on Michigan Street, DeBerry Street, and Van Buren Street. Michigan Street is classified as a four-lane Secondary Highway (between Commerce Way and Van Buren Street) and would allow vehicles to travel up to 40 miles per hour. The Project would increase pedestrian safety hazards for students walking along these street segments without sidewalks. Impact 4.15-3 should be updated to address the increased pedestrian safety hazards along routes to school.

E-15

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Moreover, the Project would generate a substantial number of new vehicle trips. Students from the Project who would walk to Grand Terrace Elementary would be required to cross the intersection of Vivienda Avenue/Commerce Way at Barton Road, which is immediately southeast of the school. Barton

Road is a four-lane Major Highway and provides access to I-215, and Commerce Way is one of the main access points to the Project site. Although school roadway markings and signs exist at and near this intersection, the Project would add 468 new peak morning trips to the intersection. The potential for pedestrian-vehicle conflicts when students walk to and from school would substantially increase. Similarly, the Project would increase vehicle trips at the intersection of De Berry Street at Mt. Vernon Avenue, which is northwest of Terrace Hills Middle, and would consequently increase pedestrian-vehicle conflicts at this intersection. E-16

The potential roadway conflicts at the Vivienda Avenue/Commerce Way at Barton Road and De Berry Street at Mt. Vernon Avenue intersections are further amplified in the ATP. As shown in Figure 4-8 of the ATP, there have been documented pedestrian and bicycle collisions at both of these intersections.



FIGURE 4-8: Collisions

E-17

EIR Impact 4.15-3 must be updated to address the increased pedestrian-vehicle conflicts at the two intersections that will result from Project traffic. As the Project would generate a substantial number of vehicle trips, as well as elementary and middle school students who would use the intersections,

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pursuant to California Vehicle Code Section 21373, the District requests the City and/or developer to provide adult crossing guards as a form of traffic control at both intersections to reduce potentially significant safety risks and hazards. As mentioned above, the ATP states that funding for the crossing guards can be through either a private development agreement or a Mello Roos District. E-17 Cont.

Significant Traffic Impact at Grand Terrace High School and Emergency Access (EIR Impact 4.15-4)

According to the Transportation Impact Study, the Project would directly reduce the level of service (LOS) of Grand Terrace High's westernmost driveway at Titan Way/Sanrive Avenue at Main Street from LOS E (35 sec/vehicle delay) to LOS F (>114 sec/vehicle delay). The analysis further finds that the driveway/intersection does not meet the requirements for the installation of a traffic signal. No other improvements are proposed to reduce the significant traffic impact. E-18

This driveway provides the only ingress and egress to the high school's western three parking lots and bus loading area. It is unacceptable that the Project will significantly delay operations at this driveway and not identify any mitigation. Impacts would significantly impact high school operations, as the delay would occur during the school's peak morning and afternoon periods. E-19

The Project must mitigate the indirect impact at the Titan Way/Sanrive Avenue at Main Street intersection. This may include, but is not limited to, creating new driveways on Taylor Street to the parking lots north and south of the football stadium; see black arrows on the figure to the right. The City and developer must coordinate with the District to improve access in and out of the west side of the Grand Terrace High campus. E-20



Additionally, left unmitigated, the traffic congestion will also affect emergency access along Main Street that will also need to be addressed in EIR Impact 4.15-4, as the traffic would impede emergency ingress and egress of the Project site and impede emergency vehicles from traversing to the Project site. E-21

Conclusion

The District requests the Project to form a Mello-Roos District to finance school facility improvements at Grand Terrace Elementary and Terrace Hills Middle, off-site pedestrian facilities between the Project E-22

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and assigned schools, and crossing guards at the Vivienda Avenue/Commerce Way at Barton Road and De Berry Street at Mt. Vernon Avenue intersections. The District also requests the Project to fully mitigate the indirect significant traffic impact at Grand Terrace High's western driveway at the Titan Way/Sanrive Avenue at Main Street intersection. E-22 Cont.

The District is committed to working with the City and developer to ensure adequate school facilities are provided and that the Project's potentially significant environmental effects on existing schools and potentially significant risks on the health and safety of students are fully mitigated. Please contact the undersigned at 909.580.6642 or owen_chang@cjusd.net if you would like to further discuss the comments provided herein. E-23

Sincerely,

Owen Chang
Director, Facilities Planning and Construction

Cc: Dr. Frank Miranda, Superintendent
Gregory Fromm, Assistant Superintendent of Business Services

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Responses to Comment Letter E – Colton Joint Unified School District
Owen Chang, Director of Facilities Planning and Construction

E-1 This comment is an introductory statement and the commenter's understanding of the Project. No response is warranted.

E-2 Comment noted. No further response is warranted.

E-3 The City acknowledges the commenter's breakdown of total number of students potentially generated by the Project but the Project is considered programmatic and therefore, it is not possible to determine the students at each grade level that would result from the Project's future population. As shown in Draft EIR Section 4.13, Public Services Table 4.13-3 (page 4.13-14), the Project was projected to generate an increased student population demand in the City by approximately 456 potential students by using a demand factor for student populations multiplied by 21.3 percent of persons under 18 years of age within the City. Refer to the following responses for further details concerning the Project's impact on the Colton Joint Unified School District's (CJUSD) facilities.

E-4 Comment noted. The City acknowledges the existing Category 3 status of Grand Terrace Elementary and Terrace Hills Middle which indicates that they currently require "major modernization, reconfiguration, and/or complete replacement," and the Category 0 status of Grand Terrace High School which indicates the school is in good condition. This comment does not identify a specific concern with the adequacy of the Draft EIR or note a specific issue or comment related to the Draft EIR's environmental analysis but is noted and will be taken into consideration by decision-makers.

E-5 Comment has been noted. The comment explains that planning is underway to upgrade the schools, however because of budgetary concerns, not all desired upgrades are progressing. No further response is required.

E-6 The comment states that, while the Project's payment of school impact fees pursuant to Education Code section 17620 would help fund some improvements, these fees would not be sufficient to modernize Grand Terrace Elementary School and Terrace Hills Middle School with state-of-the-art facilities and cites to the Colton Joint Unified School District's (CJUSD) Fee Justification Report for support while acknowledging that the Education Code limits school impact fees, absent of the Project's development. The comment asks the City and developer to consider formation of a Mello-Roos District to help raise additional funds.

The comments regarding the funds required to make the CJUSD's facilities state of the art are noted, however the comments do not relate to CEQA matters. As described in the Draft EIR, CEQA requires analyzing the Project's potential public service impacts on schools based on whether the Project could require the construction or expansion of existing public service facilities resulting in a physical impact to the environment. Draft EIR Section 4.13.1. The Draft EIR explains that the Project could result in approximately 456 new students in the CJUSD

school system and notes that, with declining enrollment, the existing schools are expected to have sufficient capacity to accommodate these new students (Draft EIR at p. 4.13-14). The Draft EIR includes detailed discussion about the relevant regulatory provisions that apply to schools in the context of development approvals (Draft EIR at p. 4.13-7 to -8) and the potential impacts of the Project on school facilities. Impact 4.13-1(III), Draft EIR at pgs. 4.13-13 to -15. As explained in Section 4.13.3 (Public Resources – Regulatory Setting) of the Draft EIR, various Education and Government Code sections govern the school fees to be paid for development projects. The Draft EIR explains that the Project applicant will be required to pay school fees to the CJUSD in compliance with those state law provisions. Accordingly, the Draft EIR concludes that the Project's impacts to schools would be less than significant.

With respect to CJUSD's suggestion that the Project applicant and City consider formation of a Mello-Roos District to provide additional funds for school facilities since the need for additional funding for schools is not specific to this project, instead the CJUSD could address additional funding with additional school fees that apply to this project as well as others who generate the need for schools.

E-7 The incorrect distance from the Project to Grand Terrace Elementary has been noted and corrected. See FEIR **Section 3.0, Errata to the Draft EIR.**

E-8 The comment states that De Berry Street and Van Buren Street between their current western terminus and Michigan Street are missing sidewalks and that students generated by the Project would use these roads to get to school. As stated in the DEIR, the Project provides pedestrian connections to Taylor/Commerce and which will have continual pedestrian access to Grand Terrace High School and Grand Terrace Elementary for residents from the proposed project on Van Buren Street, De Berry Street, and Michigan Street. Students generated by the Project would use these roads to get to school. The Project will provide nearly one mile of new sidewalks and bike lanes which will enhance safer pedestrian routes to Grand Terrace Elementary and Grand Terrace High School.

For students to get to Terrace Hills Middle School from the Project's residential development, they would utilize Van Buren Street. Currently, there are existing sidewalks in between the western terminus at the proposed new Taylor/Commerce extension to Mt. Vernon Avenue of approximately 3,300 feet in total length. The Project would provide street improvements on Van Buren Street within the Project boundary that would include a new sidewalk segment of nearly 1,700 feet. Although the Project would add a significant amount of new sidewalks of over 50% of the length of the existing sidewalks on Van Buren Street, there would still be a small portion on Van Buren Street that would not have sidewalks. This portion is outside of the Project area and approximately 550 feet in length, measuring west from where Van Buren Street meets with Mt. Vernon Avenue. Due to the physical site constraints from overhead powerlines and drainage pipes, it is infeasible to construct sidewalk in this portion along Van Buren Street as additional right-of-way acquisition or condemnation would be required by the City. Thus, the following Mitigation Measure will be added in the **Errata to the Draft EIR**:

MM-TRA-1 Upon the City's acquisition of the area on Van Buren Street necessary to connect the project's sidewalk to the remainder of Van Buren Street, the applicant will pay its fair share of the cost of construction of that portion of the sidewalk.

As to other areas of Grand Terrace that have existing conditions described in the EIR, the City of Grand Terrace, a member of SBCTA, has participated in the Phase I and Phase II of SBCTA's Regional Safe Routes to School (SRTS) Plan, which has identified eligible sidewalk and other improvements outside the Project area that are eligible for SBCTA funding for future improvements. The City will work to address these existing conditions that are not related to the project.

E-9 The comment states that the both the EIR Appendix J1 and the Draft EIR inaccurately describe sidewalks along De Berry Street west of Michigan Street and Van Buren Street west of Michigan Street. The Draft EIR will be updated to correct the statement that, "De Berry Street west of Michigan Street and Van Buren Street west of Michigan Street provide continuous sidewalks." Refer to **FEIR Section 3.0, Errata to the Draft EIR**.

E-10 The comment states that the City of Grand Terrace Active Transportation Plan (ATP), which includes Safe Routes to School Recommendations was prepared before publication of the Gateway at Grand Terrace Specific Plan and Draft EIR and therefore, the Project was not accounted for in the ATP. The comment states that two figures in the ATP should be updated to reflect the pedestrian facilities that CJUSD believes would be required as a result of the Project. The comment also asserts that the ATP's recommendations regarding traffic calming, increased safety, and pedestrian and bicycle safety infrastructure for Grand Terrace Elementary School and Terrace Hills Middle School should be similarly updated.

As discussed in the Draft EIR, the ATP is a planning document adopted by the City in 2018 that provides recommendations to support increased bicycling and walking within the City. Draft EIR at p. 4.15-11. The Draft EIR identifies the ATP's planned and recommended bicycle and pedestrian facilities in the Project Area. See Draft EIR at pgs. 4.15-14 to -15.

The Draft EIR includes analysis of the proposed Project's consistency with the ATP with respect to its recommendations regarding bicycle and pedestrian facilities and concludes that the Project is consistent with the ATP because of the Project's incorporation of bicycle lanes and pedestrian facilities. See Draft EIR at pgs. 4.15-14 to -15. With respect to the Safe Routes to School Recommendations, the ATP includes recommendations for improving bicycle and pedestrian accessibility and safety around the City's schools. ATP at 78-87. With the exception of specific bike lane suggestions, the ATP's recommendations concerning schools are generally high-level and include such items as installing stop signs and repairing sidewalks and the Project is consistent with these recommendations. The comments recommendations regarding other updates to the ATP are beyond the scope of the Project.

E-11 The comment states that the Project would directly contribute to the need for off-site pedestrian facilities and thus the City should require the Project to include a Safe Routes to School Plan specific to the Project that would amend the ATP with improvement

recommendations along De Berry Street, Van Buren Street, and Michigan Street to be required as part of the Project.

Please see Response to Comment E-10, above. Impact 4.15-1 evaluates whether the Project conflicts with a program, plan, ordinance, or policy addressing the circulation system including pedestrian facilities. Draft EIR 4.15-14. The Draft EIR's analysis of Project with regard to this impact found it would not conflict with the ATP. Draft EIR at pgs. 4.15-14 to -15. Commerce Way would be constructed with pedestrian facilities (i.e., sidewalks, bicycle facilities) resulting in a well-connected sidewalk network surrounding the Project. The Project also proposes sidewalks along De Berry Street and Van Buren Street within the Project's limits. Pedestrians would be able to access the Project and other nearby land uses or facilities between Main Street and Barton Road. Lastly, all roadways and pedestrian facilities would be designed according to the development standards listed in the proposed Specific Plan. Therefore, the Project would be compliant with the City's ATP concerning pedestrian facilities. No additional projects need to be added to the ATP and no fact-based evidence of inadequacies with the Draft EIR analysis is presented in the comment.

E-12 The comment states that the projects described in the previous Response to Comment, E-11, should be conditioned as part of Project approval and should be completed during Phase 1 when residential development occurs. Please see Response to Comments E-11, above.

E-13 The comment states that funding for the projects described in the previous Response to Comment E-11, could be achieved through private development agreements and the formation of a Mello-Roos District. Please see Response to Comments E-6, E-10 and E-11 above.

E-14 The comment states that the Draft EIR's finding of consistency with the ATP is not substantiated, specifically with respect to General Plan Circulation Element Goal 3.3 regarding the Project providing a safe circulation system, and Goal 3.5 regarding the provision of efficient alternative modes of travel for students to school.

Please see Response to Comment E-10 and E-11, above, regarding the Project's consistency with the ATP. Table 4.10-3 of the Draft EIR also includes a detailed analysis of the Project's consistency with the City's General Plan. Draft EIR at pgs. 4.10-11 to -19. With respect to General Plan Goal 3.3, the Draft EIR describes the Project's consistency with policies regarding parking and appearance; the Draft EIR also discusses consistency with Goal 3.1 with respect to the Project's circulation plan. Draft EIR at p. 4.10-12. Moreover, the Draft EIR's discussion of Impact 4.15-3 describes how the Project's circulation plan would ensure the safety of the Project. Draft EIR at p. 4.15-19; see also, Draft EIR at p. 3-14, p. 3-30 (Exhibit 3-12), p. 4.7-25, p. 4.10-14, pgs. 4.10-20 to -22. In addition, as discussed in the Draft EIR, Grand Terrace Municipal Code section 17.52.010 requires that any approved tentative tract maps conform to the City's General Plan, among other requirements. Draft EIR at 4.15-19.

With respect to consistency with General Plan Goal 3.5 regarding providing for efficient alternative modes of travel, the Draft EIR includes an analysis of the Project's consistency with

this goal. Draft EIR at pgs. 4.10-12 to -13. Due to the Project's recommended Travel Demand Management measures, the Draft EIR concludes the Project would be consistent with this General Plan Goal 3.5. *Id.* As explained in the Draft EIR, overall, the Project's circulation plan – including its bicycle and pedestrian components – would "reinforce a pedestrian-friendly environment that includes new Class II on-street bike lanes, sidewalks and streets connecting the commercial area with the residential neighborhoods, parks and schools." Draft EIR at p. 3-14. All of this substantiates the Draft EIR's finding regarding Impact 4.15-1 and the ATP and General Plan.

E-15 Please see Response to Comment, E-14, above. This comment states that without the off-site improvements along routes to Grand Terrace Elementary, Terrace Hills Middle, and Grand Terrace High pedestrian safety hazards would increase; however, no substantial data or evidence is provided. Furthermore, the commenter states that the EIR did not substantiate how the Project would not cause or increase hazards. Lastly, the commentor states that Impact 4.15-3 should be updated to address the increased pedestrian safety hazards along routes to school.

As stated in Draft EIR Section 4.15 Transportation (page 4.15-19), the Project's proposed circulation improvements would be constructed as approved by the City Engineer and City's Fire Department pursuant to Grand Terrace MC Section 17.52.070, Street Design and Chapter 17.16, and as part of the Project's proposed tentative tract map approval. This would ensure that future development within the Project would not significantly increase hazards due to a geometric design feature.

Per Draft EIR Section 4.15 Transportation (p. 4.15-15), Commerce Way would be constructed with pedestrian facilities (i.e., sidewalks, bicycle facilities) resulting in a well-connected sidewalk network surrounding the Project. The Project also proposes sidewalks along De Berry Street and Van Buren Street within the Project's limits. Pedestrians would be able to access the Project and other nearby land uses or facilities between Main Street and Barton Road. Lastly, all roadways and pedestrian facilities would be designed according to the development standards listed in the proposed Specific Plan. Therefore, the Project would be compliant with the City's ATP concerning pedestrian facilities.

The Project would provide improvements in both bicycle and pedestrian facilities for all areas of the Project and thus is not expected to create pedestrian safety hazards. Draft EIR Impact 4.15-3 uses a City threshold based on CEQA Guidelines Appendix G. Lead agencies have the discretion to select thresholds, which the City has done here. *King & Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814, 884. The comment's discussion of the existing conditions at Grand Terrace Elementary School, Terrace Hills Middle School and Grand Terrace High School is a part of the baseline condition and exists independent of the Project. No evidence of any additional risk has been presented. Assumptions regarding potential future pedestrian-vehicle conflicts are speculative. No further response is required.

The City respectfully disagrees that Impact 4.15-3 should be updated to address the existing lack of pedestrian facilities outside of the Project area along routes to school. Future development within the Project site would be designed in accordance with all applicable Grand Terrace MC regulations pertaining to roadway design and safety. Furthermore, the Project Applicant will pay development impact fees pursuant to Grand Terrace MC Chapter 4.104 Circulation Improvement Fee Program, which the City can use to improve pedestrian facilities near schools.

E-16 The comment provides assumptions that the Project would add 468 new peak morning trips to Vivienda Avenue and Commerce Way at Barton Road and would consequently increase pedestrian-vehicle conflicts at this intersection as well as De Berry Street and Mt. Vernon intersection. These assumptions have been noted; however the conflicting projections are speculative. All development within the Project site would be designed in accordance with all applicable Grand Terrace MC regulations pertaining to roadway design and safety. Please see Response to Comment E-15.

E-17 The comment states that documented pedestrian/bicycle collisions have already occurred at the intersections of Vivienda Avenue/Commerce way at Barton Road and De Berry Street at Mt. Vernon Avenue and asserts that the proposed Project would cause additional pedestrian-vehicle collisions. The comment requests that, pursuant to California Vehicle Code section 21373, the City and/or developer provide adult crossing guards at these intersections.

Please see Response to Comments E-14 and E-15, above.

E-18 The comment states that the Draft EIR's Traffic Study concludes that the Project would reduce the Level of Service (LOS) of Grand Terrace High School's westernmost driveway at Titan Way/Sanrive Avenue at Main Street from LOS E (35 seconds/vehicle delay) to LOS F (>114 seconds/vehicle delay), and that the analysis further concludes that the driveway/intersection does not meet requirements for installation of a traffic signal. The comment further states that no other improvements are included to reduce this significant traffic impact.

As described in detail in the Draft EIR, LOS is no longer an impact under CEQA. Draft EIR at p. 4.15-7. In summary, SB 743 triggered an update to the CEQA Guidelines that changed how lead agencies evaluate transportation-related impacts under CEQA to eliminate LOS. The comment is mistaken in characterizing the Project's traffic impacts as "significant" due to any resulting LOS impacts. CEQA Guidelines section 15064.3 now precludes LOS from being the method used to determine whether a project's transportation-related environmental impacts are significant and instead uses vehicle miles traveled to determine a project's transportation impacts on traffic. See Draft EIR pgs. 4.15-12 to -14, 4.15-16 to -19. However, the Draft EIR also includes an LOS analysis for informational purposes only. Draft EIR at pgs. 4.15-1 to -2, Appendix J1 (Transportation Impact Analysis or TIA). The Draft EIR's discussion makes very clear that this information is provided for informational purposes only and does not require a significance determination, or represent a significant impact, under CEQA. Draft EIR at

p. 4.15-1. Thus, contrary to the suggestion in the comment, CEQA does not require mitigation to address the Project's LOS impacts.

In addition, the comment incorrectly states the Traffic Study conclusions. The TIS explains that the >114 second/vehicle delay noted by the comment is estimated from the northbound left movement from Sanrive Drive, not from school access. [Page 369 of the TIA in Appendix D: Level of Service (LOS Worksheets) The southbound movement delay from the school access driveway is estimated to be 20.4 seconds (LOS C). Average intersection delay is estimated to be 6.9 seconds for all vehicles. Thus, the Project is not expected to detrimentally affect school access from an LOS perspective.

E-19 The comment states that the driveway discussed in Comment E-18 provides the only ingress and egress to three of the high school's parking lots and bus loading area. The comment states that the Project will cause delays at these areas, which it finds unacceptable and further states that the Project should include mitigation to address these impacts, which would occur during peak morning and afternoon periods.

Please see Response to Comment E-18, above. LOS is not a significant impact under CEQA and, therefore, no mitigation or further response is required.

E-20 The comment states that mitigation must be included to address the impact discussed in the previous Comment, E-18, and notes that such mitigation could include creating new driveways on Taylor Street. Please see Response to Comment E-18, above. LOS is not a significant impact under CEQA and, therefore, no mitigation is required.

E-21 Per Draft EIR Section 4.15, Transportation, the Project's proposed circulation will be designed in conformance with the applicable Grand Terrace MC design guidelines and regulations, which includes but are not limited to use of traffic control devices, and payment of fair share contributions. Draft EIR at p. 4.15-20. Furthermore, the Project would be void of gated communities and speed bumps, and thus would provide free and clear access for emergency personnel throughout the Project area. Lastly, the Project's Specific Plan and future project-specific development plans, would be reviewed by the City Engineer and Fire Department to ensure that adequate emergency access is provided. Therefore, the Project's impact concerning emergency access is less than significant and no mitigation is required.

E-22 This comment includes a conclusionary statement requesting that the Project form a Mello-Roos District to finance school facility improvements Grand Terrace Elementary and Terrace Hills Middle, off-site pedestrian facilities between the Project and assigned schools, and crossing guards at the Vivienda Avenue/Commerce Way at Barton Road and De Berry Street at Mt. Vernon Avenue intersections. The commentor is also requesting that the Project fully mitigate the indirect significant traffic impact at Grand Terrace High's western driveway at the Titan Way/Sanrive Avenue at Main Street intersection. See Responses to Comments E-8 through E-21.

E-23 The City appreciates the CJUSD comments. As discussed through the responses above, the Project would not create potentially significant environmental impacts to existing schools or create potentially significant risks on the health and safety of students. The Project will comply with all applicable laws, regulations, and ordinances pertaining to the Project's development and circulation improvements. Further, the Project Applicant will pay all applicable development, circulation, and school fees required for the Project. Therefore, no further response is warranted.

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Comment Letter F – Pala Band of Mission Indians
John Pepper, Lead Cultural Resources Monitor
Shasta C. Gaughen, PhD

From: John Pepper <jpepper@palatribe.com>
Sent: Tuesday, June 27, 2023 10:17 AM
To: gatewaydeir@grandterrace-ca.gov
Subject: ATTN: Konrad Bolowich, City Manager/ Acting Planning Director
Attachments: Letter 1 - Beyond reservation and TUA,.pdf

Hello Konrad Bolowich,

I have attached Pala Band of Mission Indians response to "The Gateway at Grand Terrace Specific Plan" F-1

Respectfully,

John Pepper
Pala Band of Mission Indians
Lead Cultural Resources Monitor
Pala Environmental Department, THPO
35008 Pala Temecula Road, Pmb 50; Pala, CA 92059
jpepper@palatribe.com

PED
PALA ENVIRONMENTAL DEPARTMENT
Tukve'esh, Pal, Temál, 'Etax'em
"Sky, Water, Land, People"

1

THPO
Pala Band of Mission Indians

TRIBAL HISTORIC PRESERVATION OFFICE
PALA BAND OF MISSION INDIANS
PMB 50, 35008 Pala Temecula Road | Pala, CA 92059
Phone 760-891-3510 | www.palatribe.com

June 27, 2023

Konrad Bolowich
City Manager/ Acting planning Director
22795 Barton road
Grand Terrace, CA 92313

Re: The Gateway at Grand Terrace Specific Plan:

Dear Konrad Bolowich:

The Pala Band of Mission Indians Tribal Historic Preservation Office has received your notification of the project referenced above. This letter constitutes our response on behalf of Robert Smith, Tribal Chairman. F-2

We have consulted our maps and determined that the project as described is not within the boundaries of the recognized Pala Indian Reservation. The project is also beyond the boundaries of the territory that the tribe considers its Traditional Use Area (TUA). Therefore, we have no objection to the continuation of project activities as currently planned and we defer to the wishes of Tribes in closer proximity to the project area. F-3

We appreciate involvement with your initiative and look forward to working with you on future efforts. Pala is now offering tribal monitoring services. If you have questions or need additional information, please do not hesitate to contact Alexis Wallick by telephone at 760-891-3537 or by e-mail at THPO@palatribe.com. F-4

Sincerely,

Shasta C. Gaughen, PhD
Tribal Historic Preservation Officer
Pala Band of Mission Indians

ATTENTION: THE PALA TRIBAL HISTORIC PRESERVATION OFFICE IS RESPONSIBLE FOR ALL REQUESTS FOR CONSULTATION. PLEASE ADDRESS CORRESPONDENCE TO **SHASTA C. GAUGHEN** AT THE ABOVE ADDRESS. IT IS NOT NECESSARY TO ALSO SEND NOTICES TO PALA TRIBAL CHAIRMAN ROBERT SMITH.

Consultation letter 1

Responses to Comment Letter F – Pala Band of Mission Indians
John Pepper, Lead Cultural Resources Monitor
Shasta C. Gaughen, PhD

F-1 Email transmittal of Comment Letter. No response required.

F-2 Introductory comment. No response required.

F-3 The comment concludes that the Project is not within the boundaries of the recognized Pala Indian Reservation. Additionally, commenter concludes that the Project is also beyond the boundaries of the territory that the tribe considers its Traditional Use Area. Therefore, no further response is warranted.

F-4 The City appreciates the commenter's acknowledgment of the City's willingness to consult with the tribe. The comment is conclusionary and no further response is warranted.

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Comment Letter G – San Manuel Band of Mission Indians
Bonnie Bryant

From: Bonnie Bryant <Bonnie.Bryant@sanmanuel-nsn.gov>
Sent: Thursday, June 29, 2023 12:26 PM
To: gatewaydeir@grandterrace-ca.gov
Cc: Ryan Nordness
Subject: The Gateway at Grand Terrace Specific Plan Zone change and General Plan amendment

Hello Mr. Bolowich,

Thank you for contacting the San Manuel Band of Mission Indians (SMBMI) regarding the above-referenced project. SMBMI appreciates the opportunity to review the project documentation, which our Cultural Resources Management Department received on June 21, 2023, pursuant to CEQA (as amended, 2015) and CA PRC 21080.3.1. The proposed project area exists within Serrano ancestral territory and is of interest to the Tribe. INSERT INFO G-1

Due to the nature and location of the proposed project, SMBMI respectfully requests the following for review upon availability:

- Cultural report
- Geotechnical report (if required for the project)
- Project plans showing the depth of the proposed disturbance

The provision of this information will assist San Manuel Band of Mission Indians in ascertaining how the Tribe will assume consulting party status under CEQA and participate, moving forward, in project review and implementation. Please note that if this information cannot be provided within the Tribe's 30-day response window, the Tribe automatically elects to be a consulting party under CEQA, as stipulated in AB52. If you have any questions regarding this matter, please do not hesitate to contact me at your convenience, as I will be your Point of Contact (POC) for SMBMI with respect to this project. G-2

Respectfully,
Mr. Bonnie Bryant
Cultural Resource technician
San Manuel Band of Mission Indians
Bonnie.Bryant@sanmanuel-nsn.gov

Bonnie Bryant
Cultural Resources Tech
Bonnie.Bryant@sanmanuel-nsn.gov
O:(909) 864-8933 x 50-2033
M:(909) 633-6615
26569 Community Center Dr Highland, California 92346



1

From: Antonio Lopez <Alopez@grandterrace-ca.gov>
Sent: Friday, July 7, 2023 11:40 AM
To: THPO Consulting <ACBCI-THPO@aguacaliente.net>
Cc: Konrad Bolowich <Kbolowich@grandterrace-ca.gov>; waen.messner <waen.messner@lewismc.com>; Natalie Patty <natalie@lilburncorp.com>
Subject: Requested Documentation

** This Email came from an External Source **

Good morning, my name is Antonio, and I am the Planning Tech for the City of Grand Terrace. I wanted to confirm that we got the letter you sent Konrad and are now responding with the requested information. I've attached a Dropbox Link below where you can access the requested information as the files were too large to attach to this email. If you have any further questions, feel free to contact me through phone or email.

https://www.dropbox.com/t/37DHMcWTxu9VUYku

G-3

Antonio Lopez
Planning Tech
City of Grand Terrace
22795 Barton Rd. Grand Terrace, Ca, 92313
Phone: (909) 954 5176
https://www.grandterrace-ca.gov/

From: THPO Consulting <ACBCI-THPO@aguacaliente.net>
Sent: Monday, July 17, 2023 8:35 AM
To: Antonio Lopez <Alopez@grandterrace-ca.gov>
Subject: RE: Requested Documentation

Good morning Antonio,

Thanks for confirming that you received the letter. Could you please resend the information in the Dropbox Link, unfortunately the link expired.

Thank you,

G-4

Claritsa Duarte
Cultural Resources Analyst
cduarte@aguacaliente.net
C: (760) 985-7538 | D: (760) 883-1134
5401 Dinah Shore Drive, Palm Springs, CA 92264

From: Antonio Lopez <Alopez@grandterrace-ca.gov>
Sent: Tuesday, July 18, 2023 2:20 PM
To: THPO Consulting <ACBCI-THPO@aguacaliente.net>
Cc: Natalie Patty <natalie@lilburncorp.com>; Waen Messner <waen.messner@lewismc.com>; Konrad Bolowich <Kbolowich@grandterrace-ca.gov>
Subject: RE: Requested Documentation

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon, you can access the requested information from the link below.

G-5

https://www.dropbox.com/t/pXiGkCUhE234IQ0O

Best,
Antonio Lopez
Planning Tech
909-954-5176

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Responses to Comment Letter G – San Manuel Band of Mission Indians
Bonnie Bryant

G-1 This comment is an introductory statement that indicates the Project exists within Serrano ancestral territory and is of interest to the tribe. No response is warranted.

G-2 Per the commenter's request, the City has provided the Tribe two Dropbox Links in total containing the requested Cultural Reports, Geotechnical Reports, and Project plans showing the depth of the proposed disturbance on July 7, 2023 and July 18, 2023.

G-3 Refer to Response to comment G-2 above.

G-4 The comment requests that the City resend the information in the Dropbox Link as the link had expired. The requested information was resent.

G-5 Refer to Response to Comment G-2 above.

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Comment Letter H – South Coast Air Quality Management District
Evelyn Aguilar, Air Quality Specialist, CEQA-IGR

From: Evelyn Aguilar <eaguilar@aqmd.gov>
Sent: Friday, June 30, 2023 12:13 PM
To: gatewaydeir@grandterrace-ca.gov
Cc: Sam Wang <swang1@aqmd.gov>
Subject: Technical Data Request: Proposed The Gateway at Grand Terrace Specific Plan Project

Dear Konrad Bolowich,

South Coast AQMD staff received the Notice of Availability of a Draft Environmental Impact Report (NOA/Draft EIR) for the **Proposed The Gateway at Grand Terrace Specific Plan Project** (South Coast AQMD Control Number: SBC230628-04). Staff is currently in the process of reviewing the NOA/Draft EIR. The public commenting period is from 6/26/2023 – 8/14/2023. H-1

Upon review of the files provided as part of the public review period, I was able to access the Draft EIR and Appendices on the City's website. H-2

Please provide an electronic copy of any live modeling and emission calculation files (complete files, not summaries) that were used to quantify the air quality impacts from construction and/or operation of the Proposed Project as applicable, including the following: H-3

- CalEEMod Input Files (.csv files);
- Live EMFAC output files;
- Any emission calculation file(s) (live version of excel file(s); no PDF) used to calculate the Project's emission sources (i.e. truck operations);
- AERMOD Input and Output files, including AERMOD View file(s) (.isc);
- HARP Input and Output files and/or cancer risk calculation files (live version of excel file(s); no PDF) used to calculate cancer risk, and chronic and acute hazards from the Project;
- Any other files related to post-processing done outside of AERMOD to calculate pollutant-specific concentrations (if applicable).

You may send the above-mentioned files via a Dropbox link in which they may be accessed and downloaded by South Coast AQMD staff by **7/14/23**. Without all files and supporting documentation, South Coast AQMD staff will be unable to complete a review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.

If you have any questions regarding this request, please contact me.

Thank you,

Evelyn Aguilar
Air Quality Specialist, CEQA-IGR
Planning, Rule Development & Implementation
South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765
Phone: 909-396-3148
E-mail: eaguilar@aqmd.gov
Hours of operation:
Tuesday - Friday 7:00 AM to 5:30 PM



Cleaning the air that we breathe……™

From: Antonio Lopez <Alopez@grandterrace-ca.gov>
Sent: Tuesday, July 11, 2023 7:59 AM
To: Evelyn Aguilar <eaguilar@aqmd.gov>
Cc: Sam Wang <swang1@aqmd.gov>; waen.messner <waen.messner@lewismc.com>; Natalie Patty <natalie@lilburncorp.com>; Konrad Bolowich <Kbolowich@grandterrace-ca.gov>
Subject: [EXTERNAL]Emission calculations from Ace Malisos at Kimley-Horn for Gateway Specific Plan project

Good morning Evelyn, my name is Antonio, I am the planning tech here at the City of Grand Terrace. I hope you are having a great morning ; I am attaching the emissions calculation files from Ace Malisos at Kimley-Horn through a Drobox link as the files are too large. Please let me know if you have any issues opening and downloading the files.

https://www.dropbox.com/scl/fi/hhm4tt0c6yrylj1ypym74/Gateway-at-Grand-Terrace_AQGHG-Data.zip?rlkey=5r3a9108asn6br6roepwmb27e&dl=0

H-4

Best,

AntonioLopez
Planning Tech
City of Grand Terrace
22795 Barton Rd. Grand Terrace, Ca, 92313
Phone: (909) 954 5176
https://www.grandterrace-ca.gov/

From: Evelyn Aguilar <eaguilar@aqmd.gov>
Sent: Tuesday, July 11, 2023 9:58 AM
To: Antonio Lopez <Alopez@grandterrace-ca.gov>
Cc: Sam Wang <swang1@aqmd.gov>; Waen Messner <waen.messner@lewismc.com>; Natalie Patty <natalie@lilburncorp.com>; Kbolowich@grandterrace-ca.gov
Subject: RE: Emission calculations from Ace Malisos at Kimley-Horn for Gateway Specific Plan project

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning, Antonio,

Thank you for the emissions calculation files. I was able to access them successfully. May you also have a great morning.

Sincerely,

H-5

Evelyn Aguilar
Air Quality Specialist, CEQA-IGR
Phone: 909-396-3148

Responses to Comment Letter H – South Coast Air Quality Management District
Evelyn Aguilar, Air Quality Specialist, CEQA-IGR

H-1 This comment is an introductory statement indicating that South Coast AQMD staff received the Notice of Availability (NOA) of a Draft Environmental Impact Report for the Project and are currently reviewing the documents. No response is warranted.

H-2 The comment states that the commenter was able to access the Draft EIR and associated material. No further response is warranted.

H-3 The commenter requested an electronic copy of any live modeling and emission calculation files that were used to quantify the air quality impacts from construction and/or operation of the Project. Per the commenter's request, the City emailed the commenter on July 11, 2023 with a Dropbox Link of the requested emissions calculation files. To date, no additional comment letters have been received from the commenter.

H-4 The requested information was provided. See Response to Comment H-3 above.

H-5 The commenter confirmed that they received the requested emission calculation files. No further response is warranted.

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Comment Letter I – Southwest Mountain States Regional Council of Carpenters
Mitchell M. Tsai, Attorney At Law

From: Steven Thong <steven@mitchtsailaw.com>
Sent: Monday, June 26, 2023 10:20 AM
To: Debra Thomas; gatewaydeir@grandterrace-ca.gov
Cc: Mitchell M. Tsai Attorney at Law, P.C.; Reza Bonachea Mohamadzadeh; Mitchell Tsai
Subject: SWMSRCC - [City of Grand Terrace, Gateway at Grand Terrace Specific Plan] - Advanced Notice List

Good morning Debra Thomas and Konrad Bolowich,

Our office received the Notice of Availability regarding the Gateway at Grand Terrace Specific Plan. However, the mailed NOA was sent to our old office. Please update our mailing list and email list to the following:

Mailing Address:

Mitchell M. Tsai
139 South Hudson Avenue Suite 200
Pasadena, CA 91101

Email Addresses:

- steven@mitchtsailaw.com
- reza@mitchtsailaw.com
- info@mitchtsailaw.com
- mitch@mitchtsailaw.com

I-1

Thank you.

Best,
Steven

--
Steven Thong
Paralegal
Mitchell M. Tsai, Attorney At Law
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VIA EMAIL

August 14, 2023

Konrad Bolowich
City Manager
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Ph: (909) 954-5175
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RE: Southwest Mountain States Regional Council of Carpenters' Comments Regarding the City of Grand Terrace's Gateway at Grand Terrace Specific Plan Project Draft Environmental Impact Report.

Dear Mr. Bolowich:

On behalf of the Southwest Mountain States Regional Council of Carpenters (**SWMSRCC**), my Office is submitting these comments for the City of Grand Terrace's ("**City**" or "**Lead Agency**") Gateway at Grand Terrace Specific Plan Project Draft Environmental Impact Report (SCH No. 2021020110) ("**Project**"). I-2

Here, the Draft Environmental Impact Report (**DEIR**) serves as a Program EIR (**PEIR**), addressing the overall Specific Plan (**SP**) at its complete buildout. DEIR, p. 1-1. The proposed Project involves the future development of a mixed-use development that would consist of: (1) roughly 43 acres of residential development (up to 695 dwelling units) within Planning Areas ("**PA**") 11, 12, 14, 15, 16, 19, and 20; (2) roughly 25 acres of general commercial development (up to 335,700 square feet) within PAs 1, 2, 3, 6, 7, 8, 9; (3) development and/or improvement of drainage facilities, utilities, and public streets with enhanced landscaping within PAs 5, 10, 13, 17, and 21; (4) a newly constructed park at PA 22 that includes a lighted baseball field with a tot-lot/playground and, (5) a detention basin with open space overlay in PA 18. DEIR, p. 1-3. The Project includes two phases, though this, along with the amount of time of construction of the Project, may vary depending on market conditions. *Ibid.* I-3

The Project also includes an array of discretionary approvals including applications for a Specific Plan, Zone Change (**ZC**), General Plan Amendment (**GPA**), Tentative Tract Map (**TTM**), and Development Agreement (**DA**). *Ibid.*

The Project Site ("**Site**") is located in the southwestern portion of the County of San Bernardino ("**County**") within the City. The Site comprises roughly 112 acres and 32 parcels and is bounded by Commerce Way and an existing commercial parking lot to the north; the northern portion of the sensitive receptor site Grand Terrace High School to the south; commercial and sensitive receptor residential uses to the east; and Interstate 215 to the west. DEIR, p. 1-2

I-3 Cont.

SWMSRCC is a labor union representing over 63,000 union carpenters in 10 states, including California, and has a strong interest in well-ordered land use planning and in addressing the environmental impacts of development projects. Some SWMSRCC members live, work, and recreate in the City and the surrounding communities and would be directly affected by the Project's environmental impacts.

I-4

SWMSRCC expressly reserves the right to supplement these comments at or prior to hearings on the Project, and at any later hearing and proceeding related to this Project. Gov. Code, § 65009(b); PRC, § 21177(a); see *Bakersfield Citizens for Local Control v. Bakersfield* (2004) 124 Cal.App.4th 1184, 1199-1203; see also *Galante Vineyards v. Monterey Water Dist.* (1997) 60 Cal.App.4th 1109, 1121.

I-5

SWMSRCC incorporates by reference all comments raising issues regarding the Project and its environmental review and associated documents and reports (including the City's Staff Report), or lack thereof. See *Citizens for Clean Energy v. City of Woodland* (2014) 225 Cal.App.4th 173, 191 (finding that any party who has objected to the project's environmental documentation may assert any issue timely raised by other parties).

I-6

Moreover, SWMSRCC requests that the City provide notice for any and all notices referring or related to the Project issued under CEQA (PRC, § 21000 et seq.), and the California Planning and Zoning Law ("**Planning and Zoning Law**") (Gov. Code, §§ 65000–65010). California Public Resources Code, sections 21092.2 and 21167, subsection (f) and California Government Code, section 65092 require agencies to mail such notices to any person who has filed a written request for them with the clerk of the agency's governing body.

I-7

I. THE CITY SHOULD REQUIRE THE USE OF A LOCAL WORKFORCE TO BENEFIT THE COMMUNITY'S ECONOMIC DEVELOPMENT AND ENVIRONMENT.

The City should require that future development subject to the Project be built using local workers who have graduated from a Joint Labor-Management Apprenticeship Program approved by the State of California, have at least as many hours of on-the-job experience in the applicable craft which would be required to graduate from such a program, or are registered apprentices in such a program. I-8

Community benefits such as local hire can also be helpful to reduce environmental impacts and improve the positive economic impacts of the Project. Local hire provisions requiring that a certain percentage of workers reside within 10 miles or less of the Project site can reduce the length of vendor trips, reduce greenhouse gas emissions, and provide localized economic benefits. As environmental consultants Matt Hagemann and Paul E. Rosenfeld note: I-9

> [A]ny local hire requirement that results in a decreased worker trip length from the default value has the potential to result in a reduction of construction-related GHG emissions, though the significance of the reduction would vary based on the location and urbanization level of the project site.

March 8, 2021, SWAPE Letter to Mitchell M. Tsai re Local Hire Requirements and Considerations for Greenhouse Gas Modeling.

Workforce requirements promote the development of skilled trades that yield sustainable economic development. As the California Workforce Development Board and the University of California, Berkeley Center for Labor Research and Education concluded: I-10

> [L]abor should be considered an investment rather than a cost—and investments in growing, diversifying, and upskilling California's workforce can positively affect returns on climate mitigation efforts. In other words,

> well-trained workers are key to delivering emissions reductions and moving California closer to its climate targets.[1]

I-10 Cont.

Furthermore, workforce policies have significant environmental benefits given that they improve an area's jobs-housing balance, decreasing the amount and length of job commutes and the associated greenhouse gas (**GHG**) emissions. In fact, on May 7, 2021, the South Coast Air Quality Management District found that that the "[u]se of a local state-certified apprenticeship program" can result in air pollutant reductions.[2]

I-11

Locating jobs closer to residential areas can have significant environmental benefits. As the California Planning Roundtable noted in 2008:

> People who live and work in the same jurisdiction would be more likely to take transit, walk, or bicycle to work than residents of less balanced communities and their vehicle trips would be shorter. Benefits would include potential reductions in both vehicle miles traveled and vehicle hours traveled.[3]

I-12

Moreover, local hire mandates and skill-training are critical facets of a strategy to reduce vehicle miles traveled (**VMT**). As planning experts Robert Cervero and Michael Duncan have noted, simply placing jobs near housing stock is insufficient to achieve VMT reductions given that the skill requirements of available local jobs must match those held by local residents.[4] Some municipalities have even tied local hire and

I-13

[1] California Workforce Development Board (2020) Putting California on the High Road: A Jobs and Climate Action Plan 2030 at p. ii, *available at* https://laborcenter.berkeley.edu/wp-content/uploads/2020/09/Putting-California-on-the-High-Road.pdf.

[2] South Coast Air Quality Management District (May 7, 2021) Certify Final Environmental Assessment and Adopt Proposed Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions Program, and Proposed Rule 316 – Fees for Rule 2305, Submit Rule 2305 for Inclusion Into the SIP, and Approve Supporting Budget Actions, *available at* http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2021/2021-May7-027.pdf?sfvrsn=10.

[3] California Planning Roundtable (2008) Deconstructing Jobs-Housing Balance at p. 6, *available at* https://cproundtable.org/static/media/uploads/publications/cpr-jobs-housing.pdf

[4] Cervero, Robert and Duncan, Michael (2006) Which Reduces Vehicle Travel More: Jobs-Housing Balance or Retail-Housing Mixing? Journal of the American Planning Association 72 (4), 475-490, 482, *available at* http://reconnectingamerica.org/assets/Uploads/UTCT-825.pdf.

other workforce policies to local development permits to address transportation issues. Cervero and Duncan note that: I-13 Cont.

> In nearly built-out Berkeley, CA, the approach to balancing jobs and housing is to create local jobs rather than to develop new housing. The city's First Source program encourages businesses to hire local residents, especially for entry- and intermediate-level jobs, and sponsors vocational training to ensure residents are employment-ready. While the program is voluntary, some 300 businesses have used it to date, placing more than 3,000 city residents in local jobs since it was launched in 1986. When needed, these carrots are matched by sticks, since the city is not shy about negotiating corporate participation in First Source as a condition of approval for development permits. I-14

Recently, the State of California verified its commitment towards workforce development through the Affordable Housing and High Road Jobs Act of 2022, otherwise known as Assembly Bill No. 2011 (**AB2011**). AB2011 amended the Planning and Zoning Law to allow ministerial, by-right approval for projects being built alongside commercial corridors that meet affordability and labor requirements. I-15

The City should consider utilizing local workforce policies and requirements to benefit the local area economically and to mitigate GHG emissions, improve air quality, and reduce transportation impacts. I-16

II. THE CALIFORNIA ENVIRONMENTAL QUALITY ACT.

A. Background Concerning Environmental Impacts Reports.

The California Environmental Quality Act is a California statute designed to inform decision-makers and the public about the potential significant environmental effects of a project. CEQA Guidelines, § 15002(a)(1).[5] At its core, its purpose is to "inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made." *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564. I-17

[5] The CEQA Guidelines, codified in Title 14 of the California Code of Regulations, section 15000 et seq., are regulatory guidelines promulgated by the state Natural Resources Agency for the implementation of CEQA. PRC, § 21083. The CEQA Guidelines are given "great weight in interpreting CEQA except when . . . clearly unauthorized or erroneous." *Center for Biological Diversity v. Dept. of Fish & Wildlife* (2015) 62 Cal.4th 204, 217.

CEQA directs public agencies to avoid or reduce environmental damage, when possible, by requiring alternatives or mitigation measures. CEQA Guidelines, § 15002(a)(2)-(3); see also *Berkeley Keep Jets Over the Bay Committee v. Board of Port Comes* (2001) 91 Cal.App.4th 1344, 1354; *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553; *Laurel Heights Improvement Assn.*, 47 Cal.3d at p. 400. The EIR serves to provide public agencies and the public in general with information about the effect that a proposed project is likely to have on the environment and to "identify ways that environmental damage can be avoided or significantly reduced." CEQA Guidelines, § 15002, subd. (a)(2). If the project has a significant effect on the environment, the agency may approve the project only upon finding that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns" specified in Public Resources Code section 21081. See CEQA Guidelines, §§ 15092, subds. (b)(2)(A), (B).

While the courts review an EIR using an 'abuse of discretion' standard, the reviewing court is not to *uncritically* rely on every study or analysis presented by a project proponent in support of its position. *Berkeley Jets*, 91 Cal.App.4th at p. 1355 (quoting *Laurel Heights Improvement Assn.*, 47 Cal.3d at pp. 391, 409 fn. 12) (internal quotations omitted). A clearly inadequate or unsupported study is entitled to no judicial deference. *Id.* Drawing this line and determining whether the EIR complies with CEQA's information disclosure requirements presents a question of law subject to independent review by the courts. *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 515; *Madera Oversight Coalition, Inc. v. County of Madera* (2011) 199 Cal.App.4th 48, 102, 131. As the court stated in *Berkeley Jets*, prejudicial abuse of discretion occurs if the failure to include relevant information precludes informed decision-making and informed public participation, thereby thwarting the statutory goals of the EIR process. 91 Cal.App.4th at p. 1355 (internal quotations omitted).

The preparation and circulation of an EIR is more than a set of technical hurdles for agencies and developers to overcome. *Communities for a Better Environment v. Richmond* (2010) 184 Cal.App.4th 70, 80 (quoting *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 449-450). The EIR's function is to ensure that government officials who decide to build or approve a project do so with a full understanding of the environmental consequences and, equally important, that the public is assured those consequences have been considered. *Ibid.* For the EIR to

I-17 Cont.

serve these goals it must present information so that the foreseeable impacts of pursuing the project can be understood and weighed, and the public must be given an adequate opportunity to comment on that presentation before the decision to go forward is made. *Ibid.*

A strong presumption in favor of requiring preparation of an EIR is built into CEQA. This presumption is reflected in what is known as the "fair argument" standard under which an EIR must be prepared whenever substantial evidence in the record supports a fair argument that a project may have a significant effect on the environment. *Quail Botanical Gardens Found., Inc. v. City of Encinitas* (1994) 29 Cal.App.4th 1597, 1602; *Friends of "B" St.* v. *City of Hayward* (1980) 106 Cal.3d 988, 1002.

The fair argument test stems from the statutory mandate that an EIR be prepared for any project that "may have a significant effect on the environment." Pub. Res. Code, § 21151; see *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.App.3d 68, 75; accord *Jensen v. City of Santa Rosa* (2018) 23 Cal.App.5th 877, 884. Under this test, if a proposed project is not exempt and may cause a significant effect on the environment, the lead agency must prepare an EIR. Pub. Res. Code, §§ 21100, subd. (a), 21151; CEQA Guidelines, §§ 15064, subds. (a)(1), (f)(1). An EIR may be dispensed with only if the lead agency finds no substantial evidence in the initial study or elsewhere in the record that the project may have a significant effect on the environment. *Parker Shattuck Neighbors v. Berkeley City Council* (2013) 222 Cal.App.4th 768, 785. In such a situation, the agency must adopt a negative declaration. Pub. Res. Code, § 21080, subd. (c)(1); CEQA Guidelines, §§ 15063, subd. (b)(2), 15064, subd. (f)(3).

I-17 Cont.

"Significant effect upon the environment" is defined as "a substantial or potentially substantial adverse change in the environment." Pub. Res. Code, § 21068; CEQA Guidelines, § 15382. A project may have a significant effect on the environment if there is a reasonable probability that it will result in a significant impact. *No Oil, Inc.*, 13 Cal.3d at p. 83 fn. 16; see *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 309. If any aspect of the project may result in a significant impact on the environment, an EIR must be prepared even if the overall effect of the project is beneficial. CEQA Guidelines, § 15063, subd. (b)(1); see *County Sanitation Dist. No. 2 v. County of Kern* (2005) 127 Cal.App.4th 1544, 1580.

This standard sets a "low threshold" for preparation of an EIR. *Consolidated Irrigation Dist. v. City of Selma* (2012) 204 Cal.App.4th 187, 207; *Nelson v. County of Kern* (2010) 190 Cal.App.4th 252; *Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903,

928; *Bowman v. City of Berkeley* (2004) 122 Cal.App.4th 572, 580; *Citizen Action to Serve All Students v. Thornley* (1990) 222 Cal.App.3d 748, 754; *Sundstrom*, 202 Cal.App.3d at p. 310. If substantial evidence in the record supports a fair argument that the project may have a significant environmental effect, the lead agency must prepare an EIR even if other substantial evidence before it indicates the project will have no significant effect. See *Jensen,* 23 Cal.App.5th at p. 886; *Clews Land & Livestock v. City of San Diego* (2017) 19 Cal.App.5th 161, 183; *Stanislaus Audubon Society, Inc. v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 150; *Brentwood Assn. for No Drilling, Inc. v. City of Los Angeles* (1982) 134 Cal.App.3d 491; *Friends of "B" St.*, 106 Cal.App.3d 988; CEQA Guidelines, § 15064, subd. (f)(1).

I-17 Cont.

B. Background Concerning Initial Studies, Negative Declarations, and Mitigated Negative Declarations.

CEQA and CEQA Guidelines are strict and unambiguous about when an MND may be used. A public agency must prepare an EIR whenever substantial evidence supports a "fair argument" that a proposed project "may have a significant effect on the environment." Pub. Res. Code, §§ 21100, 21151; CEQA Guidelines, §§ 15002, subds. (f)(1), (2), 15063; *No Oil, Inc.*, *supra*, 13 Cal.3d at 75; *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 111-112. Essentially, should a lead agency be presented with a fair argument that a project may have a significant effect on the environment, the lead agency shall prepare an EIR even though it may also be presented with other substantial evidence that the project will not have a significant effect. CEQA Guidelines, §§ 15064, subds. (f)(1), (2); see *No Oil Inc., supra*, 13 Cal.3d at 75 (internal citations and quotations omitted). Substantial evidence includes "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached." CEQA Guidelines, § 15384, subd. (a).

I-18

The fair argument standard is a "low threshold" test for requiring the preparation of an EIR. *No Oil Inc.*, *supra*, 13 Cal.3d at 84; *County Sanitation Dist. No. 2 of Los Angeles County v. County of Kern* (2005) 127 Cal.App.4th 1544, 1579. It "requires the preparation of an EIR where there is substantial evidence that any aspect of the project, either individually or cumulatively, may cause a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial[.]" *County Sanitation*, *supra*, 127 Cal.App.4th at 1580 (quoting CEQA Guidelines, § 15063,

subd. (b)(1)). A lead agency may adopt an MND only if "there is no substantial evidence that the project will have a significant effect on the environment." CEQA Guidelines, § 15074, subd. (b).

Evidence supporting a fair argument of a significant environmental impact triggers preparation of an EIR regardless of whether the record contains contrary evidence. *League for Protection of Oakland's Architectural and Historical Resources v. City of Oakland* (1997) 52 Cal.App.4th 896, 904-905. "Where the question is the sufficiency of the evidence to support a fair argument, deference to the agency's determination is not appropriate[.]" *County Sanitation*, 127 Cal.App.4th at 1579 (quoting *Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307, 1317-1318).

Further, it is the duty of the lead agency, not the public, to conduct the proper environmental studies. "The agency should not be allowed to hide behind its own failure to gather relevant data." *Sundstrom*, *supra*, 202 Cal.App.3d at 311. "Deficiencies in the record may actually enlarge the scope of fair argument by lending a logical plausibility to a wider range of inferences." *Ibid*; see also *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1382 (lack of study enlarges the scope of the fair argument which may be made based on the limited facts in the record).

I-18 Cont.

Thus, refusal to complete recommended studies lowers the already low threshold to establish a fair argument. The court may not exercise its independent judgment on the omitted material by determining whether the ultimate decision of the lead agency would have been affected had the law been followed. *Environmental Protection Information Center v. Cal. Dept. of Forestry* (2008) 44 Cal.4th 459, 486 (internal citations and quotations omitted). The remedy for this deficiency would be for the trial court to issue a writ of mandate. *Ibid.*

Both the review for failure to follow CEQA's procedures and the fair argument test are questions of law, thus, the de novo standard of review applies. *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435. "Whether the agency's record contains substantial evidence that would support a fair argument that the project may have a significant effect on the environment is treated as a question of law. *Consolidated Irrigation Dist.*, *supra*, 204 Cal.App.4th at 207; Kostka and Zischke, Practice Under the Environmental Quality Act (2017, 2d ed.) at § 6.76.

In the MND context, courts give no deference to the agency. The agency or the court should not weigh expert testimony or decide on the credibility of such evidence—this is the EIR's responsibility. As stated in *Pocket Protectors v. City of Sacramento*:

> Unlike the situation where an EIR has been prepared, neither the lead agency nor a court may "weigh" conflicting substantial evidence to determine whether an EIR must be prepared in the first instance. Guidelines section 15064, subdivision (f)(1) provides in pertinent part: if a lead agency is presented with a fair argument that a project may have a significant effect on the environment, the lead agency shall prepare an EIR even though it may also be presented with other substantial evidence that the project will not have a significant effect. Thus, as *Claremont* itself recognized, [c]onsideration is not to be given contrary evidence supporting the preparation of a negative declaration.

(2004) 124 Cal.App.4th 903, 935 (internal citations and quotations omitted).

In cases where it is not clear whether there is substantial evidence of significant environmental impacts, CEQA requires erring on the side of a "preference for resolving doubts in favor of environmental review." *Mejia v. City of Los Angeles* (2005) 130 Cal.App.4th 322, 332. The foremost principle under CEQA is that the Legislature intended the act to be interpreted in such manner as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language. *Friends of Mammoth v. Bd. of Supervisors* (1972) 8 Cal.3d 247, 259.

I-18 Cont.

C. Background Concerning CEQA Exemptions.

Where a lead agency chooses to dispose of CEQA by asserting a CEQA exemption, it has a duty to support its CEQA exemption findings by substantial evidence, including evidence that there are no applicable exceptions to exemptions. This duty is imposed by CEQA and related case law. CEQA Guidelines, § 15020 (lead agency shall not knowingly release a deficient document hoping that public comments will correct the defects); see *Citizens for Environmental Responsibility v. State ex rel. 14th Dist. Agriculture Assn.* (2015) 242 Cal.App.4th 555, 568 (lead agency has the burden of demonstrating that a project falls within a categorical exemption and must support the determination with substantial evidence); accord *Assn. for Protection etc. Values v. City of Ukiah* (1991) 2 Cal.App.4th 720, 732 (lead agency is required to consider exemption exceptions where there is evidence in the record that the project might have a significant impact).

I-19

The duty to support CEQA and exemption findings with substantial evidence is also required by the Code of Civil Procedure (**CCP**) and case law on administrative or traditional writs. Under the CCP, an abuse of discretion is established if the decision is unsupported by the findings, or the findings are unsupported by the evidence. CCP, § 1094.5, subd. (b). In *Topanga Assn. for a Scenic Community v. County of Los Angeles*, our Supreme Court held that implicit in CCP section 1094.5 is a requirement that the agency which renders the challenged decision must set forth findings to bridge the analytic gap between the raw evidence and ultimate decision or order. (1977) 11 Cal.3d 506, 515 (internal citations and quotations omitted). The lead agency's findings may be determined to be sufficient if a court has no trouble under the circumstances discerning the analytic route the administrative agency traveled from evidence to action. *West Chandler Blvd. Neighborhood Assn. vs. City of Los Angeles* (2011) 198 Cal.App.4th 1506, 1521-1522 (internal citations and quotations omitted). However, "mere conclusory findings without reference to the record are inadequate." *Id.* at p. 1521 (finding city council findings conclusory, violating *Topanga Assn. for a Scenic Community, supra*).

Further, CEQA exemptions must be narrowly construed to accomplish CEQA's environmental objectives. *Cal. Farm Bureau Federation v. Cal. Wildlife Conservation Bd.* (2006) 143 Cal.App.4th 173, 187; accord *Save Our Carmel River v. Monterey Peninsula Water Management Dist.* (2006) 141 Cal.App.4th 677, 697 (these rules ensure that in all but the clearest cases of categorical exemptions, a project will be subject to some level of environmental review).

Finally, CEQA procedures reflect a preference for resolving doubts in favor of environmental review. See Pub. Res. Code, § 21080, subd. (c) (an EIR may be disposed of only if there is no substantial evidence, in light of the entire record before the lead agency, that the project may have a significant effect on the environment or revisions in the project); CEQA Guidelines, §§ 15061, subd. (b)(3) (common sense exemption only where it can be seen *with certainty*); 15063, subd. (b)(1) (prepare an EIR if the agency determines that there is substantial evidence that any aspect of the project, either individually or cumulatively, may cause a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial]; 15064, subd. (h) (the agency must consider cumulative impacts of past, current, and probable future projects); 15070 (a negative declaration may be prepared only if there is no substantial evidence, in light of the whole record, that the project

I-19 Cont

may have a significant effect on the environment, or project revisions would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and there is no substantial evidence, in light of the whole record, that the project as revised may have a significant effect on the environment); *No Oil, Inc., supra,* 13 Cal.3d at 83-84 (significant impacts are to be interpreted so as to afford the fullest possible protection).

I-19 Cont.

D. CEQA Requires Revision and Recirculation of an EIR When Substantial Changes or New Information Comes to Light.

To afford the public an opportunity to review and comment on an EIR, "[w]hen significant new information is added to an environmental impact report after notice has been given pursuant to Section 21092 … but prior to certification, the public agency shall give notice again pursuant to PRC § 21092, and consult again pursuant to Sections 21104 and 21153 before certifying the environmental impact report" in accordance with Public Resources Code section 21092.1. CCR, § 15088.5.

Significant new information includes "changes in the project or environmental setting as well as additional data or other information" that "deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative)." CCR, § 15088.5, subd. (a). Examples of significant new information requiring recirculation include "new significant environmental impacts from the project or from a new mitigation measure," "substantial increase in the severity of an environmental impact," "feasible project alternative or mitigation measure considerably different from others previously analyzed" as well as when "the draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded." *Ibid.*

I-20

An agency has an obligation to recirculate an environmental impact report for public notice and comment due to "significant new information" regardless of whether the agency opts to include it in a project's environmental impact report. *Cadiz Land Co. v. Rail Cycle* (2000) 83 Cal.App.4th 74, 95 (finding that in light of a new expert report disclosing potentially significant impacts to groundwater supply the EIR should have been revised and recirculated for purposes of informing the public and governmental agencies of the volume of groundwater at risk and to allow the public and governmental agencies to respond to such information). If significant new information was brought to the attention of an agency prior to certification, an agency

is required to revise and recirculate that information as part of the environmental impact report. I-20 Cont.

III. THE PROJECT WOULD BE APPROVED IN VIOLATION OF CEQA.

A. The DEIR Fails to Consider and Analyze all Feasible, Practical, and Effective Mitigation Measures for Significant and Unavoidable Impacts.

Although the DEIR acknowledges that various impacts to air quality, biological resources, cultural resources, geology and soils, GHG emissions, hazards and hazardous materials, noise, and tribal cultural resources may be potentially significant and unavoidable, it fails to consider *all* feasible, practical, and effective feasible mitigation measures pursuant to Public Resources Code sections 21061 and 21100(b)(3). See also *Napa Citizens for Honest Govt. v. Napa Cnty. Bd. of Supervisors* (2001) 91 Ca.4th 1018, 1039. I-21

The DEIR is required to review all feasible, practical, and effective mitigation measures as the DEIR concludes that the Project would potentially have significant and unavoidable impacts to several domains identified in the DEIR. See DEIR, pp. 1-7-1-27. However, the DEIR fails to provide a feasibility analysis for mitigation measures that could conceivably reduce the Project's impacts to the requisite less than significant levels. The City should require that the future applicants of developments subject to the Project adopt specific, actionable, and immediate (non-deferrable) measures—compliance of which guaranteeing project approval—to mitigate against potential environmental impacts. Here, the DEIR lacks the inclusion or details of sufficient and adequate feasibility analyses for several mitigation measures in the context of air quality, biological resources, and GHG impacts, to name a few. Without a feasibility analysis of more stringent mitigation measures, the DEIR fails as an informational document. I-22

B. The DEIR Fails to Support Its Findings With Substantial Evidence.

When new information is brought to light showing that an impact previously discussed in an iteration of the EIR but found to be insignificant with or without mitigation in another iteration of the EIR's analysis has the potential for a significant environmental impact supported by substantial evidence, the EIR must consider and resolve the conflict in the evidence. See *Visalia Retail, L.P. v. City of Visalia* (2018) 20 Cal.App.5th 1, 13, 17; see also *Protect the Historic Amador Waterways v. Amador Water* I-23

Agency (2004) 116 Cal.App.4th 1099, 1109. While a lead agency has discretion to formulate standards for determining significance and the need for mitigation measures—the choice of any standards or thresholds of significance must be "based to the extent possible on scientific and factual data and an exercise of reasoned judgment based on substantial evidence. CCR, § 15064, subd. (b); *Cleveland Natl. Forest Found. v. San Diego Assn. of Govts.* (2017) 3 Cal.App.5th 497, 515; *Mission Bay Alliance v. Office of Community Inv. & Infrastructure* (2016) 6 Cal.App.5th 160, 206. Further, when there exists evidence that an impact could be significant, an EIR cannot adopt a contrary finding without providing an adequate explanation along with supporting evidence. *East Sacramento Partnership for a Livable City v. City of Sacramento* (2016) 5 Cal. App. 5th 281, 302.

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Additionally, a determination that regulatory compliance will be sufficient to prevent significant adverse impacts must be based on a project-specific analysis of potential impacts and the effect of regulatory compliance. In *Californians for Alternatives to Toxics v. Department of Food & Agriculture* (2005), the court set aside an EIR for a statewide crop disease control plan because it did not include an evaluation of the risks to the environment and human health from the proposed program but simply presumed that no adverse impacts would occur from use of pesticides in accordance with the registration and labeling program of the California Department of Pesticide Regulation. 136 Cal. App. 4th 1; see also *Ebbetts Pass Forest Watch v. Dept. of Forestry & Fire Protection* (2008) 43 Cal.App.4th 936, 956 (that Department of Pesticide Regulation had assessed environmental effects of certain herbicides in general did not excuse failure to assess effects of their use for specific timber harvesting project).

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1. *The DEIR Fails to Support its Findings on GHG Emissions and Air Quality Impacts With Substantial Evidence and Consider and Adopt All Feasible Mitigation Measures.*

California Code of Regulations section 15064.4 allows a lead agency to determine the significance of a project's GHG impact via a qualitative analysis (e.g., extent to which a project complies with regulations or requirements of state/regional/local GHG plans), and/or a quantitative analysis (e.g., using model or methodology to estimate project emissions and compare it to a numeric threshold). The CEQA Guidelines allow lead agencies to select which model or methodology to estimate GHG emissions as long as the selection is supported with substantial evidence, and the lead

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agency "should explain the limitations of the particular model or methodology selected for use." CCR, § 15064.4, subd. (c).

I-25 Cont.

Further, CEQA Guidelines sections 15064.4(b)(3) and 15183.5(b) allow a lead agency to consider a project's consistency with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. CEQA Guidelines sections 15064.4(b)(3) and 15183.5(b)(1) make clear that qualified GHG reduction plans or CAPs should include the following features:

(1) **Inventory**: Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities (e.g., projects) within a defined geographic area (e.g., lead agency jurisdiction);

(2) **Establish GHG Reduction Goal**: Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable;

(3) **Analyze Project Types**: Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area;

(4) **Craft Performance Based Mitigation Measures**: Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level; and,

(5) **Monitoring**: Establish a mechanism to monitor the CAP progress toward achieving said level and to require amendment if the plan is not achieving specified levels.

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Collectively, the above-listed CAP features tie qualitative measures to quantitative results, which in turn become binding via proper monitoring and enforcement by the jurisdiction—all resulting in actual GHG reductions for the jurisdiction as a whole, and the substantial evidence that the incremental contribution of an individual project is not cumulatively considerable.

Here, the DEIR concludes consistency with certain elements of the Southern California Association of Governments' (**SCAG**) statewide plans to reduce GHG emissions and air quality impacts, including Connect SoCal and the CARB Scoping

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Plan (DEIR, p. 4.7-29), but does not identify consistency with, for example, California Ambient Air Quality Standards (**CAAQS**), National Ambient Air Quality Standards (**NAAQS**), and Air Quality Management Plan (**AQMP**). DEIR, p. 6-3. The DEIR admits that the Project's operational emissions would continue to exceed the SCAQMD's operational standard for ROG and NOx, [and] would generate emissions not reflected within the current 2022 AQMP regional emissions inventory for the SCAB[.]" *Ibid.* For these reasons, the Project is not consistent with Consistency Criterion No. 1 and No. 2, despite the implementation of mitigation measures and "compliance with laws, ordinances, and regulations[.]" DEIR, p. 6-4. Further, despite implementation of several mitigation measures and compliance with laws, ordinances, and regulations, "the Project's GHG emissions would remain above SCAQMD thresholds, resulting in a significant . . . impact." *Ibid.* Last, the DEIR admits that "Project emissions could impede statewide 2030 and 2050 GHG emission reduction targets [consequently] result[ing] in a significant cumulative GHG impact." *Ibid.* The DEIR must be revised to consider more stringent mitigation measures which could reduce the environmental impacts of GHG emissions and air quality from the whole project as opposed to complacent reliance on statutory compliance and deficient and/or deferred mitigation measures.

I-27 Cont.

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A fundamental purpose of an EIR is to identify ways in which a proposed project's significant environmental impacts can be mitigated or avoided. Pub. Res. Code, §§ 21002.1, subd. (a), 21061. To implement this statutory purpose, the EIR must describe any feasible mitigation measures that can minimize the project's significant environmental effects. Pub. Res. Code, §§ 21002.1, subd. (a), 21100, subd. (b)(3); Cal. Code Regs., §§ 15121, subd. (a), 15126.4, subd. (a).

If the project has a significant effect on the environment, the agency may approve the project only upon finding that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and find that 'specific overriding economic, legal, social, technology or other benefits of the project outweigh the significant effects on the environment." "A gloomy forecast of environmental degradation is of little or no value without pragmatic, concrete means to minimize the impacts and restore ecological equilibrium." *Environmental Council of Sacramento v. City of Sacramento* (2006) 142 Cal.App.4th 1018, 1039.

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Here, the DEIR finds that the Project will have significant and unavoidable impacts on air quality and greenhouse gas emissions but finds that no further mitigation

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measures are available, which is conclusory and evades the requisite analysis under CEQA. DEIR, pp. 6-3-6.4. Even assuming the Project may take credit for all of the proposed VMT reductions it outlines, the Project will still have significant GHG emissions and air quality impacts—thereby requiring that the DEIR adopt a finding of a significance and the adoption of *all* feasible mitigation measures to ameliorate such impacts. Instead, the DEIR defers discussion of air quality and GHG emissions to the future (or never) and relies on the faulty inference that its impacts can be masked and assimilated under the guise of global climate change analysis. I-30 Cont.

Here, the City merely makes a conclusory statement about future compliance with the law and does not commit itself to any specific or binding course of action which is project-specific. A determination that regulatory compliance will be sufficient to prevent significant adverse impacts must be based on a project-specific analysis of potential impacts and the effect of regulatory compliance. *In Californians for Alternatives to Toxics v. Department of Food & Agric.* (2005) 136 Cal.App.4th 1, the court set aside an EIR for a statewide crop disease control plan because it did not include an evaluation of the risks to the environment and human health from the proposed program but simply presumed that no adverse impacts would occur from use of pesticides in accordance with the registration and labeling program of the California Department of Pesticide Regulation. There is no analysis in the DEIR connecting the effect of compliance with regulatory requirements such that the impacts could be determined to be less than significant. The City is essentially requesting a good-faith assumption that regulatory compliance will serve as a backstop without developing any mitigation measures. The City must identify additional and effective mitigation measures. I-31 I-32

The DEIR also lacks an adequate analysis on air quality impacts, which is particularly concerning due to the scope and size of the Project and its proximity to nearby sensitive receptors and the intended development of sensitive receptors including likely mixed-use and hotel development. Specifically, the Project comprises the development of 112 acres and abuts Grand Terrace High School to the south and residences to the east—elements that are largely omitted or glossed over in the DEIR's air quality and GHG emissions analyses. I-33

Despite the clear and apparent presence of sensitive receptors that beset the Project in all directions, the DEIR does not adequately or attend to the Project's potential impacts to them. This is especially egregious considering not only the construction impacts certain to result from development to the Project area, but also continued and I-34

sustained traffic and congestion, increases to VMT, the biggest contributor to GHG emissions, and vehicle idling associated with a likely substantial increase in use on nearby roads that are unlikely to bear the burden due to not only the proposed developmental uses but also proposals to direct more patrons and traffic to the Project area in an effort to increase demand for its commercial uses. Despite these likely impacts, the DEIR nonetheless concludes that the Project would be consistent with SCAG's regional goals of providing infill housing, improving the jobs-housing balance, and integrating land uses near major transportation corridors, that the Project would not expose sensitive receptors to substantial pollutant concentrations, that the Project would not result in other emissions adversely affecting a substantial number of people. These conclusions are exceedingly likely to be erroneous given the lack of attention to significant prospective contributions to VMT, GHG emissions, and impact to unaccounted nearby sensitive receptors, notwithstanding the significant construction impacts to all of these domains during anticipated construction for various developments. Lead agencies may not avoid the responsibility to prepare proper environmental analysis by failing to gather relevant data. *Sundstrom v. Cnty. of Mendocino* (1988) 202 Cal.App.3d 296, 311.

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IV. THE PROJECT VIOLATES THE STATE PLANNING AND ZONING LAW AND THE CITY'S GENERAL PLAN.

Every county and city in California must adopt a comprehensive, long-term general plan governing development. *Napa Citizens for Honest Gov. v. Napa Cnty. Bd. of Supervisors* (2001) 91 Cal.App.4th 342, 352 (citing Gov. Code, §§ 65030, 65300). The general plan sits at the top of the land use planning hierarchy and serves as a "constitution" or "charter" for all future development. *DeVita v. Cnty. of Napa* (1995) 9 Cal.4th 763, 773 (hereinafter, "*DeVita*"); *Lesher Communications, Inc. v. City of Walnut Creek* (1990) 52 Cal.3d 531, 540 (hereinafter, "*Lesher*"). General plan consistency is "the linchpin of California's land use and development laws; it is the principle which infused the concept of planned growth with the force of law." *Debottari v. Norco City Council* (1985) 171 Cal.App.3d 1204, 1213.

State law mandates two levels of consistency. First, a general plan must be internally or "horizontally" consistent—its elements must "comprise an integrated, internally consistent and compatible statement of policies for the adopting agency." Gov. Code, § 65300.5; *Sierra Club v. Bd. of Supervisors* (1981) 126 Cal.App.3d 698, 704. A general plan amendment thus may not be internally inconsistent, nor may it cause the general

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plan as a whole to become internally inconsistent. See *DeVita, supra,* 9 Cal.4th at 796 fn. 12. Second, state law requires vertical consistency, meaning that zoning ordinances and other land use decisions also must be consistent with the general plan. See Gov. Code, § 65860(a)(2) (land uses authorized by zoning ordinance must be compatible with the objectives, policies, general land uses, and programs specified in the [general] plan); see also *Neighborhood Action Group v. Cnty. of Calaveras* (1984) 156 Cal.App.3d 1176, 1184 (hereinafter, "*Neighborhood Action Group*"). A zoning ordinance that conflicts with the general plan or impedes achievement of its policies is invalid and cannot be given effect. See *Lesher, supra,* 52 Cal.3d at 544.

Further, state law requires that all subordinate land use decisions, including conditional use permits, be consistent with the general plan. See Gov. Code, § 65860, subd. (a)(2); *Neighborhood Action Group*, 156 Cal.App.3d at 1184. A project cannot be found consistent with a general plan if it conflicts with a general plan policy that is "fundamental, mandatory, and clear," regardless of whether it is consistent with other general plan policies. *Endangered Habitats League v. Cnty. of Orange* (2005) 131 Cal.App.4th 777, 782-83; *Families Unafraid to Uphold Rural El Dorado Cnty. v. Bd. of Supervisors* (1998) 62 Cal.App.4th 1332, 1341-42 (hereinafter, "*FUTURE*"). Further, even despite an absence of such a direct conflict, an ordinance or development project may not be approved if it interferes with or frustrates the general plan's policies and objectives. See *Napa Citizens, supra,* 91 Cal.App.4th at 378-79; see also *Lesher, supra,* 52 Cal.3d at 544 (zoning ordinance restricting development conflicted with growth-oriented policies of general plan).

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Here, the Project is inconsistent with the City's General Plan. As such, the Project violates the State Planning and Zoning law. Specifically, the Project fails to adequately discuss, with sufficient evidence, its conformity with each of the explicit goals, policies, and programs laid out in the City's General Plan, despite that the Project will have reasonably foreseeable impacts on land use, traffic, vehicle trip generation, air quality, GHG emissions, and more. Such goals, policies, and programs include, among others:

- Goal 4.8: Achieve regional water quality objectives and protect the beneficial uses of the regions surface and groundwater. (DEIR, p. 4.17-8)
- Policy 4.8.1 Evaluate all proposed land use and development plans for their potential to create groundwater contamination hazards from point and non-

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point sources, and cooperate with other appropriate agencies to assure appropriate mitigation. (DEIR, p. 4.17-9)

- Policy 4.8.2 Comply with the requirements of the National Pollutant Discharge Elimination System (NPDES). (DEIR, p. 4.17-9)
- Goal 4.9: Comply with State and federal regulations to ensure the protection of historical, archaeological, and paleontological resources. (DEIR, p. 4.16-6)
- Policy 4.9.1 The City shall take reasonable steps to ensure that cultural resources are located, identified and evaluated to assure that appropriate action is taken as to the disposition of these resources. (DEIR, p. 4.16-6)
- Goal 5.6: Minimize the exposure of residents, business owners, and visitors to the impacts of urban and wildland fires. (DEIR, p. 4.18-6)
- Policy 5.6.2 Continue the weed abatement program to ensure clearing of dry vegetation areas. (DEIR, p. 4.18-6)
- Policy 5.6.3 Encourage the use of fire-resistive construction materials. (DEIR, p. 4.18-6)
- Goal 7.1: Coordinate and balance the provision of public services with existing and planned development to eliminate service gaps, maximize the use of existing public facilities and services, provide a high level of quality public services at a reasonable cost, and maintain adequate services to meet the needs of current and future City residents and businesses. (DEIR, p. 4.17-9)
- Policy 7.1.1 All proposed development shall be evaluated to determine whether current public services and facilities can meet with their needs. If determined that current services and facilities are inadequate to meet the needs of new development, appropriate mitigation measures shall be applied to the new development to assure an adequate level of service. (DEIR, p. 4.17-9)
- Goal 9.2: Reduce the total quantity of waste generated within the City requiring landfill disposal to meet or exceed the State waste diversion goals. (DEIR, p. 4.17-9)
- Policy 9.2.2 Require all new development projects to recycle construction and demolition wastes. (DEIR, p. 4.17-9)
- Goal 9.7: Reduce the City's per capita demand for water consumption. (DEIR, p. 4.17-9)
- Policy 9.7.2 The City shall incorporate water conservation into the development review process. (DEIR, p. 4.17-9)

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Such an analysis is relevant not only to compliance with land use and zoning law, but also with the contemplation of the Project's consistency with land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating environmental impacts. The DEIR must be revised to include sufficient analysis of the Project's alignment with the goals, policies, and programs in the State Planning and Zoning laws and the City's General Plan. I-37 Cont.

V. CONCLUSION.

A detailed and thorough review of the Project's impacts must be studied, supported by substantial evidence, and mitigated against where necessary. Without this in-depth analysis and a higher standard for the quantity and quality of evidence supporting it, it is impossible to determine, with a high degree of certainty, the magnitude and extent of the Project's environmental impacts.

In light of the aforementioned, SWMSRCC respectfully requests that the City: (1) prepare and circulate a revised EIR which addresses the aforementioned concerns, and (2) require a local and skilled workforce for future developments which relate to and follow the Specific Plan. Should the City have any questions or concerns, it should feel free to contact my office. I-38

Sincerely,



Reza Bonachea Mohamadzadeh
Attorneys for Southwest Mountain
States Regional Council of Carpenters

Attached:

March 8, 2021, SWAPE Letter to Mitchell M. Tsai re Local Hire Requirements and Considerations for Greenhouse Gas Modeling (Exhibit A);

Air Quality and GHG Expert Paul Rosenfeld CV (Exhibit B); and,

Air Quality and GHG Expert Matt Hagemann CV (Exhibit C).

EXHIBIT A

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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March 8, 2021

Mitchell M. Tsai
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Pasadena, CA 91101

Subject: Local Hire Requirements and Considerations for Greenhouse Gas Modeling

Dear Mr. Tsai,

Soil Water Air Protection Enterprise ("SWAPE") is pleased to provide the following draft technical report explaining the significance of worker trips required for construction of land use development projects with respect to the estimation of greenhouse gas ("GHG") emissions. The report will also discuss the potential for local hire requirements to reduce the length of worker trips, and consequently, reduced or mitigate the potential GHG impacts.

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Worker Trips and Greenhouse Gas Calculations

The California Emissions Estimator Model ("CalEEMod") is a "statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects."[1] CalEEMod quantifies construction-related emissions associated with land use projects resulting from off-road construction equipment; on-road mobile equipment associated with workers, vendors, and hauling; fugitive dust associated with grading, demolition, truck loading, and on-road vehicles traveling along paved and unpaved roads; and architectural coating activities; and paving.[2]

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The number, length, and vehicle class of worker trips are utilized by CalEEMod to calculate emissions associated with the on-road vehicle trips required to transport workers to and from the Project site during construction.[3]

[1] "California Emissions Estimator Model." CAPCOA, 2017, *available at:* http://www.aqmd.gov/caleemod/home.
[2] "California Emissions Estimator Model." CAPCOA, 2017, *available at:* http://www.aqmd.gov/caleemod/home.
[3] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.

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Specifically, the number and length of vehicle trips is utilized to estimate the vehicle miles travelled ("VMT") associated with construction. Then, utilizing vehicle-class specific EMFAC 2014 emission factors, CalEEMod calculates the vehicle exhaust, evaporative, and dust emissions resulting from construction-related VMT, including personal vehicles for worker commuting.[4]

Specifically, in order to calculate VMT, CalEEMod multiplies the average daily trip rate by the average overall trip length (see excerpt below):

> "$VMT_d = \Sigma(\text{Average Daily Trip Rate}_i * \text{Average Overall Trip Length}_i)_n$
>
> Where:
>
> n = Number of land uses being modeled."[5]

Furthermore, to calculate the on-road emissions associated with worker trips, CalEEMod utilizes the following equation (see excerpt below):

> "$\text{Emissions}_{pollutant} = VMT * EF_{running,pollutant}$
>
> Where:
>
> $\text{Emissions}_{pollutant}$ = emissions from vehicle running for each pollutant
>
> VMT = vehicle miles traveled
>
> $EF_{running,pollutant}$ = emission factor for running emissions."[6]

Thus, there is a direct relationship between trip length and VMT, as well as a direct relationship between VMT and vehicle running emissions. In other words, when the trip length is increased, the VMT and vehicle running emissions increase as a result. Thus, vehicle running emissions can be reduced by decreasing the average overall trip length, by way of a local hire requirement or otherwise.

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Default Worker Trip Parameters and Potential Local Hire Requirements

As previously discussed, the number, length, and vehicle class of worker trips are utilized by CalEEMod to calculate emissions associated with the on-road vehicle trips required to transport workers to and from the Project site during construction.[7] In order to understand how local hire requirements and associated worker trip length reductions impact GHG emissions calculations, it is important to consider the CalEEMod default worker trip parameters. CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act ("CEQA") requires that such changes be justified by substantial evidence.[8] The default number of construction-related worker trips is calculated by multiplying the

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[4] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 14-15.
[5] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 23.
[6] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 15.
[7] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.
[8] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 1, 9.

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number of pieces of equipment for all phases by 1.25, with the exception of worker trips required for the building construction and architectural coating phases.[9] Furthermore, the worker trip vehicle class is a 50/25/25 percent mix of light duty autos, light duty truck class 1 and light duty truck class 2, respectively."[10] Finally, the default worker trip length is consistent with the length of the operational home-to-work vehicle trips.[11] The operational home-to-work vehicle trip lengths are:

> "[B]ased on the *location* and *urbanization* selected on the project characteristic screen. These values were *supplied by the air districts or use a default average for the state*. Each district (or county) also assigns trip lengths for urban and rural settings" (emphasis added). [12]

Thus, the default worker trip length is based on the location and urbanization level selected by the User when modeling emissions. The below table shows the CalEEMod default rural and urban worker trip lengths by air basin (see excerpt below and Attachment A).[13]

Worker Trip Length by Air Basin

Air Basin	Rural (miles)	Urban (miles)
Great Basin Valleys	16.8	10.8
Lake County	16.8	10.8
Lake Tahoe	16.8	10.8
Mojave Desert	16.8	10.8
Mountain Counties	16.8	10.8
North Central Coast	17.1	12.3
North Coast	16.8	10.8
Northeast Plateau	16.8	10.8
Sacramento Valley	16.8	10.8
Salton Sea	14.6	11
San Diego	16.8	10.8
San Francisco Bay Area	10.8	10.8
San Joaquin Valley	16.8	10.8
South Central Coast	16.8	10.8
South Coast	19.8	14.7
Average	**16.47**	**11.17**
Minimum	**10.80**	**10.80**
Maximum	**19.80**	**14.70**
Range	**9.00**	**3.90**

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[9] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.
[10] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 15.
[11] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 14.
[12] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 21.
[13] "Appendix D Default Data Tables." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4, p. D-84 – D-86.

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As demonstrated above, default rural worker trip lengths for air basins in California vary from 10.8- to 19.8-miles, with an average of 16.47 miles. Furthermore, default urban worker trip lengths vary from 10.8- to 14.7-miles, with an average of 11.17 miles. Thus, while default worker trip lengths vary by location, default urban worker trip lengths tend to be shorter in length. Based on these trends evident in the CalEEMod default worker trip lengths, we can reasonably assume that the efficacy of a local hire requirement is especially dependent upon the urbanization of the project site, as well as the project location.

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Practical Application of a Local Hire Requirement and Associated Impact

To provide an example of the potential impact of a local hire provision on construction-related GHG emissions, we estimated the significance of a local hire provision for the Village South Specific Plan ("Project") located in the City of Claremont ("City"). The Project proposed to construct 1,000 residential units, 100,000-SF of retail space, 45,000-SF of office space, as well as a 50-room hotel, on the 24-acre site. The Project location is classified as Urban and lies within the Los Angeles-South Coast County. As a result, the Project has a default worker trip length of 14.7 miles.[14] In an effort to evaluate the potential for a local hire provision to reduce the Project's construction-related GHG emissions, we prepared an updated model, reducing all worker trip lengths to 10 miles (see Attachment B). Our analysis estimates that if a local hire provision with a 10-mile radius were to be implemented, the GHG emissions associated with Project construction would decrease by approximately 17% (see table below and Attachment C).

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Local Hire Provision Net Change	
Without Local Hire Provision	
Total Construction GHG Emissions (MT CO_2e)	3,623
Amortized Construction GHG Emissions (MT CO_2e/year)	120.77
With Local Hire Provision	
Total Construction GHG Emissions (MT CO2e)	3,024
Amortized Construction GHG Emissions (MT CO_2e/year)	100.80
% Decrease in Construction-related GHG Emissions	***17%***

As demonstrated above, by implementing a local hire provision requiring 10 mile worker trip lengths, the Project could reduce potential GHG emissions associated with construction worker trips. More broadly, any local hire requirement that results in a decreased worker trip length from the default value has the potential to result in a reduction of construction-related GHG emissions, though the significance of the reduction would vary based on the location and urbanization level of the project site.

This serves as an example of the potential impacts of local hire requirements on estimated project-level GHG emissions, though it does not indicate that local hire requirements would result in reduced construction-related GHG emission for all projects. As previously described, the significance of a local hire requirement depends on the worker trip length enforced and the default worker trip length for the project's urbanization level and location.

[14] "Appendix D Default Data Tables." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4, p. D-85.

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Disclaimer

SWAPE has received limited discovery. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

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Sincerely,

Matt Hagemann, P.G., C.Hg.

Paul E. Rosenfeld, Ph.D.

EXHIBIT B

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M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

Professional Experience

Dr. Rosenfeld has over 25 years' experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from unconventional oil drilling operations, oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, and many other industrial and agricultural sources. His project experience ranges from monitoring and modeling of pollution sources to evaluating impacts of pollution on workers at industrial facilities and residents in surrounding communities.

Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing lead, heavy metals, mold, bacteria, particulate matter, petroleum hydrocarbons, chlorinated solvents, pesticides, radioactive waste, dioxins and furans, semi- and volatile organic compounds, PCBs, PAHs, perchlorate, asbestos, per- and poly-fluoroalkyl substances (PFOA/PFOS), unusual polymers, fuel oxygenates (MTBE), among other pollutants. Dr. Rosenfeld also has experience evaluating greenhouse gas emissions from various projects and is an expert on the assessment of odors from industrial and agricultural sites, as well as the evaluation of odor nuisance impacts and technologies for abatement of odorous emissions. As a principal scientist at SWAPE, Dr. Rosenfeld directs air dispersion modeling and exposure assessments. He has served as an expert witness and testified about pollution sources causing nuisance and/or personal injury at dozens of sites and has testified as an expert witness on more than ten cases involving exposure to air contaminants from industrial sources.

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Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_2O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

Publications:

Remy, L.L., Clay T., Byers, V., **Rosenfeld P. E.** (2019) Hospital, Health, and Community Burden After Oil Refinery Fires, Richmond, California 2007 and 2012. *Environmental Health.* 18:48

I-44 Cont.

Simons, R.A., Seo, Y. **Rosenfeld, P**., (2015) Modeling the Effect of Refinery Emission On Residential Property Value. Journal of Real Estate Research. 27(3):321-342

Chen, J. A, Zapata A. R., Sutherland A. J., Molmen, D.R., Chow, B. S., Wu, L. E., **Rosenfeld, P. E.,** Hesse, R. C., (2012) Sulfur Dioxide and Volatile Organic Compound Exposure To A Community In Texas City Texas Evaluated Using Aermod and Empirical Data. *American Journal of Environmental Science*, 8(6), 622-632.

Rosenfeld, P.E. & Feng, L. (2011). *The Risks of Hazardous Waste.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2010). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences*. 113–125.

Feng, L., Wu, C., Tam, L., Sutherland, A.J., Clark, J.J., **Rosenfeld, P.E.** (2010). Dioxin and Furan Blood Lipid and Attic Dust Concentrations in Populations Living Near Four Wood Treatment Facilities in the United States. *Journal of Environmental Health*. 73(6), 34-46.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2010). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Wood and Paper Industries.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2009). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Petroleum Industry*. Amsterdam: Elsevier Publishing.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. *WIT Transactions on Ecology and the Environment, Air Pollution,* 123 (17), 319-327.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. *Organohalogen Compounds*, 70, 002252-002255.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. *Organohalogen Compounds*, 70, 000527-000530.

Hensley, A.R. A. Scott, J. J. J. Clark, **Rosenfeld, P.E.** (2007). Attic Dust and Human Blood Samples Collected near a Former Wood Treatment Facility. *Environmental Research*. 105, 194-197.

Rosenfeld, P.E., J. J. J. Clark, A. R. Hensley, M. Suffet. (2007). The Use of an Odor Wheel Classification for Evaluation of Human Health Risk Criteria for Compost Facilities. *Water Science & Technology* 55(5), 345-357.

Rosenfeld, P. E., M. Suffet. (2007). The Anatomy Of Odour Wheels For Odours Of Drinking Water, Wastewater, Compost And The Urban Environment. *Water Science & Technology* 55(5), 335-344.

Sullivan, P. J. Clark, J.J.J., Agardy, F. J., **Rosenfeld, P.E.** (2007). *Toxic Legacy, Synthetic Toxins in the Food, Water, and Air in American Cities.* Boston Massachusetts: Elsevier Publishing

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash. *Water Science and Technology*. 49(9),171-178.

Rosenfeld P. E., J.J. Clark, I.H. (Mel) Suffet (2004). The Value of An Odor-Quality-Wheel Classification Scheme For The Urban Environment. *Water Environment Federation's Technical Exhibition and Conference (WEFTEC) 2004*. New Orleans, October 2-6, 2004.

Rosenfeld, P.E., and Suffet, I.H. (2004). Understanding Odorants Associated With Compost, Biomass Facilities, and the Land Application of Biosolids. *Water Science and Technology*. 49(9), 193-199.

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash, *Water Science and Technology*, 49(9), 171-178.

Rosenfeld, P. E., Grey, M. A., Sellew, P. (2004). Measurement of Biosolids Odor and Odorant Emissions from Windrows, Static Pile and Biofilter. *Water Environment Research*. 76(4), 310-315.

Rosenfeld, P.E., Grey, M and Suffet, M. (2002). Compost Demonstration Project, Sacramento California Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Integrated Waste Management Board Public Affairs Office*, Publications Clearinghouse (MS–6), Sacramento, CA Publication #442-02-008.

Rosenfeld, P.E., and C.L. Henry. (2001). Characterization of odor emissions from three different biosolids. *Water Soil and Air Pollution*. 127(1-4), 173-191.

Rosenfeld, P.E., and Henry C. L., (2000). Wood ash control of odor emissions from biosolids application. *Journal of Environmental Quality*. 29, 1662-1668.

Rosenfeld, P.E., C.L. Henry and D. Bennett. (2001). Wastewater dewatering polymer affect on biosolids odor emissions and microbial activity. *Water Environment Research*. 73(4), 363-367.

Rosenfeld, P.E., and C.L. Henry. (2001). Activated Carbon and Wood Ash Sorption of Wastewater, Compost, and Biosolids Odorants. *Water Environment Research*, 73, 388-393.

Rosenfeld, P.E., and Henry C. L., (2001). High carbon wood ash effect on biosolids microbial activity and odor. *Water Environment Research*. 131(1-4), 247-262.

I-44 Cont.

Chollack, T. and **P. Rosenfeld. (**1998). Compost Amendment Handbook For Landscaping. Prepared for and distributed by the City of Redmond, Washington State.

Rosenfeld, P. E. (1992). The Mount Liamuiga Crater Trail. *Heritage Magazine of St. Kitts*, 3(2).

Rosenfeld, P. E. (1993). High School Biogas Project to Prevent Deforestation On St. Kitts. *Biomass Users Network*, 7(1).

Rosenfeld, P. E. (1998). Characterization, Quantification, and Control of Odor Emissions From Biosolids Application To Forest Soil. Doctoral Thesis. University of Washington College of Forest Resources.

Rosenfeld, P. E. (1994). Potential Utilization of Small Diameter Trees on Sierra County Public Land. Masters thesis reprinted by the Sierra County Economic Council. Sierra County, California.

Rosenfeld, P. E. (1991). How to Build a Small Rural Anaerobic Digester & Uses Of Biogas In The First And Third World. Bachelors Thesis. University of California.

Presentations:

Rosenfeld, P.E., Sutherland, A; Hesse, R.; Zapata, A. (October 3-6, 2013). Air dispersion modeling of volatile organic emissions from multiple natural gas wells in Decatur, TX. *44th Western Regional Meeting, American Chemical Society.* Lecture conducted from Santa Clara, CA.

Sok, H.L.; Waller, C.C.; Feng, L.; Gonzalez, J.; Sutherland, A.J.; Wisdom-Stack, T.; Sahai, R.K.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Atrazine: A Persistent Pesticide in Urban Drinking Water. *Urban Environmental Pollution*. Lecture conducted from Boston, MA.

Feng, L.; Gonzalez, J.; Sok, H.L.; Sutherland, A.J.; Waller, C.C.; Wisdom-Stack, T.; Sahai, R.K.; La, M.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Bringing Environmental Justice to East St. Louis, Illinois. *Urban Environmental Pollution.* Lecture conducted from Boston, MA.

I-44 Cont.

Rosenfeld, P.E. (April 19-23, 2009). Perfluoroctanoic Acid (PFOA) and Perfluoroactane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*, Lecture conducted from Tuscon, AZ.

Rosenfeld, P.E. (April 19-23, 2009). Cost to Filter Atrazine Contamination from Drinking Water in the United States" Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*. Lecture conducted from Tuscon, AZ.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (20-22 July, 2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. Brebbia, C.A. and Popov, V., eds., *Air Pollution XVII: Proceedings of the Seventeenth International Conference on Modeling, Monitoring and Management of Air Pollution*. Lecture conducted from Tallinn, Estonia.

Rosenfeld, P. E. (October 15-18, 2007). Moss Point Community Exposure To Contaminants From A Releasing Facility. *The 23rd Annual International Conferences on Soils Sediment and Water.* Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant. *The 23rd Annual International Conferences on Soils Sediment and Water*. Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions. The *23rd Annual International Conferences on Soils Sediment and Water*. Lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld P. E. (March 2007). Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP). *The Association for Environmental Health and Sciences (AEHS) Annual Meeting*. Lecture conducted from San Diego, CA.

Rosenfeld P. E. (March 2007). Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama. *The AEHS Annual Meeting.* Lecture conducted from San Diego, CA.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (August 21 – 25, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006*. Lecture conducted from Radisson SAS Scandinavia Hotel in Oslo Norway.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (November 4-8, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *APHA 134 Annual Meeting & Exposition.* Lecture conducted from Boston Massachusetts.

Paul Rosenfeld Ph.D. (October 24-25, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. Mealey's C8/PFOA. *Science, Risk & Litigation Conference.* Lecture conducted from The Rittenhouse Hotel, Philadelphia, PA.

Paul Rosenfeld Ph.D. (September 19, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, *Toxicology and Remediation PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel, Irvine California.

Paul Rosenfeld Ph.D. (September 19, 2005). Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP. *PEMA Emerging Contaminant Conference.* Lecture conducted from Hilton Hotel in Irvine, California.

I-44 Cont.

Paul Rosenfeld Ph.D. (September 26-27, 2005). Fate, Transport and Persistence of PDBEs. *Mealey's Groundwater Conference.* Lecture conducted from Ritz Carlton Hotel, Marina Del Ray, California.

Paul Rosenfeld Ph.D. (June 7-8, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. *International Society of Environmental Forensics: Focus On Emerging Contaminants*. Lecture conducted from Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Fate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals. *2005 National Groundwater Association Ground Water And Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation. *2005 National Groundwater Association Ground Water and Environmental Law Conference.* Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. and Rob Hesse R.G. (May 5-6, 2004). Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. *National Groundwater Association. Environmental Law Conference*. Lecture conducted from Congress Plaza Hotel, Chicago Illinois.

Paul Rosenfeld, Ph.D. (March 2004). Perchlorate Toxicology. *Meeting of the American Groundwater Trust*. Lecture conducted from Phoenix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse (2004). Perchlorate Contamination of the Colorado River. *Meeting of tribal representatives*. Lecture conducted from Parker, AZ.

Paul Rosenfeld, Ph.D. (April 7, 2004). A National Damage Assessment Model For PCE and Dry Cleaners. *Drycleaner Symposium. California Ground Water Association*. Lecture conducted from Radison Hotel, Sacramento, California.

Rosenfeld, P. E., Grey, M., (June 2003) Two stage biofilter for biosolids composting odor control. *Seventh International In Situ And On Site Bioremediation Symposium Battelle Conference* Orlando, FL.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. (February 20-21, 2003) Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. *National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants*.. Lecture conducted from Hyatt Regency Phoenix Arizona.

Paul Rosenfeld, Ph.D. (February 6-7, 2003). Underground Storage Tank Litigation and Remediation. *California CUPA Forum*. Lecture conducted from Marriott Hotel, Anaheim California.

Paul Rosenfeld, Ph.D. (October 23, 2002) Underground Storage Tank Litigation and Remediation. *EPA Underground Storage Tank Roundtable*. Lecture conducted from Sacramento California.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Understanding Odor from Compost, *Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Using High Carbon Wood Ash to Control Compost Odor. *Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Grey, M. A. (September 22-24, 2002). Biocycle Composting For Coastal Sage Restoration. *Northwest Biosolids Management Association*. Lecture conducted from Vancouver Washington..

Rosenfeld, P.E. and Grey, M. A. (November 11-14, 2002). Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Soil Science Society Annual Conferenc*e. Lecture conducted from Indianapolis, Maryland.

Rosenfeld. P.E. (September 16, 2000). Two stage biofilter for biosolids composting odor control. *Water Environment Federation.* Lecture conducted from Anaheim California.

Rosenfeld. P.E. (October 16, 2000). Wood ash and biofilter control of compost odor. *Biofest.* Lecture conducted from Ocean Shores, California.

Rosenfeld, P.E. (2000). Bioremediation Using Organic Soil Amendments. *California Resource Recovery Association*. Lecture conducted from Sacramento California.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. *Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings*. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., and C.L. Henry. (1999). An evaluation of ash incorporation with biosolids for odor reduction. *Soil Science Society of America*. Lecture conducted from Salt Lake City Utah.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. *Brown and Caldwell.* Lecture conducted from Seattle Washington.

Rosenfeld, P.E., C.L. Henry. (1998). Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. *Biofest.* Lecture conducted from Lake Chelan, Washington.

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Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., C.L. Henry, R. B. Harrison, and R. Dills. (1997). Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. *Soil Science Society of America*. Lecture conducted from Anaheim California.

Teaching Experience:

UCLA Department of Environmental Health (Summer 2003 through 20010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focused on the health effects of environmental contaminants.

National Ground Water Association, Successful Remediation Technologies. Custom Course in Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5, 2002. Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

I-44 Cont.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

Academic Grants Awarded:

California Integrated Waste Management Board. $41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: $10,000 grant awarded to San Diego State University.
Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. $100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. $20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: $10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: $15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. $500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993

Deposition and/or Trial Testimony:

In the United States District Court For The District of New Jersey
Duarte et al, *Plaintiffs,* vs. United States Metals Refining Company et. al. *Defendant.*
Case No.: 2:17-cv-01624-ES-SCM
Rosenfeld Deposition. 6-7-2019

In the United States District Court of Southern District of Texas Galveston Division
M/T Carla Maersk, *Plaintiffs,* vs. Conti 168., Schiffahrts-GMBH & Co. Bulker KG MS "Conti Perdido" *Defendant.*
Case No.: 3:15-CV-00106 consolidated with 3:15-CV-00237
Rosenfeld Deposition. 5-9-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
Carole-Taddeo-Bates et al., vs. Ifran Khan et al., Defendants
Case No.: No. BC615636
Rosenfeld Deposition, 1-26-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
The San Gabriel Valley Council of Governments et al. vs El Adobe Apts. Inc. et al., Defendants
Case No.: No. BC646857
Rosenfeld Deposition, 10-6-2018; Trial 3-7-19

In United States District Court For The District of Colorado
Bells et al. Plaintiff vs. The 3M Company et al., Defendants
Case: No 1:16-cv-02531-RBJ
Rosenfeld Deposition, 3-15-2018 and 4-3-2018

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In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow Agrosciences, LLC, et al., Defendants
Cause No 1923
Rosenfeld Deposition, 11-17-2017

In The Superior Court of the State of California In And For The County Of Contra Costa
Simons et al., Plaintiffs vs. Chevron Corporation, et al., Defendants
Cause No C12-01481
Rosenfeld Deposition, 11-20-2017

In The Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 8-23-2017

In The Superior Court of the State of California, For The County of Los Angeles
Warrn Gilbert and Penny Gilber, Plaintiff vs. BMW of North America LLC
Case No.: LC102019 (c/w BC582154)
Rosenfeld Deposition, 8-16-2017, Trail 8-28-2018

In the Northern District Court of Mississippi, Greenville Division
Brenda J. Cooper, et al., *Plaintiffs,* vs. Meritor Inc., et al., *Defendants*
Case Number: 4:16-cv-52-DMB-JVM
Rosenfeld Deposition: July 2017

In The Superior Court of the State of Washington, County of Snohomish
Michael Davis and Julie Davis et al., Plaintiff vs. Cedar Grove Composting Inc., Defendants
Case No.: No. 13-2-03987-5
Rosenfeld Deposition, February 2017
Trial, March 2017

In The Superior Court of the State of California, County of Alameda
Charles Spain., Plaintiff vs. Thermo Fisher Scientific, et al., Defendants
Case No.: RG14711115
Rosenfeld Deposition, September 2015

In The Iowa District Court In And For Poweshiek County
Russell D. Winburn, et al., Plaintiffs vs. Doug Hoksbergen, et al., Defendants
Case No.: LALA002187
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Jerry Dovico, et al., Plaintiffs vs. Valley View Sine LLC, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Doug Pauls, et al.,, et al., Plaintiffs vs. Richard Warren, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

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In The Circuit Court of Ohio County, West Virginia
Robert Andrews, et al. v. Antero, et al.
Civil Action N0. 14-C-30000
Rosenfeld Deposition, June 2015

In The Third Judicial District County of Dona Ana, New Mexico
Betty Gonzalez, et al. Plaintiffs vs. Del Oro Dairy, Del Oro Real Estate LLC, Jerry Settles and Deward DeRuyter, Defendants
Rosenfeld Deposition: July 2015

In The Iowa District Court For Muscatine County
Laurie Freeman et. al. Plaintiffs vs. Grain Processing Corporation, Defendant
Case No 4980
Rosenfeld Deposition: May 2015

In the Circuit Court of the 17th Judicial Circuit, in and For Broward County, Florida
Walter Hinton, et. al. Plaintiff, vs. City of Fort Lauderdale, Florida, a Municipality, Defendant.
Case Number CACE07030358 (26)
Rosenfeld Deposition: December 2014

In the United States District Court Western District of Oklahoma
Tommy McCarty, et al., Plaintiffs, v. Oklahoma City Landfill, LLC d/b/a Southeast Oklahoma City Landfill, et al. Defendants.
Case No. 5:12-cv-01152-C
Rosenfeld Deposition: July 2014

In the County Court of Dallas County Texas
Lisa Parr et al, *Plaintiff*, vs. Aruba et al, *Defendant.*
Case Number cc-11-01650-E
Rosenfeld Deposition: March and September 2013
Rosenfeld Trial: April 2014

In the Court of Common Pleas of Tuscarawas County Ohio
John Michael Abicht, et al., *Plaintiffs,* vs. Republic Services, Inc., et al., *Defendants*
Case Number: 2008 CT 10 0741 (Cons. w/ 2009 CV 10 0987)
Rosenfeld Deposition: October 2012

In the United States District Court of Southern District of Texas Galveston Division
Kyle Cannon, Eugene Donovan, Genaro Ramirez, Carol Sassler, and Harvey Walton, each Individually and on behalf of those similarly situated, *Plaintiffs,* vs. BP Products North America, Inc., *Defendant.*
Case 3:10-cv-00622
Rosenfeld Deposition: February 2012
Rosenfeld Trial: April 2013

In the Circuit Court of Baltimore County Maryland
Philip E. Cvach, II et al., *Plaintiffs* vs. Two Farms, Inc. d/b/a Royal Farms, Defendants
Case Number: 03-C-12-012487 OT
Rosenfeld Deposition: September 2013

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EXHIBIT C

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Matthew F. Hagemann, P.G., C.Hg., QSD, QSP

Geologic and Hydrogeologic Characterization
Industrial Stormwater Compliance
Investigation and Remediation Strategies
Litigation Support and Testifying Expert
CEQA Review

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 25 years of experience in environmental policy, assessment and remediation. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) while also working with permit holders to improve hydrogeologic characterization and water quality monitoring.

Matt has worked closely with U.S. EPA legal counsel and the technical staff of several states in the application and enforcement of RCRA, Safe Drinking Water Act and Clean Water Act regulations. Matt has trained the technical staff in the States of California, Hawaii, Nevada, Arizona and the Territory of Guam in the conduct of investigations, groundwater fundamentals, and sampling techniques.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2014;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

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- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 100 environmental impact reports since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, Valley Fever, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at industrial facilities.
- Manager of a project to provide technical assistance to a community adjacent to a former Naval shipyard under a grant from the U.S. EPA.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.
- Expert witness on two cases involving MTBE litigation.
- Expert witness and litigation support on the impact of air toxins and hazards at a school.
- Expert witness in litigation at a former plywood plant.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

I-44 Cont.

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- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.

I-44 Cont.

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- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

I-44 Cont.

- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

I-44 Cont.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

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Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt taught physical geology (lecture and lab and introductory geology at Golden West College in Huntington Beach, California from 2010 to 2014.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

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I-44 Cont.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

I-44 Cont.

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Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

I-44 Cont.

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Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

I-44 Cont.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examination, 2009-2011.

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Responses to Comment Letter I – Southwest Mountain States Regional Council of Carpenters Mitchell M. Tsai, Attorney At Law

I-1 Receipt of the NOA is noted and a current address provided. The commenter's address and email address has been updated per the commenter's request.

I-2 Introductory comment stating that the office of Mitchell M. Tsai, Attorney At Law is submitting comments on behalf of the Southwest Mountain States Regional Council of Carpenters (SWMRCC).

I-3 Overview of the commenter's understanding of the Project. This comment does not identify a specific concern with the adequacy of the Draft EIR or note a specific issue or comment related to the Draft EIR's environmental analysis. No response is required.

I-4 The SWMRCC labor union's background is noted. This comment does not identify a specific concern with the adequacy of the Draft EIR or note a specific issue or comment related to the Draft EIR's environmental analysis. No response is required.

I-5 The commenter's right to supplement the submitted comment letter is noted. This comment does not identify a specific concern with the adequacy of the Draft EIR or note a specific issue or comment related to the Draft EIR's environmental analysis. No response is required.

I-6 Comment notes that all comments raising issues regarding the project and its environmental review and associated documents and reports are incorporated by reference. This comment does not identify a specific concern with the adequacy of the Draft EIR or note a specific issue or comment related to the Draft EIR's environmental analysis. No response is required.

I-7 The comment requests the City provide notice regarding the Project. The City will provide all notices pertaining the Project to the Commenter. This comment does not identify a specific concern with the adequacy of the Draft EIR or note a specific issue or comment related to the Draft EIR's environmental analysis. No further response is required.

I-8 The comment suggests that the Applicant provide additional community benefits such as requiring local hire and use of a skilled and trained workforce for the Project. This comment does not identify a specific concern with the adequacy of the Draft EIR or note a specific issue or comment related to the Draft EIR's environmental analysis. However, your comment will be taken into consideration by decision-makers.

I-9 The comment states that local hire requirements requiring a certain percentage of workers to reside within 10 miles of the Project site can help to reduce environmental impacts and improve positive economic impacts from the Project. The comment states that such requirements reduce vendor trips and greenhouse gas (GHG) emissions, and provide localized economic benefits. The opinion expressed about hiring local workers is noted.

Commenter's opinion about hiring local workers is noted. Commenter is advocating for imposition of local hire requirements with respect to the carpenters union, which would apply only during the construction phase of the Project. Commenter mentions potential reductions of vendor trips (i.e., vehicles miles traveled [VMT] associated with vendors) and GHG emissions that would result from such requirements. However, any environmental benefits that would be realized as a result of local hire requirements would apply only during the construction phase. The Draft EIR analyzes construction-phase VMT impacts and construction-phase GHG impacts (Draft EIR, pp. 4.7-19 through 4.7-21).

With respect to GHG emissions, while the Project's overall impacts were determined to be significant and unavoidable, the portion attributable to the construction phase is very minor compared to the operational emissions (59 tons/year versus 18,480 tons per year) and only a small portion of that is attributable to construction worker commutes (Draft EIR, p. 4.7-21). The comment assume workers would not be local but there is no evidence that they would and any reduction to this fractional portion of the Project's GHG emissions is both negligible and speculative.

The comment also states that local economic benefits that would result from local hire requirements. Such considerations are beyond the scope of CEQA. No further response is required.

I-10 The comment references a 2020 paper prepared by the Institute for Research on Labor and Employment at the University of California, Berkley which states that a workforce of skilled trades can yield sustainable economic development and that well-trained workers are key to reducing GHG emissions and moving California closer to its climate targets. No comment is made regarding the Project or the EIR relevant to CEQA. No further response is required.

I-11 The comment states that workforce policies have significant environmental benefits by improving job-housing balance and decreasing the length of commutes. The commenter further states that local state-certified apprenticeship programs can result in air pollutant reductions. The link commenter provides is blocked. No comment is made regarding the Project or the EIR relevant to CEQA. No further response is required.

I-12 The comment states that locating jobs close to residential areas can have significant environmental benefits and cites to the California Planning Roundtable for support. This comment does not identify a specific concern with the adequacy of the Draft EIR or note a specific issue or comment related to the Draft EIR's environmental analysis. Please see Response to Comment, I-9, above. The California Planning Roundtable report cited in the comment examines permanent jobs-housing balance, not the temporary relationship between construction jobs and development that a local hire mandate would require. It should be noted that, as relates to a permanent jobs-housing balance, the Project would generate some retail jobs that are not technical and would be filled by a broad sector of any local community.

I-13 The comment states that local hire mandates and skill training are critical facets of a strategy to reduce VMT and cites two planning experts to support the argument that placing jobs near

housing stock may be insufficient to achieve VMT reductions due to a mismatch in required skills. Please see Response to Comment, I-9, above. The Cervero and Duncan research cited relates to permanent jobs, not temporary construction jobs as Commenter is advocating. Contrary to the suggestion from Commenter, the article concludes that "Linking jobs and housing holds significant potential to reduce VMT and VHT [vehicle hours travelled]." Cervero and Duncan at 488. The cited article does not discuss local hire mandates or skill training as suggested by Commenter. Placing workers in permanent proximity to their residences – the subject of the cited article – would result in very different environmental gains than employing a limited number of construction workers at a job in proximity to their homes for a limited period of time. It should be noted that the Project would generate some retail jobs that are not technical and would be filled by a broad sector of any local community.

I-14 The comment cites to the Cervero and Duncan article's discussion of the City of Berkeley's First Source program, which encourages contractors working on publicly funded construction projects to hire Berkeley Residents. The First Source program applies to City of Berkeley construction projects for which Berkeley is able to set their own policy for hiring decisions. In addition, the cited text asserts that Berkeley is addressing its jobs-housing imbalance concerns by bringing new jobs – rather than housing – to the Berkeley. This concept is inapplicable to the Project where the City wants to bring more housing.

I-15 Comment noted. No comment is made regarding the Project. No further response is required.

I-16 Comment noted. As discussed on page 4.12-4 of the DEIR, the State EDD reports that that City's labor force was 6,800 persons in September 2022. Of the City's labor force, 300 persons were unemployed representing an unemployment rate of approximately 3.9 percent. According to EDD, jobs in the City totaled 6,500. Comparatively, the City's existing unemployment rate is 0.1 percent higher than the County's unemployment rate of 3.8 percent. Therefore, as development within the Specific Plan occurs, contractors are likely to hire locally. No comment is made regarding the Project or the EIR relevant to CEQA. No further response is required.

I-17 The commenter provides information regarding CEQA and the commenter's understanding regarding preparation of EIRs including CEQA's requirements for environmental analysis and reducing environmental impacts. Several court cases are cited. The comment also describes the commenter's understanding of the standard of review that courts apply to determine the sufficiency of an EIR. The comment states that an EIR must include sufficient information so that foreseeable impacts can be understood and the public can comment on them. The comment also describes its view of the "fair argument" standard and when it is to be applied.

The comment's general description of CEQA's goals and requirements is noted. With respect to the description of the standard of review applicable to a court's review of the sufficiency of an EIR, the City notes that an EIR's adequacy with respect to, for example, methodology, baseline conditions, scope of environmental impact analysis, and adequacy of mitigation measures is reviewed under the substantial evidence standard. *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435; *Mission Bay All. v.*

Office of Cmty. Inv. & Infrastructure (2016) 6 Cal.App.5th 160, 192, 206; Guidelines §15384(a). Disagreements among experts do not invalidate an EIR, and the lead agency may adopt the environmental conclusions reached by the experts that prepared the EIR, even though others may disagree with the underlying data, analysis, or conclusions. *Laurel Heights Improvement Assn. v. Regents of Univ. of California* (1988) 47 Cal.3d 376, 407-08. Only with respect to questions about whether the agency complied with the legal requirements of CEQA is the agency's action reviewed under a less deferential standard to determine whether the agency failed to proceed in a manner required by law. Pub. Res. Code § 21168.5. No comment was made specific to the Project or the Draft EIR; therefore, no further response is required.

I-18 The comment provides general background regarding initial studies, negative declarations, and mitigated negative declarations. The comment is noted. The City prepared an EIR for the proposed Project that is compliant with CEQA. No comment was made specific to the Project or the Draft EIR; therefore, no further response is required. As such, this response provides no opinion regarding the legal content of the comment.

I-19 The comment provides a summary and discussion about how exemptions to CEQA can be used and the standards for doing so. No CEQA exemption was used for this project nor was any comment made specific to this Project or the Draft EIR; therefore, no further response is required. As such, this response provides no opinion regarding the legal content of the comment.

I-20 The comment provides a summary and discussion of when a revision or recirculation of an EIR may be required and the standards for doing so. The comment summarizes the definitions used in the Guidelines for this topic. No comment was made specific to this Project or the Draft EIR; therefore, no further response is required. As such, this response provides no opinion regarding the legal content of this comment.

I-21 The comment states that Draft EIR failed to consider all feasible, practical, and effective mitigation measures. However, the comment does not provide any specific feasible, practical, and effective mitigation measures that should have been included in the Draft EIR analysis. As such, no further response is needed.

I-22 The comment states that the Draft EIR is required to review all feasible, practical, and effective mitigation measures. Per Public Resources Code, Sections 21002 and 21002.1(b), CEQA does not require adoption of every imaginable feasible mitigation measure. CEQA's requirement applies only to feasible mitigation that will "substantially lessen" a project's significant effects. The Draft EIR has identified all feasible mitigation measures, which are summarized in Section 1.0, Executive Summary. Although the comment claims that the Draft EIR does not contain the details for several mitigation measures in the context of air quality, biological resources and GHG impact, the comment does not identify any additional information regarding feasible mitigation measures in these or any other areas. Therefore, no further response is required.

I-23 The comment makes various statements regarding an EIR's analysis of potentially significant impacts and cites to various legal cases. The comment made no reference specific to this Project or the Draft EIR; therefore, no further response is required. As such, this response provides no opinion regarding the legal content of the comment.

I-24 The comment states that referring to regulatory compliance to prevent significant adverse impacts must be based on a project-specific analysis of potential impacts and the effect of regulatory compliance. The comment made no reference specific to this Project or the Draft EIR; therefore, no further response is required. As such, this response provides no opinion regarding the legal content of the comment.

I-25 The comment is a summary of the commenter's view of State CEQA Guidelines 15064.4. A lead agency is allowed to determine the significance of a project's GHG impact via qualitative analysis and/or a quantitative analysis. The comment goes on to state that the lead agency can select the model or methodology used to estimate GHG emissions as long as the selection is supported by substantial evidence and the lead agency should explain the limitations of the particular model or methodology used.

The GHG analysis for this EIR was prepared using CalEEMod version 2020.4.0 which was the latest version of the program when the technical studies were prepared. CalEEMod, was developed for the California Air Pollution Officers Association (CAPCOA) in collaboration with the California Air Districts. The purpose of CalEEMod is to provide a uniform platform for government agencies, land use planners, and environmental professionals to estimate potential emissions associated with both construction and operational use of land use projects. It is intended that these emission estimates are suitable for quantifying air quality and climate change impacts as part of the preparation of California Environmental Quality Act (CEQA) documents. In addition, individual districts may rely on the model's emission estimates to show compliance with local agency rules. CalEEMod utilizes widely accepted methodologies for estimating emissions combined with default data that can be used when site-specific information is not available. The analysis in the Draft EIR follows the methodology included in the CalEEMod User's Guide.

The comment does not raise a specific issue with the Draft EIR and no further response is required.

I-26 The commenter provides their view of the State CEQA Guidelines Section 15183.5(b)(1) requirements of a qualified Climate Action Plan (CAP). The project does not propose development of a CAP and the City of Grand Terrace does not have a qualified CAP. No comment was made specific to the Project or the Draft EIR and the Draft EIR describes feasible mitigation measures for potentially significant GHG impacts. As such, no further response is required, and this response provides no opinion regarding the legal content of this comment.

I-27 The comment states that the Draft EIR GHG and air quality analyses do not identify consistency with California Ambient Air Quality Standards, National Ambient Air Quality Standards, and Air Quality Management Plan as part of the analysis. However, the GHG Threshold 4.7-1.2

addresses consistency with applicable plans, policies, or regulations adopted to reduce GHG emissions (Draft EIR at p. 4.7-19). The plans and standards identified by the commenter were developed to reduce criteria pollutants. Although the reduction of certain criteria pollutants could indirectly reduce GHG emissions, the goal of the plan and standards listed by the commenter is not to reduce GHG. No further response is required.

I-28 The comment notes that the Draft EIR identified a significant GHG impact associated with the Project. The commenter states the Project must consider more stringent mitigation measures to reduce GHG emissions. However, as stated in the Draft EIR, after mitigation, mobile emissions associated with the Project would generate 93 percent of the Project's GHG emissions. While the Project and the City do not have the ability to regulate vehicle emissions, state and federal regulations will continue to improve engine efficiency and thus emissions. California has set a goal of requiring all new vehicles sold in 2035 and beyond to be zero-emission vehicles. Therefore, as vehicle emissions decrease in the future, GHG impacts associated with Project will also decrease. The comment does not identify any mitigation measures for evaluation to reduce environmental impacts. No further response is required.

I-29 The comment states that a fundamental purpose of an EIR is to identify ways to mitigate or avoid the significant environmental effects of a project. Consistent with and to accomplish this goal, the comment states that an EIR describes feasible mitigation measures. No comment was made specific to the Project or the Draft EIR and the Draft EIR does describe feasible mitigation measures for potentially significant impacts. As such, no further response is required, and this response provides no opinion regarding the legal content of this comment.

I-30 The comment notes that the Draft EIR identified significant air quality and GHG impacts associated with the Project, states that the Project must adopt all feasible mitigation measures, and disputes the adequacy of the analysis under CEQA. The comment does not provide any suggestions for additional mitigation nor does it identify any missing elements of the analysis. The Draft EIR provides a complete analysis of air quality and greenhouse gas emissions. The Draft EIR includes numerous mitigation measures to reduce Project GHG emissions (Draft EIR at pages 4.2-1 and 4.7-1). **MM GHG-1** requires the installation of photovoltaic solar panels to offset energy emissions in residential buildings. **MM GHG-2** requires the Project to meet or exceed the voluntary CALGreen Tier 2 standards to further improve energy efficiency. **MM GHG-3** requires the residential projects to be all electric (i.e., no natural gas) and **MM GHG-4** requires the Project to divert 75 percent of waste from landfills. Furthermore, **MMs AQ-2** through **AQ-4** have been identified in Draft EIR Section 4.2, Air Quality to reduce operational emissions would also reduce GHG emissions. **MM AQ-2** requires the implementation of a qualifying Commute Trip Reduction (CTR)/ Transportation Demand Management (TDM) plan to reduce mobile GHG emissions for all uses. **MM AQ-3** prohibits the use of any kind of fireplaces, and **MM AQ-4** requires that the Project's Codes Covenants and Restrictions (CC&Rs) and/or tenant lease agreements include contractual language that all landscaping equipment used on-site shall be 100 percent electrically powered. See also Response to Comment I-28 regarding pollution from mobile sources. The comment does not specify how any of these mitigation measures are deferred to the future. These mitigation

measures will reduce impacts and no other mitigation measures are identified by the commenter that will reduce mobile source emissions to less than significant levels. The EIR finds that there will still be a significant impact and the City will need to adopt a statement of overriding consideration.

No further response is required.

I-31 The comment states that the City makes a conclusory statement about future compliance with the law and does not commit itself to any specific or binding course of action which is project-specific. The Draft EIR provides a complete analysis of air quality and greenhouse gas emissions and the comment does not provide a specific comment to the contrary. Refer to Response to Comment I-30 for more information.

I-32 The comments states that compliance with regulatory requirements may not be enough to satisfy CEQA, and claims that the Draft EIR does not connect the effect of regulatory compliance with impacts to determine the effect less than significant. Because this comment does not refer to any specifics in the Draft EIR, it is unclear to which sections the comment refers, however the Air Quality and GHG sections provide comprehensive impact analyses and recommends for adoption all feasible mitigation measures; the mitigations do not only rely solely upon regulatory compliance. See Draft EIR Sections 4.2, Air Quality (Draft EIR at page 4.2-1) and 4.7, Greenhouse Gas Emissions (Draft EIR at page 4.7-1). No comment was made specific to the Project or the Draft EIR and the Draft EIR describes feasible mitigation measures for potentially significant impacts. As such, no further response is required, and this response provides no opinion regarding the legal content of this comment.

I-33 The comment incorrectly states that the Draft EIR lacks adequate analysis of air quality impacts and states concern regarding impacts to sensitive receptors in the vicinity of the Project, especially Grand Terrace High School to the south. Air Quality Impact 4.2-3 discusses in detail what impacts the construction and operation of the Project will have on sensitive receptors (see Draft EIR at pgs. 4.2-30 to -39) which include single-family residences, Veterans Freedom Park, and Grand Terrace High School. In addition, a Health Risk Assessment (HRA) was prepared for the Project analyzing health impacts from the construction and operation of the Project (see Draft EIR, **Appendix A**). Appendix A specifically discusses and analyzes the effects on sensitive receptors. Draft EIR Appendix A, p. 10, 18-40. As discussed in the Draft EIR, the Projects impacts to sensitive receptors would be less than significant. In addition, the comment states that the GHG analysis lacks adequate discussion of the 112-acre Project. The GHG chapter specifically discusses the size of the project (Draft EIR at p. 4.7-1) and provides detailed analysis of its impacts under the thresholds (Draft EIR at pgs. 4.7-19 to -31) and proposes mitigation measures. No further response is required.

I-34 The comment states that the Draft EIR does not provide adequate analysis of sensitive receptors, including construction impacts and traffic, VMT and GHG impacts. Please refer to Response to Comment I-33, regarding analysis of construction and operational air quality and GHG impacts and effects including those to sensitive receptors. In addition, the Draft EIR

provides comprehensive analysis of VMT. See Draft EIR Chapter 4.15 and Draft EIR Appendix J1, Appendix J2. All changes to VMT are discussed and analyzed. The comment does not identify any specific deficiencies or any bases for its statements. No further response is required.

I-35 The comment notes the Project would be consistent with SCAG's regional goals but questions the conclusion based on the commenter's belief that the Draft EIR did not analyze impacts to surrounding sensitive receptors. As previously stated in Response to Comments I-33 and I-34, Air Quality Impact 4.2-3 discusses in detail the impacts from construction and operation of Project will have on sensitive receptors (refer to Draft EIR at pages 4.2-30 to 4.2-39) which include single-family residences, Veterans Freedom Park, and Grand Terrace High School. Localized significance threshold analysis following AQMD methodology was prepared to determine impacts from construction and operation of the Project. In addition, a HRA was prepared for the Project which analyzed impacts to receptors within 1,400 feet of the Project site. A HRA is a technical study that evaluates how toxic emissions are released from a project during construction and operations, how those emissions disperse throughout the community, and the potential for those toxic emissions to impact human health. The air dispersion modeling for this HRA was performed using the U.S. EPA AERMOD dispersion model. AERMOD requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. Surface and upper air meteorological data were provided by the SCAQMD. The HRA follows the methodology outlined in California's Office of Environmental Health Hazard Assessment's (OEHHA) 2015 document, *Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments*.

As discussed in the Draft EIR, impacts to sensitive receptors would be less than significant. All necessary and required data and analysis is provided in the Draft EIR and the comment provides only conclusory statements claiming inadequacy. No further response is required.

I-36 The comment provides a summary of requirements related to the development of general plans and determinations of land use decision's consistency with them. No comment was made specific to this Project or EIR; therefore, no further response is required. As such, this response provides no opinion regarding the legal content of this comment.

I-37 The comment states that the Project is inconsistent with the General Plan and violates state Planning and Zoning Law. The comment lists fourteen Grand Terrace General Plan goals and policies with which it states the Project will not be consistent. The letter does not provide any details to support these assertions. The comment states that the Draft EIR must be revised to include sufficient analysis of the Project's consistency with the Grand Terrace General Plan.

As a threshold matter, an EIR is not required to discuss a project's consistency with a local general plan. Rather, CEQA Guidelines section 15125(d) specifies that an EIR must discuss a project's *inconsistency* with a relevant general plan. Nevertheless, Table 4.10-3: General Plan Consistency Analysis, of the Draft EIR includes a detailed analysis of the Project's consistency with all relevant Grand Terrace General Plan goals and policies, including all the ones identified

in the comment. Draft EIR at pgs. 4.10-11 to -19. Moreover, the project is consistent with each of the cited policies:

37(a) Goal 4.8: Achieve regional water quality objectives and protect the beneficial uses of the regions surface and groundwater.

See discussion regarding Policies 4.8.1 and 4.8.2, below.

37(b) Policy 4.8.1: Evaluate all proposed land use and development plans for their potential to create groundwater contamination hazards from point and non-point sources, and cooperate with other appropriate agencies to assure appropriate mitigation.

The Draft EIR explains that the Project would be consistent with this policy because all future development projects within the Project site would be required to implement a Storm Water Pollution Prevention Plan and Water Quality Management Plan that will contain best management practices to minimize groundwater contamination hazards.

37(c) Policy 4.8.2: Comply with the requirements of the National Pollutant Discharge Elimination System (NPDES).

The Draft EIR explains that the Project would be consistent with this policy because all site-specific development would be subject to the requirements of the NPDES permitting process.

37(d) Goal 4.9: Comply with State and federal regulations to ensure the protection of historical, archaeological, and paleontological resources.

See Discussion regarding Policy 4.9.1, below.

37(e) Policy 4.9.1: The City shall take reasonable steps to ensure that cultural resources are located, identified and evaluated to assure that appropriate action is taken as to the disposition of these resources.

The Draft EIR explains that the Project would be consistent with this policy because it would implement mitigation measures that would minimize impacts to any unknown cultural resources discovered on the site.

37(f) Goal 5.6: Minimize the exposure of residents, business owners, and visitors to the impacts of urban and wildland fires.

See discussion regarding Policy 5.6.2, below.

37(g) Policy 5.6.2: Continue the weed abatement program to ensure clearing of dry vegetation areas.

The Draft EIR explains that the Project would be consistent with this policy because the Project is located in a local responsibility area and would comply with the City's Local Hazard Mitigation Plan.

37(h) Policy 5.6.3: Encourage the use of fire-resistive construction materials.

The Draft EIR explains that the Project would be consistent with this policy because it would comply with the California Building Code, which regulates the design, construction, and quality of materials, etc. for development.

37(i) *Goal 7.1: Coordinate and balance the provision of public services with existing and planned development to eliminate service gaps, maximize the use of existing public facilities and services, provide a high level of quality public services at a reasonable cost, and maintain adequate services to meet the needs of current and future City residents and businesses.*

See discussion regarding Policy 7.1.1, below.

37(j) *Policy 7.1.1: All proposed development shall be evaluated to determine whether current public services and facilities can meet with their needs. If determined that current services and facilities are inadequate to meet the needs of new development, appropriate mitigation measures shall be applied to the new development to assure an adequate level of service.*

The Draft EIR explains that the Project would be consistent with this policy because fire protection and police protections would remain efficient in serving the proposed Project. The Project is required to adhere to Grand Terrace MC Chapter 4.80, Development Impact Fees, which would require each applicant to pay a development impact fee imposed by the City to pay for all or a portion of costs of providing public services associated with new development.

37(k) *Goal 9.2: Reduce the total quantity of waste generated within the City requiring landfill disposal to meet or exceed the State waste diversion goals.*

See discussion regarding Policy 9.2.2, below.

37(l) *Policy 9.2.2: Require all new development projects to recycle construction and demolition wastes.*

The Draft EIR explains that the Project would be consistent with this policy because all development projects will be required to recycle or handle construction and demolition wastes, consistent with this Policy and in accordance with applicable state regulations regarding the use, handling, storage, and transportation of waste.

37(m) *Goal 9.7: Reduce the City's per capita demand for water consumption.*

See discussion regarding Policy 9.7.2, below.

37(n) *Policy 9.7.2: The City shall incorporate water conservation into the development review process.*

The Draft EIR explains that the Project would be consistent with this policy because all projects would be required to incorporate water conservation design features and landscaping to minimize water consumption.

In addition, Courts are highly deferential to a city's determination of a project's consistency with its own general plan. *See The Highway 68 Coalition v County of Monterey* (2017) 14 Cal. App. 5th 883, 896 (consistency of development permit and development plan with general plan). California's Planning and Zoning Law does not require strict conformity with all aspects of a general plan, but rather consistency with its overall goals and objectives. *See, e.g., Friends of Lagoon Valley v. City of Vacaville* (2007) 154 Cal.App. 4th 807, 815 (upholding overall consistency finding even though project deviated from some plan provisions because plan allowed for balancing of competing priorities).

As noted, the comment does not point to any specific flaws in this analysis or explain how the Project is inconsistent with the goals and policies described in detail in Table 4.10-3. As such, Table 4.10-3 provides the consistency analysis required by CEQA. No further response is required.

I-38 The commenter's request for recirculation of the EIR and requirement for local and skilled workforce is noted but no specifics are provided as to why recirculation is necessary and no trigger for recirculation is met.

I-39 The comment is introductory to an attachment to Mitchell Tsai's comment letter, and no specific comments are made. Responses to specific comments in the attachment are provided below.

I-40 The comment states that the California Emissions Estimator Model (CalEEMod) is a model generally used to estimate criteria pollutant and GHG emissions and describes some of the inputs entered into the model to estimate construction emissions, including VMT. No comment was made specific to this Project or EIR; therefore, no further response is required.

I-41 The comment discusses how default worker trip lengths in CalEEMod are based on location specific data and urbanization. While default worker trip lengths vary by location, default urban worker trip lengths tend to be shorter in length. No comment was made specific to this Project or EIR; therefore, no further response is required.

I-42 The comment states that, with respect to construction analysis, CalEEMod outputs depend on the utilized worker trip lengths and the efficacy of a local hire requirement depends upon the urbanization of a project site and the project's location. Comment presents example of the reduction in construction-related GHG emissions associated with a local hire provision. No comment was made specific to this Project or EIR; therefore, no further response is required.

I-43 The comment provides a boilerplate disclaimer about the information the commenter received. Comment is noted. No further response is required.

I-44 Comment provides the professional experience resume of the attachment's author. Comment noted. No further response is required.

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Comment Letter J – Supporters Alliance for Environmental Responsibility
Lozeau Drury LLP – Rebecca Davis

From: Layne Fajeau <layne@lozeaudrury.com>
Sent: Thursday, August 10, 2023 4:45 PM
To: haguirre; gatewaydeir@grandterrace-ca.gov; Kbolowich
Cc: Rebecca Davis; Madeline Dawson
Subject: Comment re: Draft Environmental Impact Report for the Gateway at Grand Terrace Specific Plan (SCH 2021020110)
Attachments: 2023.08.10 DEIR Comment for Gateway at Grand Terrace Specific Plan.pdf

Dear Ms. Aguirre and Mr. Bolowich,

On behalf of Supporters Alliance for Environmental Responsibility ("SAFER"), attached, please find comments regarding the Draft Environmental Impact Report for the Gateway at Grand Terrace Specific Plan (SCH 2021020110). J-1

If you could please confirm receipt of these comments, it would be much appreciated.

Cheers,
Layne

--
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Via Email

August 10, 2023

Haide Aguirre, Planner
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Konrad Bolowich, City Manager and Acting
Planning Director
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22795 Barton Road
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Re: Comment on Draft Environmental Impact Report for the Gateway at Grand Terrace Specific Plan (SCH 2021020110)

Dear Ms. Aguirre and Mr. Bolowich,

This comment is submitted on behalf of Supporters Alliance for Environmental Responsibility ("SAFER"), regarding the Draft Environmental Impact Report ("DEIR") prepared for the Gateway at Grand Terrace Specific Plan Project (SCH 2021020110), which proposes a Specific Plan to guide the development in 25 planning areas, including construction of up to 750 residential dwelling units, 271,009 square feet of commercial space, an 87,425 square foot business park, and 8.18 acres of park/open space on an approximately 125-acre site bounded by Commerce Way and an existing commercial parking lot to the north; the northern portion of Grand Terrace High School to the south; commercial and residential uses to the east; and I-215 to the west (the "Project"). J-2

SAFER is concerned that the DEIR fails as an informational document, fails to analyze all of the Project's significant impacts, and fails to impose all feasible mitigation measures to reduce the Project's impacts. SAFER requests that the Planning and Development Services Department address these shortcomings in a revised draft environmental impact report and recirculate the revised DEIR prior to considering approvals for the Project. J-3

SAFER reserves the right to supplement this comment during the administrative process. *Galante Vineyards v. Monterey Peninsula Water Management Dist*., 60 Cal. App. 4th 1109, 1121 (1997). J-4

Sincerely,

Rebecca Davis

Responses to Comment Letter J – Supporters Alliance for Environmental Responsibility Lozeau Drury LLP – Rebecca Davis

J-1 The comment is an email transmittal of the commenter's letter regarding the Project's Draft EIR. The City acknowledges receipt of the commenter's letter and has prepared the following responses to comments.

J-2 Overview of the commenter's understanding of the Project is noted for the record. No further response is required.

J-3 The commenter states that the Draft EIR fails as an informational document, fails to analyze all of the Project's significant impacts, and fails to impose all feasible mitigation measures to reduce the Project's impacts, and requests that a revised Draft EIR be prepared prior to consideration of approvals. However, the comment does not identify any specific concern with the adequacy of the Draft EIR or note a specific issue or comment related to the Draft EIR's environmental analysis. Therefore, no further response is required.

J-4 Comment noted. This comment does not identify a specific concern with the adequacy of the Draft EIR or note a specific issue or comment related to the Draft EIR's environmental analysis. Therefore, no further response is required.

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Section 3.0 Errata to the Draft EIR

3.1 INTRODUCTION TO THE ERRATA

In accordance with Section 15132 of the CEQA Guidelines, the FEIR for The Gateway at Grand Terrace Specific Plan (Project) includes the DEIR, dated June 2023, as well as any proposed revisions or changes to the DEIR.

The changes to the DEIR do not affect the overall conclusions of the environmental document, and instead represent changes to the DEIR to provide clarification, amplification and/or insignificant modifications, as needed as a result of public comments on the DEIR, or due to additional information received during the public review period. These clarifications and corrections do not warrant recirculation of the DEIR pursuant to CEQA Guidelines Section 15088.5.

None of the changes or information provided in the comments identify a new significant environmental impact, a substantial increase in the severity of an environmental impact for which mitigation is not proposed, or a new feasible alternative or mitigation measure that would clearly lessen significant environmental impacts but is not adopted. In addition, the changes do not reflect a fundamentally flawed or conclusory DEIR.

Changes to the DEIR are listed by Section, page, paragraph, etc. to best guide the reader to the revision. Changes are identified as follows:

Deletions are indicated by ~~strikeout text.~~

Additions are indicated by <u>underlined text.</u>

3.2 CHANGES TO THE DRAFT EIR

Cover Page, under Draft Environmental Impact Report

<u>State Clearinghouse No. 202102011</u>

Cover Page, under Zone Change 17-02

<u>Zoning Code Amendment 24-01</u>

Page 1-5, 3rd Paragraph, 1st Sentence

The No Commercial Alternative assumes that the Project Applicant would not develop any commercial development ~~and would limit the Project's commercial component as a zone change only~~.

Page 1-5, 4th Paragraph, 1st Sentence

The Project also includes various discretionary approvals including applications for a Specific Plan, Zone Change, <u>Zoning Code Amendment,</u> General Plan Amendment, Tentative Tract Map, and Development Agreement.

Executive Summary, Table 1-1, Mitigation Measure AQ-2, 2nd Sentence

The TDM plan shall be approved by the City of Grand Terrace prior to the issuance of building permits and incorporated into the Project's ~~Codes Covenants~~Covenants, Conditions, and Restrictions (CC&Rs).

Executive Summary, Table 1-1, Mitigation Measure AQ-4, 1st Sentence

Prior to the issuance of occupancy permits, the Planning Division shall confirm that the Project's ~~Codes Covenants~~ Covenants, Conditions, and Restrictions (CC&Rs) and/or tenant lease agreements include contractual language that all landscaping equipment used on-site shall be 100 percent electrically powered.

Executive Summary, Table 1-1, Addition of new Mitigation Measure BIO-3

MM BIO-3 If the Crotch bumble bee is no longer a candidate or listed species under the California Endangered Species Act, then this mitigation measure shall not be required.

Due to the presence of potentially suitable habitat for Crotch bumble bee within the Project site, the following measures shall be implemented to reduce potential impacts to this species:

- *Pre-construction Survey*: To the extent feasible, construction activities (i.e., demolition, earthwork, clearing, and grubbing) shall occur outside of the Crotch's bee flight season (February 1 through October 31). If construction activities must occur during the flight season, a qualified biologist shall conduct a pre-construction survey for Crotch's bumble bee queens, gynes, and colonies. The survey shall be conducted no more than 14 days prior to construction during optimal weather conditions (e.g., warm, sunny days between 65- and 90-degrees Fahrenheit). If the pre-construction survey is negative, no further assessment shall be required, and construction activities shall be allowed to proceed without any further requirements.

If Crotch bumble bee is detected during the pre-construction survey, the following measures shall be implemented:

- *CESA Compliance*: Prior to issuance of a grading permit, it shall be demonstrated that CESA-required consultation with CDFW regarding the project's effects to Crotch bumble bee has occurred. If take of Crotch bumble bee is expected, an incidental take permit (ITP) shall be obtained from CDFW. In addition, if an incidental take permit is issued for the project that covers Crotch bumble bee, that document shall supersede any inconsistent measures provided in this report.
- *Compensatory Mitigation:* Compensatory mitigation for permanent direct impacts to suitable Crotch's bumble bee habitat shall be offset through compensatory mitigation, which may include, but is not necessarily limited to, on-site or off-site habitat preservation, enhancement, restoration, and/or creation at a ratio of no less than 1:1. However, if an incidental take permit is issued for the project that

covers Crotch's bumble bee, that document(s) shall supersede any measures and mitigation ratios provided in this report.

Executive Summary, Table 1-1, Revised Mitigation Measure BIO-3 to BIO-4

MM ~~BIO-3~~BIO-4: In addition to obtaining permits from the USACE, RWQCB, and CDFW, impacts to CDFW jurisdiction will require a Streambed Alternation Agreement and the Project shall implement mitigation consisting of one or more of the following options (mitigation would be required at a minimum 1:1 ratio to offset impacts):

1) Avoidance and conservation of on-site waters;
2) Establishment and/or enhancement of wetlands/riparian habitat on-site;
3) Establishment and/or enhancement of wetlands/riparian habitat off-site;
4) Purchase of credits from an approved mitigation bank/in-lieu fee program

Executive Summary, Table 1-1, Mitigation Measure GHG-1

MM GHG-1: Residential Renewable Energy Generation. Prior to issuance of ~~each~~ residential building~~'s~~ permits for each developments phase, residential development within the Project site shall be required to submit plans for the installation of solar photovoltaic (PV) panels or another source of renewable electricity generation on-site~~, based on the maximum roof area available for solar (i.e., solar-ready zone)~~. The PV panels or alternative shall be installed prior to the issuance of Certificate of Occupancy (or the final Certificate of Occupancy within the development phase, if Virtual Net Metering is utilized). ~~The s~~Solar-ready zones shall comply with Section 110.10 of the 2022 California Energy Code and meet ~~with~~ access, pathway, ventilation, and spacing requirements, and exclude skylight area.

Each residential building (or development phase, if VNEM is utilized) shall include an electrical system and other infrastructure sufficiently sized to accommodate the PV arrays. The electrical system and infrastructure must be clearly labeled with noticeable and permanent signage. The schedule of photovoltaic system locations may be updated as needed.

Executive Summary, Table 1-1, Mitigation Measure GHG-2, 1st Sentence

Prior to the issuance of building permits, future development within the Project shall be designed to exceed 2022 Title 24 energy efficiency standards by a minimum of 15 percent through any of the following methods: achieving Leadership in Energy and Environmental Design (LEED) standards or ~~meet or exceed~~meeting or exceeding CALGreen Tier 2 standards in effect at the time. ~~in order to exceed 2022 Title 24 energy efficiency standards by a minimum of 15 percent.~~ Alternatively, the Project design shall include on-site renewable energy for future commercial development, for example the incorporation of solar panels into future Project commercial development, such that 15 percent of the on-site energy consumption is offset.

Executive Summary, Table 1-1, Mitigation Measure HAZ-1

Applicable to future development projects within the Project site, if signs of soil contamination, including staining or odor are encountered during ground-disturbance activities, construction shall halt, and the project-specific applicant/contractor is required to prepare a Phase II ESA to evaluate the potential environmental concern. If test results ~~are positive for a potential impact~~ show RECs, HRECs, and/or CRECs, then remediation would be required to clean and detoxify the site subject to approval of regulatory oversight by the County, DTSC or RWQCB, prior to continuing ground-disturbing activities.

Executive Summary, Table 1-1, Impact Statement 4.15-3, 1st Sentence

~~No mitigation is required.~~ **MM TRA-1:** Upon the City's acquisition of the area on Van Buren Street necessary to connect the project's sidewalk to the remainder of Van Buren Street, the applicant will pay its fair share of the cost of construction of that portion of the sidewalk.

Executive Summary, Table 1-1, Mitigation Measure TCR-1

MM TCR-1: Discovery of Tribal Cultural Resources. In the event that Native American cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) the Augustine Band of Cahuilla Indians tribe will be notified and work shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. Additionally, San Manuel Band of Mission Indians will be contacted if any such find occurs and be provided information and permitted/invited to perform a site visit when the archaeologist makes his/her assessment, so as to provide Tribal input. The archaeologist shall complete an isolate record for the find and submit this document to the applicant and Lead Agency for dissemination to the San Manuel Band of Mission Indians.

Page 2-7, 1st Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 2-7, 2nd Paragraph

Specific Plan (SP ~~00-17~~17-01) – The Gateway at Grand Terrace Specific Plan document (Project) establishes the necessary plans, development standards, regulations, zoning, infrastructure requirements, design guidelines and implementation programs on which subsequent project-related development activities (i.e., future implementing development projects) are to be founded.

Page 2-7, After Paragraph 5

5. Zoning Code Amendment (ZCA 24-01) – is required to amend the Zoning Code (Title 18 of the city of Grand Terrace Municipal Code) to create a new Specific Plan District, the Gateway at Grand Terrace Specific Plan District and its new zoning designations as listed in ZC 17-02 above.

Page 2-7, 6th Paragraph

6.~~5. Development Agreement~~ ~~– A Development Agreement is proposed to identify parties responsible for the construction of major infrastructure improvements, phasing schedule of development and infrastructure improvements, financial commitments for the construction of the infrastructure improvements, vesting of applicable codes and standards, and vesting of development impact fees for a specified term and appropriate extension metrics.~~ **Development Agreement and Exchange Agreement** – A Development Agreement and Exchange Agreement are proposed to identify parties responsible for the construction of major infrastructure improvements, phasing schedule of development and infrastructure improvements, financial commitments for the construction of the infrastructure improvements, vesting of applicable codes and standards, vesting of development impact fees for a specified term and appropriate extension metrics, and the terms and conditions for the exchange of developer owned land for city property.

Page 3-3, 4th Paragraph, 2nd Sentence

The Project site consists predominately of vacant land, as well as storage commercial uses, and ~~six~~five non-conforming residences.

Page 3-3, 4th Paragraph, 3rd Sentence

concrete-lined storm channel carries runoff from a storm drain at the western end of De Berry Street, southwest beneath the ~~Gage Canal~~Riverside Canal and into the westward-flowing drainage way that crosses the Project area from the western end of Van Buren Street.

Page 3-4, 1st Paragraph, 5th Sentence

There is a total of ~~six~~five existing single-family residences with associated accessory structures along De Berry Street and Van Buren Street. Only four of the five existing nonconforming residential structures within the Specific Plan boundary are occupied. The fifth nonconforming structure is unoccupied and boarded up. One of the residences, located on Van Buren Street, is not expected to be part of future residential development and will not be affected. The other three occupied units in the current CM zone are within the proposed commercial area of the Specific Plan. Currently, the landowners these three nonconforming residences are not participating in the Specific Plan and no specific development is proposed on those parcels and no demolition of those units is proposed at this time.

Page 3-4, 1st Paragraph, 6th Sentence

~~Five~~Four out of the ~~six~~five residences are currently occupied.

Page 3-4, 1st Paragraph, Last Sentence

The remaining building is ~~vacant~~unoccupied and boarded up.

Page 3-4, 2nd Paragraph, Last Sentence

The proposed Specific Plan (SP ~~00-17~~17-01) has been prepared pursuant to California Government Code §65454.

Page 3-4, 2nd Paragraph, Last Sentence

The proposed Specific Plan (SP ~~00-17~~17-01) has been prepared pursuant to California Government Code §65454.

Page 3-5, 2nd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 3-11, Last Paragraph, 2nd Sentence

The northern drainage course enters the site at the westerly end of De Berry Street. It then travels in a southwesterly direction and enters the San Bernardino County Flood Control District (SBCFCD)'s Highgrove Channel that eventually directs flows off-site under I-215.

Page 3-12, 1st Paragraph, 2nd Sentence

These storm water flows travel west and join the ~~SBCFCD channel~~Highgrove Channel at the western edge of the Project area.

Page 3-12, 4th Paragraph, 2nd Sentence

The basin would be hydraulically connected, and ~~two~~one outfall~~s with one~~ providing outlet to the Highgrove Storm Channel located adjacently to the upstream end of the Riverside Canal.~~drainage area and another providing a secondary outlet to the Gage Canal.~~

Page 3-18, 1st Bullet Point

Adopt the Gateway at Grand Terrace Specific Plan (~~00-17~~17-01).

Page 3-18, After Bullet Point 3

Adopt a Zone Change Amendment which is required to amend the Zoning Code (Grand Terrace MC Title 18) to create a new Specific Plan District, the Gateway at Grand Terrace Specific Plan District and its new zoning designations as listed in ZC 17-02 above.

Page 4-1.1, 3rd Paragraph, Last Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4-1.2, 2nd Paragraph, 4th Sentence

A concrete-lined storm channel carries runoff from a storm drain at the western end of De Berry Street, southwest beneath the ~~Gage Canal~~Riverside Canal and into the westward-flowing drainage way that crosses the Project area from the western end of Van Buren Street.

Page 4-1.9, 4th Paragraph, 1st Sentence

Additionally, the Project site includes a Southern California Edison (SCE) electrical substation and basins in the southern portion of the site, a public storage facility and a materials stockyard in the northern portion of the site, and the ~~Gage Canal~~Riverside Canal ~~along~~inthe northwestern portion of the site.

Page 4-2.1, Last Paragraph, Last Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.2-26, Mitigation Measure AQ-2, 2nd Sentence

The TDM plan shall be approved by the City of Grand Terrace prior to the issuance of building permits and incorporated into the Project's ~~Codes Covenants~~Covenants, Conditions, and Restrictions (CC&Rs).

Page 4.2-27, Mitigation Measure AQ-4, 1st Sentence

Prior to the issuance of occupancy permits, the Planning Division shall confirm that the Project's ~~Codes Covenants~~ Covenants, Conditions, and Restrictions (CC&Rs) and/or tenant lease agreements include contractual language that all landscaping equipment used on-site shall be 100 percent electrically powered.

Page 4.2-27, Mitigation Measure AQ-4, 1st Sentence

Prior to the issuance of occupancy permits, the Planning Division shall confirm that the Project's ~~Codes Covenants~~ Covenants, Conditions, and Restrictions (CC&Rs) and/or tenant lease agreements include contractual language that all landscaping equipment used on-site shall be 100 percent electrically powered.

Page 4.3-1, 3rd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.3-15, Before "Burrowing Owl" Header

Crotch Bumble Bee

Crotch bumble bee (Bombus crotchii) is a CDFW candidate species for listing as endangered. The Crotch's bumble bee is found between San Diego and Redding in a variety of habitats including open grasslands, shrublands, chaparral, desert margins including Joshua tree and creosote scrub, and semi-urban settings. It is near endemic to California, with only a few records from Nevada and Mexico.

Page 4.3-38, After 4th Paragraph

The Crotch bumble bee is not anticipated to be present at the Project site. However, in an unlikely event that the Crotch bumble bee is found, the Project would be required to implement **MM BIO-3**. This mitigation measure shall only be required if the Crotch bumble bee remains as a CESA candidate or is listed as a state engendered species at the time of project construction. With implementation of **MM BIO-3**, impacts to the Crotch bumble bee species would be reduced to less than significant levels.

Page 4.3-39, After MM BIO-2

MM BIO-3 If the Crotch bumble bee is no longer a candidate or listed species under the California Endangered Species Act, then this mitigation measure shall not be required.

Due to the presence of potentially suitable habitat for Crotch bumble bee within the Project site, the following measures shall be implemented to reduce potential impacts to this species:

- *Pre-construction Survey*: To the extent feasible, construction activities (i.e., demolition, earthwork, clearing, and grubbing) shall occur outside of the Crotch's bee flight season (February 1 through October 31). If construction activities must occur during the flight season, a qualified biologist shall conduct a pre-construction survey for Crotch's bumble bee queens, gynes, and colonies. The survey shall be conducted no more than 14 days prior to construction during optimal weather conditions (e.g., warm, sunny days between 65- and 90-degrees Fahrenheit). If the pre-construction survey is negative, no further assessment shall be required, and construction activities shall be allowed to proceed without any further requirements.

If Crotch bumble bee is detected during the pre-construction survey, the following measures shall be implemented:

- *CESA Compliance*: Prior to issuance of a grading permit, it shall be demonstrated that CESA-required consultation with CDFW regarding the project's effects to Crotch bumble bee has occurred. If take of Crotch bumble bee is expected, an incidental take permit (ITP) shall be obtained from CDFW. In addition, if an incidental take permit is issued for the project that covers Crotch bumble bee, that document shall supersede any inconsistent measures provided in this report.
- *Compensatory Mitigation:* Compensatory mitigation for permanent direct impacts to suitable Crotch's bumble bee habitat shall be offset through compensatory mitigation, which may include, but is not necessarily limited to, on-site or off-site habitat preservation, enhancement, restoration, and/or creation at a ratio of no less than 1:1. However, if an incidental take permit is issued for the project that covers Crotch's bumble bee, that document(s) shall supersede any measures and mitigation ratios provided in this report.

Page 4.3-39, 2nd Paragraph

To reduce potentially significant impacts, **MM ~~BIO-3~~BIO-4** which is required during regulatory permit acquisition for future development, will include one or more of the following mitigation options to reduce impacts to sensitive vegetation communities: 1) avoidance and conservation of onsite waters; 2) establishment and/or enhancement of wetlands/riparian habitat onsite; 3) establishment and/or enhancement of wetlands/riparian habitat offsite; and/or 4) purchase of credits from an approved mitigation bank/in-lieu fee program. With implementation of **MM ~~BIO-3~~BIO-4**, impacts to sensitive vegetation communities would be reduced to less than significant levels.

Page 4.3-41, 2nd Paragraph, Last two Sentences

Furthermore, the Project would implement **MM ~~BIO-3~~BIO-4** to mitigate impacts concerning jurisdictional waters. Since the Project would obtain the necessary permits from USACE, RWQCB, and CDFW and implement **MM ~~BIO-3~~BIO-4**, the Project's construction impact to jurisdictional waters would be reduced to a less than significant level.

Page 4.3-42, MM BIO-3

MM ~~BIO-3~~BIO-4 In addition to obtaining permits from the USACE, RWQCB, and CDFW, impacts to CDFW jurisdiction will require a Streambed Alternation Agreement and the Project shall implement mitigation consisting of one or more of the following options (mitigation would be required at a minimum 1:1 ratio to offset impacts):

1) Avoidance and conservation of on-site waters;
2) Establishment and/or enhancement of wetlands/riparian habitat on-site;
3) Establishment and/or enhancement of wetlands/riparian habitat off-site;
4) Purchase of credits from an approved mitigation bank/in-lieu fee program.

Page 4.3-44, 3rd Paragraph, 1st Sentence

Compensatory mitigation for Project specific impacts to riparian and wetland resources would be required by agencies with jurisdiction over these resources and implemented in the course of the Project's development (**MM ~~BIO-3~~BIO-4**).

Page 4.3-44, 4th Paragraph, 1st Sentence

Compliance with existing regulations, permit conditions, local design standards and implementation of **MMs BIO-1** through **~~BIO-3~~BIO-4** would reduce Project impacts to biological resources to a less than significant levels.

Page 4.4-2, 1st Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.5-1, 3rd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.6-1, 4th Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.7-1, 3rd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.7-21, 1st Paragraph, 3rd Sentence

MM AQ-3 prohibits the use of any kind of fire places, and **MM AQ-4** requires that the Project's ~~Code, Covenants~~Covenants, Conditions, and Restrictions (CC&Rs) and/or tenant lease agreements include contractual language that all landscaping equipment used on-site shall be 100 percent electrically powered.

Page 4.7-24, Updated Mitigation Measure GHG-1

MM GHG-1 **Residential Renewable Energy Generation.** Prior to issuance of ~~each~~ residential building~~'s~~ permits for each developments phase, residential development within the Project site shall be required to submit plans for the installation of solar photovoltaic (PV) panels or another source of renewable electricity generation on-site~~, based on the maximum roof area available for solar (i.e., solar-ready zone)~~. The PV panels or alternative shall be installed prior to the issuance of Certificate of Occupancy (or the final Certificate of Occupancy within the development phase, if Virtual Net Metering is utilized). ~~The s~~Solar-ready zones shall comply with Section 110.10 of the 2022 California Energy Code and meet ~~with~~ access, pathway, ventilation, and spacing requirements, and exclude skylight area.

Each residential building (or development phase, if VNEM is utilized) shall include an electrical system and other infrastructure sufficiently sized to accommodate the PV arrays. The electrical system and infrastructure must be clearly labeled with noticeable and permanent signage. The schedule of photovoltaic system locations may be updated as needed.

Page 4.7-24, Updated Mitigation Measure GHG-2

MM GHG-2 Prior to the issuance of building permits, future development within the Project shall be designed to ~~achieve~~exceed 2022 Title 24 energy efficiency standards by a minimum of 15 percent through any of the following methods: achieve~~e~~ing Leadership in Energy and Environmental Design (LEED) standards or ~~meet or exceed~~meeting or exceeding CALGreen Tier 2 standards in effect at the time. ~~in order to exceed 2022 Title 24 energy efficiency standards by a minimum of 15 percent.~~ Alternatively, the Project design shall include on-site renewable energy for future commercial development, for example the incorporation of solar panels into future Project commercial development, such that 15 percent of the on-site energy consumption is offset.

Page 4.8-1, 3rd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.8-17, Mitigation Measure HAZ-1, Sentence

MM HAZ-1 Applicable to future development projects within the Project site, if signs of soil contamination, including staining or odor are encountered during ground-disturbance activities, construction shall halt, and the project-specific applicant/contractor is required to prepare a Phase II ESA to evaluate the potential environmental concern. If test results ~~are positive for a potential impact~~ show RECs, HRECs, and/or CRECs, then remediation would be required to clean and detoxify the site subject to approval of regulatory oversight by the County, DTSC or RWQCB, prior to continuing ground-disturbing activities.

Page 4.9-1, 3rd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.9-1, 3rd Bullet Point

Hydrology and Hydraulics Report (Q3 Consulting, ~~November 2022~~ March 2023) (**Appendix H1**).

Page 4.9-2, 3rd Paragraph, 3rd Sentence

It then travels in a southwesterly direction and enters the ~~San Bernardino County Flood Control District (SBCFCD) channel~~Highgrove Channel that eventually directs flows off-site under I-215.

Page 4.9-2, 3rd Paragraph, 5th Sentence

These storm water flows travel west and join the ~~SBCFCD channel~~Highgrove Channel at the western edge of the Project site.

Page 4.9-14, 3rd Paragraph, 1st Sentence

A local storm drain system at the intersection of De Berry Street and Commerce Way would capture flows from De Berry Street and connect to the existing ~~SBCFCD~~Highgrove Channel storm drain line under Commerce Way, then drain to the basin.

Page 4.9-15, 3rd Paragraph, 1st Sentence

A local storm drain system at the intersection of De Berry Street and Commerce Way would capture flows from De Berry Street and connect to the existing ~~SBCFCD~~Highgrove Channel storm drain line under Commerce Way, then drain to the basin.

Page 4.9-16, 1st Paragraph, 2nd Sentence

A local storm drain system at the intersection of De Berry Street and Commerce Way would capture flows from De Berry Street and connect to the existing ~~SBCFCD~~Highgrove Channel storm drain line under Commerce Way, then drain to the basin.

Page 4.9-18, 1st Paragraph, 4th Sentence

A local storm drain system at the intersection of De Berry Street and Commerce Way would capture flows from De Berry Street and connect to the existing ~~SBCFCD~~Highgrove Channel storm drain line under Commerce Way, then drain to the basin.

Page 4.10-1, 3rd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.10-1, 5th Paragraph, 3rd Sentence

The Project site consists predominately of vacant land, storage commercial uses, and ~~six~~five non-conforming residences.

Page 4.10-2, 1st Paragraph, Last Sentences

There is a total of ~~six~~five existing single-family residences with associated accessory structures along De Berry Street and Van Buren Street. ~~Five~~Four of the ~~six~~five residences are currently occupied and one is boarded up and unoccupied. ~~The remaining residence is vacant.~~

Page 4.10-2, 2nd Paragraph, Last Sentence

The Gateway at Grand Terrace Specific Plan (SP ~~00-17~~17-01) has been prepared pursuant California Government Code Section 65454.

Page 4.10-2, 4th Paragraph, after 2nd Sentence

In addition to changing the City's zoning map through ZC 17-02, a Zone Change Amendment is also required in order to amend the Zoning Code to create a new Specific Plan District, the Gateway at Grand Terrace Specific Plan District and its new zoning designations as previously discussed.

Page 4.10-3, Table 4.10-3: General Plan Consistency Analysis

Table 4.10-3: General Plan Consistency Analysis

General Plan Policy [1]	Project Consistency
Land Use Element	
Goal 2.1: Provide for balanced growth which seeks to provide a wide range of employment and housing opportunities and maintenance of a healthy, diversified community.	
Policy LU 2.1.6 - Mixed use development which can demonstrate superior use of land, more efficient utilization of public facilities, and more effective conservation of natural resources shall be strongly encouraged by the City of Grand Terrace.	The Project proposes mixed-use land uses in support of the City's desire for more mixed-use development in the City. Therefore, the Project would comply with this Policy.
Policy LU 2.1.7 – The City shall continually refine population growth forecasts to ensure adequate planning for anticipated increased levels of sewerage, water, and other necessary community services.	**Section 4.17, Utilities and Service Systems** discusses the Project's demand on water and sewer as well as other dry utility hookups. Buildout of the Project would incrementally increase demands on public utilities; however, the increases were determined to be within the anticipated growth patterns and within the capacity of existing and planned resources. Therefore, the Project would comply with this Policy.
Goal 2.2: Preserve and enhance the quality and character of the City's residential neighborhoods.	
Policy LU 2.2.2 - All residential developments shall comply with the goals and policies of the Housing Element of the General Plan.	The Project proposes residential uses that would comply with all applicable goals and policies set in the housing element. Additionally, all residential development would adhere to the development standards and design standards contained in the Grand Terrace MC and Specific Plan document. Refer to consistency with the pertinent goals and policies in the Housing Element below. Therefore, the Project would comply with this Policy.
Goal 2.3: Provide a wide range of retail and service commercial opportunities designed to meet the needs of the City's residents, businesses, and visitors while also providing employment opportunities.	
Policy LU 2.3.1 - Commercially designated freeway frontage shall be master planned to ensure a comprehensive commercial development pattern that will serve as a scenic entry into the City.	The Project's commercial uses would be located near the I-215 freeway off-ramp at Barton Road. Commercial development would be subject to Grand Terrace MC and Specific Plan design standards and guidelines to ensure that all commercial development serves as a scenic entry into the City via Barton Road/Commerce Way. Therefore, the Project would comply with this Policy.
Policy LU 2.3.2 - Maintenance and continued development of Grand Terrace's established commercial areas, as an encouragement of new commercial development.	The Project includes the establishment of new commercial development. Therefore, the Project would comply with this Policy.
Policy LU 2.3.3 - Additional freeway service-oriented commercial uses shall be encouraged.	The Project's commercial land uses are sited near the I-215 north-south off ramps via Barton Road. Therefore, the Project would comply with this Policy.
Policy LU 2.3.5 - Measures to reduce potential land use incompatibility between commercially designated areas and all other plan areas will be given special	Applicable Specific Plan design standards and features would be considered on a project-by-project basis so residential and nonresidential land uses are developed cohesively. All development would be subject to the Specific Plan design

General Plan Policy [1]	Project Consistency
consideration. Specific features could include increased setbacks, walls, berms, and landscaping.	standards for residential and nonresidential development and any other applicable Grand Terrace MC development standards. Therefore, the Project would comply with this Policy.
Goal 2.5: Provide for the preservation of natural resources and open space.	
Policy LU 2.5.3 - Energy efficiency shall be encouraged in all future development.	Future development facilitated by this Project would be designed in compliance with applicable federal, state, and local regulatory which includes, but is not limited to, the current California Green Building Standards Codes in regard to energy usage. If necessary, future development would perform subsequent environmental analysis to determine project-specific energy demand impacts. Therefore, the Project would comply with this Policy.
Circulation Element	
Goal 3.1: Provide a comprehensive transportation system that provides for the current and long-term efficient movement of people and goods within and through the City.	
Policy C 3.1.1 - Provide a transportation system which supports planned land uses and improves the quality of life.	The Project proposes a circulation plan that includes improvements to the local circulation (i.e., roadways, pedestrian walkways, and bicycle facilities). The circulation plan for the Project improves local circulation and provides for new development. Refer to **Exhibit 3-12, Conceptual Circulation Plan** and **Section 4.15, Transportation** for further details. Therefore, the Project would comply with this Policy.
Policy C 3.1.2 - An arterial street system shall be established that provides for the collection of local traffic and provide for the efficient movement of people and goods through the City.	The proposed circulation plan would provide partial improvements to Taylor Street, Van Buren Street, and De Berry Street, that include street extensions, utility easements, installation of bike lanes, sidewalks, and a variety of street cross sections that will serve the various land uses and create a visually appealing and functional roadway system for vehicle and pedestrian uses. This will improve local circulation for traffic and provide efficient movement of people and goods through the City. Additionally, Taylor Street shall be extended towards Commerce Way along the Riverside Canal. Therefore, the Project would comply with this Policy.
Policy C 3.1.3 - Commerce Way shall provide for the movement of traffic associated with commercial and business traffic.	Refer to Policy C 3.1.2 above, **Exhibit 3-12,** and **Exhibit 3-7, Construction Phasing Plan** which illustrates the proposed Commerce Way/Taylor Street extension/connection and improvements as part of the Specific Plan. Therefore, the Project would comply with this Policy.
Policy C 3.1.5 - New development projects shall be analyzed in accordance with SANBAG congestion management Program (CMP) Traffic Impact Analysis (TIA) Guidelines.	The Project's TIA (**Appendix J1**) was prepared in accordance with the County of San Bernardino CMP. Therefore, the Project is consistent with Policy C 3.1.5.
Policy C 3.1.7 - The maximum acceptable Level of Service for streets identified in the City Master Plan of Streets and Highways during peak hours shall be LOS "D."	The TIA (Appendix J1) included recommended improvements for study intersections that would operate below applicable LOS policies in given jurisdictions. These recommendations include a combination of fee payments to established programs, construction of specific improvements, payment of a fair-share contribution toward future improvements, or a combination of these approaches. The recommended improvements are intended to improve operational conditions consistent with Grand Terrace GP LOS policies.

General Plan Policy [1]	Project Consistency
Policy C 3.1.8 – The City shall use the Caltrans Design and traffic manuals as guidelines for street lighting, traffic signage, street markings and intersection signalization.	The proposed Specific Plan's design standards concerning street lighting, traffic signage, and street marking are consistent with the Grand Terrace GP's and MC's policies and regulations. Intersection signalization was discussed as part of a recommended improvement in the TIA. Refer to discussion above.
Goal 3.2: Provide for a well-maintained roadway system.	
Policy C 3.2.1 - The City shall continue to require the dedication of street right-of-way, as identified in the Circulation Plan, from all proposed land development projects.	The proposed circulation improvements would be designed in accordance with Policy C 3.2.1.
Policy C 3.2.2 - The City shall require that street improvements be constructed at the time that development occurs on vacant or underutilized property.	Circulation improvements are anticipated to occur within two phases and would be considered on a project-by-project basis. Therefore, the Project would comply with this Policy.
Policy C 3.2.3 - The extension, improvement and maintenance of City streets using City funds shall be based upon an adopted Capital Improvement Program.	The financing and maintenance plan for the proposed Specific Plan will ensure the timely completion of public facilities, utilities and other necessary capital improvements as well as the property maintenance of these facilities. The proposed extension of Commerce Way is classified as a Capital Improvement Plan (CIP) project. Commerce Way would be constructed with pedestrian facilities (i.e., sidewalks, bicycle facilities) resulting in a well-connected sidewalk network surrounding the Project. The Project also proposes sidewalks along De Berry Street and Van Buren Street within the Project's limits. Pedestrians would be able to access the Project and other nearby land uses or facilities between Main Street and Barton Road. Lastly, all roadways and pedestrian facilities would be designed according to the development standards listed in the proposed Specific Plan.
Goal 3.3: Provide for a safe circulation system.	
Policy C 3.3.1 - Promote the safe and effective movement of all segments of the population and the efficient transport of goods.	The proposed circulation system would be designed to allow the safe and effective movement of all segments of the population and the efficient transport of goods.
Policy C 3.3.2 - The City shall require that new developments provide adequate off street parking in order to minimize the need for on street parking.	Both on-site and off-site parking requirements will be determined on a project-by-project but would be designed in accordance with all applicable state and local regulations, including the design standards within the Specific Plan document. Future development would be required to provide adequate parking as determined by City staff. Therefore, the Project would comply with this Policy.
Policy C 3.3.3 - The City shall ensure that local street improvements are designed with proper attention to community appearance and aesthetics as well as the need to move traffic safely and efficiently.	The Specific Plan standards include private roads and alleys should be visually distinguishable from public streets through the use of a variety of materials and colors. Refer to Policy 3.1.1 above and **Section 4.15, Transportation** for more information. Therefore, the Project would comply with this Policy.
Policy C 3.3.4 - The City shall route truck traffic away from residential areas and work with regional agencies in order to mitigate potential impacts from regional traffic.	Consistent with Policy C 3.3.3, the Project would not allow the movement of trucks near the proposed residential developments. The TIA (**Appendix J1**) included recommended improvements for study intersections that would operate below applicable LOS policies in given jurisdictions. These recommendations include a combination of fee payments to established programs, construction of specific improvements,

General Plan Policy [1]	Project Consistency
	payment of a fair-share contribution toward future improvements, or a combination of these approaches. The recommended improvements are intended to improve operational conditions consistent with Grand Terrace GP LOS policies. However, the recommended improvements are conceptual in nature and not required to be enforced as additional delay – to an intersection or roadway segment – is no longer considered a significant impact under CEQA.
Policy C 3.3.5 - The City shall evaluate and, when appropriate, implement traffic calming measures on residential local residential streets.	Refer to Policy C 3.3.4 above.
Policy C 3.3.6 - The City shall ensure that the design of Commerce Way at the UPRR line is coordinated with the UPRR Company.	The construction of proposed Commerce Way Extension would be coordinated with the UPRR Company. Therefore, the Project would be consistent with Policy C 3.3.6.
Goal 3.4: Provide for efficient and safe bikeway system within the City.	
Policy C 3.4.1 - Develop a system of continuous and convenient bicycle routes designed to connect schools, residential areas, shopping centers, parks, and employment areas.	Commerce Way would include a planned Class II Bike Lane. In support of the Grand Terrace ATP, Commerce Way would include a striped median, Class II on-street bike lanes with landscaped parkways and sidewalks near residential and commercial areas.
Policy C 3.4.6 - The City shall require the provision of bike racks at all new commercial and industrial developments.	Future commercial uses would be developed with bike racks.
Goal 3.5: Provide for efficient alternative modes of travel.	
Policy C 3.5.1 - Promote measures, which reduce reliance on single occupant vehicle usage by enforcement of the Traffic Control Measures (TCM) ordinance, which addresses development standards, land use patterns, employer based rideshare programs and bicycle/pedestrian facilities.	Travel Demand Management (TDM) measures determined most appropriate for the Specific Plan include providing car-sharing, bike sharing, and ride-sharing programs, developing bicycle connections that will provide access to proposed bicycle facilities, and providing telecommuting or work-at-home programs, where appropriate. Refer to **Section 4.15, Transportation** that contains a discussion regarding travel demand measures that would serve to further assist in reducing VMT. Therefore, the Project would comply with this Policy.
Policy C 3.5.3 - The City shall encourage and facilitate pedestrian movement by creating environments that are conducive to walking and maintaining a "human scale" of development.	Pedestrian facilities include crosswalks, pedestrian signals, sidewalks, and multi-use trails. At existing signalized intersections, adjacent to the Project, crosswalks and pedestrian push-button actuated signals are provided. At existing unsignalized intersections, adjacent to the Project, crosswalks are generally provided, except along Main Street. Main Street consists of mostly side-street stop-controlled intersections and offers limited north-south crossings except near Grand Terrace High School.
Policy C 3.5.6 - The City shall encourage Transit Oriented Development (TOD) to provide housing that is in close proximity to designated public transit facilities and routes. All projects will be reviewed in relationship to their proximity to existing and future transit systems.	The Project's housing would be within OmniTrans Route 305 and RTA 14. Per Section 4.15
Open Space and Conservation Element	
Goal 4.1: That the Open Space needed for outdoor recreation in the City of Grand Terrace be provided and thereby, improve the quality of life for the residents of the City.	
Policy OPC 4.1.1 – A park standard of five (5) acres per 1,000 population shall be used to determine the total	The Project would develop open space and recreational uses that would meet park facilities demands of the planned

General Plan Policy [1]	Project Consistency
acreage of developed parks and recreation areas for the City.	generated population growth, including the development of additional recreational facilities and would comply with Policy 4.1.1. The Project would directly generate population growth and would develop and would develop new recreational, public facilities, and open space development into the planning area. Therefore, the Project would comply with this Policy.
Policy OPC 4.1.5 – The City will establish guidelines and standards for the establishment of a linkage system among the City's parks and open space areas. In residential areas, the feasibility of utilizing sidewalks shall be made. These sidewalks will be part of the "Pedestrian Sidewalk Master Plan" called for in the Circulation Element and "safe routes" to school's plan. In addition, consideration will be given to the placement of appropriate signage along the sidewalk identifying them as part of a designated trail system.	~~*Not Applicable.*~~ This Policy is intended to be implemented by the City of Grand Terrace and not private projects. Nevertheless, the Project's proposed open space and residential areas would be designed consistently with Policy OPC 4.1.5.
Policy OPC 4.1.6 – The City will work with other public agencies and private entities to coordinate its trail planning and development to tie into the regional trails systems, including the California recreational Trail System, connecting neighboring cities and counties. These trails may be used for pedestrian, equestrian, or biking. Such efforts will include a connection with the Santa Ana River Trail as shown in the "Plan of Open Space and Trails for the County of San Bernardino" and with the trail system of the County of Riverside including the proposed regional trail along the Gage Canal in Riverside County.	~~*Not Applicable.*~~ This Policy is intended to be implemented by the City of Grand Terrace and not private projects. Nevertheless, the financing and maintenance plan for the Specific Plan will ensure the timely completion of public facilities, utilities and other necessary capital improvements as well as the property maintenance of these facilities. This includes the development of trails.
Goal 4.2: Natural resources in the City of Grand Terrace shall be protected and preserved by utilizing open space designations or related regulations.	
Policy OPC 4.2.2 – The City shall establish land use regulations to preserve and protect any identified natural resources.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects. However, the Project establishes appropriate new land use and zoning designation as well as development standards and guidelines for future development.
Policy OPC 4.2.5 – The City shall act to reasonably conserve and protect significant biological resources.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects. However, the Project would adhere to **MM BIO-1** through **BIO-3** to avoid impacts to sensitive species and habitats.
Goal 4.3: Public health and safety in the City of Grand Terrace shall be protected, in part, through open space areas.	
Policy OPC 4.3.3 - Open space shall be used to protect public health and safety resulting from flood hazard conditions in the City of Grand Terrace.	The Project proposes open space land uses in PA 5 that would be utilized to protect the proposed residential and commercial uses from flooding hazards that could result from the overflow of the Riverside Canal. In addition, development would include best management practices (BMPs) as required by NPDES permitting that would minimize flood hazard impacts. Therefore, the Project would comply with this Policy.
Goal 4.6: The City shall support and promote the conservation of energy resources.	
Policy OPC 4.6.1 – The City shall establish an energy conservation policy and implementation program for all City facilities.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects.

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Policy OPC 4.6.2 – The City shall implement a public outreach program to provide the public with information regarding energy conservation practices and programs.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects.
Policy OPC 4.6.3 - The City shall encourage energy and environmentally sustainable design in new land development projects using Leadership in Energy and Environmental Design (LEED) or similar standards.	~~*Not Applicable.*~~This Policy is intended to be implemented by the City of Grand Terrace and not private projects. However, specific development within the Project would be required to adhere to the latest California Building Code and Energy Code to ensure that energy is used efficiently.
Goal 4.7: Support air quality planning through land use policies, outreach efforts, and participation in regional air quality planning.	
Policy OPC 4.7.1 - The City shall evaluate and implement traffic flow improvements and construction management practices that reduce locally generated vehicle emissions.	TDM measures determined most appropriate for the Specific Plan include providing car-sharing, bike sharing, and ride-sharing programs, developing bicycle connections that will provide access to proposed bicycle facilities, and providing telecommuting or work-at-home programs, where appropriate. These travel demand measures would serve to further assist in reducing VMT and thereby vehicular emissions. Therefore, the Project would comply with this Policy.
Policy OPC 4.7.2 – The City shall encourage the use of public transportation through coordination with local and regional transit providers.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects. However, the Project's proposed residential uses would be located in close proximity of OmniTrans OminiGo Route 325, Route 30519, Route 5, and Route sbX,2and Riverside Transit Authority (RTA) Route 14.
Policy OPC 4.7.3 - The City shall encourage land use planning and urban design that reduces vehicle trips through mixed use development, consolidation of commercial uses along arterial highways, and pedestrian connection between residential and commercial uses.	The Project's proposed circulation plan would improve circulation for the new development by reinforcing a pedestrian-friendly environment. New Class II on-street bike lanes, sidewalks and streets would cohesively connect the mixed-use areas with the residential neighborhoods, parks and schools and provide circulation within the residential communities. In addition, the Project would travel demand measures to lower VMT. Therefore, the Project would comply with this Policy.
Policy 4.7.5 – The City shall encourage employers to develop and implement trip reduction plans including alternate work schedules, rideshare programs, telecommuting, and employee education programs.	TDM measures determined most appropriate for the Specific Plan include providing car-sharing, bike sharing, and ride-sharing programs, developing bicycle connections that will provide access to proposed bicycle facilities, and providing telecommuting or work-at-home programs, where appropriate. These travel demand measures would serve to further assist in reducing VMT Therefore, the Project would comply with this Policy.
~~Policy OPC 4.7.6 – The City shall implement policies and procedures designed to reduce emissions generated by construction activities including enforcement of SCAQMD Rule 403.~~	~~This Policy is intended to be implemented by the City of Grand Terrace and not private projects. Nevertheless, the Project would~~
Policy OPC 4.7.7 - The City shall promote energy conservation efforts in new and existing residences and businesses.	~~*Not Applicable.*~~ This Policy is intended to be implemented by the City of Grand Terrace and not private projects. The relevant energy conservation plans and policies to the Project include the California Title 24 energy standards and the 2022 California Green Building Code.
Goal 4.8: Achieve regional water quality objectives and protect the beneficial uses of the regions surface and groundwater.	

General Plan Policy [1]	Project Consistency
Policy OPC 4.8.1 - Evaluate all proposed land use and development plans for their potential to create groundwater contamination hazards from point and non-point sources, and cooperate with other appropriate agencies to assure appropriate mitigation	All future development projects within the Project site would be required to implement a SWPPP and WQMP that contains BMPs to minimize groundwater contamination hazards. Therefore, the Project would comply with this Policy.
Policy OPC 4.8.2 - Comply with the requirements of the National Pollutant Discharge Elimination System (NPDES).	All site-specific development would be subject to the requirements of the NPDES permitting process. Therefore, the Project would comply with this Policy. Therefore, the Project would comply with this Policy.
Goal 4.9: Comply with state and federal regulations to ensure the protection of historical, archaeological, and paleontological resources.	
Policy OPC 4.9.1 - The City shall take reasonable steps to ensure that cultural resources are located, identified and evaluated to assure that appropriate action is taken as to the disposition of these resources.	The Project would implement mitigation measures that would minimize impacts to any unknown cultural resources discovered on site. Therefore, the Project would comply with this Policy.
Public Health and Safety Element	
Goal 5.1: Minimize the risk to public health and safety, social and economic welfare of the City resulting from geologic and seismic hazards.	
Policy PHS 5.1.1 - All new development shall comply with current seismic design standards.	All development projects would be designed in accordance with the latest California Building Codes to ensure that impacts from seismic activity is minimized. Therefore, the Project would comply with this Policy.
Policy PHS 5.1.2 - All proposed developments shall be evaluated for impacts associated with geologic and seismic hazards.	All development would be subject to applicable Grand Terrace MC design standards, including City approval of final geotechnical reports, and mitigation measures provided in this EIR which includes the presence of a qualified geotechnical engineer during all grading activity. Therefore, the Project would comply with this Policy.
Policy PHS 5.1.4 - Grading plans for development projects shall include an approved drainage and erosion control plan to minimize the impacts from erosion and sedimentation during grading.	All development projects would be subject to this Policy. Therefore, the Project would comply with this Policy.
Goal 5.3: Reduce the risk to life and property in areas designated as flood hazard areas.	
<u>Policy PHS 5.3.3 - The City shall evaluate the flood control system of the City and improve it as required and as funds become available.</u>	<u>This Policy is intended to be implemented by the City of Grand Terrace. However, the Project includes storm drainage improvements that would be constructed to the requirements of the City of Grand Terrace and the SBCFCD.</u>
Policy PHS 5.3.4 - The City shall require all development projects to comply with the National Pollutant Discharge Elimination System (NPDES) and implement appropriate Best Management Practices.	All site-specific development would be subject to the requirements of the NPDES permitting process. Therefore, the Project would comply with this Policy.
Goal 5.6: Minimize the exposure of residents, business owners, and visitors to the impacts of urban and wildland fires.	
~~Policy PHS 5.6.2 – Continue the weed abatement program to ensure clearing of dry vegetation areas.~~	~~The Project is located in an LRA and would comply with the City's Local Hazard Mitigation Plan. Therefore, the Project would comply with this Policy.~~
Policy PHS 5.6.3 – Encourage the use of fire-resistive construction materials.	The Project would comply with the California Building Code which regulates the design, construction, and quality of materials, etc. for development. Therefore, the Project would comply with this Policy.
Noise Element	
Goal 6.1: Protect the citizens of Grand Terrace and sensitive land uses from annoying and excessive noise generated by non-transportation-oriented uses and activities.	

General Plan Policy [1]	Project Consistency
Policy N 6.1.2 - Construction noise on adjacent land uses shall be minimized by limiting the permitted hours of activity.	All future project construction activity would occur within the permitted hours of activity consistent with this Policy. Therefore, the Project would comply with this Policy.
Policy N 6.1.3 – City departments shall observe state and federal occupational safety and health noise standards.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects.
Goal 6.2: Prevent and mitigate the adverse impacts of excessive exposure to residential and commercial land uses.	
Policy N 6.2.1 - The City shall evaluate potential noise impacts as part of the land use planning process to mitigate or avoid detrimental impacts and enforce the local noise ordinance.	Project development would be consistent with the Grand Terrace MC Noise development standards to reduce noise impacts near residential land uses and is further discussed in **Section 4.11, Noise**. Therefore, the Project would comply with this Policy.
Policy N 6.2.3 - New residential developments located in close proximity to existing commercial/industrial operations shall be evaluated for potential noise impacts and interior noise mitigation.	All proposed mixed use/ commercial development near residential land uses would be designed in accordance with applicable Grand Terrace MC Noise standards. Therefore, the Project would comply with this Policy.
Policy N 6.2.4 - Commercial uses developed as part of any mixed-use project including residential component shall not be noise intensive. Mixed-use structures shall be designed to prevent commercial noise impacts to the project's residential uses.	All proposed mixed use/ commercial development near residential land uses would be designed in accordance with applicable Grand Terrace MC Noise standards, as well as mitigation measures included in this EIR to reduce impacts to nearby sensitive receptors. Therefore, the Project would comply with this Policy.
Policy N 6.2.5 - New commercial/industrial operations located in proximity to existing or proposed residential areas shall incorporate noise mitigation into project design.	All proposed commercial development near the proposed residential land uses would be designed in accordance with applicable Grand Terrace MC Noise standards, as well as mitigation measures included in this EIR to reduce impacts to nearby sensitive receptors. Therefore, the Project would comply with this Policy.
Policy N 6.2.6 - Impacts of construction noise and vibration on adjacent land uses shall be regulated through limiting the permitted hours of activity.	All future project construction activity would occur within the permitted hours of activity consistent with this Policy. Therefore, the Project would comply with this Policy.
Policy N 6.2.7 - The City shall evaluate potential ground-borne vibration impacts as part of the land use planning process to mitigate or avoid detrimental impacts on adjacent land uses.	Pursuant to **MM NOI-3** in this EIR, should construction activities requiring operation of vibratory rollers take place within 26 feet of a structure, a Project-specific vibration impact analysis shall be conducted. Therefore, the Project would comply with this Policy.
Goal 6.3: Protect the residents of Grand Terrace from excessive noise generated by transportation-oriented sources.	
Policy N 6.3.3 - The City shall consider noise impacts to residential neighborhoods when designating truck routes and major circulation corridors.	Project-generated noise impacts were analyzed in Section 4.11, Noise of this EIR. Refer to **Section 4.11, Noise**.
Policy N 6.3.5 - Encourage, where feasible, noise mitigation measures, such as noise barriers and realignments, in the design and construction of new roadway projects in the City of Grand Terrace.	Consistent with Policy N 6.3.5, the Project includes **MM NOI-1** which requires that final grading and building plans shall incorporate the required noise barriers (patio enclosure, wall, berm, or combination wall/berm), and the property owner/developer shall install these barriers and enclosures.
Public Services Element	
Goal 7.1: Coordinate and balance the provision of public services with existing and planned development to eliminate service gaps, maximize the use of existing public facilities and services, provide a high level of quality public services at a reasonable cost, and maintain adequate services to meet the needs of current and future City residents and businesses.	
Policy PS 7.1.1 – All proposed development shall be evaluated to determine whether current public services and facilities can meet with their needs. If determined that current services and facilities are	Fire protection and police protection would remain efficient in serving the proposed project. The Project is required to adhere to Grand Terrace MC Chapter 4.80 Development Impact Fees, which would require each applicant to pay a development

General Plan Policy [1]	Project Consistency
inadequate to meet the needs of new development, appropriate mitigation measures shall be applied to the new development to assure an adequate level of service.	impact fee (determined by the table provided in Chapter 4.80) imposed by the City to pay for all or a portion of costs of providing public services associated with new development. Therefore, the Project would comply with this Policy.
Policy PS 7.1.2 – The City shall establish and periodically update a Development Impact Fee program for new development designed to generate adequate fees to provide new public services and facilities necessary to serve the new development.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects.
Policy PS 7.1.3 - Ensure that existing residents and businesses are not burdened with the economic costs of new infrastructure to support new development.	The financing of construction, operation, and maintenance of public improvements and facilities (facilities), and public services shall include funding through a combination of financing mechanism. Final determination as to the facilities to be financed and as to maintenance responsibilities, whether public or private maintenance, will be made prior to approval of tentative maps or building permits. A summary of financing and maintenance responsibilities is provided in the proposed specific plan which indicates the parties responsible for construction, financing, and maintaining the public improvements proposed by the Specific Plan.
Policy PS 7.1.4 - The City shall coordinate with public and private utility companies and agencies to assure the long-term provision of necessary public services including water, sewer, electrical, natural gas, telephone, cable TV and waste collection/recycling.	Future development within the Project area would be required to coordinate with the City and applicable utility providers to ensure that utilities are provided as needed.
Policy PS 7.1.7 - The City shall seek grants and other funding sources to improve public services and facilities.	The financing of construction, operation, and maintenance of public improvements and facilities (facilities), and public services shall include funding through a combination of financing mechanism. Final determination as to the facilities to be financed and as to maintenance responsibilities, whether public or private maintenance, will be made prior to approval of tentative maps or building permits. A summary of financing and maintenance responsibilities is provided in the proposed specific plan which indicates the parties responsible for construction, financing, and maintaining the public improvements proposed by the Specific Plan.
Goal 7.5: Provide for adequate law enforcement and police protection services and facilities.	
Policy PS 7.5.1 – Work with the County Sherriff's Department to ensure that adequate police personnel, response times, and equipment are available to meet current and future demands of the City's residents and businesses.	This Policy is intended to be implemented by the City of Grand Terrace and not private projects. However, the Project is required to adhere to Grand Terrace MC Chapter 4.80 Development Impact Fees.
Goal 7.6: Provide for adequate fire protection services and facilities.	
Policy PS 7.6.1 – Work with the San Bernardino County Fire Protection District to ensure that adequate fire protection personnel, response times, and equipment are available to meet current and future demands of the City's residents and businesses.	This Policy is intended to be implemented by the City of Grand Terrace and not private projects. However, the Project is required to adhere to Grand Terrace MC Chapter 4.80 Development Impact Fees.
Policy PS 7.6.2 – Work with Riverside Highland Water Company to ensure adequate water pressure for fire fighting throughout the City.	This Policy is intended to be implemented by the City of Grand Terrace and not private projects. However, the Project is required to provide fire hydrants at locations approved by the SBCoFD, and Riverside Highland Water Company lines would be extended to loop around the Project site.

General Plan Policy [1]	Project Consistency
Goal 7.7: In cooperation with the Colton Joint Unified School District, provide adequate public education facilities and programs.	
Policy PS 7.7.2 - Cooperate with the School District in the collection of school impact mitigation fees for all new developments within the City.	The Project would pay these fees in compliance with the California Government Code Section 65995 and Education Code and Grand Terrace MC Chapter 4.80. Therefore, the Project would comply with this Policy.
Housing Element	
Goal 8.1: Provide and encourage a supply of housing suitable to the needs and sufficient in number to serve existing and projected residents of Grand Terrace.	
Policy H 8.1.1 - Promote and encourage development of housing, which varies by type, design, form of ownership and size.	The proposed residential uses would contain a variety of housing types which include a variety of attached and detached residential including cluster product, duplexes, townhomes, small-lot single family, stacked flats and supportive recreational amenities. Therefore, the Project would comply with this Policy.
Policy H 8.1.2 - Maximize use of remaining vacant land suitable for residential development	The Project would convert primarily vacant land for residential uses. Therefore, the Project would comply with this Policy.
Policy H 8.1.3 - Promote and encourage infill housing development and more intensive use of underutilized land for residential construction.	The Project proposes residential development on underutilized land. Therefore, the Project would comply with this Policy.
Policy H 8.1.4 - Encourage the use of innovative land use techniques and construction methods to minimize housing costs without compromising basic health, safety and aesthetic considerations.	The residential land uses would contain a variety of housing types to create individual neighborhoods, provide architectural interest and housing choices. All residential development would subject to the residential design standards within the Specific Plan and applicable state design standards. Therefore, the Project would comply with this Policy.
Goal 8.2: Promote and encourage housing opportunities, accessible to employment centers and quality community services for all economic segments of the community including designated very low, low, and moderate income households.	
Policy H 8.2.1 – Continue a Policy of expeditious processing of residential development proposals and permits.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects.
Policy H 8.2.2 – Encourage a wide range of housing types, prices and ownership forms in new construction.	See Policy H 8.1.1 and H 8.1.4 above.
Policy H 8.2.3 – Emphasize and promote the role of the private sector in the construction of low-and moderate-income housing.	The Project would adhere to the California Planning and Zoning Law which would assist in the development of adequate housing to meet the needs of low-and moderate-income households. Therefore, the Project would comply with this Policy.
Policy H 8.2.4 – Support the development of cost saving and energy conserving construction techniques.	All housing development would be developed in accordance with the latest California Building and Energy Codes. Pursuant to the California Solar Mandate, all housing development would also be developed with solar systems that would help reduce electricity costs. Therefore, the Project would comply with this Policy.
Policy H 8.2.8 – Streamline administrative procedures for granting approvals and permits and establish time limits for such approvals to minimize time, costs and uncertainty associated with development.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects.
Policy H 8.2.9 – Provide zoning, subdivision and construction incentives to minimize the cost of new and rehabilitated units.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects
Policy H 8.1.10 - Promote mixed use development that includes provisions for affordable housing.	See Policy H 8.2.3 above. The Project would comply with this Policy.

General Plan Policy [1]	Project Consistency
Goal 8.3: Promote and encourage the rehabilitation of deteriorated dwelling units and the conservation of the currently sound housing stock.	
Policy H 8.3.4 – Upgrade community facilities and municipal services as community needs warrant.	The Project proposes public facility land uses that includes improvements to existing community facilities and municipal services. Therefore, the Project would comply with this Policy.
Policy H 8.3.11 – Preserve the physical character of existing neighborhoods.	The Specific Plan contains development standards that would ensure that streetscapes and buildings convey a cohesive, high-quality community identity while minimizing negative impacts to nearby neighborhoods. Therefore, the Project would comply with this Policy.
Goal 8.4: Conserve and improve the condition of existing affordable housing stock.	
Policy H 8.4.2 – Encourage the use of assistance programs to make residences more energy efficient.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects.
Policy H 8.4.5 – Encourage the incorporation or energy conservation features in the design of all new housing developments and the addition of energy conservation devices/practices in existing residential developments.	The Project would adhere to the California Green Building Standards Code of Regulations, Title 24, Part 11. Therefore, the Project would comply with this Policy.
Sustainable Development Element	
Goal 9.1: Reduce the City's per capita energy usage.	
Policy SD 9.1.2 – The City shall incorporate energy conservation measures into conditions of approval for new development projects.	~~*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects.~~ All future development would be required to adhere to all applicable California Green Building Standards Code of Regulations, Title 24, Part 11 design standards as a condition of approval.
Goal 9.2: Reduce the total quantity of waste generated within the City requiring landfill disposal to meet or exceed the State waste diversion goals.	
Policy SD 9.2.2 – Require all new development projects to recycle construction and demolition wastes.	All development projects will be required to recycle or handle construction and demolition wastes, consist with this Policy and in accordance with applicable state regulations regarding the use, handling, storage, and transportation of waste. Therefore, the Project would comply with this Policy.
Goal 9.3: Reduce the total quantity of waste generated within the City requiring landfill disposal to meet or exceed the State waste diversion goals.	
Policy SD 9.3.1 – Incorporate "green" building practices into the review of all new or renovated development projects.	All future development would be designed in accordance with the latest California Building Code and Energy Code standards, including the Specific Plan's residential and non-residential development standards. Therefore, the Project would comply with this Policy.
Policy SD 9.3.2 – Site and building design in new developments should maximize opportunities for efficient energy performance.	All future development would be designed in accordance with the latest California Building Code and Energy Code standards, including the Specific Plan's residential and non-residential development standards. Therefore, the Project would comply with this Policy.
Goal 9.4: Provide parks and open space throughout the City.	
Policy SD 9.4.1 - The City shall implement the Open Space and Conservation Element of the General Plan to provide an average of five acres of parks and open space for every 1,000 residents.	The Project proposes approximately 9.33 acres of open space/park per 1,890 residents per acres. Therefore, the Project would be consistent with this Policy.
Policy SD 9.4.2 - The City shall provide trees and other landscaping along all arterial highways.	The streetscape will be composed of a number of different types of plants and trees based on the characteristic of the street. For example, Commerce Way should have a different landscape arrangement than collector streets. Since the Project would provide landscaping throughout the Project's streets, the Project complies with this Policy.

General Plan Policy [1]	Project Consistency
Goal 9.5: Provide alternative transportation modes designed to reduce vehicle miles traveled.	
Policy SD 9.5.1 - The City shall encourage alternative transportation modes, including mass transit, ride sharing, bicycles, and pedestrian transportation.	Consistent with this Policy, the Project would implement TDM measures that includes ride sharing (pedestrian transportation) and development of bicycle facilities.
Policy SD 9.5.2 - The City shall encourage the creation of local jobs designed to reduce commuter mileage and fuel consumption.	Future commercial uses within the Project site would create employment opportunities for future on-site residents or for residents located in the nearby surrounding area.
Goal 9.7: Reduce the City's per capita demand for water consumption.	
Policy SD 9.7.2 The City shall incorporate water conservation into the development review process.	All development Projects would be required to incorporate water conservation design features and landscaping to minimize water consumption. Therefore, the Project would comply with this Policy.
Goal 9.8: The City shall lead the development community by example in green building, and energy and resource conservation practices.	
Policy SD 9.8.1 – The City shall support green development standards for new or rehabilitated public buildings and facilities.	The Project would adhere to the California Green Building Standards Code of Regulations, Title 24, Part 11. Therefore, the Project would comply with this Policy.
Policy SD 9.8.2 – The City shall actively reduce greenhouse gas emissions from public facilities throughout the community.	*Not Applicable.* This Policy is intended to be implemented by the City of Grand Terrace and not private projects.
Source: City of Grand Terrace. (2010). *Grand Terrace General Plan.* Retrieved at: https://www.grandterrace-ca.gov/departments/planning_development_services/planning (accessed March 2022). Tables C.1 through C.8 of Specific Plan.	

Page 4.11-1, 3rd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.12-1, 4th Paragraph, Last Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.12-1, 4th Paragraph, Last Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.12-11, 2nd Paragraph, 1st and 2nd Sentences

The Project site is comprised of predominately vacant land and currently contains ~~six~~five existing residential structures with associated accessory structures on De Berry Street and Van Buren Street. Of these residential structures, ~~five~~four are currently occupied, and one is ~~vacant~~unoccupied and boarded up.

Page 4.12-11, 2nd Paragraph, 4th Sentence

Although buildout of the Project would displace both housing and people, the existing residences are currently considered non-conforming since the existing underlying land use and zoning do not permit residential use within the ~~Gateway SP~~Project boundary. Only four of the five existing nonconforming residential structures within the Specific Plan boundary are occupied. The fifth nonconforming structure is unoccupied and boarded up. One of the residences, located on Van Buren Street, is not expected to be part of future residential development and will not be affected. The other three occupied units in the current CM zone are within the proposed commercial area of the Specific Plan. Currently, the landowners these three nonconforming residences are not participating in the Specific Plan and no specific development is proposed on those parcels and no demolition of those units is proposed at this time.

Page 4.12-11, 3rd Paragraph, 1st Sentence

Considering the 2022 total population, average number of residents per unit, and number of housing units within the City, the existing ~~six~~five residences would contain approximately ~~16.5~~11 persons and account for approximately ~~0.12~~0.08 percent of total housing units in the City in 2022.

Page 4.13-1, 4th Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.13-4, 1st Paragraph, 2nd Sentence

Presently, there are two elementary schools, one middle school, and one high school operated by CJUSD within the City limits. Grand Terrace Elementary is approximately ~~three roadway miles~~ 750 feet northeast of the Project site.

Page 4.13-13, Last Paragraph, 2nd Sentence

These schools include Grand Terrace High School, adjacent to the Project site, Grand Terrace Elementary School (12066 Vivienda Avenue) located approximately ~~3 miles~~ 750 feet northeast of the Project site.

Page 4.14-1, 3rd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.15-1, 3rd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.15-15, 3rd Paragraph, Bullet Points

The City adopted the Grand Terrace ATP in 2018 which provides recommendations and an implementation plan to address the long-term development and maintenance of the City's transportation-related systems. The ATP is consistent with the Grand Terrace GP Land Use Element and other pertinent transportation-related local and regional planning documents.

The ATP can be found at the following City Website: https://www.grandterrace-ca.gov/departments/planning_development_services/planning

Page 4.15-15, 3rd Paragraph, Bullet Points

The following roadway segments are adjacent to the Project and currently provide continuous sidewalk:

- Barton Road east of Grand Terrace Road
- The existing extent of Commerce Way south of Barton Road
- ~~De Berry Street west of Michigan Street~~
- ~~Van Buren Street west of Michigan Street~~
- Michigan Street South of Pico Street
- Center Street
- Main Street east of Taylor Street

Page 4.15-19, After 2nd Paragraph and New Mitigation Measure TRA-1

Impact 4.15-3: Substantially increase hazards due to a geometric design feature (e.g., sharp curvesv or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Level of Significance: Less Than Significant with Mitigation Incorporated

The Project's proposed circulation plan would improve the local circulation and would provide access for new development within the Project. The proposed circulation improvements are noted under **Section 4.15.3** above and further discussed in the Specific Plan. The proposed circulation improvements would be compatible with existing and proposed land uses. All proposed improvements would be constructed as approved by the City Engineer and City's Fire Department pursuant to Grand Terrace MC Section 17.52.070, Street Design and Chapter 17.16, and as part of the Project's proposed tentative tract map approval. In accordance with Grand Terrace MC Section 17.52.010, "All subdivisions and tentative maps thereof, must conform to the City General Plan, Zoning Code, and any applicable specific plans and to all applicable planning, zoning, design, improvement and environmental requirements."

For students to get to Terrace Hills Middle School from the Project's residential development, they would utilize Van Buren Street. Currently, there are existing sidewalks in between the western terminus at the proposed new Taylor/Commerce extension to Mt. Vernon Avenue of approximately 3,300 feet in total length. The Project would provide street improvements on Van Buren Street within the Project boundary that would include a new sidewalk segment of nearly 1,700 feet. Although the Project would add a

significant amount of new sidewalks of over 50% of the length of the existing sidewalks on Van Buren Street, there would still be a small portion on Van Buren Street that would not have sidewalks. This portion is outside of the Project area and approximately 550 feet in length, measuring west from where Van Buren Street meets with Mt. Vernon Avenue. Due to the physical site constraints from overhead powerlines and drainage pipes, it is infeasible to construct sidewalk in this portion along Van Buren Street as additional right-of-way acquisition or condemnation would be required by the City. Refer to Mitigation Measure (**MM**) **TRA-1**.

Upon approval of the Project's Specific Plan and adherence with the Grand Terrace MC design standards, the Project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use.

Mitigation Measures

~~No mitigation measures are required.~~

MM TRA-1 Upon the City's acquisition of the area on Van Buren Street necessary to connect the project's sidewalk to the remainder of Van Buren Street, the applicant will pay its fair share of the cost of construction of that portion of the sidewalk.

Page 4.15-20, After 2nd Reference

City of Grand Terrace. (2016). *City of Grand Terrace Municipal Code.* Retrieved from: https://library.municode.com/ca/grand_terrace/codes/municipal_code?nodeId=GRAND_TERRACE_CALIFORNIAMUCO.

City of Grand Terrace. (2018). *Grand Terrace Active Transportation Plan*. Retrieved from: https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_12337255/File/Departments/Planning%20&%20Development/Grand%20Terrace%20Active%20Transportation%20Plan%20-%20Oct%202018.pdf

Page 4-16-1, 3rd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4-16-11, First Paragraph

MM TCR-1 **Discovery of Tribal Cultural Resources.** In the event that Native American cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) the Augustine Band of Cahuilla Indians tribe will be notified and work shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. Additionally, San Manuel Band of Mission Indians will be contacted if any such find occurs and be provided information and permitted/invited to perform a site visit when the archaeologist makes his/her

assessment, so as to provide Tribal input. The archaeologist shall complete an isolate record for the find and submit this document to the applicant and Lead Agency for dissemination to the San Manuel Band of Mission Indians.

Page 4.17-3, 3rd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 4.17-3, 4th Paragraph, 3rd Sentence

It then travels in a southwesterly direction and enters the ~~San Bernardino County Flood Control District (SBCFCD) channel~~Highgrove Channel that eventually directs flows off-site under I-215.

Page 4.17-3, 4th Paragraph, 5th Sentence

These storm water flows travel west and join the ~~SBCFCD channel~~Highgrove Channel at the western edge of the Project site.

Page 4.17-3, 4th Paragraph, Last Sentence

The westerly terminus of Pico Street overflows with storm water during large storm events and the storm water travels through the existing school site towards Taylor Street and ultimately joins the ~~Gage Canal~~Riverside Canal at the western edge of the Project site.

Page 4.17-14, 1st Paragraph, 1st Sentence

…and ~~two~~one outfall ~~with one~~providing outlet to the ~~San Bernardino County Flood Control District (SBCFCD)~~Highgrove Channel drainage area ~~and another providing a secondary outlet to the Gage Canal~~.

Page 4.17-14, 2nd Paragraph

At De Berry Street, a local storm drain system at the intersection of De Berry Street and Commerce Way would capture flows from De Berry and connect to the existing ~~SBCFCD~~Highgrove Channel storm drain line under Commerce Way, draining to the basin.

Page 4.17-14, 5th Paragraph, 2nd Sentence

All proposed improvements would be constructed to the requirements of the City and the SBCFCD.

Page 4.18-1, 4th Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

Page 6-6, 2nd Paragraph, 4th Sentence

Alternative 1 would not develop the 695 dwelling units, ~~455,0495~~335,700 square feet (SF) of general commercial uses, ~~and~~ or associated on-site and off-site infrastructure improvements that would otherwise occur as part of the Project.

Page 6-6, 1st Paragraph, 2nd Sentence

As with the Project, **MMs BIO-1** through **~~BIO-3~~BIO-4** would be required to reduce biological resource impacts to a level of less than significant.

Page 6-16, 4th Paragraph

The No Commercial Alternative or "Alternative 3" assumes that the Project Applicant would not develop any commercial development ~~and would limit the Project's commercial component as a zone change only~~. Development under Alternative 3 would only consist of the development of 695 dwelling units~~,~~ and ~~would forgo~~ not include the 335,700 SF of combined retail, restaurant, and self-storage spaces that are proposed by the Project. Parcels that would be rezoned for commercial use would remain undeveloped or would be developed by a separate project applicant in the ~~foreseeable~~future. Additionally, The Specific Plan would not include entitlements for commercial development and any future commercial development (by others) would be subject to the Specific Plan's applicable design standards and provisions. All other Project components would stay the same.

Page 6-17, 1st Paragraph

The commercial uses proposed by the Project would be eliminated under this alternative. Alternative 3 proposes the development of 695 dwelling units and would leave the remaining land vacant for the ~~foreseeable~~ future until it is developed by others. The same general aesthetics would apply to Alternative 3 when compared to the Project. Although no commercial development by the applicant would occur, future developments ~~(by others) within the rezoned commercial land uses~~ are required to adhere to the Specific Plan's commercial guidelines. In addition, although Alternative 3 would eliminate commercial development, the Project area lacks officially designated scenic vistas and the Project site is not considered a visually sensitive area.

Page 6-17, 5th Paragraph, 2nd Sentence

Additionally, the Project and Alternative 3 would implement **MM BIO-1** through **~~MM BIO-3~~BIO-4** to reduce impacts to biological resources to less than significant levels.

Page 6-20, 1st Paragraph

The Project requires adoption of the Specific Plan and Development Agreement as well as approval of the proposed Zone Change, General Plan Amendment, and Tentative Tract Map. ~~Alternative 3 would require the same entitlements. As such, Alternative 3 would be environmentally equivalent to the Project regarding land use and planning, since land uses would be added, and land use entitlements would be required.~~

Page 6-22, Last Paragraph, 2nd Sentence

According to **Table 6-1**, the ~~Residential Only~~ Alternative would be the environmentally superior alternative because it would reduce some of the potentially significant impacts of the Project. However, while the ~~Residential Only~~ Alternative is the environmentally superior alternative, it is not capable of meeting all of the basic objectives of the Project.

Page 7-1, 2nd Paragraph, 2nd Sentence

The Project consists of applications for a Specific Plan (SP ~~00-17~~17-01), General Plan Amendment (GPA 17-01), Zone Change (ZC 17-02), Zoning Code Amendment (ZCA 24-01), Tentative Tract Map No. 20501 (TTM 18-01) and a Development Agreement.

***Appendix A,* Hydrology and Hydraulics Report Update**

Gateway at Grand Terrace Specific Plan Hydrology and Hydraulics Report

Grand Terrace, California

FINAL REPORT

March 2023

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1 INTRODUCTION

1.1 Project Overview

The Gateway at Grand Terrace Specific Plan is a guide for City-wide development of underutilized land in the southwest corner of the City of Grand Terrace. The project site is approximately 109 acres and is roughly bounded by the I-215 freeway to the west, Pico Street to the south, approximately 700ft to the west of Michigan Street, and Commerce Way to the north. The City is located in San Bernardino County on the southern border with Riverside County. The area's drainage system primarily consists of street conveyance with limited surface and sub-surface conveyance facilities. The topography of the urbanized area tributary to the project site is relatively steep, ranging from 6-percent on the upper (eastern) slopes at the base of the foothills to 1-percent on the western side of the City near the I-215 freeway. The project site resides within this 1-percent sloped area.

Q3 Consulting was retained to prepare a hydrology and hydraulic evaluation of the project and its potential impacts to the downstream receiving waters. This study includes regional and local evaluations of the project site to determine impacts to existing drainage infrastructure and provide general design characteristics of the proposed basin for regional flood mitigation.

1.2 Goals and Objectives

The purpose of this report is to present a detailed engineering analysis for the proposed regional flood control basin.

The primary objectives of this study include the following:

- Research, collect, and review previous studies completed in the watershed and along the project;
- Establish the design criteria and requirements to be used for the proposed detention/retention basin;
- Develop the existing condition and proposed condition hydrology for project on-site and regional watershed per San Bernardino County methodology. Develop single area unit hydrographs in proposed condition and route hydrographs through proposed detention basin using Advanced Engineering Software (AES) ;
- Develop the existing condition and proposed condition models using XPStorm and direct rain-on-grid approach to help size the non-County storm drain systems tributary to the proposed detention/retention basin.

Figure 1-1. Vicinity Map

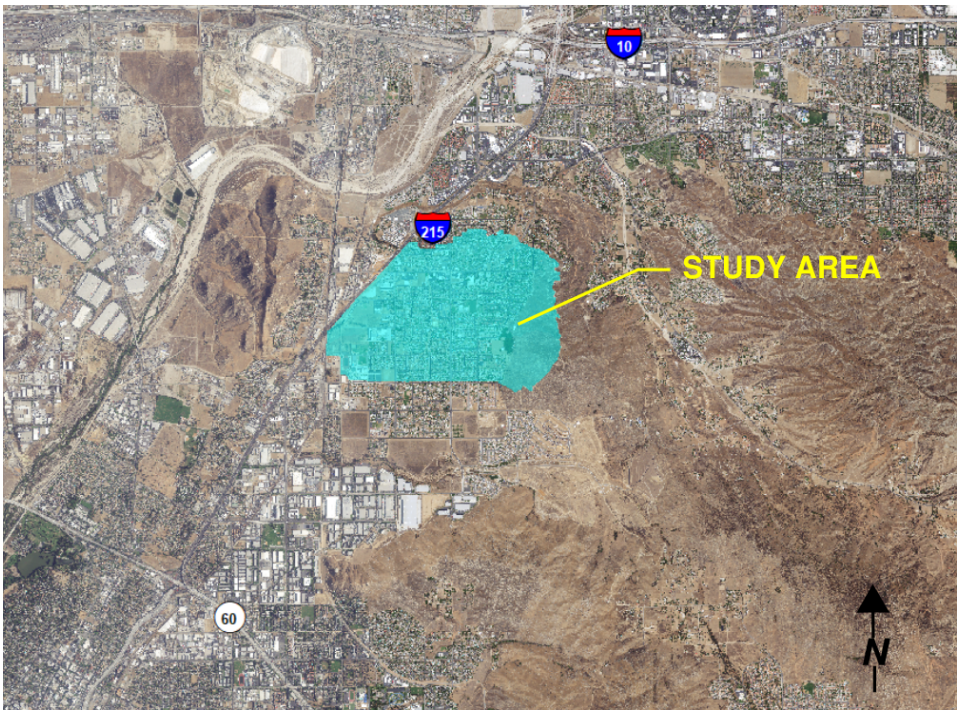
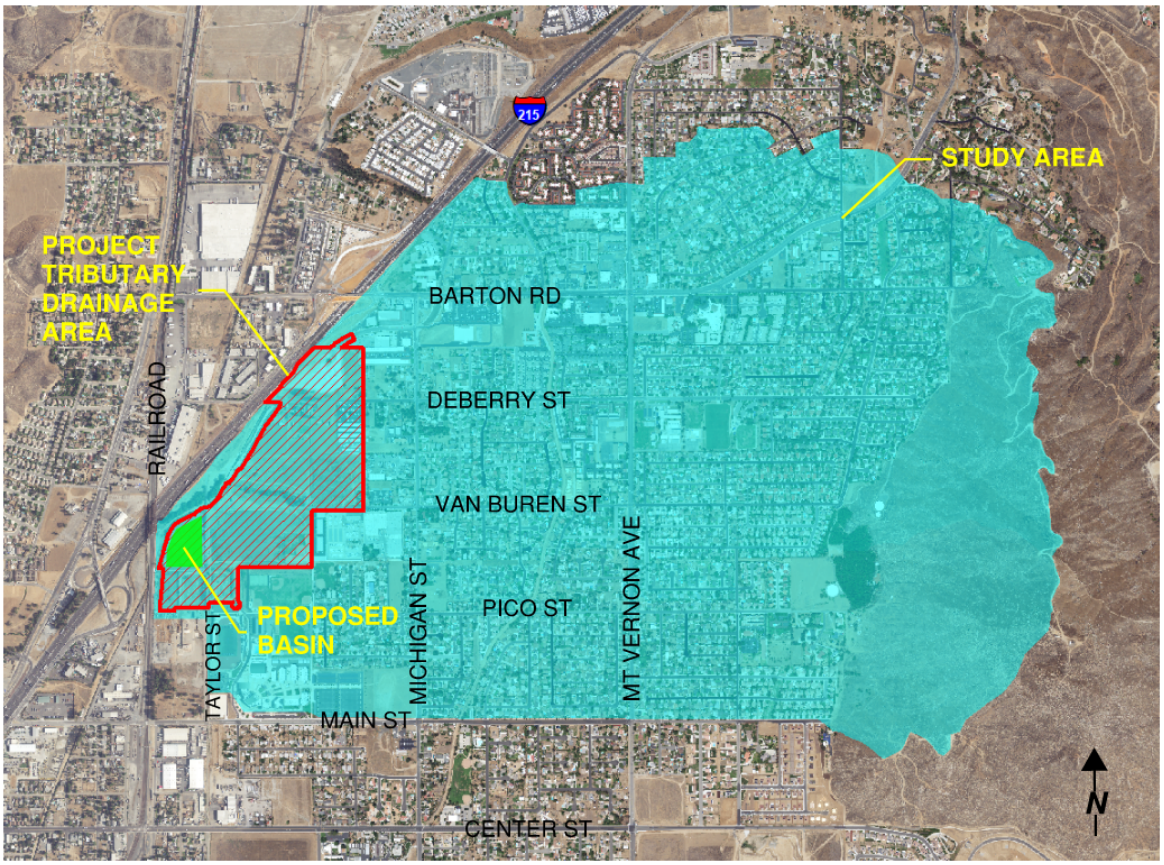


Figure 1-2. Project Location Map



2 FLOOD ROUTING ANALYSES

2.1 Background

This study focuses on the regional and local on-site watersheds tributary to the Gateway project site. The regional watershed encompasses majority of the City and runoff is generally transported downstream (east to west) via surface flow along a network of streets. Steep slopes and high curbs allow the flows to be contained within the streets for the most part. Flows generated from the proposed project site (on-site) are currently proposed to be conveyed via a storm drain system and discharged into the proposed detention/retention basin.

The Riverside Canal runs along the western edge of the project site and carries flows downstream to an existing 5'hx8'w RCB. Adjacent to the upstream end of the Riverside Canal, there is a concrete lined trapezoidal channel that conveys flows into a natural channel known as the Highgrove Storm Channel. From the Highgrove Channel, runoff is conveyed under the I-215 freeway via a double 6'hx6'w RCB.

In 2020, Q3 Consulting prepared a detailed regional drainage study focused on sizing a drainage system for the Pico and Van Buren Watersheds, "Pico Watershed Focused Drainage Study", January 2020 (Pico Study). This study identified the main storm drain system required to capture flows tributary to Pico Street and Van Buren Street. Both systems would discharge into one of two proposed retention basins constructed as part of the Gateway project, per the Pico Study.

The Gateway project is now evaluating the consolidation of the two basins into one large detention/retention basin. This study provides the supporting analyses for a single basin alternative. As part of this study, the analysis will ensure the peak outflow for the single basin into the two receiving waters is less than existing conditions. Since one of the two basin discharges is the County owned Highgrove Channel, a regional hydrology analysis must be performed using County methodology. In this case, it is the Small Area Unit Hydrograph method.

All other storm drains upstream of the proposed detention/retention basin can be designed using a City accepted methodology. In this case, the proposed local storm drain systems (tributary to the basin) were evaluated and sized using an advanced stormwater modeling system, Autodesk's XPStorm software.

2.2 Design Criteria

The regional hydrology for the design of storm drain systems is based on the County of San Bernardino requirements prescribed in the Hydrology Manual. The evaluation and preliminary design of drainage infrastructure was based on the 1-percent annual chance (100-year) storm event based on the methodology identified in Section 2.3.

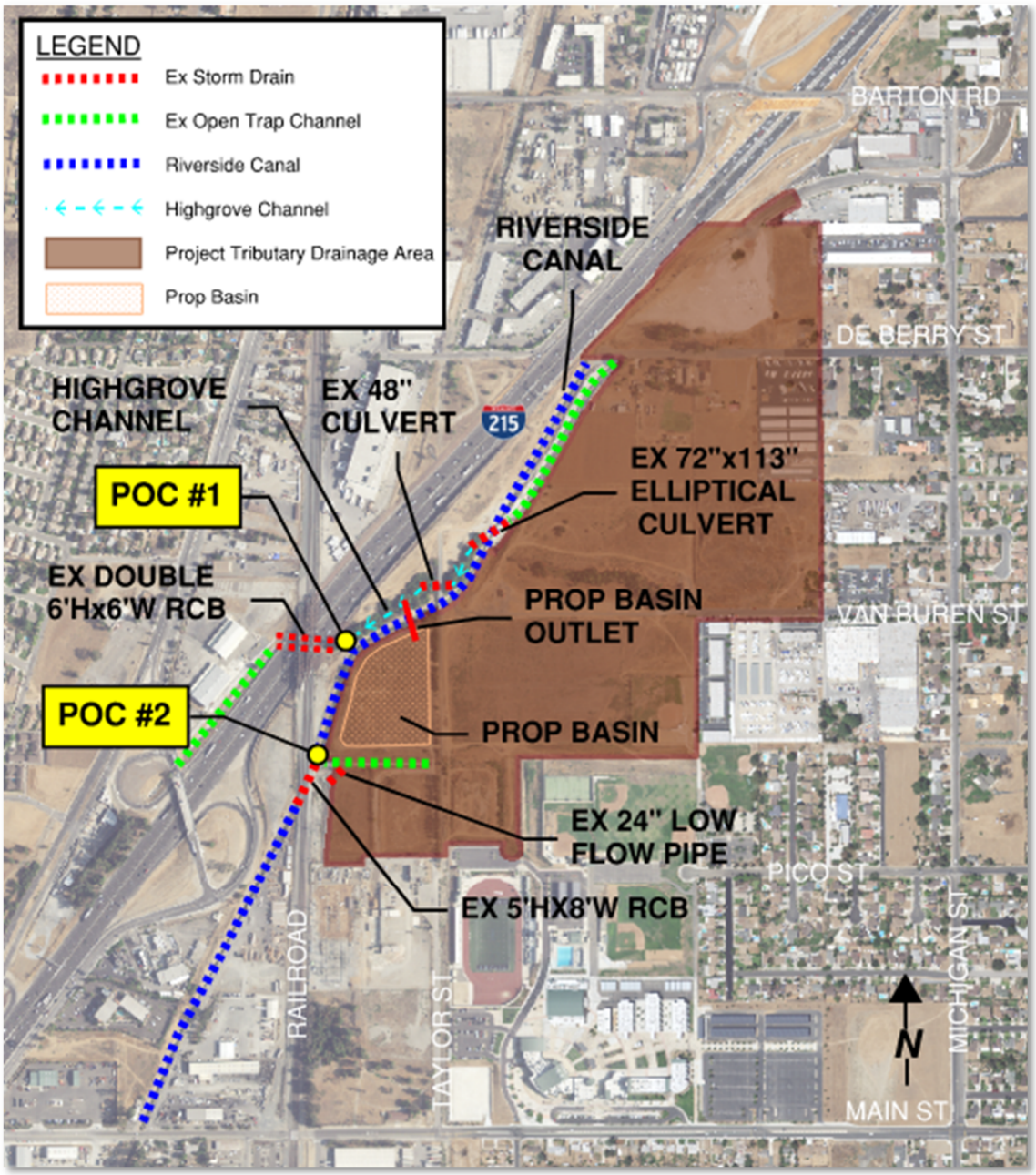
Point of Comparisons (POC):
Two discharge points were selected to serve as point of comparisons (POC) of the peak discharges between existing, interim, and proposed conditions to ensure the project conditions did not produce adverse impacts to the downstream receiving water bodies. POC #1 is located at the inlet of the existing double 6'Hx6'W RCBs located under the I-215 freeway and railroad crossing. POC#1 is the primary location of concern and comparison for project conditions.

POC #2 is located at the inlet of the existing 5'Hx8'W RCB that routes flow from the Riverside Canal under the railroad. According to the City of Riverside, this location was never intended to receive stormwater runoff. Consequently, POC#2 will not receive any regional runoff after the proposed basin is implemented.

Boundary Conditions (XPStorm):
In XPStorm existing, interim, and proposed condition models, the open channels downstream of POC #1 were set to normal depth. POC #2 was set to normal depth for the existing condition models, as interim and proposed conditions do not see any discharge to POC #2. Based on field investigation the historic water level of the Riverside Canal appeared to be approximately 2 feet deep. In order to replicate this condition, a steady state of 40 cfs was assigned to the Riverside Canal in the XP models.

Existing 48" Culvert in Highgrove Channel
The existing 48" culvert located in the Highgrove Channel does not have the capacity to convey 100-year design storm flows. In the event of a 100-year storm event, flows would bypass the existing 48" culvert and overtop the embankment. Therefore, for this analysis the existing 48" culvert was disregarded.

Figure 2-1. Existing Facilities and Point of Comparison (POC) for Peak Flows



2.3 Methodology

This study involves two distinct and different methods of analysis to serve two separate goals. The first method (County Method) was prepared to evaluate the regional hydrology tributary to the County facility (Highgrove Channel) and the potential impacts the project would have on this facility, as requested by San Bernardino County Flood Control District. This method includes the design of the proposed retention/detention basin.

A second, more detailed, method (Detailed Method) was prepared to evaluate required local drainage infrastructure required to adequately drain portions of the City and within the project area. This method was used to design the main (City) storm drain infrastructure tributary to the County facility. This analysis also continued the work previously performed in the Pico Study.

Both methods were developed and analyzed to satisfy the requirements of both County and City agencies. Although these methods are different, the flood control mitigation goals for both had to be met.

2.3.1 Single Area Unit Hydrographs using AES (County Method)

As seen on Exhibit 3 and Exhibit 4, three regional sub-watersheds were delineated based on drainage patterns and outlet points (general topography). The northern drainage boundary (Subarea 1A) and middle drainage boundary (Subarea 2A) eventually discharge into the existing double 6'x6'RCB underneath the I-215 freeway (POC #1/Node 101). The southern drainage boundary (Subarea 3B) eventually discharges into the Riverside Canal (POC #2/ Node 200). Guidelines for establishing the longest flow path, Lca, and effective slope were performed per the County Hydrology Manual.

A series of regional hydrology analyses were prepared in accordance with the San Bernardino County Hydrology Manual for the 2, 5, 10, 25, and 100-year storm events to evaluate the potential project impacts on the County-owned Highgrove Channel. For existing, interim, and proposed conditions, loss rates and unit hydrographs were developed using AES and per County Hydrology Manual. Lag was calculated per County Hydrology methodology and is summarized in the table below. For proposed condition, the basin routing was completed in AES.

2.3.2 Direct Rainfall using XPStorm (Detailed Method)

In addition to the County AES analysis, the study area hydrology and hydraulics were evaluated using XPStorm to support the sizing and future design of the project and City storm drain main-line systems. XPStorm is a dynamic-wave model that solves the full St. Venant Equations. XPStorm can model the surface in 2-dimensions, while linking to the subsurface infrastructure, or storm drain system. The result is a comprehensive model that can communicate between the surface and subsurface facilities throughout the modeled design storm duration. This analysis is an update to the of the Pico Study (2020) prepared by Q3 Consulting.

This model primarily is used to model and size the project on-site and City owned storm drain facilities. XPStorm is not currently on the County's accepted model list, therefore it was only used for the City drainage system sizing. The proposed basin was sized using the County method but was rerun in XPStorm to accurately identify the tailwater conditions for the proposed City storm drain facilities. This is due to the outlets from the basin tying into a County facility (Highgrove storm channel).

Due to the topographic and climatic characteristics of this region, this project study benefited from the use of an advanced surface model which identifies flow quantity and direction as it moves through the urban area. Traditional hydraulic modeling techniques would not accurately predict the existing flooding potential or the impacts of proposed improvements for these areas. Using these advanced modeling techniques, hydraulic analyses were completed for existing, interim and proposed conditions using a linked 2-dimensional surface model, and 1-dimensional subsurface model (1D/2D) in XPStorm. Again,

the use of XPStorm was for all the City storm drain facilities and the project proposed (main line) facilities.

All urbanized areas within the focused study area were evaluated in XPStorm using a rain-on-grid approach, or Direct Rainfall Method (DRM). DRM is the process of adding (net) rainfall directly to the two-dimensional surface, or digital terrain model. This method allows the surface's physical characteristics (i.e. topography, land use) to dictate the flow patterns, resulting in a more realistic rainfall-runoff modeling approach. Offsite areas, mainly hillside slopes, were evaluated externally using the Advanced Engineering Software's (AES) program to develop Unit Hydrographs for the design storm events. The offsite hydrographs were added to the DRM at the locations where the offsite hydrographs entered the urbanized area.

For a given watershed, DRM will yield different peak flow values than the Unit Hydrograph method. This is a result of the response of the runoff on the 2D surface. Theoretically, the peak flows produced by the Unit Hydrograph are calculated based on "lag", which is similar to time-of-concentration, that assumes all flows are concentrated and conveyed from one concentration point to the next. This assumption has a tendency to fictitiously reduce travel time. Reduced time-of-concentration yields higher peak flow rate estimates.

The rainfall patterns used in DRM are the same as what is used in AES (County Method). For the County method, the SBCFCD Manual precipitation values were used (NOAA 2). For the XPStorm models, the more recent NOAA 14 data was used.

Loss rates for both the Unit Hydrograph method, and the DRM were calculated based on the San Bernardino County Hydrology Manual. Loss rates in XPStorm were incorporated into the gross rainfall data, to yield a net rainfall to use on the 3d surface. To keep the two methods consistent, Loss rates were calculated and incorporated into the rainfall point precipitation depths based on Land Uses, Soil Type, and using Antecedent Moisture Condition 2 (AMC 2).

The XP models used for this study were based on the same models used in the "Pico Watershed Focused Drainage Study" (Q3, 2020). The City's existing storm drain system and model parameters such as rainfall, topography, and manning's values that were used in the Pico Study were also used in this study's models.

Table 2-1. Lag Parameters (County Method)

Subarea	n	L (mi)	Lca (mi)	S (ft/mi)	Lag (hr)
1A	0.02	2.05	0.99	293.31	0.21
2A	0.02	2.33	1.05	208.83	0.24
3B	0.02	2.35	1.17	226.11	0.25
3A	0.02	0.68	0.26	114.1	0.10

2.4 Watershed and Flood Routing Parameters

2.4.1 Precipitation

For the County Method AES calculations, the rainfall data was calculated using the SBCHM NOAA Atlas 2 data. AMC 3 was used for the 100-year and AMC 2 was used for the 2, 5, 10, and 25-year storm events.

For the Detailed Method XP models, direct rainfall method (DRM) data was prepared using the San Bernardino County Hydrology rainfall pattern to develop hyetographs. The point precipitation data for the 100-year storm event (or 1% annual chance) was based on the NOAA Atlas 14 data and AMC 2.

Table 2-2. NOAA Atlas 2 Point Precipitation Data used in AES (County Method)

Duration	100- Year Point Precipitation	25- Year Point Precipitation	10- Year Point Precipitation	5- Year Point Precipitation	2- Year Point Precipitation
5-min	0.41	0.36	0.3	0.27	0.22
30-min	0.85	0.75	0.63	0.58	0.45
60-min	1.2	1.0	0.85	0.75	0.6
3-hr	1.8	1.45	1.2	1.1	0.87
6-hr	2.25	1.8	1.57	1.38	1.1
24-hr	4.75	3.6	3.0	2.52	1.8

Table 2-3. NOAA Atlas 14, 100-Year Point Precipitation Data used in XP Models (Detailed Method)

Duration	100-Year Point Precipitation
5-min	0.291
30-min	0.765
60-min	1.12
3-hr	1.89
6-hr	2.61
24-hr	4.65

2.4.2 Topography

Existing topography (2013) was provided by the City. This data was used to develop the 2-D surface within XPSTORM.

2.4.3 Vertical Datum

The project uses the North American Vertical Datum of 1988 (NAVD88).

2.4.4 Soil Types

Soil data from USDA Natural Resources Conservation Services Web Soil Survey was used for this analysis.

2.4.5 Land Uses

Existing land uses were taken from the General Plan Land Use obtained from the San Bernardino County ArcGIS website.

2.4.6 Manning's "n" Value

A varying manning's value was used for the model. The manning's designations were as follows:

0.06 – Open Space
0.045– Residential/Commercial Landscaping
0.025 - Streets

Blocked– buildings/obstructions were not modeled with a Manning's roughness.

For 2-D modeling (used in the Detailed Method), the roughness coefficients are higher than standard drainage conduit values. The primary reason is, flows are generally shallow on 2-D surfaces, therefore roughness is relatively more impactful on flows regimes.

2.4.7 Grid Size (Detailed Method)

The grid cell resolution is an important consideration in two-dimensional modeling. Small grid cell sizes increase accuracy, but require additional computation times; while larger grid sizes compromise accuracy but increase computation time. The determination of grid size requires a trade-off to ensure a workable model without compromising satisfactory accuracy.

Multiple cell sizes can be specified within one model, allowing a larger grid size to be used in areas were high detail is not required and a smaller grid size to be used in primary areas of interest. Multiple cells sizes were evaluated and a 10-foot grid cell size was used for the Grand Terrace model. This cell size was sufficient to adequate capture the street flow conveyance, and refined enough to provide a higher level of detail in areas where bifurcation could be present

2.4.8 Computational Time Step (Detailed Method)

The computational time step is very important for 2-D modeling. At each time increment, the software computes a flow depth at each cell as well as each cell boundary, and assigns flow accordingly, resulting in a new computation at the subsequent time step therefore increasing the simulation time. Grid size is directly proportion to the computational time step. A time-step of 0.8 seconds was used for 10-foot grid cells.

2.5 Existing Condition Analyses (County Method)

An evaluation of proposed impacts due to the project are required by the County due to the discharge into the Highgrove Channel. The potential impact of the proposed development was evaluated in two scenarios: a local project onsite analysis; and a regional watershed analysis.

The existing condition of the project onsite and regional watersheds were evaluated to establish peak flow mitigation goals.

2.5.1 Project Site Existing Condition Analysis

Peak flows calculated for the local analysis was based on the project site being the only tributary area. Off-site regional flows from the Riverside Canal and Highgrove Storm Channel were not considered for this local analysis. The existing condition peak flow rates for the project onsite analysis was calculated for the 25-year and 100-year storm events. Per County hydrology guidelines, the 100-year proposed peak flow generated from the project site should not exceed the 25-year existing condition flow. Loss rates and unit hydrographs were calculated using AES. The existing peak flow results are summarized in Table 2-5 below and on Exhibit 1.

2.5.2 Regional Existing Condition Analysis

In this evaluation, off-site regional flows tributary to the existing double 6'x 6' RCB at POC #1 and the Riverside Canal at POC #2 are taken into consideration. The existing condition of the regional analysis was evaluated using two methods.

- The first method was the same as what was done for the project onsite analysis. AES was used to calculate loss rates and develop unit hydrographs per San Bernardino County Hydrology Manual methodology for the 2, 5, 10, 25, and 100-year storm events.

- The second method was using XPStorm to develop a 1-D/2-D hydraulic model with direct rainfall for the 100-year storm event.

In existing condition there is an open channel along the southern border of the future proposed basin which carries flows into the existing 5'hx8'w RCB and eventually into the Riverside Canal. A 24-inch low flow pipe was identified during field investigation which diverts flows away from the Riverside Canal. To account for the reduction of flow reaching POC #2 due to this low flow pipe, a conservative approach was taken which assumed the maximum head of 4ft (the depth of the open channel) acting on the inlet of the low flow pipe. With a headwater of 4 feet, 13 cfs could be conveyed through the low flow pipe. In the AES method, 13 cfs was subtracted from the existing condition unit hydrograph peak flows as seen in Figure A.

The existing peak flow results are summarized in Table 2-7, Table 2-8 below and on Exhibit 3.

2.6 Proposed Condition Analyses

A detention-retention basin is proposed that will serve as a regional flood attenuation facility. The goal of the basin is to not only reduce the peak runoff of the Gateway project site, but also reduce the peak runoff of the regional watershed. The proposed basin is approximately 75 ac-ft and has a bottom elevation of 920 feet and a top elevation of 945 feet. The culvert hydraulic program by the Federal Highway Administration (FHWA) was used to determine the discharge of the proposed 3'h x 4.5'w RCB basin outlet. Table 2-4 shows the stage-storage-discharge relationship. The proposed basin outlets into the existing double 6'hx6'w RCB underneath the I-215 freeway (POC #1/ Node 101). No discharge is proposed to flow into the Riverside Canal (POC #2/ Node 200). The proposed basin outlet RCB travels under the existing Riverside Canal and discharges into the Highgrove Channel just upstream of the Caltrans 6'x6' RCB. This outlet will require energy dissipation within the footprint of the existing channel.

The potential impact of the proposed development was evaluated in two scenarios- a local project onsite analysis and a regional watershed analysis.

Table 2-4. Proposed Basin Storage-Area-Discharge Curve

Elevation	Depth (ft)	Area (ac)	Total Vol (ac-ft)	Discharge (cfs)
920	0	0	0	0
925	5	1.74	9.83	113
930	10	2.19	22.02	192
935	15	2.69	36.78	248
940	20	3.22	54.33	293
945	25	3.8	74.84	332

2.6.1 Project Onsite Proposed Condition (County Method)

Peak flows calculated for this local analysis was based on the project site being the only tributary area. This area was isolated to understand the actual runoff potential from the project site itself, to compare to the existing runoff of the same area. Off-site regional flows from the Riverside Canal and Highgrove Storm Channel were not considered for this local analysis. The proposed condition peak flow rates for the project onsite analysis were calculated for the 100-year storm event. Loss rates and unit hydrographs were developed using AES. AES was also used to define the basin, outlet designs, and route the unit hydrographs.

Per County hydrology guidelines, the 100-year proposed peak flow generated from the project site should not exceed the 25-year existing condition flow. The 25-year existing condition peak flow was approximately 262 cfs and the 100-year proposed unmitigated flow was 317.8 cfs. After routing the proposed hydrograph in AES, the 100-year basin max water surface elevation was approximately 923.7 feet. The southern outlet (POC #2) has been disconnected from the upstream "existing channel". That flow now enters the basin where it is mitigated and discharged to POC#1. The basin discharge to POC #1, for the 100-year peak flow is 93 cfs. The 100-year proposed mitigated flow of 82.9 cfs is well under the 25-year existing condition flow of 262.0 cfs and therefore meets County discharge requirements.

Table 2-5. Project Onsite AES Results (County Method)

Location	Tributary Area (ac)	25- Year Exist (cfs)	100-Year Exist (cfs)	100-Year Prop Unmitigated (cfs)
Project Site (Subarea 3A)	98.5	262.0	292.2	317.8

Table 2-6. Project Onsite AES Results (County Method)

Location	100-Year Prop Mitigated
Basin Max WSE (ft)	923.7
POC #1 / Node 101 Qpeak (cfs)	82.9
POC #2 / Node 200 Qpeak (cfs)	0

2.6.2 Regional Interim Condition (Detailed Method)

In this analysis, the Detailed Model was used to evaluate the impact of constructing some of the ultimate infrastructure outlined in the Pico Study (2020). Exhibit 6 shows the results of the XPStorm and the layout of the first phase of constructed storm drain infrastructure ("red" lines). Future storm drain will be constructed by the City along Pico Street, and Van Buren Street per the "yellow" lines shown in Exhibit 7. The purpose of this analysis is to evaluate the interim conditions and compare results to that of the ultimate conditions with respect to sizing the proposed basin outlet facilities. Those facilities will be designed to convey and mitigate both scenarios.

2.6.3 Regional Proposed Condition

In this analysis, regional flows tributary to the existing double 6'x 6' RCB at POC #1 and the Riverside Canal at POC #2 are taken into consideration, which include the project site. The proposed condition of the regional analysis was evaluated using both hydrology methods.

- The County Method included the 2, 5, 10, 25, and 100-year storm events. AES was used to route the flows through the proposed basin. The method set the goals for flood control mitigation, and subsequently the conduit (outlet) sizes in the basin.
- The Detailed Method was run using XPStorm using the basin outlet configuration identified in the County Method. The 100-year storm event was calculated to identify and size the project-site main storm drain facilities.

In the Detailed Method, off-site flows were conveyed through the project according to topography, existing and proposed storm drain lines. These XPStorm results should be used as an update to the Pico Study (2020).

The existing and proposed mitigated peak flow rates are summarized in Table 2-7, Table 2-8 and Exhibit 4. In the AES County method, the proposed mitigated flow at both outlet locations is below existing flows in all the storm events. In the XPStorm method, the 100-year proposed mitigated flow is below existing flow at both proposed outlet locations.

Table 2-7. Regional AES Results (County Method)

Regional- AES Results										
Location	**100- Year**		**25- Year**		**10- Year**		**5- Year**		**2- Year**	
	Exist	**Prop**	**Exist**	**Prop**	**Exist**	**Prop**	**Exist**	**Prop**	**Exist**	**Prop**
Basin Max WSE (ft)	--	944.0	--	938.0	--	935.2	--	933.4	--	930.3
POC #1 / Node 101 Qpeak (cfs)	2008.4	1444.2	1625.9	1186.5	1325.6	988	1181.2	890.6	897.6	688.9
POC #2 / Node 200 Qpeak (cfs)	870.9*	0	679.9*	0	546.1*	0	481.0*	0	356.0*	0

Note: All proposed values shown in table above include proposed basin mitigation
**13 cfs was subtracted from the existing condition flow at POC #2/Node 200 to account for the low flow pipe diverting flows away from the Riverside Canal*

Table 2-8. Regional XPStorm Results (Detailed Method)

Regional - XPStorm Results			
Location	**100- Year**		
	Exist	**Interim**	**Ultimate**
Basin Max WSE (ft)	--	933.1	933.7
POC #1 / Node 101 Qpeak (cfs)	628	593.6	607.3
POC #2 / Node 200 Qpeak (cfs)	235	0	0

Note: All proposed values shown in table above include basin mitigation

Table 2-8 identifies a "0 cfs" for POC#2 as flow no longer will be diverted to the canal. No discharge from basin (or from the existing tributary channel) occurs in either interim or ultimate conditions.

The governing condition for the design of the basin is the Ultimate, with a maximum basin WSE of 933.7 and a peak discharge downstream (POC #1) of 607.3 cfs.

3 CONCLUSIONS

The goal of this study is to evaluate and size a proposed 75 ac-ft detention-retention basin to provide a local and regional flood attenuation solution. This study is not intended to include final designs for the Gateway drainage backbone.

Two hydrologic methods were evaluated to understand the impacts of the project and proposed detention basin on the downstream receiving waters. Since the main receiving water body is a County facility (Highgrove Channel), it is required by the County to evaluate the existing and proposed conditions using a County authorized stormwater modeling software. AES was used to develop the watershed hydrographs and to perform basin routing. The outlet consists of an RCB storm drain with a compound slope, that discharges into a natural channel. The outlet is modeled comprehensively with the downstream channel and the Caltrans 6'x6' RCB to better understand the hydraulic conditions and behaviors within the system network.

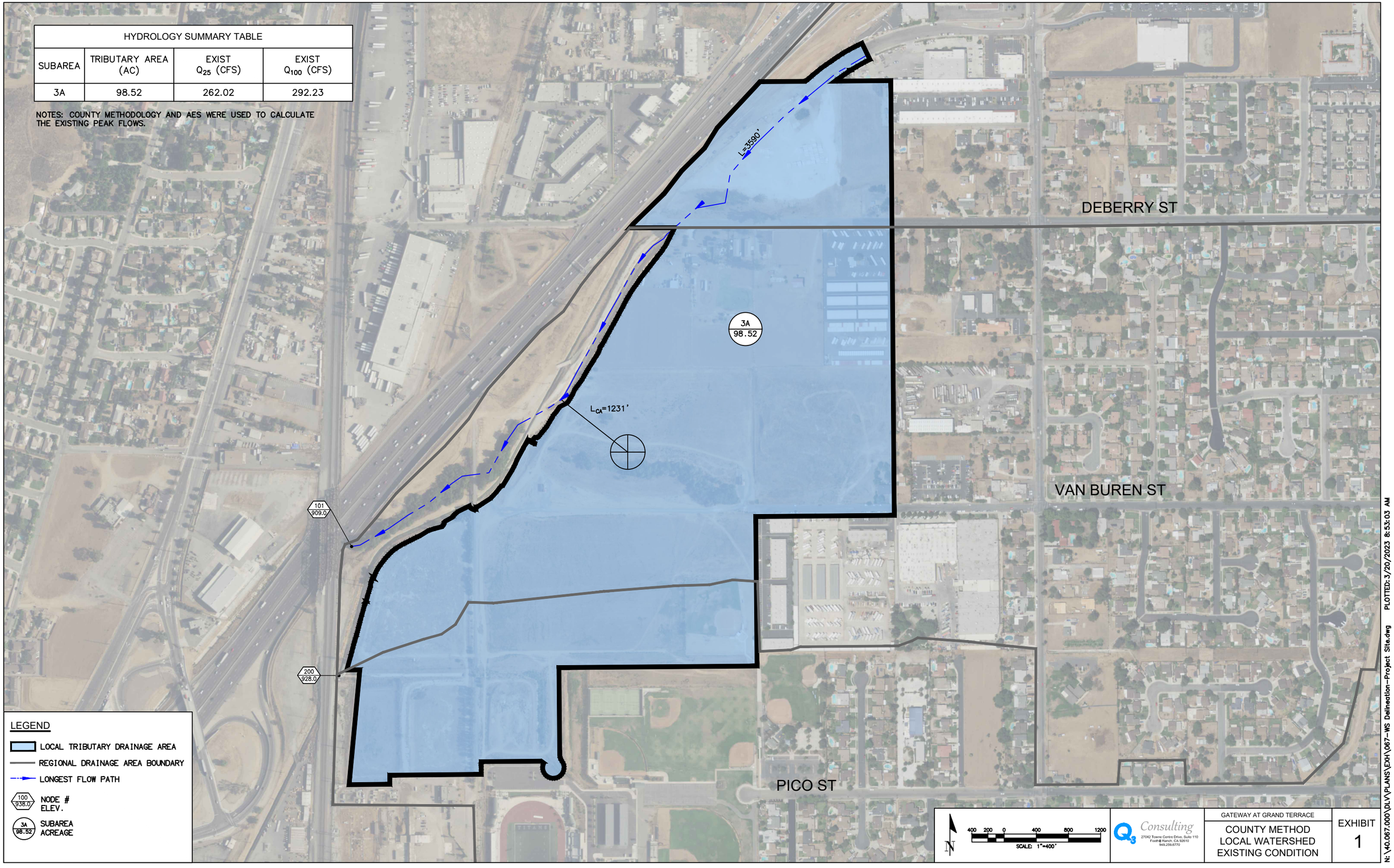
The second method used in this study (Detailed Method) included the use of a more advanced stormwater software model, XPStorm. This method included the use of XPStorm and builds off of City models already developed during the Pico Study (2020). The detailed model was selected by the City to evaluate the immediate watershed and drainage infrastructure and will be used to size and design the project main storm drain facilities.

The local project on-site and regional off-site analyses demonstrate the proposed development should have no adverse impact on downstream facilities. For the County Method, the proposed 100-year local on-site flows are mitigated to below existing 25-year flows. Using San Bernardino County hydrology methodology, the 2, 5, 10, 25, and 100-year regional peak flows are below existing peak flows. Using advanced dynamic flood routing in XPStorm, the proposed 100-year peak flow is below the existing peak flow for both the interim conditions and the proposed conditions.

Based on the results of the County Method, the 100-year (project conditions) discharge into the Highgrove Channel is less than the 25-year existing conditions. For the Detailed Method, the 100-year project conditions runoff is less to both Highgrove Channel and Gage Canal than the existing condition 100-year runoff.

HYDROLOGY SUMMARY TABLE			
SUBAREA	TRIBUTARY AREA (AC)	EXIST Q_{25} (CFS)	EXIST Q_{100} (CFS)
3A	98.52	262.02	292.23

NOTES: COUNTY METHODOLOGY AND AES WERE USED TO CALCULATE THE EXISTING PEAK FLOWS.



LEGEND

- LOCAL TRIBUTARY DRAINAGE AREA
- REGIONAL DRAINAGE AREA BOUNDARY
- LONGEST FLOW PATH
- 100 / 938.0 — NODE # / ELEV.
- 3A / 98.52 — SUBAREA / ACREAGE

N

400 200 0 400 800 1200

SCALE: 1"=400'

Consulting
27042 Towne Centre Drive, Suite 110
Foothill Ranch, CA 92610
949.259.9770

GATEWAY AT GRAND TERRACE

COUNTY METHOD
LOCAL WATERSHED
EXISTING CONDITION

EXHIBIT
1

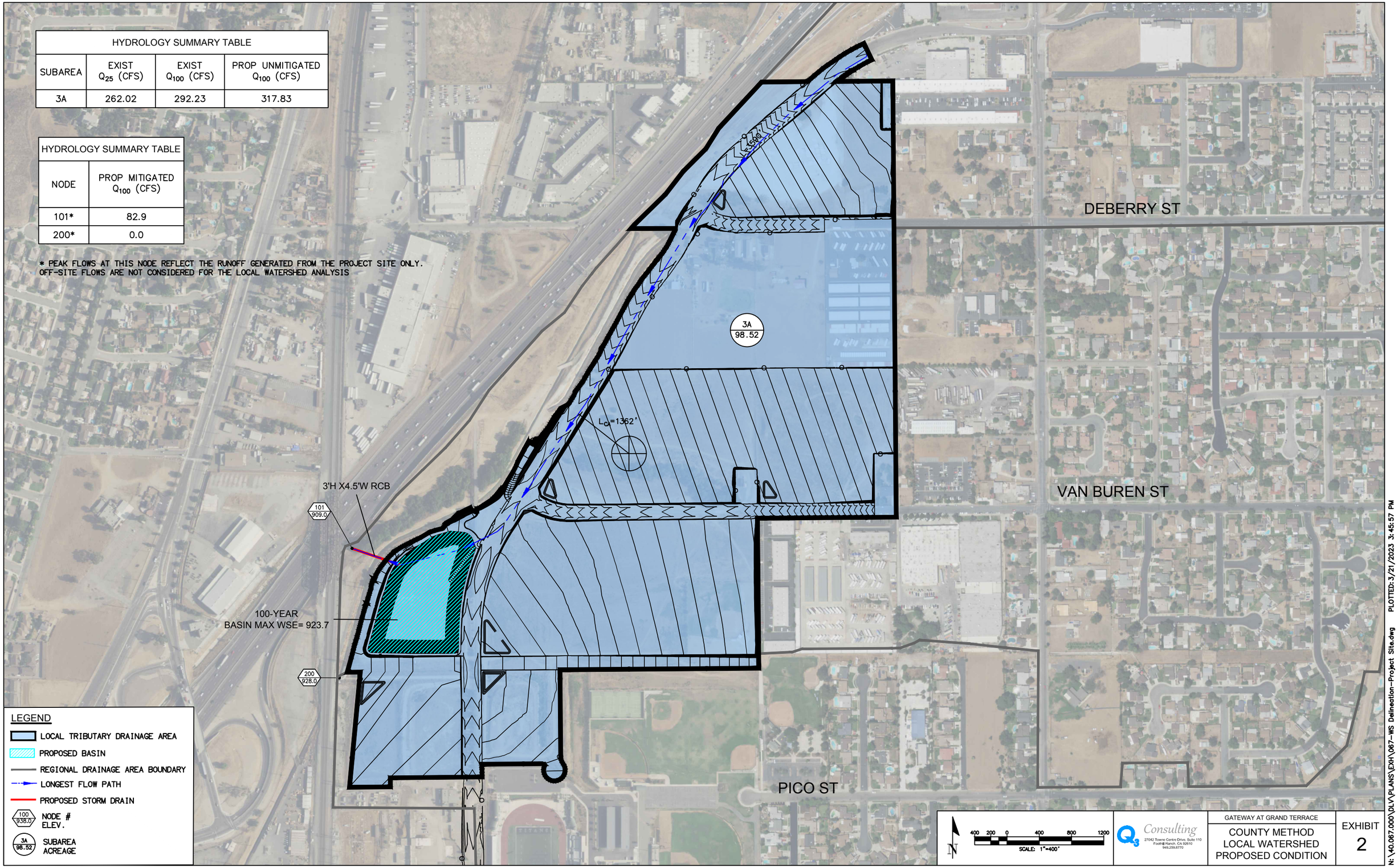
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HYDROLOGY SUMMARY TABLE			
SUBAREA	EXIST Q_{25} (CFS)	EXIST Q_{100} (CFS)	PROP UNMITIGATED Q_{100} (CFS)
3A	262.02	292.23	317.83

HYDROLOGY SUMMARY TABLE	
NODE	PROP MITIGATED Q_{100} (CFS)
101*	82.9
200*	0.0

* PEAK FLOWS AT THIS NODE REFLECT THE RUNOFF GENERATED FROM THE PROJECT SITE ONLY.
OFF-SITE FLOWS ARE NOT CONSIDERED FOR THE LOCAL WATERSHED ANALYSIS



Consulting
27042 Towne Centre Drive, Suite 110
Foothill Ranch, CA 92610
949.259.0770

GATEWAY AT GRAND TERRACE

COUNTY METHOD
LOCAL WATERSHED
PROPOSED CONDITION

EXHIBIT
2

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HYDROLOGY SUMMARY TABLE	
SUBAREA	Q_{100} EXIST cfs
1A	1241.54
2A	823.43
3B	870.94*

HYDROLOGY SUMMARY TABLE	
NODE	Q_{100} EXIST cfs
100	1241.54
101	2008.37
200	870.94

NOTES: COUNTY METHODOLOGY AND AES WERE USED TO CALCULATE THE EXISTING PEAK FLOWS

BARTON RD
MT VERNON AVE
OBSERVATION ST
DEBERRY ST
WREN ST
VAN BUREN ST
PICO ST
MICHIGAN ST
MAIN ST

1A 592.60
2A 428.58
3B 475.33

L_{CA}=5244'
L=10827'
L=2186'
L_{CA}=5557'
L=12289'
L_{CA}=6159'
L=12390'

100 938.0
101 909.0
200 928.0

LEGEND
- DRAINAGE AREA BOUNDARY
- LONGEST FLOW PATH
- PROJECT TRIBUTARY DRAINAGE BOUNDARY
- 100 / 938.0 — NODE # / ELEV.
- 1A / 577.95 — SUBAREA / ACREAGE

N

900 450 0 900 1800 2700
SCALE: 1"=900'

Q3 Consulting
27042 Towne Centre Drive, Suite 110
Foothill Ranch, CA 92610
949.259.0770

GATEWAY AT GRAND TERRACE
COUNTY METHOD
REGIONAL WATERSHED
EXISTING CONDITION

EXHIBIT 3

N:\40.067.000\DLV\PLANS\EXH\067-WS Delineation-Regional.dwg PLOTTED: 3/20/2023 8:40:43 AM

HYDROLOGY SUMMARY TABLE		
SUBAREA	EXIST Q_{100} (CFS)	PROP UNMITIGATED Q_{100} (CFS)
1A	1241.54	1212.88
2A	823.43	908.47
3B	870.94	842.52

BARTON RD
MT VERNON AVE
OBSERVATION ST
DEBERRY ST
WREN ST
VAN BUREN ST
PICO ST
MICHIGAN ST
MAIN ST
1A 577.95
2A 466.32
3B 452.30
L_{CA}=5244'
L=10827'
L_{CA}=5557'
L=12289'
L_{CA}=6159'
L=12390'
L=2186'
100 938.0
3'HX4.5'W RCB
101 909.0
100-YEAR
BASIN MAX WSE= 944.0
303 921.0
200 928.0
300 2075
302 2225
301 2422

LEGEND
- DRAINAGE AREA BOUNDARY
- SUBAREA DRAINAGE AREA BOUNDARY
- LONGEST FLOW PATH
- PROPOSED STORM DRAIN
- PROPOSED BASIN
- 100 / 938.0 — NODE # / ELEV.
- 1A / 577.95 — SUBAREA ACREAGE

	100 year AES		25 year AES		10 year AES		5 year AES		2 year AES	
	Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop
Basin WSE (ft)	--	944.0	--	938.0	--	935.2	--	933.4	--	930.3
Discharge into Caltrans Dbl 6x6 (cfs) (Node 101)	2008.4	1444.2	1625.9	1186.5	1325.6	988.0	1181.2	890.6	897.6	688.9
Discharge into Canal (cfs) (Node 200)	870.9	0	679.9	0	546	0	481.0	0	356.0	0

N
900 450 0 900 1800 2700
SCALE: 1"=900'

Q3 Consulting
27042 Towne Centre Drive, Suite 110
Foothill Ranch, CA 92610
949.259.0770

GATEWAY AT GRAND TERRACE
COUNTY METHOD
REGIONAL WATERSHED
PROPOSED CONDITION

EXHIBIT 4

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BARTON RD

DEBERRY ST

VANBUREN ST

PICO ST

TAYLOR ST

MICHIGAN ST

VERNON AVE

MAIN ST

215

POC #1
Ex Dbl 6'x6' RCB
Q_{100}=628 cfs

POC #2
Ex 5'hx8'w RCB
Q_{100}=235 cfs

Legend

- Ex SD
- Ex Open Channel
- Prop SD

max depth (ft)

- 0.25 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 <

Q3 Consulting

N

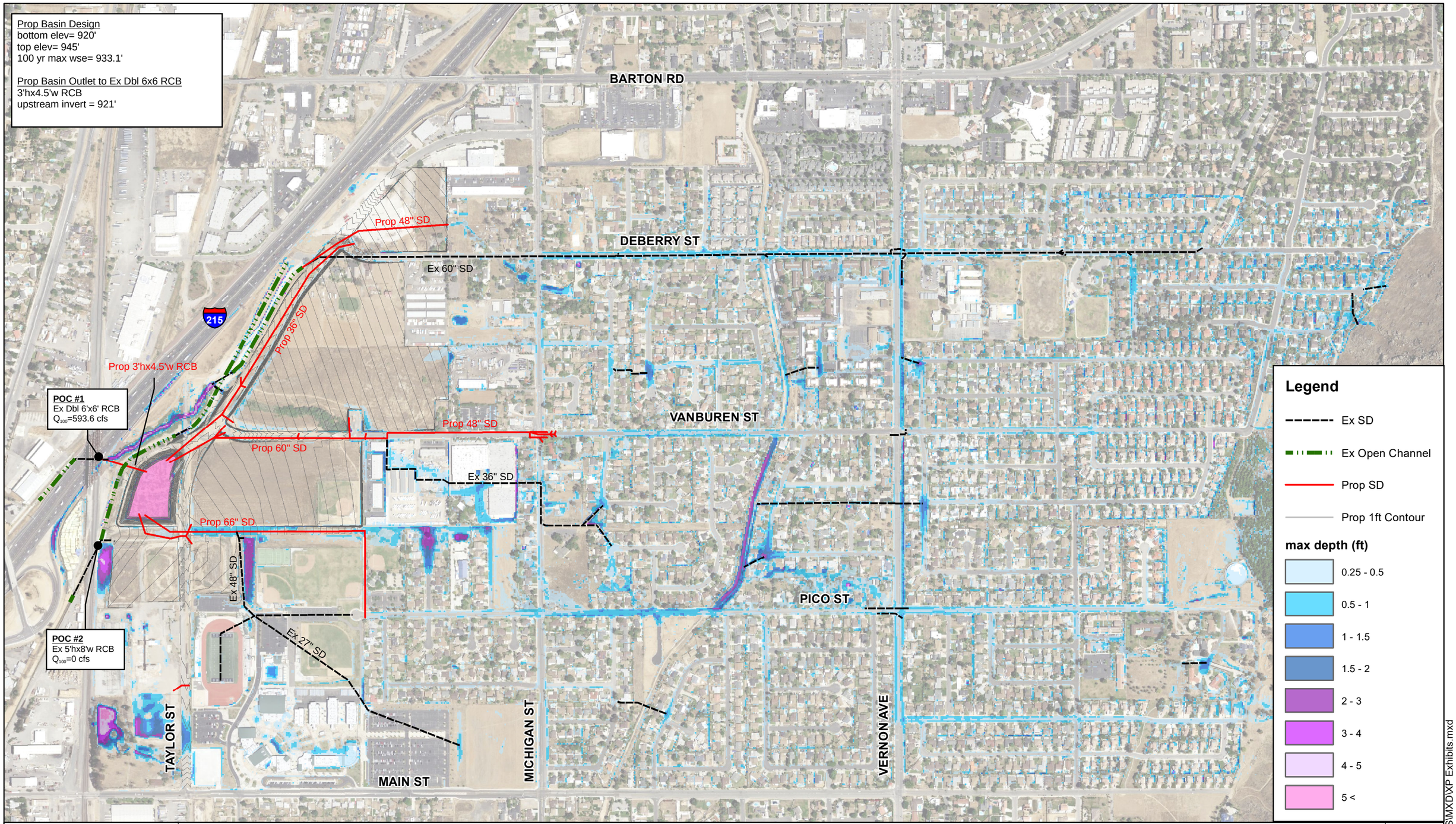
0 250 500 1,000 Feet

Gateway at Grand Terrace - Specific Plan

Detailed Model (XPStorm)
Existing Condition 100-Year Max Depth

EXHIBIT 5

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Q3 Consulting

N

0 250 500 1,000 Feet

Gateway at Grand Terrace - Specific Plan

Detailed Model (XPStorm)
Interim Condition 100-Year Max Depth

EXHIBIT 6

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Prop Basin Design
bottom elev= 920'
top elev= 945'
100 yr max wse= 933.7'

Prop Basin Outlet to Ex Dbl 6x6 RCB
3'hx4.5'w RCB
upstream invert = 921'

POC #1
Ex Dbl 6'x6' RCB
Q_{100}=607.3 cfs

POC #2
Ex 5'hx8'w RCB
Q_{100}=0 cfs

BARTON RD
DEBERRY ST
VANBUREN ST
PICO ST
MAIN ST
TAYLOR ST
MICHIGAN ST
VERNON AVE
215

Prop 48" SD
Ex 60" SD
Prop 36" SD
Prop 3'hx4.5'w RCB
Prop 48" SD
Prop 60" SD
Prop 36" SD
Ex 36" SD
Prop 66" SD
Ex 48" SD
Ex 27" SD
Prop 54" SD
Prop 42" SD

Legend

- Ex SD
- Ex Open Channel
- Prop SD
- Prop SD Ult Condition
- Prop 1ft Contour

max depth (ft)

- 0.25 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 <

Q3 Consulting

N

0 250 500 1,000 Feet

Gateway at Grand Terrace - Specific Plan

Detailed Model (XPStorm)
Ultimate Condition 100-Year Max Depth

EXHIBIT 7

N:\40.067.000\GIS\MXD\XP Exhibits.mxd

Appendix A
Existing Condition Hydrology
County Method (AES)

EXIST 100-YEAR
PROJECT ON-SITE ANALYSIS

LOSS RATE CALCULATIONS
EXISTING ON-SITE
100-YR ANALYSIS

****
NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS
==========
(C) Copyright 1989-2015 Advanced Engineering Software (aes)
Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Local-100yr-Exist
01-14-2022
==========
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 4.75 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	5.02	10.00	32.(AMC II)	0.742	0.870
2	0.20	10.00	69.(AMC II)	0.272	0.923
3	28.31	100.00	50.(AMC II)	0.495	0.390
4	0.94	100.00	69.(AMC II)	0.272	0.681
5	57.38	100.00	79.(AMC II)	0.170	0.832
6	0.06	60.00	69.(AMC II)	0.272	0.789
7	1.35	10.00	32.(AMC II)	0.742	0.870
8	0.08	10.00	56.(AMC II)	0.423	0.904
9	5.18	10.00	69.(AMC II)	0.272	0.923

TOTAL AREA (Acres) = 98.52

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.250

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.289
==========

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

            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
          (c) Copyright 1989-2015 Advanced Engineering Software (aes)
              Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:



 ************************ DESCRIPTION OF STUDY ************************
* Grand Terrace                                                       *
* SAUH-Local-Existing Condition                                       *
* 2022-01-14                                                          *
 *********************************************************************

  FILE NAME: EXLOC100.DAT
  TIME/DATE OF STUDY: 11:29 01/14/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      95.520 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.100 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.250
         LOW LOSS FRACTION = 0.289
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  2.25
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  4.75
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.996
30-MINUTE FACTOR = 0.996
1-HOUR FACTOR = 0.996
3-HOUR FACTOR = 0.999
6-HOUR FACTOR = 1.000
24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 83.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	12.091	139.675
2	66.357	626.880
3	94.973	330.574
4	99.026	46.817
5	99.610	6.750
6	99.903	3.375
7	100.000	1.125

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 9.9374
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 27.8509

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	75.0	150.0	225.0	300.0
0.083	0.0061	0.88	Q	.	.	.	.
0.167	0.0395	4.85	Q	.	.	.	.
0.250	0.0874	6.95	Q	.	.	.	.
0.333	0.1374	7.26	Q	.	.	.	.
0.417	0.1878	7.32	Q	.	.	.	.
0.500	0.2385	7.36	Q	.	.	.	.
0.583	0.2894	7.39	Q	.	.	.	.
0.667	0.3404	7.41	Q	.	.	.	.
0.750	0.3916	7.42	Q	.	.	.	.
0.833	0.4428	7.44	Q	.	.	.	.
0.917	0.4942	7.46	Q	.	.	.	.
1.000	0.5458	7.48	Q	.	.	.	.
1.083	0.5974	7.50	VQ	.	.	.	.
1.167	0.6492	7.52	VQ	.	.	.	.
1.250	0.7011	7.54	.Q	.	.	.	.
1.333	0.7532	7.56	.Q	.	.	.	.
1.417	0.8054	7.58	.Q	.	.	.	.
1.500	0.8577	7.60	.Q	.	.	.	.
1.583	0.9102	7.62	.Q	.	.	.	.
1.667	0.9628	7.64	.Q	.	.	.	.
1.750	1.0155	7.66	.Q	.	.	.	.
1.833	1.0684	7.68	.Q	.	.	.	.
1.917	1.1214	7.70	.Q	.	.	.	.
2.000	1.1746	7.72	.Q	.	.	.	.
2.083	1.2279	7.74	.Q	.	.	.	.
2.167	1.2814	7.76	.Q	.	.	.	.
2.250	1.3350	7.78	.Q	.	.	.	.
2.333	1.3887	7.81	.Q	.	.	.	.
2.417	1.4427	7.83	.QV	.	.	.	.
2.500	1.4967	7.85	.QV	.	.	.	.
2.583	1.5509	7.87	.QV	.	.	.	.
2.667	1.6053	7.89	.QV	.	.	.	.
2.750	1.6598	7.92	.QV	.	.	.	.
2.833	1.7145	7.94	.QV	.	.	.	.
2.917	1.7693	7.96	.QV	.	.	.	.
3.000	1.8243	7.99	.QV	.	.	.	.
3.083	1.8795	8.01	.QV	.	.	.	.
3.167	1.9348	8.03	.QV	.	.	.	.
3.250	1.9903	8.06	.QV	.	.	.	.

3.333	2.0459	8.08	.QV	.	.	.	.
3.417	2.1017	8.10	.Q V	.	.	.	.
3.500	2.1577	8.13	.Q V	.	.	.	.
3.583	2.2139	8.15	.Q V	.	.	.	.
3.667	2.2702	8.18	.Q V	.	.	.	.
3.750	2.3267	8.20	.Q V	.	.	.	.
3.833	2.3834	8.23	.Q V	.	.	.	.
3.917	2.4402	8.25	.Q V	.	.	.	.
4.000	2.4973	8.28	.Q V	.	.	.	.
4.083	2.5545	8.31	.Q V	.	.	.	.
4.167	2.6119	8.33	.Q V	.	.	.	.
4.250	2.6694	8.36	.Q V	.	.	.	.
4.333	2.7272	8.39	.Q V	.	.	.	.
4.417	2.7852	8.41	.Q V	.	.	.	.
4.500	2.8433	8.44	.Q V	.	.	.	.
4.583	2.9016	8.47	.Q V	.	.	.	.
4.667	2.9602	8.50	.Q V	.	.	.	.
4.750	3.0189	8.53	.Q V	.	.	.	.
4.833	3.0778	8.56	.Q V	.	.	.	.
4.917	3.1370	8.58	.Q V	.	.	.	.
5.000	3.1963	8.62	.Q V	.	.	.	.
5.083	3.2558	8.64	.Q V	.	.	.	.
5.167	3.3156	8.68	.Q V	.	.	.	.
5.250	3.3755	8.70	.Q V	.	.	.	.
5.333	3.4357	8.74	.Q V	.	.	.	.
5.417	3.4961	8.77	.Q V	.	.	.	.
5.500	3.5567	8.80	.Q V	.	.	.	.
5.583	3.6175	8.83	.Q V	.	.	.	.
5.667	3.6785	8.86	.Q V	.	.	.	.
5.750	3.7398	8.89	.Q V	.	.	.	.
5.833	3.8012	8.93	.Q V	.	.	.	.
5.917	3.8630	8.96	.Q V	.	.	.	.
6.000	3.9249	9.00	.Q V	.	.	.	.
6.083	3.9871	9.03	.Q V	.	.	.	.
6.167	4.0495	9.06	.Q V	.	.	.	.
6.250	4.1122	9.10	.Q V	.	.	.	.
6.333	4.1751	9.14	.Q V	.	.	.	.
6.417	4.2382	9.17	.Q V	.	.	.	.
6.500	4.3016	9.21	.Q V	.	.	.	.
6.583	4.3653	9.24	.Q V	.	.	.	.
6.667	4.4292	9.28	.Q V	.	.	.	.
6.750	4.4934	9.32	.Q V	.	.	.	.
6.833	4.5578	9.36	.Q V	.	.	.	.
6.917	4.6225	9.39	.Q V	.	.	.	.
7.000	4.6875	9.44	.Q V	.	.	.	.
7.083	4.7527	9.47	.Q V	.	.	.	.
7.167	4.8183	9.52	.Q V	.	.	.	.
7.250	4.8841	9.55	.Q V	.	.	.	.
7.333	4.9502	9.60	.Q V	.	.	.	.
7.417	5.0165	9.64	.Q V	.	.	.	.

7.500	5.0832	9.68	.Q	V .	.	.	.
7.583	5.1502	9.72	.Q	V .	.	.	.
7.667	5.2175	9.77	.Q	V .	.	.	.
7.750	5.2850	9.81	.Q	V .	.	.	.
7.833	5.3529	9.86	.Q	V .	.	.	.
7.917	5.4211	9.90	.Q	V .	.	.	.
8.000	5.4897	9.95	.Q	V .	.	.	.
8.083	5.5585	10.00	.Q	V .	.	.	.
8.167	5.6277	10.05	.Q	V .	.	.	.
8.250	5.6972	10.09	.Q	V .	.	.	.
8.333	5.7671	10.14	.Q	V .	.	.	.
8.417	5.8372	10.19	.Q	V .	.	.	.
8.500	5.9078	10.24	.Q	V .	.	.	.
8.583	5.9787	10.29	.Q	V .	.	.	.
8.667	6.0500	10.35	.Q	V .	.	.	.
8.750	6.1216	10.40	.Q	V .	.	.	.
8.833	6.1936	10.46	.Q	V .	.	.	.
8.917	6.2660	10.51	.Q	V .	.	.	.
9.000	6.3387	10.57	.Q	V.	.	.	.
9.083	6.4119	10.62	.Q	V.	.	.	.
9.167	6.4855	10.68	.Q	V.	.	.	.
9.250	6.5594	10.74	.Q	V.	.	.	.
9.333	6.6338	10.80	.Q	V.	.	.	.
9.417	6.7086	10.86	.Q	V.	.	.	.
9.500	6.7839	10.93	.Q	V.	.	.	.
9.583	6.8595	10.99	.Q	V.	.	.	.
9.667	6.9356	11.05	.Q	V.	.	.	.
9.750	7.0122	11.12	.Q	V	.	.	.
9.833	7.0892	11.19	.Q	V	.	.	.
9.917	7.1667	11.25	.Q	V	.	.	.
10.000	7.2447	11.33	.Q	V	.	.	.
10.083	7.3232	11.39	.Q	V	.	.	.
10.167	7.4022	11.47	.Q	V	.	.	.
10.250	7.4816	11.54	.Q	V	.	.	.
10.333	7.5617	11.62	.Q	V	.	.	.
10.417	7.6422	11.69	.Q	V	.	.	.
10.500	7.7233	11.77	.Q	.V	.	.	.
10.583	7.8049	11.85	.Q	.V	.	.	.
10.667	7.8871	11.94	.Q	.V	.	.	.
10.750	7.9699	12.02	.Q	.V	.	.	.
10.833	8.0533	12.11	.Q	.V	.	.	.
10.917	8.1372	12.19	.Q	.V	.	.	.
11.000	8.2218	12.29	.Q	.V	.	.	.
11.083	8.3071	12.37	.Q	.V	.	.	.
11.167	8.3930	12.47	.Q	. V	.	.	.
11.250	8.4795	12.56	.Q	. V	.	.	.
11.333	8.5667	12.67	.Q	. V	.	.	.
11.417	8.6547	12.77	.Q	. V	.	.	.
11.500	8.7433	12.88	.Q	. V	.	.	.
11.583	8.8327	12.98	.Q	. V	.	.	.

```
11.667      8.9229     13.09  .Q        . V       .         .         .
11.750      9.0138     13.20  .Q        . V       .         .         .
11.833      9.1055     13.32  .Q        .  V      .         .         .
11.917      9.1981     13.44  .Q        .  V      .         .         .
12.000      9.2915     13.57  .Q        .  V      .         .         .
12.083      9.3811     13.01  .Q        .  V      .         .         .
12.167      9.4509     10.13  .Q        .  V      .         .         .
12.250      9.5105      8.65  .Q        .  V      .         .         .
12.333      9.5694      8.56  .Q        .  V      .         .         .
12.417      9.6289      8.65  .Q        .  V      .         .         .
12.500      9.6894      8.77  .Q        .  V      .         .         .
12.583      9.7506      8.89  .Q        .   V     .         .         .
12.667      9.8129      9.05  .Q        .   V     .         .         .
12.750      9.8762      9.19  .Q        .   V     .         .         .
12.833      9.9405      9.35  .Q        .   V     .         .         .
12.917     10.0060      9.50  .Q        .   V     .         .         .
13.000     10.0726      9.68  .Q        .   V     .         .         .
13.083     10.1404      9.84  .Q        .   V     .         .         .
13.167     10.2096     10.04  .Q        .   V     .         .         .
13.250     10.2800     10.22  .Q        .   V     .         .         .
13.333     10.3518     10.44  .Q        .   V     .         .         .
13.417     10.4251     10.64  .Q        .   V     .         .         .
13.500     10.5000     10.87  .Q        .    V    .         .         .
13.583     10.5764     11.09  .Q        .    V    .         .         .
13.667     10.6546     11.36  .Q        .    V    .         .         .
13.750     10.7345     11.61  .Q        .    V    .         .         .
13.833     10.8165     11.90  .Q        .    V    .         .         .
13.917     10.9004     12.18  .Q        .    V    .         .         .
14.000     10.9865     12.51  .Q        .    V    .         .         .
14.083     11.0766     13.08  .Q        .    V    .         .         .
14.167     11.1770     14.58  .Q        .     V   .         .         .
14.250     11.2840     15.54  . Q       .     V   .         .         .
14.333     11.3949     16.09  . Q       .     V   .         .         .
14.417     11.5089     16.55  . Q       .     V   .         .         .
14.500     11.6267     17.10  . Q       .     V   .         .         .
14.583     11.7481     17.63  . Q       .     V   .         .         .
14.667     11.8739     18.27  . Q       .      V  .         .         .
14.750     12.0041     18.90  . Q       .      V  .         .         .
14.833     12.1395     19.67  . Q       .      V  .         .         .
14.917     12.2803     20.43  . Q       .      V  .         .         .
15.000     12.4276     21.39  . Q       .      V  .         .         .
15.083     12.5815     22.34  . Q       .       V .         .         .
15.167     12.7438     23.56  .  Q      .       V .         .         .
15.250     12.9146     24.80  .  Q      .       V .         .         .
15.333     13.0966     26.43  .  Q      .       V .         .         .
15.417     13.2987     29.36  .  Q      .        V.         .         .
15.500     13.5553     37.25  .   Q     .        V.         .         .
15.583     13.8499     42.78  .    Q    .        V.         .         .
15.667     14.1730     46.91  .     Q   .         V         .         .
15.750     14.5172     49.97  .     Q   .         V         .         .
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15.833     14.8675     50.87  .     Q   .         .V        .         .
15.917     15.2657     57.82  .      Q  .         .V        .         .
16.000     15.8304     81.99  .         Q         . V       .         .
16.083     16.8803    152.45  .         .         Q   V     .         .
16.167     18.8930    292.23  .         .         .      V  .       Q .
16.250     20.1145    177.36  .         .         .  Q    V .         .
16.333     20.6248     74.10  .        Q.         .        V.         .
16.417     20.9697     50.08  .     Q   .         .         V         .
16.500     21.2205     36.41  .   Q     .         .         V         .
16.583     21.4147     28.19  .  Q      .         .         V         .
16.667     21.5818     24.27  .  Q      .         .         V         .
16.750     21.7325     21.87  . Q       .         .         .V        .
16.833     21.8703     20.02  . Q       .         .         .V        .
16.917     21.9980     18.54  . Q       .         .         .V        .
17.000     22.1173     17.32  . Q       .         .         .V        .
17.083     22.2278     16.05  . Q       .         .         .V        .
17.167     22.3246     14.06  .Q        .         .         . V       .
17.250     22.4124     12.74  .Q        .         .         . V       .
17.333     22.4952     12.03  .Q        .         .         . V       .
17.417     22.5741     11.46  .Q        .         .         . V       .
17.500     22.6496     10.96  .Q        .         .         . V       .
17.583     22.7220     10.51  .Q        .         .         . V       .
17.667     22.7916     10.11  .Q        .         .         . V       .
17.750     22.8587      9.74  .Q        .         .         . V       .
17.833     22.9235      9.40  .Q        .         .         . V       .
17.917     22.9861      9.10  .Q        .         .         .  V      .
18.000     23.0468      8.81  .Q        .         .         .  V      .
18.083     23.1103      9.22  .Q        .         .         .  V      .
18.167     23.1929     11.99  .Q        .         .         .  V      .
18.250     23.2846     13.33  .Q        .         .         .  V      .
18.333     23.3763     13.31  .Q        .         .         .  V      .
18.417     23.4666     13.11  .Q        .         .         .  V      .
18.500     23.5555     12.91  .Q        .         .         .  V      .
18.583     23.6430     12.70  .Q        .         .         .  V      .
18.667     23.7291     12.51  .Q        .         .         .   V     .
18.750     23.8139     12.32  .Q        .         .         .   V     .
18.833     23.8975     12.14  .Q        .         .         .   V     .
18.917     23.9799     11.97  .Q        .         .         .   V     .
19.000     24.0612     11.80  .Q        .         .         .   V     .
19.083     24.1414     11.64  .Q        .         .         .   V     .
19.167     24.2205     11.49  .Q        .         .         .   V     .
19.250     24.2987     11.35  .Q        .         .         .   V     .
19.333     24.3759     11.21  .Q        .         .         .    V    .
19.417     24.4522     11.08  .Q        .         .         .    V    .
19.500     24.5276     10.95  .Q        .         .         .    V    .
19.583     24.6021     10.82  .Q        .         .         .    V    .
19.667     24.6758     10.70  .Q        .         .         .    V    .
19.750     24.7487     10.59  .Q        .         .         .    V    .
19.833     24.8208     10.47  .Q        .         .         .    V    .
19.917     24.8922     10.37  .Q        .         .         .    V    .
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20.000     24.9629     10.26  .Q        .         .         .    V    .
20.083     25.0329     10.16  .Q        .         .         .    V    .
20.167     25.1022     10.06  .Q        .         .         .     V   .
20.250     25.1708      9.97  .Q        .         .         .     V   .
20.333     25.2388      9.87  .Q        .         .         .     V   .
20.417     25.3062      9.78  .Q        .         .         .     V   .
20.500     25.3730      9.70  .Q        .         .         .     V   .
20.583     25.4392      9.61  .Q        .         .         .     V   .
20.667     25.5048      9.53  .Q        .         .         .     V   .
20.750     25.5699      9.45  .Q        .         .         .     V   .
20.833     25.6344      9.37  .Q        .         .         .     V   .
20.917     25.6984      9.29  .Q        .         .         .     V   .
21.000     25.7619      9.22  .Q        .         .         .     V   .
21.083     25.8249      9.15  .Q        .         .         .      V  .
21.167     25.8874      9.08  .Q        .         .         .      V  .
21.250     25.9494      9.01  .Q        .         .         .      V  .
21.333     26.0110      8.94  .Q        .         .         .      V  .
21.417     26.0721      8.87  .Q        .         .         .      V  .
21.500     26.1328      8.81  .Q        .         .         .      V  .
21.583     26.1930      8.75  .Q        .         .         .      V  .
21.667     26.2528      8.68  .Q        .         .         .      V  .
21.750     26.3122      8.62  .Q        .         .         .      V  .
21.833     26.3712      8.57  .Q        .         .         .      V  .
21.917     26.4298      8.51  .Q        .         .         .      V  .
22.000     26.4880      8.45  .Q        .         .         .       V .
22.083     26.5459      8.40  .Q        .         .         .       V .
22.167     26.6033      8.34  .Q        .         .         .       V .
22.250     26.6604      8.29  .Q        .         .         .       V .
22.333     26.7172      8.24  .Q        .         .         .       V .
22.417     26.7735      8.19  .Q        .         .         .       V .
22.500     26.8296      8.14  .Q        .         .         .       V .
22.583     26.8853      8.09  .Q        .         .         .       V .
22.667     26.9407      8.04  .Q        .         .         .       V .
22.750     26.9957      7.99  .Q        .         .         .       V .
22.833     27.0504      7.95  .Q        .         .         .       V .
22.917     27.1049      7.90  .Q        .         .         .       V .
23.000     27.1590      7.86  .Q        .         .         .        V.
23.083     27.2128      7.81  .Q        .         .         .        V.
23.167     27.2663      7.77  .Q        .         .         .        V.
23.250     27.3195      7.73  .Q        .         .         .        V.
23.333     27.3724      7.69  .Q        .         .         .        V.
23.417     27.4251      7.64  .Q        .         .         .        V.
23.500     27.4775      7.60  .Q        .         .         .        V.
23.583     27.5296      7.57  .Q        .         .         .        V.
23.667     27.5814      7.53  .Q        .         .         .        V.
23.750     27.6330      7.49  Q         .         .         .        V.
23.833     27.6843      7.45  Q         .         .         .        V.
23.917     27.7353      7.41  Q         .         .         .        V.
24.000     27.7862      7.38  Q         .         .         .        V.
24.083     27.8306      6.46  Q         .         .         .        V.
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   24.167     27.8476      2.47  Q          .          .          .        V.
   24.250     27.8502      0.37  Q          .          .          .        V.
   24.333     27.8507      0.07  Q          .          .          .        V.
   24.417     27.8509      0.03  Q          .          .          .        V.
   24.500     27.8509      0.01  Q          .          .          .         V
--------------------------------------------------------------------------------
---
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
               0%                           1470.0
              10%                             70.0
              20%                             25.0
              30%                             15.0
              40%                             15.0
              50%                             15.0
              60%                             10.0
              70%                              5.0
              80%                              5.0
              90%                              5.0
 ================================================================================

   END OF FLOODSCx ROUTING ANALYSIS
```

EXISTING 25-YEAR
PROJECT ON-SITE ANALYSIS

LOSS RATE CALCULATIONS
EXISTING ON-SITE
25-YR ANALYSIS

****
NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS
==========
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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Local-25yr-Exist
01-14-2022
==========
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 3.60 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	5.02	10.00	32.(AMC II)	0.742	0.849
2	0.20	10.00	69.(AMC II)	0.272	0.902
3	28.31	100.00	50.(AMC II)	0.495	0.297
4	0.94	100.00	69.(AMC II)	0.272	0.608
5	57.38	100.00	79.(AMC II)	0.170	0.787
6	0.06	60.00	69.(AMC II)	0.272	0.739
7	1.35	10.00	32.(AMC II)	0.742	0.849
8	0.08	10.00	56.(AMC II)	0.423	0.881
9	5.18	10.00	69.(AMC II)	0.272	0.902

TOTAL AREA (Acres) = 98.52

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.250

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.345
==========

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

            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* Grand Terrace                                                       *
* SAUH-Local-Existing Condition                                       *
* 2022-01-14                                                          *
 *********************************************************************

  FILE NAME: EXLOC25.DAT
  TIME/DATE OF STUDY: 11:24 01/14/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      98.520 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.100 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.250
         LOW LOSS FRACTION = 0.345
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.36
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.75
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.00
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.45
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  3.60
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.996
30-MINUTE FACTOR = 0.996
1-HOUR FACTOR = 0.996
3-HOUR FACTOR = 0.999
6-HOUR FACTOR = 1.000
24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 83.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	12.091	144.062
2	66.357	646.568
3	94.973	340.956
4	99.026	48.287
5	99.610	6.962
6	99.903	3.481
7	100.000	1.160

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 9.0872
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 20.4524

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	75.0	150.0	225.0	300.0
0.083	0.0041	0.59	Q	.	.	.	.
0.167	0.0264	3.24	Q	.	.	.	.
0.250	0.0584	4.64	Q	.	.	.	.
0.333	0.0918	4.85	Q	.	.	.	.
0.417	0.1255	4.90	Q	.	.	.	.
0.500	0.1594	4.92	Q	.	.	.	.
0.583	0.1934	4.94	Q	.	.	.	.
0.667	0.2276	4.95	Q	.	.	.	.
0.750	0.2618	4.97	Q	.	.	.	.
0.833	0.2961	4.98	Q	.	.	.	.
0.917	0.3305	4.99	Q	.	.	.	.
1.000	0.3650	5.01	Q	.	.	.	.
1.083	0.3996	5.02	Q	.	.	.	.
1.167	0.4342	5.04	Q	.	.	.	.
1.250	0.4690	5.05	Q	.	.	.	.
1.333	0.5039	5.06	Q	.	.	.	.
1.417	0.5389	5.08	QV	.	.	.	.
1.500	0.5739	5.09	QV	.	.	.	.
1.583	0.6091	5.11	QV	.	.	.	.
1.667	0.6444	5.12	QV	.	.	.	.
1.750	0.6798	5.14	QV	.	.	.	.
1.833	0.7153	5.15	QV	.	.	.	.
1.917	0.7508	5.17	QV	.	.	.	.
2.000	0.7865	5.18	QV	.	.	.	.
2.083	0.8223	5.20	QV	.	.	.	.
2.167	0.8582	5.21	QV	.	.	.	.
2.250	0.8942	5.23	QV	.	.	.	.
2.333	0.9303	5.24	QV	.	.	.	.
2.417	0.9666	5.26	QV	.	.	.	.
2.500	1.0029	5.28	QV	.	.	.	.
2.583	1.0393	5.29	Q V	.	.	.	.
2.667	1.0759	5.31	Q V	.	.	.	.
2.750	1.1126	5.32	Q V	.	.	.	.
2.833	1.1494	5.34	Q V	.	.	.	.
2.917	1.1863	5.36	Q V	.	.	.	.
3.000	1.2233	5.38	Q V	.	.	.	.
3.083	1.2604	5.39	Q V	.	.	.	.
3.167	1.2977	5.41	Q V	.	.	.	.
3.250	1.3350	5.43	Q V	.	.	.	.

3.333	1.3725	5.44	Q	V	.	.	.	.
3.417	1.4101	5.46	Q	V	.	.	.	.
3.500	1.4479	5.48	Q	V	.	.	.	.
3.583	1.4857	5.50	Q	V	.	.	.	.
3.667	1.5237	5.52	Q	V	.	.	.	.
3.750	1.5619	5.53	Q	V	.	.	.	.
3.833	1.6001	5.55	Q	V	.	.	.	.
3.917	1.6385	5.57	Q	V	.	.	.	.
4.000	1.6770	5.59	Q	V	.	.	.	.
4.083	1.7156	5.61	Q	V	.	.	.	.
4.167	1.7544	5.63	Q	V	.	.	.	.
4.250	1.7933	5.65	Q	V	.	.	.	.
4.333	1.8324	5.67	Q	V	.	.	.	.
4.417	1.8715	5.69	Q	V	.	.	.	.
4.500	1.9109	5.71	Q	V	.	.	.	.
4.583	1.9503	5.73	Q	V	.	.	.	.
4.667	1.9899	5.75	Q	V	.	.	.	.
4.750	2.0297	5.77	Q	V	.	.	.	.
4.833	2.0696	5.79	Q	V	.	.	.	.
4.917	2.1096	5.81	Q	V	.	.	.	.
5.000	2.1498	5.84	Q	V	.	.	.	.
5.083	2.1902	5.86	Q	V	.	.	.	.
5.167	2.2307	5.88	Q	V	.	.	.	.
5.250	2.2713	5.90	Q	V	.	.	.	.
5.333	2.3121	5.93	Q	V	.	.	.	.
5.417	2.3531	5.95	Q	V	.	.	.	.
5.500	2.3942	5.97	Q	V	.	.	.	.
5.583	2.4355	5.99	Q	V	.	.	.	.
5.667	2.4769	6.02	Q	V	.	.	.	.
5.750	2.5185	6.04	Q	V	.	.	.	.
5.833	2.5603	6.07	Q	V	.	.	.	.
5.917	2.6023	6.09	Q	V	.	.	.	.
6.000	2.6444	6.12	Q	V	.	.	.	.
6.083	2.6867	6.14	Q	V	.	.	.	.
6.167	2.7292	6.17	Q	V	.	.	.	.
6.250	2.7718	6.19	Q	V	.	.	.	.
6.333	2.8146	6.22	Q	V	.	.	.	.
6.417	2.8576	6.24	Q	V	.	.	.	.
6.500	2.9008	6.27	Q	V	.	.	.	.
6.583	2.9442	6.30	Q	V	.	.	.	.
6.667	2.9878	6.33	Q	V	.	.	.	.
6.750	3.0315	6.35	Q	V	.	.	.	.
6.833	3.0755	6.38	Q	V	.	.	.	.
6.917	3.1197	6.41	Q	V	.	.	.	.
7.000	3.1640	6.44	Q	V	.	.	.	.
7.083	3.2086	6.47	Q	V	.	.	.	.
7.167	3.2533	6.50	Q	V	.	.	.	.
7.250	3.2983	6.53	Q	V	.	.	.	.
7.333	3.3435	6.56	Q	V	.	.	.	.
7.417	3.3889	6.59	Q	V	.	.	.	.

7.500	3.4345	6.62	Q	V	.	.	.	.
7.583	3.4804	6.65	Q	V	.	.	.	.
7.667	3.5264	6.69	Q	V	.	.	.	.
7.750	3.5727	6.72	Q	V	.	.	.	.
7.833	3.6192	6.76	Q	V	.	.	.	.
7.917	3.6660	6.79	Q	V	.	.	.	.
8.000	3.7130	6.82	Q	V	.	.	.	.
8.083	3.7602	6.86	Q	V	.	.	.	.
8.167	3.8077	6.89	Q	V	.	.	.	.
8.250	3.8554	6.93	Q	V	.	.	.	.
8.333	3.9034	6.97	Q	V	.	.	.	.
8.417	3.9516	7.00	Q	V	.	.	.	.
8.500	4.0001	7.04	Q	V	.	.	.	.
8.583	4.0489	7.08	Q	V	.	.	.	.
8.667	4.0979	7.12	Q	V	.	.	.	.
8.750	4.1472	7.16	Q	V	.	.	.	.
8.833	4.1968	7.20	Q	V	.	.	.	.
8.917	4.2467	7.24	Q	V	.	.	.	.
9.000	4.2968	7.28	Q	V	.	.	.	.
9.083	4.3473	7.32	Q	V	.	.	.	.
9.167	4.3980	7.37	Q	V	.	.	.	.
9.250	4.4491	7.41	Q	V	.	.	.	.
9.333	4.5004	7.46	Q	V	.	.	.	.
9.417	4.5521	7.50	.Q	V	.	.	.	.
9.500	4.6041	7.55	.Q	V	.	.	.	.
9.583	4.6564	7.60	.Q	V	.	.	.	.
9.667	4.7091	7.65	.Q	V	.	.	.	.
9.750	4.7621	7.69	.Q	V	.	.	.	.
9.833	4.8155	7.75	.Q	V	.	.	.	.
9.917	4.8692	7.80	.Q	V	.	.	.	.
10.000	4.9232	7.85	.Q	V	.	.	.	.
10.083	4.9777	7.90	.Q	V	.	.	.	.
10.167	5.0325	7.96	.Q	V	.	.	.	.
10.250	5.0877	8.01	.Q	V	.	.	.	.
10.333	5.1433	8.07	.Q	V	.	.	.	.
10.417	5.1992	8.13	.Q	V	.	.	.	.
10.500	5.2556	8.19	.Q	V	.	.	.	.
10.583	5.3124	8.25	.Q	V	.	.	.	.
10.667	5.3697	8.31	.Q	V	.	.	.	.
10.750	5.4274	8.37	.Q	V	.	.	.	.
10.833	5.4855	8.44	.Q	V	.	.	.	.
10.917	5.5441	8.50	.Q	V	.	.	.	.
11.000	5.6032	8.58	.Q	V	.	.	.	.
11.083	5.6627	8.64	.Q	.V	.	.	.	.
11.167	5.7227	8.72	.Q	.V	.	.	.	.
11.250	5.7832	8.79	.Q	.V	.	.	.	.
11.333	5.8443	8.87	.Q	.V	.	.	.	.
11.417	5.9059	8.94	.Q	.V	.	.	.	.
11.500	5.9680	9.02	.Q	.V	.	.	.	.
11.583	6.0307	9.10	.Q	.V	.	.	.	.

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11.667      6.0940      9.19  .Q        .V        .         .         .
11.750      6.1579      9.27  .Q        . V       .         .         .
11.833      6.2224      9.36  .Q        . V       .         .         .
11.917      6.2874      9.45  .Q        . V       .         .         .
12.000      6.3532      9.55  .Q        . V       .         .         .
12.083      6.4166      9.20  .Q        . V       .         .         .
12.167      6.4669      7.31  Q         . V       .         .         .
12.250      6.5107      6.35  Q         . V       .         .         .
12.333      6.5541      6.30  Q         . V       .         .         .
12.417      6.5980      6.37  Q         . V       .         .         .
12.500      6.6425      6.47  Q         . V       .         .         .
12.583      6.6877      6.56  Q         .  V      .         .         .
12.667      6.7336      6.67  Q         .  V      .         .         .
12.750      6.7803      6.78  Q         .  V      .         .         .
12.833      6.8278      6.90  Q         .  V      .         .         .
12.917      6.8761      7.01  Q         .  V      .         .         .
13.000      6.9253      7.15  Q         .  V      .         .         .
13.083      6.9754      7.27  Q         .  V      .         .         .
13.167      7.0265      7.42  Q         .  V      .         .         .
13.250      7.0785      7.55  .Q        .  V      .         .         .
13.333      7.1316      7.71  .Q        .  V      .         .         .
13.417      7.1857      7.86  .Q        .   V     .         .         .
13.500      7.2411      8.04  .Q        .   V     .         .         .
13.583      7.2977      8.21  .Q        .   V     .         .         .
13.667      7.3555      8.41  .Q        .   V     .         .         .
13.750      7.4147      8.59  .Q        .   V     .         .         .
13.833      7.4754      8.81  .Q        .   V     .         .         .
13.917      7.5375      9.02  .Q        .   V     .         .         .
14.000      7.6014      9.27  .Q        .   V     .         .         .
14.083      7.6677      9.62  .Q        .   V     .         .         .
14.167      7.7394     10.41  .Q        .    V    .         .         .
14.250      7.8148     10.95  .Q        .    V    .         .         .
14.333      7.8929     11.34  .Q        .    V    .         .         .
14.417      7.9733     11.67  .Q        .    V    .         .         .
14.500      8.0564     12.08  .Q        .    V    .         .         .
14.583      8.1423     12.47  .Q        .    V    .         .         .
14.667      8.2314     12.94  .Q        .     V   .         .         .
14.750      8.3238     13.41  .Q        .     V   .         .         .
14.833      8.4201     13.99  .Q        .     V   .         .         .
14.917      8.5203     14.55  .Q        .     V   .         .         .
15.000      8.6255     15.27  . Q       .     V   .         .         .
15.083      8.7356     15.98  . Q       .      V  .         .         .
15.167      8.8520     16.90  . Q       .      V  .         .         .
15.250      8.9748     17.83  . Q       .      V  .         .         .
15.333      9.1061     19.06  . Q       .      V  .         .         .
15.417      9.2502     20.92  . Q       .       V .         .         .
15.500      9.4243     25.29  .  Q      .       V .         .         .
15.583      9.6217     28.66  .  Q      .       V .         .         .
15.667      9.8405     31.76  .   Q     .        V.         .         .
15.750     10.0824     35.12  .   Q     .        V.         .         .
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15.833	10.3593	40.21	. Q . V . .
15.917	10.6954	48.80	. Q . V . .
16.000	11.1889	71.65	. Q. .V . .
16.083	12.1243	135.82	. . Q . V . .
16.167	13.9289	262.02	. . . V . Q .
16.250	15.0103	157.03	. . Q V. .
16.333	15.4147	58.71	. Q . . V .
16.417	15.6591	35.49	. Q . . V .
16.500	15.8379	25.96	. Q . . V .
16.583	15.9781	20.36	. Q . . .V .
16.667	16.0981	17.42	. Q . . .V .
16.750	16.2056	15.62	. Q . . .V .
16.833	16.3037	14.24	.Q . . .V .
16.917	16.3942	13.14	.Q . . . V .
17.000	16.4785	12.24	.Q . . . V .
17.083	16.5568	11.37	.Q . . . V .
17.167	16.6272	10.22	.Q . . . V .
17.250	16.6920	9.41	.Q . . . V .
17.333	16.7534	8.90	.Q . . . V .
17.417	16.8118	8.48	.Q . . . V .
17.500	16.8676	8.11	.Q . . . V .
17.583	16.9211	7.77	.Q . . . V .
17.667	16.9725	7.47	Q . . . V .
17.750	17.0221	7.19	Q . . . V .
17.833	17.0699	6.94	Q . . . V .
17.917	17.1161	6.71	Q . . . V .
18.000	17.1608	6.50	Q . . . V .
18.083	17.2073	6.74	Q . . . V .
18.167	17.2661	8.54	.Q . . . V .
18.250	17.3308	9.40	.Q . . . V .
18.333	17.3952	9.36	.Q . . . V .
18.417	17.4586	9.20	.Q . . . V .
18.500	17.5210	9.05	.Q . . . V .
18.583	17.5822	8.89	.Q . . . V .
18.667	17.6424	8.74	.Q . . . V .
18.750	17.7016	8.60	.Q . . . V .
18.833	17.7599	8.46	.Q . . . V .
18.917	17.8173	8.33	.Q . . . V .
19.000	17.8739	8.21	.Q . . . V .
19.083	17.9296	8.09	.Q . . . V .
19.167	17.9846	7.98	.Q . . . V .
19.250	18.0388	7.87	.Q . . . V .
19.333	18.0922	7.76	.Q . . . V .
19.417	18.1450	7.66	.Q . . . V .
19.500	18.1971	7.57	.Q . . . V .
19.583	18.2486	7.47	Q . . . V .
19.667	18.2995	7.38	Q . . . V .
19.750	18.3497	7.30	Q . . . V .
19.833	18.3994	7.21	Q . . . V .
19.917	18.4486	7.13	Q . . . V .

20.000	18.4971	7.06	Q	.	.	.	V .
20.083	18.5452	6.98	Q	.	.	.	V .
20.167	18.5928	6.91	Q	.	.	.	V .
20.250	18.6399	6.84	Q	.	.	.	V .
20.333	18.6865	6.77	Q	.	.	.	V .
20.417	18.7326	6.70	Q	.	.	.	V .
20.500	18.7783	6.63	Q	.	.	.	V .
20.583	18.8235	6.57	Q	.	.	.	V .
20.667	18.8684	6.51	Q	.	.	.	V .
20.750	18.9128	6.45	Q	.	.	.	V .
20.833	18.9568	6.39	Q	.	.	.	V .
20.917	19.0005	6.34	Q	.	.	.	V .
21.000	19.0437	6.28	Q	.	.	.	V .
21.083	19.0866	6.23	Q	.	.	.	V .
21.167	19.1292	6.18	Q	.	.	.	V .
21.250	19.1713	6.12	Q	.	.	.	V .
21.333	19.2132	6.07	Q	.	.	.	V .
21.417	19.2547	6.03	Q	.	.	.	V .
21.500	19.2959	5.98	Q	.	.	.	V .
21.583	19.3367	5.93	Q	.	.	.	V .
21.667	19.3773	5.89	Q	.	.	.	V .
21.750	19.4175	5.84	Q	.	.	.	V .
21.833	19.4575	5.80	Q	.	.	.	V .
21.917	19.4971	5.76	Q	.	.	.	V .
22.000	19.5365	5.72	Q	.	.	.	V .
22.083	19.5756	5.68	Q	.	.	.	V .
22.167	19.6144	5.64	Q	.	.	.	V .
22.250	19.6530	5.60	Q	.	.	.	V .
22.333	19.6913	5.56	Q	.	.	.	V .
22.417	19.7293	5.52	Q	.	.	.	V .
22.500	19.7671	5.49	Q	.	.	.	V .
22.583	19.8046	5.45	Q	.	.	.	V .
22.667	19.8419	5.42	Q	.	.	.	V .
22.750	19.8790	5.38	Q	.	.	.	V .
22.833	19.9158	5.35	Q	.	.	.	V .
22.917	19.9524	5.31	Q	.	.	.	V.
23.000	19.9888	5.28	Q	.	.	.	V.
23.083	20.0249	5.25	Q	.	.	.	V.
23.167	20.0608	5.22	Q	.	.	.	V.
23.250	20.0966	5.19	Q	.	.	.	V.
23.333	20.1321	5.16	Q	.	.	.	V.
23.417	20.1674	5.13	Q	.	.	.	V.
23.500	20.2025	5.10	Q	.	.	.	V.
23.583	20.2374	5.07	Q	.	.	.	V.
23.667	20.2721	5.04	Q	.	.	.	V.
23.750	20.3067	5.01	Q	.	.	.	V.
23.833	20.3410	4.99	Q	.	.	.	V.
23.917	20.3751	4.96	Q	.	.	.	V.
24.000	20.4091	4.93	Q	.	.	.	V.
24.083	20.4388	4.32	Q	.	.	.	V.

24.167	20.4502	1.65	Q	.	.	.	V.
24.250	20.4519	0.25	Q	.	.	.	V.
24.333	20.4522	0.05	Q	.	.	.	V.
24.417	20.4524	0.02	Q	.	.	.	V.
24.500	20.4524	0.00	Q	.	.	.	V.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1470.0
10%	55.0
20%	25.0
30%	15.0
40%	15.0
50%	15.0
60%	5.0
70%	5.0
80%	5.0
90%	5.0

END OF FLOODSCx ROUTING ANALYSIS

EXISTING 100-YEAR
REGIONAL ANALYSIS
TRIBUTARY TO EX DBL 6X6
POC #1 / NODE 101

LOSS RATE CALCULATIONS
EXISTING REGIONAL
100-YR ANALYSIS
NODE 101

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

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

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Problem Descriptions:
Grand Terrace
Barton+Deberry-100yr-Exist
01-13-2022

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*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 4.75 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	30.17	20.00	32.(AMC II)	0.742	0.789
2	23.43	20.00	69.(AMC II)	0.272	0.896
3	57.88	10.00	32.(AMC II)	0.742	0.870
4	37.59	10.00	69.(AMC II)	0.272	0.923
5	121.44	50.00	32.(AMC II)	0.742	0.548
6	93.70	50.00	69.(AMC II)	0.272	0.816
7	0.84	50.00	75.(AMC II)	0.210	0.869
8	5.36	100.00	50.(AMC II)	0.495	0.390
9	23.00	100.00	69.(AMC II)	0.272	0.681
10	8.37	100.00	79.(AMC II)	0.170	0.832
11	74.01	100.00	83.(AMC II)	0.133	0.902
12	14.07	60.00	32.(AMC II)	0.742	0.468
13	1.07	60.00	69.(AMC II)	0.272	0.789
14	59.21	10.00	32.(AMC II)	0.742	0.870
15	42.46	10.00	69.(AMC II)	0.272	0.923

TOTAL AREA (Acres) = 592.60

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.171

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.218

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

==========

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

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Problem Descriptions:
Grand Terrace
VanBuren WS-Exist 100year
2022-03-08

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*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 4.75 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	21.79	20.00	32.(AMC II)	0.742	0.789
2	2.22	20.00	69.(AMC II)	0.272	0.896
3	16.61	10.00	32.(AMC II)	0.742	0.870
4	12.95	10.00	69.(AMC II)	0.272	0.923
5	118.38	50.00	32.(AMC II)	0.742	0.548
6	62.07	50.00	69.(AMC II)	0.272	0.816
7	0.77	50.00	75.(AMC II)	0.210	0.869
8	23.68	100.00	50.(AMC II)	0.495	0.390
9	4.11	100.00	69.(AMC II)	0.272	0.681
10	41.85	100.00	79.(AMC II)	0.170	0.832
11	29.94	100.00	83.(AMC II)	0.133	0.902
12	20.33	60.00	32.(AMC II)	0.742	0.468
13	2.38	60.00	69.(AMC II)	0.272	0.789
14	42.22	10.00	32.(AMC II)	0.742	0.870
15	1.33	10.00	56.(AMC II)	0.423	0.904
16	27.95	10.00	69.(AMC II)	0.272	0.923

TOTAL AREA (Acres) = 428.58

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.221

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.275

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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:



 ************************ DESCRIPTION OF STUDY ************************
* GRAND TERRACE GATEWAY                                               *
* REGIONAL-CALTRANS OUTLET-EXIST 100 YR                               *
* CT 2022-03-08                                                       *
 **********************************************************************

  FILE NAME: CALEX100.DAT
  TIME/DATE OF STUDY: 15:52 03/10/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     592.600 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.210 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.171
         LOW LOSS FRACTION = 0.218
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  2.25
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  4.75
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PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.974
30-MINUTE FACTOR = 0.974
1-HOUR FACTOR = 0.974
3-HOUR FACTOR = 0.996
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 39.683

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.872	205.853
2	19.165	1167.628
3	48.437	2097.862
4	76.826	2034.622
5	90.830	1003.627
6	96.604	413.793
7	98.430	130.854
8	99.173	53.239
9	99.669	35.567
10	99.917	17.783
11	100.000	5.928

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 46.3162
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 187.8783

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	325.0	650.0	975.0	1300.0
0.083	0.0099	1.43	Q	.	.	.	.
0.167	0.0757	9.56	Q	.	.	.	.
0.250	0.2421	24.17	Q	.	.	.	.
0.333	0.5064	38.37	VQ	.	.	.	.
0.417	0.8194	45.44	VQ	.	.	.	.
0.500	1.1529	48.43	VQ	.	.	.	.
0.583	1.4936	49.46	VQ	.	.	.	.
0.667	1.8376	49.95	VQ	.	.	.	.
0.750	2.1841	50.32	VQ	.	.	.	.
0.833	2.5324	50.57	VQ	.	.	.	.
0.917	2.8818	50.74	VQ	.	.	.	.
1.000	3.2322	50.86	VQ	.	.	.	.
1.083	3.5833	50.99	VQ	.	.	.	.
1.167	3.9354	51.12	VQ	.	.	.	.
1.250	4.2884	51.25	VQ	.	.	.	.
1.333	4.6423	51.38	VQ	.	.	.	.
1.417	4.9970	51.51	.Q	.	.	.	.
1.500	5.3528	51.65	.Q	.	.	.	.
1.583	5.7094	51.78	.Q	.	.	.	.
1.667	6.0670	51.92	.Q	.	.	.	.
1.750	6.4255	52.06	.Q	.	.	.	.
1.833	6.7849	52.19	.Q	.	.	.	.
1.917	7.1454	52.33	.Q	.	.	.	.
2.000	7.5067	52.47	.Q	.	.	.	.
2.083	7.8691	52.61	.Q	.	.	.	.
2.167	8.2325	52.76	.Q	.	.	.	.
2.250	8.5968	52.90	.Q	.	.	.	.
2.333	8.9621	53.05	.Q	.	.	.	.
2.417	9.3285	53.19	.Q	.	.	.	.
2.500	9.6958	53.34	.QV	.	.	.	.
2.583	10.0642	53.49	.QV	.	.	.	.
2.667	10.4336	53.64	.QV	.	.	.	.
2.750	10.8041	53.79	.QV	.	.	.	.
2.833	11.1756	53.95	.QV	.	.	.	.
2.917	11.5482	54.10	.QV	.	.	.	.
3.000	11.9219	54.26	.QV	.	.	.	.
3.083	12.2966	54.41	.QV	.	.	.	.
3.167	12.6725	54.57	.QV	.	.	.	.
3.250	13.0494	54.73	.QV	.	.	.	.

3.333	13.4275	54.90	.QV	.	.	.	.
3.417	13.8067	55.06	.QV	.	.	.	.
3.500	14.1870	55.22	.Q V	.	.	.	.
3.583	14.5685	55.39	.Q V	.	.	.	.
3.667	14.9511	55.56	.Q V	.	.	.	.
3.750	15.3349	55.73	.Q V	.	.	.	.
3.833	15.7198	55.90	.Q V	.	.	.	.
3.917	16.1060	56.07	.Q V	.	.	.	.
4.000	16.4934	56.25	.Q V	.	.	.	.
4.083	16.8819	56.42	.Q V	.	.	.	.
4.167	17.2718	56.60	.Q V	.	.	.	.
4.250	17.6628	56.78	.Q V	.	.	.	.
4.333	18.0551	56.96	.Q V	.	.	.	.
4.417	18.4487	57.14	.Q V	.	.	.	.
4.500	18.8435	57.33	.Q V	.	.	.	.
4.583	19.2396	57.52	.Q V	.	.	.	.
4.667	19.6371	57.71	.Q V	.	.	.	.
4.750	20.0358	57.90	.Q V	.	.	.	.
4.833	20.4359	58.09	.Q V	.	.	.	.
4.917	20.8373	58.29	.Q V	.	.	.	.
5.000	21.2402	58.49	.Q V	.	.	.	.
5.083	21.6443	58.69	.Q V	.	.	.	.
5.167	22.0499	58.89	.Q V	.	.	.	.
5.250	22.4569	59.09	.Q V	.	.	.	.
5.333	22.8653	59.30	.Q V	.	.	.	.
5.417	23.2751	59.51	.Q V	.	.	.	.
5.500	23.6864	59.72	.Q V	.	.	.	.
5.583	24.0991	59.93	.Q V	.	.	.	.
5.667	24.5134	60.15	.Q V	.	.	.	.
5.750	24.9291	60.37	.Q V	.	.	.	.
5.833	25.3464	60.59	.Q V	.	.	.	.
5.917	25.7652	60.81	.Q V	.	.	.	.
6.000	26.1856	61.04	.Q V	.	.	.	.
6.083	26.6075	61.27	.Q V	.	.	.	.
6.167	27.0311	61.50	.Q V	.	.	.	.
6.250	27.4562	61.73	.Q V	.	.	.	.
6.333	27.8830	61.97	.Q V	.	.	.	.
6.417	28.3114	62.21	.Q V	.	.	.	.
6.500	28.7416	62.45	.Q V	.	.	.	.
6.583	29.1734	62.70	.Q V	.	.	.	.
6.667	29.6069	62.95	.Q V	.	.	.	.
6.750	30.0422	63.20	.Q V	.	.	.	.
6.833	30.4792	63.46	.Q V	.	.	.	.
6.917	30.9180	63.72	.Q V	.	.	.	.
7.000	31.3587	63.98	.Q V	.	.	.	.
7.083	31.8011	64.24	.Q V	.	.	.	.
7.167	32.2454	64.52	.Q V	.	.	.	.
7.250	32.6916	64.79	.Q V	.	.	.	.
7.333	33.1397	65.07	. Q V	.	.	.	.
7.417	33.5897	65.34	. Q V	.	.	.	.

7.500	34.0417	65.63	. Q	V	.	.	.	.
7.583	34.4957	65.92	. Q	V	.	.	.	.
7.667	34.9517	66.21	. Q	V	.	.	.	.
7.750	35.4097	66.51	. Q	V	.	.	.	.
7.833	35.8699	66.81	. Q	V	.	.	.	.
7.917	36.3321	67.11	. Q	V	.	.	.	.
8.000	36.7964	67.42	. Q	V	.	.	.	.
8.083	37.2629	67.74	. Q	V	.	.	.	.
8.167	37.7316	68.06	. Q	V	.	.	.	.
8.250	38.2026	68.38	. Q	V	.	.	.	.
8.333	38.6758	68.71	. Q	V	.	.	.	.
8.417	39.1513	69.04	. Q	V	.	.	.	.
8.500	39.6291	69.38	. Q	V	.	.	.	.
8.583	40.1093	69.72	. Q	V	.	.	.	.
8.667	40.5919	70.08	. Q	V	.	.	.	.
8.750	41.0770	70.43	. Q	V	.	.	.	.
8.833	41.5646	70.79	. Q	V	.	.	.	.
8.917	42.0546	71.16	. Q	V	.	.	.	.
9.000	42.5473	71.54	. Q	V	.	.	.	.
9.083	43.0426	71.91	. Q	V	.	.	.	.
9.167	43.5405	72.30	. Q	V	.	.	.	.
9.250	44.0411	72.69	. Q	V	.	.	.	.
9.333	44.5445	73.09	. Q	V	.	.	.	.
9.417	45.0507	73.50	. Q	V	.	.	.	.
9.500	45.5597	73.91	. Q	V	.	.	.	.
9.583	46.0717	74.33	. Q	V	.	.	.	.
9.667	46.5866	74.77	. Q	V	.	.	.	.
9.750	47.1045	75.20	. Q	V		.	.	.
9.833	47.6255	75.65	. Q	V		.	.	.
9.917	48.1496	76.10	. Q	V		.	.	.
10.000	48.6769	76.56	. Q	V		.	.	.
10.083	49.2074	77.03	. Q	V		.	.	.
10.167	49.7413	77.52	. Q	V		.	.	.
10.250	50.2785	78.00	. Q	V		.	.	.
10.333	50.8192	78.51	. Q	V		.	.	.
10.417	51.3634	79.02	. Q	V		.	.	.
10.500	51.9112	79.54	. Q	.V		.	.	.
10.583	52.4626	80.07	. Q	.V		.	.	.
10.667	53.0178	80.62	. Q	.V		.	.	.
10.750	53.5769	81.17	. Q	.V		.	.	.
10.833	54.1398	81.74	. Q	.V		.	.	.
10.917	54.7068	82.32	. Q	.V		.	.	.
11.000	55.2778	82.92	. Q	.V		.	.	.
11.083	55.8531	83.52	. Q	.V		.	.	.
11.167	56.4326	84.15	. Q	. V		.	.	.
11.250	57.0165	84.78	. Q	. V		.	.	.
11.333	57.6050	85.44	. Q	. V		.	.	.
11.417	58.1980	86.11	. Q	. V		.	.	.
11.500	58.7958	86.80	. Q	. V		.	.	.
11.583	59.3984	87.50	. Q	. V		.	.	.

11.667	60.0060	88.23	. Q	. V	.	.	.
11.750	60.6187	88.96	. Q	. V	.	.	.
11.833	61.2367	89.73	. Q	. V	.	.	.
11.917	61.8600	90.51	. Q	. V	.	.	.
12.000	62.4889	91.32	. Q	. V	.	.	.
12.083	63.1161	91.06	. Q	. V	.	.	.
12.167	63.7070	85.80	. Q	. V	.	.	.
12.250	64.2280	75.66	. Q	. V	.	.	.
12.333	64.6816	65.86	. Q	. V	.	.	.
12.417	65.1048	61.44	.Q	. V	.	.	.
12.500	65.5190	60.15	.Q	. V	.	.	.
12.583	65.9347	60.35	.Q	. V	.	.	.
12.667	66.3549	61.01	.Q	. V	.	.	.
12.750	66.7803	61.78	.Q	. V	.	.	.
12.833	67.2121	62.70	.Q	. V	.	.	.
12.917	67.6508	63.70	.Q	. V	.	.	.
13.000	68.0971	64.79	.Q	. V	.	.	.
13.083	68.5510	65.92	. Q	. V	.	.	.
13.167	69.0132	67.11	. Q	. V	.	.	.
13.250	69.4839	68.34	. Q	. V	.	.	.
13.333	69.9635	69.65	. Q	. V	.	.	.
13.417	70.4525	70.99	. Q	. V	.	.	.
13.500	70.9514	72.44	. Q	. V	.	.	.
13.583	71.4605	73.92	. Q	. V	.	.	.
13.667	71.9806	75.52	. Q	. V	.	.	.
13.750	72.5120	77.17	. Q	. V	.	.	.
13.833	73.0558	78.95	. Q	. V	.	.	.
13.917	73.6123	80.80	. Q	. V	.	.	.
14.000	74.1825	82.80	. Q	. V	.	.	.
14.083	74.7707	85.41	. Q	. V	.	.	.
14.167	75.3950	90.65	. Q	. V	.	.	.
14.250	76.0726	98.39	. Q	. V	.	.	.
14.333	76.8044	106.26	. Q	. V	.	.	.
14.417	77.5737	111.71	. Q	. V	.	.	.
14.500	78.3725	115.98	. Q	. V	.	.	.
14.583	79.1971	119.73	. Q	. V	.	.	.
14.667	80.0486	123.64	. Q	. V	.	.	.
14.750	80.9285	127.76	. Q	. V	.	.	.
14.833	81.8397	132.30	. Q	. V	.	.	.
14.917	82.7843	137.15	. Q	. V	.	.	.
15.000	83.7664	142.60	. Q	. V	.	.	.
15.083	84.7894	148.54	. Q	. V	.	.	.
15.167	85.8592	155.33	. Q	. V	.	.	.
15.250	86.9808	162.86	. Q	. V	.	.	.
15.333	88.1628	171.63	. Q	. V	.	.	.
15.417	89.4250	183.26	. Q	. V	.	.	.
15.500	90.8354	204.79	. Q	. V	.	.	.
15.583	92.4617	236.15	. Q	. V	.	.	.
15.667	94.3259	270.67	. Q	. V	.	.	.
15.750	96.3849	298.98	. Q	. V	.	.	.

15.833	98.5913	320.36	. Q. V . .
15.917	100.9511	342.65	. Q .V . .
16.000	103.6920	397.97	. . Q . V . .
16.083	107.5957	566.82	. . Q . V . .
16.167	114.1549	952.40	. . . V Q. .
16.250	122.7054	1241.54	. . . V . Q .
16.333	130.6024	1146.63	. . . V . Q .
16.417	135.7202	743.11	. . . Q V . .
16.500	139.0170	478.70	. . Q . V. .
16.583	141.2235	320.39	. Q. . V .
16.667	142.8892	241.85	. Q . . V .
16.750	144.2718	200.76	. Q . . V .
16.833	145.4542	171.68	. Q . . V .
16.917	146.4986	151.64	. Q . . .V .
17.000	147.4453	137.47	. Q . . .V .
17.083	148.3204	127.06	. Q . . .V .
17.167	149.1197	116.06	. Q . . .V .
17.250	149.8366	104.09	. Q . . .V .
17.333	150.4798	93.39	. Q . . . V .
17.417	151.0729	86.12	. Q . . . V .
17.500	151.6305	80.97	. Q . . . V .
17.583	152.1609	77.02	. Q . . . V .
17.667	152.6682	73.65	. Q . . . V .
17.750	153.1548	70.66	. Q . . . V .
17.833	153.6229	67.98	. Q . . . V .
17.917	154.0745	65.56	. Q . . . V .
18.000	154.5108	63.36	.Q . . . V .
18.083	154.9407	62.42	.Q . . . V .
18.167	155.3997	66.65	. Q . . . V .
18.250	155.9221	75.85	. Q . . . V .
18.333	156.5061	84.79	. Q . . . V .
18.417	157.1147	88.37	. Q . . . V .
18.500	157.7272	88.93	. Q . . . V .
18.583	158.3338	88.09	. Q . . . V .
18.667	158.9325	86.92	. Q . . . V .
18.750	159.5229	85.73	. Q . . . V .
18.833	160.1049	84.51	. Q . . . V .
18.917	160.6785	83.29	. Q . . . V .
19.000	161.2439	82.10	. Q . . . V .
19.083	161.8015	80.95	. Q . . . V .
19.167	162.3515	79.86	. Q . . . V .
19.250	162.8943	78.81	. Q . . . V .
19.333	163.4302	77.81	. Q . . . V .
19.417	163.9594	76.85	. Q . . . V .
19.500	164.4822	75.92	. Q . . . V .
19.583	164.9989	75.02	. Q . . . V .
19.667	165.5097	74.16	. Q . . . V .
19.750	166.0148	73.33	. Q . . . V .
19.833	166.5143	72.53	. Q . . . V .
19.917	167.0085	71.76	. Q . . . V .

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20.000    167.4976     71.01  . Q       .         .         .    V    .
20.083    167.9816     70.29  . Q       .         .         .    V    .
20.167    168.4609     69.59  . Q       .         .         .    V    .
20.250    168.9354     68.91  . Q       .         .         .    V    .
20.333    169.4054     68.25  . Q       .         .         .     V   .
20.417    169.8711     67.61  . Q       .         .         .     V   .
20.500    170.3324     66.99  . Q       .         .         .     V   .
20.583    170.7896     66.38  . Q       .         .         .     V   .
20.667    171.2427     65.80  . Q       .         .         .     V   .
20.750    171.6920     65.23  . Q       .         .         .     V   .
20.833    172.1374     64.67  .Q        .         .         .     V   .
20.917    172.5791     64.13  .Q        .         .         .     V   .
21.000    173.0171     63.61  .Q        .         .         .     V   .
21.083    173.4517     63.10  .Q        .         .         .     V   .
21.167    173.8828     62.60  .Q        .         .         .      V  .
21.250    174.3105     62.11  .Q        .         .         .      V  .
21.333    174.7350     61.63  .Q        .         .         .      V  .
21.417    175.1563     61.17  .Q        .         .         .      V  .
21.500    175.5744     60.72  .Q        .         .         .      V  .
21.583    175.9895     60.27  .Q        .         .         .      V  .
21.667    176.4017     59.84  .Q        .         .         .      V  .
21.750    176.8109     59.42  .Q        .         .         .      V  .
21.833    177.2172     59.00  .Q        .         .         .      V  .
21.917    177.6208     58.60  .Q        .         .         .      V  .
22.000    178.0217     58.20  .Q        .         .         .      V  .
22.083    178.4198     57.82  .Q        .         .         .      V  .
22.167    178.8154     57.44  .Q        .         .         .       V .
22.250    179.2084     57.07  .Q        .         .         .       V .
22.333    179.5989     56.70  .Q        .         .         .       V .
22.417    179.9870     56.34  .Q        .         .         .       V .
22.500    180.3726     55.99  .Q        .         .         .       V .
22.583    180.7559     55.65  .Q        .         .         .       V .
22.667    181.1368     55.31  .Q        .         .         .       V .
22.750    181.5155     54.98  .Q        .         .         .       V .
22.833    181.8920     54.66  .Q        .         .         .       V .
22.917    182.2662     54.34  .Q        .         .         .       V .
23.000    182.6384     54.03  .Q        .         .         .       V .
23.083    183.0084     53.73  .Q        .         .         .       V .
23.167    183.3763     53.42  .Q        .         .         .        V.
23.250    183.7422     53.13  .Q        .         .         .        V.
23.333    184.1061     52.84  .Q        .         .         .        V.
23.417    184.4680     52.55  .Q        .         .         .        V.
23.500    184.8280     52.27  .Q        .         .         .        V.
23.583    185.1861     52.00  .Q        .         .         .        V.
23.667    185.5424     51.73  .Q        .         .         .        V.
23.750    185.8968     51.46  .Q        .         .         .        V.
23.833    186.2493     51.20  .Q        .         .         .        V.
23.917    186.6002     50.94  .Q        .         .         .        V.
24.000    186.9492     50.68  .Q        .         .         .        V.
24.083    187.2867     49.00  .Q        .         .         .        V.
```

```
  24.167    187.5667     40.65  .Q        .         .         .        V.
  24.250    187.7449     25.89  Q         .         .         .        V.
  24.333    187.8250     11.63  Q         .         .         .        V.
  24.417    187.8567      4.60  Q         .         .         .        V.
  24.500    187.8685      1.71  Q         .         .         .        V.
  24.583    187.8739      0.79  Q         .         .         .        V.
  24.667    187.8768      0.41  Q         .         .         .        V.
  24.750    187.8779      0.17  Q         .         .         .        V.
  24.833    187.8782      0.04  Q         .         .         .        V.
--------------------------------------------------------------------------------
---
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
               0%                           1490.0
              10%                            145.0
              20%                             60.0
              30%                             35.0
              40%                             25.0
              50%                             20.0
              60%                             15.0
              70%                             15.0
              80%                             10.0
              90%                             10.0


 ********************************************************************************
   FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 5.2
 --------------------------------------------------------------------------------
   >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
 ================================================================================

          THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
          TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
          INTERVALS(Reference: the National Engineering Handbook,
          Hydrology, Chapter 17, page 17-52, August,1972,
          U.S. Department of Commerce).


          ASSUMED REGULAR CHANNEL INFORMATION:
            BASEWIDTH(FT) =   30.00     CHANNEL Z =  2.00
            UPSTREAM ELEVATION(FT) =     938.00
            DOWNSTREAM ELEVATION(FT) =     909.00
            CHANNEL LENGTH(FT) =    2185.72     MANNING'S FACTOR = 0.015
            CONSTANT LOSS RATE(CFS) =    0.00
```

CHANNEL ROUTING COEFFICIENT ESTIMATED:
  MAXIMUM INFLOW(CFS) = 1241.54
  AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW = 1020.92
  CHANNEL NORMAL VELOCITY FOR Q = 1020.92 CFS = 16.04 FPS
  ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.904

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 0.990

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
0.083	1.43	0.84	0.84
0.167	9.56	6.17	6.17
0.250	24.17	18.05	18.05
0.333	38.37	32.39	32.39
0.417	45.44	42.44	42.44
0.500	48.43	47.16	47.16
0.583	49.46	49.02	49.02
0.667	49.95	49.74	49.74
0.750	50.32	50.16	50.16
0.833	50.57	50.46	50.46
0.917	50.74	50.67	50.67
1.000	50.86	50.81	50.81
1.083	50.99	50.94	50.94
1.167	51.12	51.07	51.07
1.250	51.25	51.20	51.20
1.333	51.38	51.33	51.33
1.417	51.51	51.46	51.46
1.500	51.65	51.59	51.59
1.583	51.78	51.73	51.73
1.667	51.92	51.86	51.86
1.750	52.06	52.00	52.00
1.833	52.19	52.14	52.14
1.917	52.33	52.27	52.27
2.000	52.47	52.41	52.41
2.083	52.61	52.56	52.56
2.167	52.76	52.70	52.70
2.250	52.90	52.84	52.84
2.333	53.05	52.99	52.99
2.417	53.19	53.13	53.13
2.500	53.34	53.28	53.28
2.583	53.49	53.43	53.43
2.667	53.64	53.58	53.58
2.750	53.79	53.73	53.73
2.833	53.95	53.88	53.88

2.917	54.10	54.04	54.04
3.000	54.26	54.19	54.19
3.083	54.41	54.35	54.35
3.167	54.57	54.51	54.51
3.250	54.73	54.66	54.66
3.333	54.90	54.83	54.83
3.417	55.06	54.99	54.99
3.500	55.22	55.15	55.15
3.583	55.39	55.32	55.32
3.667	55.56	55.49	55.49
3.750	55.73	55.65	55.65
3.833	55.90	55.83	55.83
3.917	56.07	56.00	56.00
4.000	56.25	56.17	56.17
4.083	56.42	56.35	56.35
4.167	56.60	56.52	56.52
4.250	56.78	56.70	56.70
4.333	56.96	56.89	56.89
4.417	57.14	57.07	57.07
4.500	57.33	57.25	57.25
4.583	57.52	57.44	57.44
4.667	57.71	57.63	57.63
4.750	57.90	57.82	57.82
4.833	58.09	58.01	58.01
4.917	58.29	58.21	58.21
5.000	58.49	58.40	58.40
5.083	58.69	58.60	58.60
5.167	58.89	58.80	58.80
5.250	59.09	59.01	59.01
5.333	59.30	59.21	59.21
5.417	59.51	59.42	59.42
5.500	59.72	59.63	59.63
5.583	59.93	59.84	59.84
5.667	60.15	60.06	60.06
5.750	60.37	60.27	60.27
5.833	60.59	60.49	60.49
5.917	60.81	60.72	60.72
6.000	61.04	60.94	60.94
6.083	61.27	61.17	61.17
6.167	61.50	61.40	61.40
6.250	61.73	61.63	61.63
6.333	61.97	61.87	61.87
6.417	62.21	62.11	62.11
6.500	62.45	62.35	62.35
6.583	62.70	62.60	62.60
6.667	62.95	62.84	62.84
6.750	63.20	63.10	63.10
6.833	63.46	63.35	63.35
6.917	63.72	63.61	63.61
7.000	63.98	63.87	63.87

7.083	64.24	64.13	64.13
7.167	64.52	64.40	64.40
7.250	64.79	64.67	64.67
7.333	65.07	64.95	64.95
7.417	65.34	65.23	65.23
7.500	65.63	65.51	65.51
7.583	65.92	65.80	65.80
7.667	66.21	66.09	66.09
7.750	66.51	66.38	66.38
7.833	66.81	66.68	66.68
7.917	67.11	66.98	66.98
8.000	67.42	67.29	67.29
8.083	67.74	67.60	67.60
8.167	68.06	67.92	67.92
8.250	68.38	68.24	68.24
8.333	68.71	68.57	68.57
8.417	69.04	68.90	68.90
8.500	69.38	69.24	69.24
8.583	69.72	69.58	69.58
8.667	70.08	69.93	69.93
8.750	70.43	70.28	70.28
8.833	70.79	70.64	70.64
8.917	71.16	71.01	71.01
9.000	71.54	71.38	71.38
9.083	71.91	71.75	71.75
9.167	72.30	72.14	72.14
9.250	72.69	72.53	72.53
9.333	73.09	72.92	72.92
9.417	73.50	73.33	73.33
9.500	73.91	73.74	73.74
9.583	74.33	74.16	74.16
9.667	74.77	74.58	74.58
9.750	75.20	75.02	75.02
9.833	75.65	75.46	75.46
9.917	76.10	75.91	75.91
10.000	76.56	76.37	76.37
10.083	77.03	76.84	76.84
10.167	77.52	77.31	77.31
10.250	78.00	77.80	77.80
10.333	78.51	78.30	78.30
10.417	79.02	78.80	78.80
10.500	79.54	79.32	79.32
10.583	80.07	79.85	79.85
10.667	80.62	80.39	80.39
10.750	81.17	80.94	80.94
10.833	81.74	81.50	81.50
10.917	82.32	82.08	82.08
11.000	82.92	82.67	82.67
11.083	83.52	83.27	83.27
11.167	84.15	83.89	83.89

11.250	84.78	84.52	84.52
11.333	85.44	85.17	85.17
11.417	86.11	85.83	85.83
11.500	86.80	86.51	86.51
11.583	87.50	87.20	87.20
11.667	88.23	87.92	87.92
11.750	88.96	88.65	88.65
11.833	89.73	89.41	89.41
11.917	90.51	90.18	90.18
12.000	91.32	90.98	90.98
12.083	91.06	91.17	91.17
12.167	85.80	87.99	87.99
12.250	75.66	79.90	79.90
12.333	65.86	69.98	69.98
12.417	61.44	63.32	63.32
12.500	60.15	60.71	60.71
12.583	60.35	60.28	60.28
12.667	61.01	60.74	60.74
12.750	61.78	61.46	61.46
12.833	62.70	62.31	62.31
12.917	63.70	63.28	63.28
13.000	64.79	64.33	64.33
13.083	65.92	65.44	65.44
13.167	67.11	66.61	66.61
13.250	68.34	67.82	67.82
13.333	69.65	69.10	69.10
13.417	70.99	70.43	70.43
13.500	72.44	71.83	71.83
13.583	73.92	73.30	73.30
13.667	75.52	74.85	74.85
13.750	77.17	76.48	76.48
13.833	78.95	78.20	78.20
13.917	80.80	80.02	80.02
14.000	82.80	81.96	81.96
14.083	85.41	84.31	84.31
14.167	90.65	88.45	88.45
14.250	98.39	95.14	95.14
14.333	106.26	102.95	102.95
14.417	111.71	109.40	109.40
14.500	115.98	114.18	114.18
14.583	119.73	118.15	118.15
14.667	123.64	122.00	122.00
14.750	127.76	126.03	126.03
14.833	132.30	130.39	130.39
14.917	137.15	135.11	135.11
15.000	142.60	140.31	140.31
15.083	148.54	146.05	146.05
15.167	155.33	152.48	152.48
15.250	162.86	159.69	159.69
15.333	171.63	167.94	167.94

15.417	183.26	178.38	178.38
15.500	204.79	195.77	195.77
15.583	236.15	222.99	222.99
15.667	270.67	256.15	256.15
15.750	298.98	287.04	287.04
15.833	320.36	311.33	311.33
15.917	342.65	333.27	333.27
16.000	397.97	374.83	374.83
16.083	566.82	496.24	496.24
16.167	952.40	791.04	791.04
16.250	1241.54	1119.44	1119.44
16.333	1146.63	1184.93	1184.93
16.417	743.11	911.61	911.61
16.500	478.70	590.57	590.57
16.583	320.39	387.48	387.48
16.667	241.85	275.25	275.25
16.750	200.76	218.22	218.22
16.833	171.68	183.98	183.98
16.917	151.64	160.11	160.11
17.000	137.47	143.46	143.46
17.083	127.06	131.46	131.46
17.167	116.06	120.69	120.69
17.250	104.09	109.12	109.12
17.333	93.39	97.90	97.90
17.417	86.12	89.19	89.19
17.500	80.97	83.15	83.15
17.583	77.02	78.69	78.69
17.667	73.65	75.07	75.07
17.750	70.66	71.92	71.92
17.833	67.98	69.11	69.11
17.917	65.56	66.58	66.58
18.000	63.36	64.29	64.29
18.083	62.42	62.82	62.82
18.167	66.65	64.89	64.89
18.250	75.85	72.00	72.00
18.333	84.79	81.03	81.03
18.417	88.37	86.84	86.84
18.500	88.93	88.68	88.68
18.583	88.09	88.44	88.44
18.667	86.92	87.41	87.41
18.750	85.73	86.23	86.23
18.833	84.51	85.02	85.02
18.917	83.29	83.80	83.80
19.000	82.10	82.60	82.60
19.083	80.95	81.43	81.43
19.167	79.86	80.32	80.32
19.250	78.81	79.26	79.26
19.333	77.81	78.23	78.23
19.417	76.85	77.25	77.25
19.500	75.92	76.31	76.31

19.583	75.02	75.40	75.40
19.667	74.16	74.53	74.53
19.750	73.33	73.68	73.68
19.833	72.53	72.87	72.87
19.917	71.76	72.09	72.09
20.000	71.01	71.33	71.33
20.083	70.29	70.59	70.59
20.167	69.59	69.88	69.88
20.250	68.91	69.19	69.19
20.333	68.25	68.52	68.52
20.417	67.61	67.88	67.88
20.500	66.99	67.25	67.25
20.583	66.38	66.64	66.64
20.667	65.80	66.04	66.04
20.750	65.23	65.47	65.47
20.833	64.67	64.91	64.91
20.917	64.13	64.36	64.36
21.000	63.61	63.83	63.83
21.083	63.10	63.31	63.31
21.167	62.60	62.81	62.81
21.250	62.11	62.31	62.31
21.333	61.63	61.83	61.83
21.417	61.17	61.36	61.36
21.500	60.72	60.91	60.91
21.583	60.27	60.46	60.46
21.667	59.84	60.02	60.02
21.750	59.42	59.60	59.60
21.833	59.00	59.18	59.18
21.917	58.60	58.77	58.77
22.000	58.20	58.37	58.37
22.083	57.82	57.98	57.98
22.167	57.44	57.60	57.60
22.250	57.07	57.22	57.22
22.333	56.70	56.86	56.86
22.417	56.34	56.50	56.50
22.500	55.99	56.14	56.14
22.583	55.65	55.80	55.80
22.667	55.31	55.46	55.46
22.750	54.98	55.12	55.12
22.833	54.66	54.80	54.80
22.917	54.34	54.48	54.48
23.000	54.03	54.16	54.16
23.083	53.73	53.85	53.85
23.167	53.42	53.55	53.55
23.250	53.13	53.25	53.25
23.333	52.84	52.96	52.96
23.417	52.55	52.67	52.67
23.500	52.27	52.39	52.39
23.583	52.00	52.11	52.11
23.667	51.73	51.84	51.84

```
         23.750        51.46       51.57       51.57
         23.833        51.20       51.31       51.31
         23.917        50.94       51.05       51.05
         24.000        50.68       50.79       50.79
================================================================================
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =    187.878 AF
    OUTFLOW VOLUME =    187.878 AF
    LOSS    VOLUME =      0.000 AF


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     428.580 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.240 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.221
         LOW LOSS FRACTION = 0.275
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  2.25
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  4.75

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.981
          30-MINUTE FACTOR = 0.981
           1-HOUR FACTOR = 0.981
           3-HOUR FACTOR = 0.997
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  34.722
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.308	119.610
2	14.779	646.413
3	38.225	1215.257
4	66.233	1451.644
5	84.561	949.989
6	93.250	450.344
7	97.213	205.452
8	98.477	65.467
9	99.128	33.747
10	99.651	27.130
11	99.913	13.565
12	100.000	4.521

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 42.2980
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 127.1365

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	225.0	450.0	675.0	900.0
0.083	0.0053	0.77	Q	.	.	.	.
0.167	0.0393	4.94	Q	.	.	.	.
0.250	0.1274	12.79	Q	.	.	.	.
0.333	0.2802	22.18	Q	.	.	.	.
0.417	0.4755	28.36	VQ	.	.	.	.
0.500	0.6912	31.33	VQ	.	.	.	.
0.583	0.9166	32.73	VQ	.	.	.	.
0.667	1.1455	33.23	VQ	.	.	.	.
0.750	1.3764	33.53	VQ	.	.	.	.
0.833	1.6091	33.79	VQ	.	.	.	.
0.917	1.8430	33.96	VQ	.	.	.	.
1.000	2.0776	34.07	VQ	.	.	.	.
1.083	2.3129	34.16	VQ	.	.	.	.
1.167	2.5488	34.25	VQ	.	.	.	.
1.250	2.7852	34.33	VQ	.	.	.	.
1.333	3.0223	34.42	VQ	.	.	.	.
1.417	3.2599	34.51	.Q	.	.	.	.
1.500	3.4982	34.60	.Q	.	.	.	.
1.583	3.7371	34.69	.Q	.	.	.	.
1.667	3.9766	34.78	.Q	.	.	.	.
1.750	4.2168	34.87	.Q	.	.	.	.
1.833	4.4576	34.96	.Q	.	.	.	.
1.917	4.6990	35.06	.Q	.	.	.	.
2.000	4.9411	35.15	.Q	.	.	.	.
2.083	5.1838	35.24	.Q	.	.	.	.
2.167	5.4272	35.34	.Q	.	.	.	.
2.250	5.6712	35.44	.Q	.	.	.	.
2.333	5.9160	35.53	.Q	.	.	.	.
2.417	6.1614	35.63	.Q	.	.	.	.
2.500	6.4074	35.73	.QV	.	.	.	.
2.583	6.6542	35.83	.QV	.	.	.	.
2.667	6.9016	35.93	.QV	.	.	.	.
2.750	7.1498	36.03	.QV	.	.	.	.
2.833	7.3986	36.13	.QV	.	.	.	.
2.917	7.6482	36.24	.QV	.	.	.	.
3.000	7.8985	36.34	.QV	.	.	.	.
3.083	8.1495	36.45	.QV	.	.	.	.
3.167	8.4012	36.55	.QV	.	.	.	.
3.250	8.6537	36.66	.QV	.	.	.	.

3.333	8.9069	36.77	.QV	.	.	.	.
3.417	9.1609	36.88	.QV	.	.	.	.
3.500	9.4156	36.99	.QV	.	.	.	.
3.583	9.6711	37.10	.Q V	.	.	.	.
3.667	9.9274	37.21	.Q V	.	.	.	.
3.750	10.1845	37.32	.Q V	.	.	.	.
3.833	10.4423	37.44	.Q V	.	.	.	.
3.917	10.7009	37.55	.Q V	.	.	.	.
4.000	10.9604	37.67	.Q V	.	.	.	.
4.083	11.2206	37.79	.Q V	.	.	.	.
4.167	11.4817	37.91	.Q V	.	.	.	.
4.250	11.7436	38.03	.Q V	.	.	.	.
4.333	12.0064	38.15	.Q V	.	.	.	.
4.417	12.2699	38.27	.Q V	.	.	.	.
4.500	12.5344	38.40	.Q V	.	.	.	.
4.583	12.7997	38.52	.Q V	.	.	.	.
4.667	13.0659	38.65	.Q V	.	.	.	.
4.750	13.3329	38.78	.Q V	.	.	.	.
4.833	13.6009	38.91	.Q V	.	.	.	.
4.917	13.8697	39.04	.Q V	.	.	.	.
5.000	14.1395	39.17	.Q V	.	.	.	.
5.083	14.4101	39.30	.Q V	.	.	.	.
5.167	14.6817	39.44	.Q V	.	.	.	.
5.250	14.9543	39.57	.Q V	.	.	.	.
5.333	15.2278	39.71	.Q V	.	.	.	.
5.417	15.5022	39.85	.Q V	.	.	.	.
5.500	15.7777	39.99	.Q V	.	.	.	.
5.583	16.0541	40.13	.Q V	.	.	.	.
5.667	16.3315	40.28	.Q V	.	.	.	.
5.750	16.6099	40.42	.Q V	.	.	.	.
5.833	16.8893	40.57	.Q V	.	.	.	.
5.917	17.1697	40.72	.Q V	.	.	.	.
6.000	17.4512	40.87	.Q V	.	.	.	.
6.083	17.7338	41.02	.Q V	.	.	.	.
6.167	18.0174	41.18	.Q V	.	.	.	.
6.250	18.3021	41.34	.Q V	.	.	.	.
6.333	18.5879	41.50	.Q V	.	.	.	.
6.417	18.8747	41.65	.Q V	.	.	.	.
6.500	19.1627	41.82	.Q V	.	.	.	.
6.583	19.4519	41.98	.Q V	.	.	.	.
6.667	19.7422	42.15	.Q V	.	.	.	.
6.750	20.0336	42.32	.Q V	.	.	.	.
6.833	20.3262	42.49	.Q V	.	.	.	.
6.917	20.6200	42.66	.Q V	.	.	.	.
7.000	20.9150	42.84	.Q V	.	.	.	.
7.083	21.2113	43.01	.Q V	.	.	.	.
7.167	21.5088	43.19	.Q V	.	.	.	.
7.250	21.8075	43.38	.Q V	.	.	.	.
7.333	22.1075	43.56	.Q V	.	.	.	.
7.417	22.4088	43.75	.Q V	.	.	.	.

7.500	22.7114	43.94	.Q	V	.	.	.
7.583	23.0153	44.13	.Q	V	.	.	.
7.667	23.3206	44.33	.Q	V	.	.	.
7.750	23.6272	44.52	.Q	V	.	.	.
7.833	23.9352	44.73	.Q	V	.	.	.
7.917	24.2447	44.93	.Q	V	.	.	.
8.000	24.5555	45.14	. Q	V	.	.	.
8.083	24.8678	45.34	. Q	V	.	.	.
8.167	25.1816	45.56	. Q	V	.	.	.
8.250	25.4968	45.77	. Q	V	.	.	.
8.333	25.8136	45.99	. Q	V	.	.	.
8.417	26.1318	46.21	. Q	V	.	.	.
8.500	26.4517	46.44	. Q	V	.	.	.
8.583	26.7731	46.67	. Q	V	.	.	.
8.667	27.0961	46.91	. Q	V	.	.	.
8.750	27.4208	47.14	. Q	V	.	.	.
8.833	27.7471	47.38	. Q	V	.	.	.
8.917	28.0751	47.63	. Q	V	.	.	.
9.000	28.4049	47.88	. Q	V	.	.	.
9.083	28.7363	48.13	. Q	V	.	.	.
9.167	29.0696	48.39	. Q	V	.	.	.
9.250	29.4046	48.65	. Q	V	.	.	.
9.333	29.7415	48.92	. Q	V	.	.	.
9.417	30.0802	49.19	. Q	V	.	.	.
9.500	30.4209	49.46	. Q	V	.	.	.
9.583	30.7635	49.74	. Q	V	.	.	.
9.667	31.1080	50.03	. Q	V	.	.	.
9.750	31.4546	50.32	. Q	V	.	.	.
9.833	31.8032	50.62	. Q	V	.	.	.
9.917	32.1539	50.92	. Q	V	.	.	.
10.000	32.5067	51.23	. Q	V	.	.	.
10.083	32.8616	51.54	. Q	V	.	.	.
10.167	33.2188	51.86	. Q	V	.	.	.
10.250	33.5782	52.19	. Q	V	.	.	.
10.333	33.9399	52.52	. Q	V	.	.	.
10.417	34.3040	52.86	. Q	V	.	.	.
10.500	34.6705	53.21	. Q	V	.	.	.
10.583	35.0394	53.56	. Q	V	.	.	.
10.667	35.4108	53.93	. Q	V	.	.	.
10.750	35.7847	54.29	. Q	V	.	.	.
10.833	36.1612	54.68	. Q	V	.	.	.
10.917	36.5404	55.06	. Q	V	.	.	.
11.000	36.9224	55.46	. Q	V	.	.	.
11.083	37.3071	55.86	. Q	V	.	.	.
11.167	37.6947	56.28	. Q	V	.	.	.
11.250	38.0852	56.70	. Q	V	.	.	.
11.333	38.4787	57.14	. Q	V	.	.	.
11.417	38.8752	57.58	. Q	V	.	.	.
11.500	39.2749	58.04	. Q	V	.	.	.
11.583	39.6778	58.50	. Q	V	.	.	.

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11.667     40.0841     58.99  . Q       . V       .         .         .
11.750     40.4937     59.48  . Q       . V       .         .         .
11.833     40.9068     59.99  . Q       . V       .         .         .
11.917     41.3235     60.50  . Q       .  V      .         .         .
12.000     41.7439     61.04  . Q       .  V      .         .         .
12.083     42.1640     61.00  . Q       .  V      .         .         .
12.167     42.5664     58.42  . Q       .  V      .         .         .
12.250     42.9318     53.06  . Q       .  V      .         .         .
12.333     43.2525     46.56  . Q       .  V      .         .         .
12.417     43.5452     42.50  .Q        .  V      .         .         .
12.500     43.8268     40.89  .Q        .  V      .         .         .
12.583     44.1055     40.48  .Q        .  V      .         .         .
12.667     44.3864     40.78  .Q        .  V      .         .         .
12.750     44.6704     41.24  .Q        .   V     .         .         .
12.833     44.9581     41.78  .Q        .   V     .         .         .
12.917     45.2501     42.39  .Q        .   V     .         .         .
13.000     45.5469     43.09  .Q        .   V     .         .         .
13.083     45.8488     43.84  .Q        .   V     .         .         .
13.167     46.1561     44.62  .Q        .   V     .         .         .
13.250     46.4690     45.43  . Q       .   V     .         .         .
13.333     46.7878     46.29  . Q       .   V     .         .         .
13.417     47.1128     47.18  . Q       .   V     .         .         .
13.500     47.4443     48.13  . Q       .   V     .         .         .
13.583     47.7825     49.11  . Q       .    V    .         .         .
13.667     48.1280     50.16  . Q       .    V    .         .         .
13.750     48.4809     51.25  . Q       .    V    .         .         .
13.833     48.8419     52.41  . Q       .    V    .         .         .
13.917     49.2112     53.63  . Q       .    V    .         .         .
14.000     49.5896     54.94  . Q       .    V    .         .         .
14.083     49.9792     56.57  . Q       .    V    .         .         .
14.167     50.3887     59.46  . Q       .    V    .         .         .
14.250     50.8273     63.68  . Q       .    V    .         .         .
14.333     51.2996     68.59  .  Q      .     V   .         .         .
14.417     51.7992     72.53  .  Q      .     V   .         .         .
14.500     52.3198     75.60  .  Q      .     V   .         .         .
14.583     52.8589     78.27  .  Q      .     V   .         .         .
14.667     53.4157     80.86  .  Q      .     V   .         .         .
14.750     53.9912     83.55  .  Q      .     V   .         .         .
14.833     54.5870     86.52  .  Q      .      V  .         .         .
14.917     55.2046     89.68  .  Q      .      V  .         .         .
15.000     55.8465     93.21  .   Q     .      V  .         .         .
15.083     56.5149     97.05  .   Q     .      V  .         .         .
15.167     57.2133    101.41  .   Q     .       V .         .         .
15.250     57.9451    106.25  .   Q     .       V .         .         .
15.333     58.7155    111.86  .   Q     .       V .         .         .
15.417     59.5363    119.19  .    Q    .       V .         .         .
15.500     60.4454    132.00  .    Q    .        V.         .         .
15.583     61.4838    150.78  .     Q   .        V.         .         .
15.667     62.6802    173.71  .      Q  .        V.         .         .
15.750     64.0173    194.15  .       Q .         V         .         .
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15.833	65.4645	210.14	. Q. V . .
15.917	67.0233	226.34	. Q .V . .
16.000	68.8072	259.02	. .Q .V . .
16.083	71.2734	358.09	. . Q . V . .
16.167	75.3002	584.69	. . . V Q . .
16.250	80.7026	784.43	. . . V . Q .
16.333	86.3736	823.43	. . . V . Q .
16.417	90.5869	611.77	. . . QV . .
16.500	93.3387	399.57	. . Q . V. .
16.583	95.2069	271.25	. . Q . V. .
16.667	96.4909	186.44	. Q . . V .
16.750	97.5103	148.02	. Q . . V .
16.833	98.3827	126.67	. Q . . V .
16.917	99.1328	108.92	. Q . . .V .
17.000	99.7968	96.40	. Q . . .V .
17.083	100.3978	87.27	. Q . . .V .
17.167	100.9475	79.82	. Q . . .V .
17.250	101.4451	72.26	. Q . . .V .
17.333	101.8932	65.05	. Q . . . V .
17.417	102.3035	59.59	. Q . . . V .
17.500	102.6870	55.68	. Q . . . V .
17.583	103.0497	52.67	. Q . . . V .
17.667	103.3958	50.25	. Q . . . V .
17.750	103.7274	48.14	. Q . . . V .
17.833	104.0458	46.24	. Q . . . V .
17.917	104.3525	44.53	.Q . . . V .
18.000	104.6486	43.00	.Q . . . V .
18.083	104.9391	42.17	.Q . . . V .
18.167	105.2423	44.02	.Q . . . V .
18.250	105.5778	48.72	. Q . . . V .
18.333	105.9540	54.62	. Q . . . V .
18.417	106.3542	58.11	. Q . . . V .
18.500	106.7620	59.21	. Q . . . V .
18.583	107.1695	59.17	. Q . . . V .
18.667	107.5724	58.50	. Q . . . V .
18.750	107.9699	57.72	. Q . . . V .
18.833	108.3621	56.95	. Q . . . V .
18.917	108.7489	56.16	. Q . . . V .
19.000	109.1302	55.37	. Q . . . V .
19.083	109.5062	54.59	. Q . . . V .
19.167	109.8770	53.84	. Q . . . V .
19.250	110.2429	53.13	. Q . . . V .
19.333	110.6041	52.44	. Q . . . V .
19.417	110.9608	51.79	. Q . . . V .
19.500	111.3131	51.15	. Q . . . V .
19.583	111.6612	50.55	. Q . . . V .
19.667	112.0053	49.96	. Q . . . V .
19.750	112.3455	49.40	. Q . . . V .
19.833	112.6819	48.85	. Q . . . V .
19.917	113.0147	48.32	. Q . . . V .

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20.000    113.3440     47.82  . Q       .         .         .    V    .
20.083    113.6699     47.32  . Q       .         .         .    V    .
20.167    113.9926     46.85  . Q       .         .         .    V    .
20.250    114.3120     46.39  . Q       .         .         .    V    .
20.333    114.6284     45.94  . Q       .         .         .     V   .
20.417    114.9418     45.50  . Q       .         .         .     V   .
20.500    115.2523     45.08  . Q       .         .         .     V   .
20.583    115.5599     44.67  .Q        .         .         .     V   .
20.667    115.8649     44.28  .Q        .         .         .     V   .
20.750    116.1671     43.89  .Q        .         .         .     V   .
20.833    116.4668     43.51  .Q        .         .         .     V   .
20.917    116.7640     43.15  .Q        .         .         .     V   .
21.000    117.0587     42.79  .Q        .         .         .     V   .
21.083    117.3510     42.44  .Q        .         .         .     V   .
21.167    117.6410     42.10  .Q        .         .         .      V  .
21.250    117.9287     41.77  .Q        .         .         .      V  .
21.333    118.2142     41.45  .Q        .         .         .      V  .
21.417    118.4975     41.14  .Q        .         .         .      V  .
21.500    118.7787     40.83  .Q        .         .         .      V  .
21.583    119.0578     40.53  .Q        .         .         .      V  .
21.667    119.3350     40.24  .Q        .         .         .      V  .
21.750    119.6101     39.95  .Q        .         .         .      V  .
21.833    119.8834     39.67  .Q        .         .         .      V  .
21.917    120.1547     39.40  .Q        .         .         .      V  .
22.000    120.4242     39.13  .Q        .         .         .      V  .
22.083    120.6919     38.87  .Q        .         .         .      V  .
22.167    120.9578     38.61  .Q        .         .         .       V .
22.250    121.2220     38.36  .Q        .         .         .       V .
22.333    121.4846     38.12  .Q        .         .         .       V .
22.417    121.7454     37.87  .Q        .         .         .       V .
22.500    122.0046     37.64  .Q        .         .         .       V .
22.583    122.2622     37.41  .Q        .         .         .       V .
22.667    122.5183     37.18  .Q        .         .         .       V .
22.750    122.7728     36.96  .Q        .         .         .       V .
22.833    123.0258     36.74  .Q        .         .         .       V .
22.917    123.2773     36.52  .Q        .         .         .       V .
23.000    123.5274     36.31  .Q        .         .         .       V .
23.083    123.7761     36.10  .Q        .         .         .       V .
23.167    124.0233     35.90  .Q        .         .         .        V.
23.250    124.2692     35.70  .Q        .         .         .        V.
23.333    124.5137     35.50  .Q        .         .         .        V.
23.417    124.7569     35.31  .Q        .         .         .        V.
23.500    124.9988     35.12  .Q        .         .         .        V.
23.583    125.2394     34.94  .Q        .         .         .        V.
23.667    125.4788     34.75  .Q        .         .         .        V.
23.750    125.7169     34.57  .Q        .         .         .        V.
23.833    125.9538     34.40  .Q        .         .         .        V.
23.917    126.1895     34.22  .Q        .         .         .        V.
24.000    126.4240     34.05  .Q        .         .         .        V.
24.083    126.6520     33.11  .Q        .         .         .        V.
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  24.167    126.8503     28.79  .Q        .         .         .        V.
  24.250    126.9936     20.82  Q         .         .         .        V.
  24.333    127.0720     11.37  Q         .         .         .        V.
  24.417    127.1078      5.20  Q         .         .         .        V.
  24.500    127.1234      2.27  Q         .         .         .        V.
  24.583    127.1299      0.94  Q         .         .         .        V.
  24.667    127.1334      0.51  Q         .         .         .        V.
  24.750    127.1354      0.29  Q         .         .         .        V.
  24.833    127.1362      0.12  Q         .         .         .        V.
  24.917    127.1364      0.03  Q         .         .         .        V.
--------------------------------------------------------------------------------
---
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
              0%                            1495.0
             10%                             145.0
             20%                              65.0
             30%                              40.0
             40%                              30.0
             50%                              20.0
             60%                              20.0
             70%                              20.0
             80%                              10.0
             90%                              10.0


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

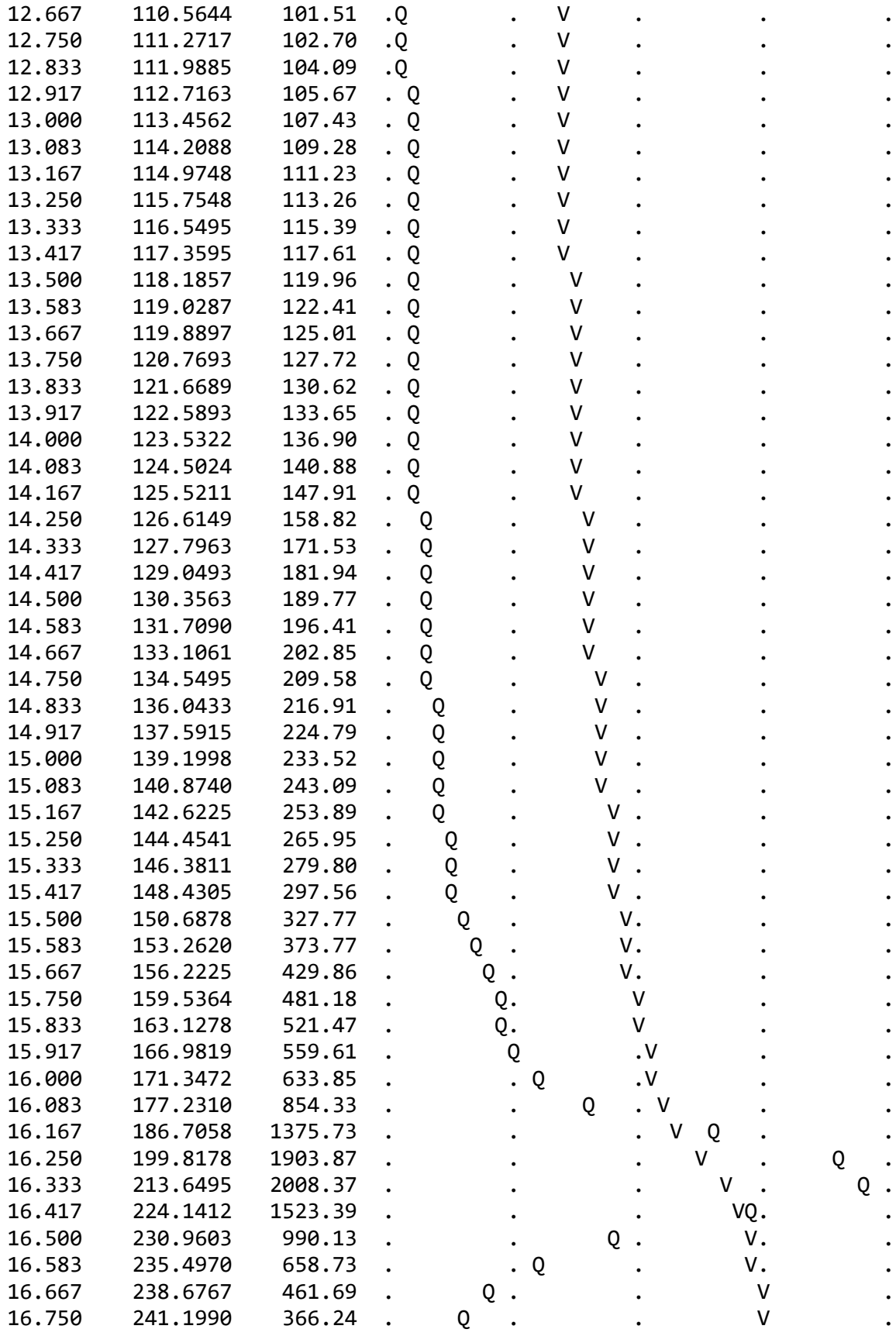

 ****************************************************************************
   FLOW PROCESS FROM NODE    101.00 TO NODE    101.00 IS CODE =  11
 ----------------------------------------------------------------------------
   >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
 ============================================================================

            STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
         (Note: Time indicated is at END of Each Unit Intervals)
 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      525.0    1050.0    1575.0    2100.0
 ----------------------------------------------------------------------------
    0.083      0.0111      1.61  Q         .         .         .         .
```

0.167	0.0876	11.11	Q	.	.	.	.
0.250	0.2999	30.84	Q	.	.	.	.
0.333	0.6758	54.57	VQ	.	.	.	.
0.417	1.1633	70.79	VQ	.	.	.	.
0.500	1.7039	78.48	VQ	.	.	.	.
0.583	2.2669	81.75	VQ	.	.	.	.
0.667	2.8383	82.97	VQ	.	.	.	.
0.750	3.4147	83.69	VQ	.	.	.	.
0.833	3.9950	84.25	VQ	.	.	.	.
0.917	4.5778	84.62	VQ	.	.	.	.
1.000	5.1624	84.88	VQ	.	.	.	.
1.083	5.7484	85.10	VQ	.	.	.	.
1.167	6.3360	85.31	VQ	.	.	.	.
1.250	6.9250	85.53	VQ	.	.	.	.
1.333	7.5156	85.75	VQ	.	.	.	.
1.417	8.1076	85.97	.Q	.	.	.	.
1.500	8.7012	86.19	.Q	.	.	.	.
1.583	9.2964	86.41	.Q	.	.	.	.
1.667	9.8931	86.64	.Q	.	.	.	.
1.750	10.4913	86.87	.Q	.	.	.	.
1.833	11.0912	87.10	.Q	.	.	.	.
1.917	11.6927	87.33	.Q	.	.	.	.
2.000	12.2957	87.56	.Q	.	.	.	.
2.083	12.9004	87.80	.Q	.	.	.	.
2.167	13.5067	88.04	.Q	.	.	.	.
2.250	14.1147	88.28	.Q	.	.	.	.
2.333	14.7243	88.52	.Q	.	.	.	.
2.417	15.3356	88.76	.Q	.	.	.	.
2.500	15.9486	89.01	.QV	.	.	.	.
2.583	16.5634	89.26	.QV	.	.	.	.
2.667	17.1798	89.51	.QV	.	.	.	.
2.750	17.7980	89.76	.QV	.	.	.	.
2.833	18.4179	90.01	.QV	.	.	.	.
2.917	19.0396	90.27	.QV	.	.	.	.
3.000	19.6631	90.53	.QV	.	.	.	.
3.083	20.2884	90.79	.QV	.	.	.	.
3.167	20.9155	91.06	.QV	.	.	.	.
3.250	21.5445	91.32	.QV	.	.	.	.
3.333	22.1753	91.59	.QV	.	.	.	.
3.417	22.8080	91.87	.QV	.	.	.	.
3.500	23.4426	92.14	.QV	.	.	.	.
3.583	24.0790	92.42	.Q V	.	.	.	.
3.667	24.7174	92.70	.Q V	.	.	.	.
3.750	25.3578	92.98	.Q V	.	.	.	.
3.833	26.0001	93.27	.Q V	.	.	.	.
3.917	26.6444	93.55	.Q V	.	.	.	.
4.000	27.2907	93.84	.Q V	.	.	.	.
4.083	27.9390	94.14	.Q V	.	.	.	.
4.167	28.5894	94.43	.Q V	.	.	.	.
4.250	29.2418	94.73	.Q V	.	.	.	.

4.333	29.8963	95.04	.Q V	.	.	.	.
4.417	30.5530	95.34	.Q V	.	.	.	.
4.500	31.2117	95.65	.Q V	.	.	.	.
4.583	31.8726	95.96	.Q V	.	.	.	.
4.667	32.5357	96.28	.Q V	.	.	.	.
4.750	33.2009	96.59	.Q V	.	.	.	.
4.833	33.8684	96.92	.Q V	.	.	.	.
4.917	34.5381	97.24	.Q V	.	.	.	.
5.000	35.2101	97.57	.Q V	.	.	.	.
5.083	35.8844	97.90	.Q V	.	.	.	.
5.167	36.5609	98.24	.Q V	.	.	.	.
5.250	37.2399	98.58	.Q V	.	.	.	.
5.333	37.9212	98.92	.Q V	.	.	.	.
5.417	38.6048	99.27	.Q V	.	.	.	.
5.500	39.2909	99.62	.Q V	.	.	.	.
5.583	39.9795	99.98	.Q V	.	.	.	.
5.667	40.6705	100.34	.Q V	.	.	.	.
5.750	41.3640	100.70	.Q V	.	.	.	.
5.833	42.0601	101.07	.Q V	.	.	.	.
5.917	42.7587	101.44	.Q V	.	.	.	.
6.000	43.4599	101.82	.Q V	.	.	.	.
6.083	44.1637	102.19	.Q V	.	.	.	.
6.167	44.8702	102.58	.Q V	.	.	.	.
6.250	45.5793	102.97	.Q V	.	.	.	.
6.333	46.2912	103.37	.Q V	.	.	.	.
6.417	47.0058	103.76	.Q V	.	.	.	.
6.500	47.7233	104.17	.Q V	.	.	.	.
6.583	48.4435	104.58	.Q V	.	.	.	.
6.667	49.1666	104.99	.Q V	.	.	.	.
6.750	49.8926	105.41	. Q V	.	.	.	.
6.833	50.6215	105.84	. Q V	.	.	.	.
6.917	51.3534	106.27	. Q V	.	.	.	.
7.000	52.0882	106.71	. Q V	.	.	.	.
7.083	52.8262	107.15	. Q V	.	.	.	.
7.167	53.5672	107.59	. Q V	.	.	.	.
7.250	54.3113	108.05	. Q V	.	.	.	.
7.333	55.0586	108.51	. Q V	.	.	.	.
7.417	55.8091	108.97	. Q V	.	.	.	.
7.500	56.5629	109.45	. Q V	.	.	.	.
7.583	57.3200	109.93	. Q V	.	.	.	.
7.667	58.0804	110.41	. Q V	.	.	.	.
7.750	58.8442	110.90	. Q V	.	.	.	.
7.833	59.6115	111.41	. Q V	.	.	.	.
7.917	60.3822	111.91	. Q V	.	.	.	.
8.000	61.1565	112.43	. Q V	.	.	.	.
8.083	61.9344	112.95	. Q V	.	.	.	.
8.167	62.7159	113.48	. Q V	.	.	.	.
8.250	63.5012	114.02	. Q V	.	.	.	.
8.333	64.2902	114.56	. Q V	.	.	.	.
8.417	65.0830	115.12	. Q V	.	.	.	.

```
 8.500     65.8797    115.68  . Q     V .         .         .         .
 8.583     66.6803    116.25  . Q     V .         .         .         .
 8.667     67.4849    116.83  . Q     V .         .         .         .
 8.750     68.2936    117.42  . Q     V .         .         .         .
 8.833     69.1065    118.02  . Q     V .         .         .         .
 8.917     69.9235    118.63  . Q     V .         .         .         .
 9.000     70.7448    119.25  . Q     V .         .         .         .
 9.083     71.5704    119.88  . Q      V.         .         .         .
 9.167     72.4005    120.53  . Q      V.         .         .         .
 9.250     73.2350    121.17  . Q      V.         .         .         .
 9.333     74.0742    121.84  . Q      V.         .         .         .
 9.417     74.9179    122.51  . Q      V.         .         .         .
 9.500     75.7664    123.20  . Q      V.         .         .         .
 9.583     76.6197    123.90  . Q      V.         .         .         .
 9.667     77.4779    124.61  . Q      V.         .         .         .
 9.750     78.3411    125.34  . Q      V.         .         .         .
 9.833     79.2094    126.08  . Q       V         .         .         .
 9.917     80.0829    126.83  . Q       V         .         .         .
10.000     80.9616    127.60  . Q       V         .         .         .
10.083     81.8458    128.38  . Q       V         .         .         .
10.167     82.7354    129.18  . Q       V         .         .         .
10.250     83.6306    129.99  . Q       V         .         .         .
10.333     84.5316    130.82  . Q       V         .         .         .
10.417     85.4384    131.66  . Q       V         .         .         .
10.500     86.3511    132.53  . Q       V         .         .         .
10.583     87.2699    133.41  . Q       .V        .         .         .
10.667     88.1949    134.31  . Q       .V        .         .         .
10.750     89.1263    135.23  . Q       .V        .         .         .
10.833     90.0641    136.18  . Q       .V        .         .         .
10.917     91.0086    137.14  . Q       .V        .         .         .
11.000     91.9599    138.13  . Q       .V        .         .         .
11.083     92.9181    139.13  . Q       .V        .         .         .
11.167     93.8834    140.16  . Q       .V        .         .         .
11.250     94.8559    141.22  . Q       . V       .         .         .
11.333     95.8360    142.30  . Q       . V       .         .         .
11.417     96.8236    143.40  . Q       . V       .         .         .
11.500     97.8191    144.55  . Q       . V       .         .         .
11.583     98.8226    145.71  . Q       . V       .         .         .
11.667     99.8343    146.91  . Q       . V       .         .         .
11.750    100.8545    148.13  . Q       . V       .         .         .
11.833    101.8834    149.39  . Q       . V       .         .         .
11.917    102.9212    150.68  . Q       .  V      .         .         .
12.000    103.9681    152.02  . Q       .  V      .         .         .
12.083    105.0161    152.17  . Q       .  V      .         .         .
12.167    106.0245    146.41  . Q       .  V      .         .         .
12.250    106.9402    132.97  . Q       .  V      .         .         .
12.333    107.7429    116.55  . Q       .  V      .         .         .
12.417    108.4717    105.82  . Q       .  V      .         .         .
12.500    109.1714    101.60  .Q        .  V      .         .         .
12.583    109.8653    100.75  .Q        .  V      .         .         .
```



16.833	243.3384	310.64	. Q	.	.	V	.
16.917	245.1912	269.03	. Q	.	.	.V	.
17.000	246.8431	239.86	. Q	.	.	.V	.
17.083	248.3495	218.73	. Q	.	.	.V	.
17.167	249.7304	200.50	. Q	.	.	.V	.
17.250	250.9796	181.38	. Q	.	.	.V	.
17.333	252.1018	162.95	. Q	.	.	. V	.
17.417	253.1265	148.78	. Q	.	.	. V	.
17.500	254.0826	138.83	. Q	.	.	. V	.
17.583	254.9872	131.36	. Q	.	.	. V	.
17.667	255.8503	125.32	. Q	.	.	. V	.
17.750	256.6772	120.06	. Q	.	.	. V	.
17.833	257.4716	115.34	. Q	.	.	. V	.
17.917	258.2368	111.11	. Q	.	.	. V	.
18.000	258.9757	107.28	. Q	.	.	. V	.
18.083	259.6988	104.99	.Q	.	.	. V	.
18.167	260.4489	108.91	. Q	.	.	. V	.
18.250	261.2803	120.72	. Q	.	.	. V	.
18.333	262.2145	135.65	. Q	.	.	. V	.
18.417	263.2128	144.95	. Q	.	.	. V	.
18.500	264.2313	147.90	. Q	.	.	. V	.
18.583	265.2479	147.61	. Q	.	.	. V	.
18.667	266.2528	145.91	. Q	.	.	. V	.
18.750	267.2442	143.95	. Q	.	.	. V	.
18.833	268.2220	141.98	. Q	.	.	. V	.
18.917	269.1859	139.97	. Q	.	.	. V	.
19.000	270.1361	137.97	. Q	.	.	. V	.
19.083	271.0729	136.02	. Q	.	.	. V	.
19.167	271.9969	134.17	. Q	.	.	. V	.
19.250	272.9087	132.38	. Q	.	.	. V	.
19.333	273.8087	130.68	. Q	.	.	. V	.
19.417	274.6974	129.04	. Q	.	.	. V	.
19.500	275.5752	127.46	. Q	.	.	. V	.
19.583	276.4426	125.95	. Q	.	.	. V	.
19.667	277.3000	124.49	. Q	.	.	. V	.
19.750	278.1476	123.08	. Q	.	.	. V	.
19.833	278.9859	121.72	. Q	.	.	. V	.
19.917	279.8152	120.41	. Q	.	.	. V	.
20.000	280.6357	119.14	. Q	.	.	. V	.
20.083	281.4478	117.91	. Q	.	.	. V	.
20.167	282.2517	116.73	. Q	.	.	. V	.
20.250	283.0477	115.58	. Q	.	.	. V	.
20.333	283.8360	114.46	. Q	.	.	. V	.
20.417	284.6168	113.38	. Q	.	.	. V	.
20.500	285.3904	112.33	. Q	.	.	. V	.
20.583	286.1570	111.31	. Q	.	.	. V	.
20.667	286.9168	110.32	. Q	.	.	. V	.
20.750	287.6700	109.36	. Q	.	.	. V	.
20.833	288.4167	108.42	. Q	.	.	. V	.
20.917	289.1571	107.51	. Q	.	.	. V	.

21.000	289.8914	106.62	. Q	.	.	.	V .
21.083	290.6197	105.75	. Q	.	.	.	V .
21.167	291.3423	104.91	.Q	.	.	.	V .
21.250	292.0591	104.09	.Q	.	.	.	V .
21.333	292.7704	103.29	.Q	.	.	.	V .
21.417	293.4764	102.50	.Q	.	.	.	V .
21.500	294.1771	101.74	.Q	.	.	.	V .
21.583	294.8726	100.99	.Q	.	.	.	V .
21.667	295.5631	100.26	.Q	.	.	.	V .
21.750	296.2487	99.55	.Q	.	.	.	V .
21.833	296.9295	98.85	.Q	.	.	.	V .
21.917	297.6056	98.17	.Q	.	.	.	V .
22.000	298.2771	97.50	.Q	.	.	.	V .
22.083	298.9441	96.85	.Q	.	.	.	V .
22.167	299.6067	96.21	.Q	.	.	.	V .
22.250	300.2650	95.58	.Q	.	.	.	V .
22.333	300.9190	94.97	.Q	.	.	.	V .
22.417	301.5690	94.37	.Q	.	.	.	V .
22.500	302.2148	93.78	.Q	.	.	.	V .
22.583	302.8567	93.20	.Q	.	.	.	V .
22.667	303.4947	92.64	.Q	.	.	.	V .
22.750	304.1289	92.08	.Q	.	.	.	V .
22.833	304.7593	91.54	.Q	.	.	.	V .
22.917	305.3860	91.00	.Q	.	.	.	V .
23.000	306.0091	90.47	.Q	.	.	.	V .
23.083	306.6286	89.96	.Q	.	.	.	V .
23.167	307.2447	89.45	.Q	.	.	.	V.
23.250	307.8573	88.95	.Q	.	.	.	V.
23.333	308.4666	88.47	.Q	.	.	.	V.
23.417	309.0725	87.98	.Q	.	.	.	V.
23.500	309.6752	87.51	.Q	.	.	.	V.
23.583	310.2747	87.05	.Q	.	.	.	V.
23.667	310.8711	86.59	.Q	.	.	.	V.
23.750	311.4644	86.14	.Q	.	.	.	V.
23.833	312.0547	85.70	.Q	.	.	.	V.
23.917	312.6419	85.27	.Q	.	.	.	V.
24.000	313.2262	84.84	.Q	.	.	.	V.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.0
10%	150.0
20%	65.0
30%	40.0

40%	30.0
50%	20.0
60%	20.0
70%	15.0
80%	10.0
90%	10.0

==========

END OF FLOODSCx ROUTING ANALYSIS

EXISTING 25-YEAR
REGIONAL ANALYSIS
TRIBUTARY TO EX DBL 6X6
POC #1 / NODE 101

LOSS RATE CALCULATIONS
EXISTING REGIONAL
25-YR ANALYSIS
NODE 101

****

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

==========

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Barton+Deberry WS-Exist-25year
2022-03-10

==========

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 3.60 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	30.17	20.00	32.	0.975	0.748
2	23.43	20.00	69.	0.566	0.804
3	57.88	10.00	32.	0.975	0.842
4	37.59	10.00	69.	0.566	0.870
5	121.44	50.00	32.	0.975	0.468
6	93.70	50.00	69.	0.566	0.608
7	0.84	50.00	75.	0.470	0.658
8	5.36	100.00	50.	0.820	0.061
9	23.00	100.00	69.	0.566	0.282
10	8.37	100.00	79.	0.398	0.457
11	74.01	100.00	83.	0.326	0.540
12	14.07	60.00	32.	0.975	0.374
13	1.07	60.00	69.	0.566	0.543
14	59.21	10.00	32.	0.975	0.842
15	42.46	10.00	69.	0.566	0.870

TOTAL AREA (Acres) = 592.60

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.277

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.358

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 ************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
 ========================================================================
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              Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                              Analysis prepared by:

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

  Problem Descriptions:
   Grand Terrace
   VanBuren WS-Exist-25year
   2022-03-08
========================================================================
 *** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
     AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

     TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.60 (inches)

     SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
        TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
          1         21.79       20.00            32.       0.975       0.748
          2          2.22       20.00            69.       0.566       0.804
          3         16.61       10.00            32.       0.975       0.842
          4         12.95       10.00            69.       0.566       0.870
          5        118.38       50.00            32.       0.975       0.468
          6         62.07       50.00            69.       0.566       0.608
          7          0.77       50.00            75.       0.470       0.658
          8         23.68      100.00            50.       0.820       0.061
          9          4.11      100.00            69.       0.566       0.282
         10         41.85      100.00            79.       0.398       0.457
         11         29.94      100.00            83.       0.326       0.540
         12         20.33       60.00            32.       0.975       0.374
         13          2.38       60.00            69.       0.566       0.543
         14         42.22       10.00            32.       0.975       0.842
         15          1.33       10.00            56.       0.748       0.853
         16         27.95       10.00            69.       0.566       0.870

     TOTAL AREA (Acres) =    428.58

     AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.348

     AREA-AVERAGED LOW LOSS FRACTION, Y = 0.429
 ========================================================================
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**************************************************************************

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



 ************************* DESCRIPTION OF STUDY *************************
* Grand Terrace                                                         *
* BD WS & VB WS - Exist-25year                                          *
* 2022-03-10                                                            *
 ************************************************************************

  FILE NAME: CALEX25.DAT
  TIME/DATE OF STUDY: 16:18 03/10/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     592.600 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.210 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.277
         LOW LOSS FRACTION = 0.358
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.36
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.75
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.00
```

SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 1.45
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 1.80
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 3.60

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE FACTOR = 0.974
 30-MINUTE FACTOR = 0.974
  1-HOUR FACTOR = 0.974
  3-HOUR FACTOR = 0.996
  6-HOUR FACTOR = 0.998
 24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 39.683

==========

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.872	205.853
2	19.165	1167.628
3	48.437	2097.862
4	76.826	2034.622
5	90.830	1003.627
6	96.604	413.793
7	98.430	130.854
8	99.173	53.239
9	99.669	35.567
10	99.917	17.783
11	100.000	5.928

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =   57.1960
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =   120.3101

==========

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

==========

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 275.0 550.0 825.0 1100.0
0.083	0.0057	0.83	Q . . . .
0.167	0.0437	5.52	Q . . . .
0.250	0.1398	13.95	Q . . . .
0.333	0.2924	22.16	Q . . . .
0.417	0.4731	26.24	Q . . . .
0.500	0.6657	27.97	VQ . . . .
0.583	0.8625	28.57	VQ . . . .
0.667	1.0613	28.86	VQ . . . .
0.750	1.2615	29.08	VQ . . . .
0.833	1.4629	29.23	VQ . . . .
0.917	1.6649	29.33	VQ . . . .
1.000	1.8674	29.41	VQ . . . .
1.083	2.0706	29.49	VQ . . . .
1.167	2.2742	29.57	VQ . . . .
1.250	2.4785	29.66	VQ . . . .
1.333	2.6833	29.74	VQ . . . .
1.417	2.8887	29.82	VQ . . . .
1.500	3.0946	29.90	.Q . . . .
1.583	3.3011	29.99	.Q . . . .
1.667	3.5083	30.07	.Q . . . .
1.750	3.7160	30.16	.Q . . . .
1.833	3.9243	30.25	.Q . . . .
1.917	4.1332	30.33	.Q . . . .
2.000	4.3427	30.42	.Q . . . .
2.083	4.5529	30.51	.Q . . . .
2.167	4.7636	30.60	.Q . . . .
2.250	4.9750	30.69	.Q . . . .
2.333	5.1870	30.78	.Q . . . .
2.417	5.3997	30.88	.Q . . . .
2.500	5.6130	30.97	.Q . . . .
2.583	5.8269	31.06	.Q . . . .
2.667	6.0415	31.16	.QV . . . .
2.750	6.2567	31.25	.QV . . . .
2.833	6.4726	31.35	.QV . . . .
2.917	6.6892	31.45	.QV . . . .

3.000	6.9065	31.55	.QV	.	.	.	.
3.083	7.1244	31.64	.QV	.	.	.	.
3.167	7.3431	31.75	.QV	.	.	.	.
3.250	7.5624	31.85	.QV	.	.	.	.
3.333	7.7824	31.95	.QV	.	.	.	.
3.417	8.0031	32.05	.QV	.	.	.	.
3.500	8.2246	32.16	.QV	.	.	.	.
3.583	8.4468	32.26	.QV	.	.	.	.
3.667	8.6697	32.37	.QV	.	.	.	.
3.750	8.8934	32.47	.QV	.	.	.	.
3.833	9.1178	32.58	.Q V	.	.	.	.
3.917	9.3429	32.69	.Q V	.	.	.	.
4.000	9.5688	32.80	.Q V	.	.	.	.
4.083	9.7955	32.91	.Q V	.	.	.	.
4.167	10.0230	33.03	.Q V	.	.	.	.
4.250	10.2512	33.14	.Q V	.	.	.	.
4.333	10.4802	33.26	.Q V	.	.	.	.
4.417	10.7101	33.37	.Q V	.	.	.	.
4.500	10.9407	33.49	.Q V	.	.	.	.
4.583	11.1722	33.61	.Q V	.	.	.	.
4.667	11.4045	33.73	.Q V	.	.	.	.
4.750	11.6376	33.85	.Q V	.	.	.	.
4.833	11.8716	33.97	.Q V	.	.	.	.
4.917	12.1064	34.10	.Q V	.	.	.	.
5.000	12.3421	34.22	.Q V	.	.	.	.
5.083	12.5787	34.35	.Q V	.	.	.	.
5.167	12.8161	34.48	.Q V	.	.	.	.
5.250	13.0544	34.61	.Q V	.	.	.	.
5.333	13.2937	34.74	.Q V	.	.	.	.
5.417	13.5338	34.87	.Q V	.	.	.	.
5.500	13.7749	35.01	.Q V	.	.	.	.
5.583	14.0170	35.14	.Q V	.	.	.	.
5.667	14.2599	35.28	.Q V	.	.	.	.
5.750	14.5038	35.42	.Q V	.	.	.	.
5.833	14.7487	35.56	.Q V	.	.	.	.
5.917	14.9946	35.70	.Q V	.	.	.	.
6.000	15.2415	35.85	.Q V	.	.	.	.
6.083	15.4893	35.99	.Q V	.	.	.	.
6.167	15.7382	36.14	.Q V	.	.	.	.
6.250	15.9881	36.29	.Q V	.	.	.	.
6.333	16.2391	36.44	.Q V	.	.	.	.
6.417	16.4911	36.59	.Q V	.	.	.	.
6.500	16.7442	36.75	.Q V	.	.	.	.
6.583	16.9983	36.90	.Q V	.	.	.	.
6.667	17.2536	37.06	.Q V	.	.	.	.
6.750	17.5100	37.22	.Q V	.	.	.	.

6.833	17.7675	37.39	.Q	V	.	.	.	.
6.917	18.0261	37.55	.Q	V	.	.	.	.
7.000	18.2859	37.72	.Q	V	.	.	.	.
7.083	18.5469	37.89	.Q	V	.	.	.	.
7.167	18.8090	38.07	.Q	V	.	.	.	.
7.250	19.0724	38.24	.Q	V	.	.	.	.
7.333	19.3370	38.42	.Q	V	.	.	.	.
7.417	19.6028	38.60	.Q	V	.	.	.	.
7.500	19.8698	38.78	.Q	V	.	.	.	.
7.583	20.1382	38.96	.Q	V	.	.	.	.
7.667	20.4078	39.15	.Q	V	.	.	.	.
7.750	20.6788	39.34	.Q	V	.	.	.	.
7.833	20.9510	39.54	.Q	V	.	.	.	.
7.917	21.2247	39.73	.Q	V	.	.	.	.
8.000	21.4997	39.93	.Q	V	.	.	.	.
8.083	21.7760	40.13	.Q	V	.	.	.	.
8.167	22.0539	40.34	.Q	V	.	.	.	.
8.250	22.3331	40.54	.Q	V	.	.	.	.
8.333	22.6138	40.76	.Q	V	.	.	.	.
8.417	22.8959	40.97	.Q	V	.	.	.	.
8.500	23.1796	41.19	.Q	V	.	.	.	.
8.583	23.4648	41.41	.Q	V	.	.	.	.
8.667	23.7516	41.64	.Q	V	.	.	.	.
8.750	24.0399	41.86	.Q	V	.	.	.	.
8.833	24.3299	42.10	.Q	V	.	.	.	.
8.917	24.6214	42.33	.Q	V	.	.	.	.
9.000	24.9147	42.58	.Q	V	.	.	.	.
9.083	25.2096	42.82	.Q	V	.	.	.	.
9.167	25.5062	43.07	.Q	V	.	.	.	.
9.250	25.8046	43.32	.Q	V	.	.	.	.
9.333	26.1048	43.59	.Q	V	.	.	.	.
9.417	26.4067	43.85	.Q	V	.	.	.	.
9.500	26.7106	44.12	.Q	V	.	.	.	.
9.583	27.0163	44.39	.Q	V	.	.	.	.
9.667	27.3239	44.67	.Q	V	.	.	.	.
9.750	27.6335	44.95	.Q	V	.	.	.	.
9.833	27.9450	45.24	.Q	V	.	.	.	.
9.917	28.2586	45.53	.Q	V	.	.	.	.
10.000	28.5743	45.84	.Q	V	.	.	.	.
10.083	28.8920	46.14	.Q	V	.	.	.	.
10.167	29.2120	46.45	.Q	V	.	.	.	.
10.250	29.5341	46.77	.Q	V	.	.	.	.
10.333	29.8584	47.10	.Q	V	.	.	.	.
10.417	30.1851	47.43	.Q	V	.	.	.	.
10.500	30.5141	47.77	.Q	V	.	.	.	.
10.583	30.8455	48.11	.Q	V	.	.	.	.

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10.667     31.1793     48.47  .Q        V         .         .         .
10.750     31.5156     48.83  .Q        V         .         .         .
10.833     31.8545     49.21  .Q        V         .         .         .
10.917     32.1960     49.58  .Q        V         .         .         .
11.000     32.5402     49.98  .Q        V         .         .         .
11.083     32.8871     50.37  .Q        V         .         .         .
11.167     33.2368     50.78  .Q        .V        .         .         .
11.250     33.5894     51.19  .Q        .V        .         .         .
11.333     33.9449     51.63  .Q        .V        .         .         .
11.417     34.3035     52.06  .Q        .V        .         .         .
11.500     34.6652     52.52  .Q        .V        .         .         .
11.583     35.0300     52.97  .Q        .V        .         .         .
11.667     35.3982     53.45  .Q        .V        .         .         .
11.750     35.7696     53.94  .Q        .V        .         .         .
11.833     36.1446     54.44  .Q        . V       .         .         .
11.917     36.5231     54.96  .Q        . V       .         .         .
12.000     36.9052     55.49  . Q       . V       .         .         .
12.083     37.2869     55.42  . Q       . V       .         .         .
12.167     37.6485     52.51  .Q        . V       .         .         .
12.250     37.9710     46.82  .Q        . V       .         .         .
12.333     38.2556     41.33  .Q        . V       .         .         .
12.417     38.5234     38.89  .Q        . V       .         .         .
12.500     38.7867     38.22  .Q        . V       .         .         .
12.583     39.0512     38.41  .Q        . V       .         .         .
12.667     39.3188     38.86  .Q        .  V      .         .         .
12.750     39.5899     39.37  .Q        .  V      .         .         .
12.833     39.8652     39.97  .Q        .  V      .         .         .
12.917     40.1449     40.62  .Q        .  V      .         .         .
13.000     40.4295     41.33  .Q        .  V      .         .         .
13.083     40.7192     42.05  .Q        .  V      .         .         .
13.167     41.0141     42.83  .Q        .  V      .         .         .
13.250     41.3146     43.62  .Q        .  V      .         .         .
13.333     41.6209     44.47  .Q        .  V      .         .         .
13.417     41.9331     45.34  .Q        .  V      .         .         .
13.500     42.2519     46.28  .Q        .   V     .         .         .
13.583     42.5772     47.24  .Q        .   V     .         .         .
13.667     42.9097     48.28  .Q        .   V     .         .         .
13.750     43.2496     49.35  .Q        .   V     .         .         .
13.833     43.5974     50.51  .Q        .   V     .         .         .
13.917     43.9535     51.71  .Q        .   V     .         .         .
14.000     44.3186     53.00  .Q        .   V     .         .         .
14.083     44.6946     54.59  .Q        .   V     .         .         .
14.167     45.0899     57.40  . Q       .   V     .         .         .
14.250     45.5125     61.36  . Q       .    V    .         .         .
14.333     45.9631     65.43  . Q       .    V    .         .         .
14.417     46.4344     68.44  . Q       .    V    .         .         .
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14.500     46.9233     70.98  . Q       .    V    .         .         .
14.583     47.4283     73.32  . Q       .    V    .         .         .
14.667     47.9504     75.82  . Q       .    V    .         .         .
14.750     48.4908     78.46  . Q       .     V   .         .         .
14.833     49.0512     81.38  . Q       .     V   .         .         .
14.917     49.6333     84.52  .  Q      .     V   .         .         .
15.000     50.2397     88.05  .  Q      .     V   .         .         .
15.083     50.8726     91.91  .  Q      .     V   .         .         .
15.167     51.5360     96.33  .  Q      .      V  .         .         .
15.250     52.2333    101.24  .  Q      .      V  .         .         .
15.333     52.9700    106.97  .  Q      .      V  .         .         .
15.417     53.7558    114.10  .   Q     .      V  .         .         .
15.500     54.6193    125.39  .   Q     .       V .         .         .
15.583     55.5897    140.89  .    Q    .       V .         .         .
15.667     56.6831    158.76  .    Q    .       V .         .         .
15.750     57.8991    176.56  .     Q   .        V.         .         .
15.833     59.2593    197.50  .      Q  .        V.         .         .
15.917     60.8204    226.68  .       Q .         V         .         .
16.000     62.7716    283.32  .         Q         V         .         .
16.083     65.7450    431.73  .         .    Q    .V        .         .
16.167     71.0307    767.49  .         .         .  V   Q  .         .
16.250     78.0430   1018.18  .         .         .    V    .      Q  .
16.333     84.4419    929.13  .         .         .       V .  Q      .
16.417     88.3608    569.02  .         .         Q        V.         .
16.500     90.6900    338.21  .         . Q       .         V         .
16.583     92.1421    210.84  .      Q  .         .         V         .
16.667     93.2112    155.23  .    Q    .         .         V         .
16.750     94.0937    128.15  .   Q     .         .         .V        .
16.833     94.8393    108.26  .  Q      .         .         .V        .
16.917     95.4887     94.30  .  Q      .         .         .V        .
17.000     96.0718     84.66  .  Q      .         .         .V        .
17.083     96.6094     78.07  . Q       .         .         . V       .
17.167     97.1024     71.58  . Q       .         .         . V       .
17.250     97.5495     64.92  . Q       .         .         . V       .
17.333     97.9560     59.02  . Q       .         .         . V       .
17.417     98.3336     54.82  .Q        .         .         . V       .
17.500     98.6896     51.69  .Q        .         .         . V       .
17.583     99.0284     49.19  .Q        .         .         . V       .
17.667     99.3523     47.04  .Q        .         .         .  V      .
17.750     99.6630     45.11  .Q        .         .         .  V      .
17.833     99.9618     43.39  .Q        .         .         .  V      .
17.917    100.2499     41.83  .Q        .         .         .  V      .
18.000    100.5282     40.40  .Q        .         .         .  V      .
18.083    100.8016     39.70  .Q        .         .         .  V      .
18.167    101.0906     41.96  .Q        .         .         .  V      .
18.250    101.4146     47.04  .Q        .         .         .  V      .
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18.333    101.7725     51.97  .Q        .         .         .  V       .
18.417    102.1434     53.86  .Q        .         .         .  V       .
18.500    102.5155     54.03  .Q        .         .         .   V      .
18.583    102.8834     53.42  .Q        .         .         .   V      .
18.667    103.2459     52.63  .Q        .         .         .   V      .
18.750    103.6028     51.83  .Q        .         .         .   V      .
18.833    103.9542     51.02  .Q        .         .         .   V      .
18.917    104.3000     50.22  .Q        .         .         .   V      .
19.000    104.6405     49.44  .Q        .         .         .   V      .
19.083    104.9759     48.69  .Q        .         .         .   V      .
19.167    105.3063     47.98  .Q        .         .         .    V     .
19.250    105.6320     47.30  .Q        .         .         .    V     .
19.333    105.9533     46.64  .Q        .         .         .    V     .
19.417    106.2702     46.02  .Q        .         .         .    V     .
19.500    106.5830     45.42  .Q        .         .         .    V     .
19.583    106.8918     44.84  .Q        .         .         .    V     .
19.667    107.1967     44.28  .Q        .         .         .    V     .
19.750    107.4980     43.74  .Q        .         .         .    V     .
19.833    107.7957     43.22  .Q        .         .         .    V     .
19.917    108.0899     42.72  .Q        .         .         .    V     .
20.000    108.3808     42.24  .Q        .         .         .     V    .
20.083    108.6685     41.77  .Q        .         .         .     V    .
20.167    108.9531     41.32  .Q        .         .         .     V    .
20.250    109.2346     40.88  .Q        .         .         .     V    .
20.333    109.5133     40.46  .Q        .         .         .     V    .
20.417    109.7891     40.05  .Q        .         .         .     V    .
20.500    110.0622     39.65  .Q        .         .         .     V    .
20.583    110.3326     39.26  .Q        .         .         .     V    .
20.667    110.6004     38.89  .Q        .         .         .     V    .
20.750    110.8657     38.52  .Q        .         .         .     V    .
20.833    111.1286     38.17  .Q        .         .         .     V    .
20.917    111.3890     37.82  .Q        .         .         .      V   .
21.000    111.6472     37.49  .Q        .         .         .      V   .
21.083    111.9031     37.16  .Q        .         .         .      V   .
21.167    112.1568     36.84  .Q        .         .         .      V   .
21.250    112.4084     36.53  .Q        .         .         .      V   .
21.333    112.6579     36.22  .Q        .         .         .      V   .
21.417    112.9053     35.93  .Q        .         .         .      V   .
21.500    113.1508     35.64  .Q        .         .         .      V   .
21.583    113.3943     35.36  .Q        .         .         .      V   .
21.667    113.6359     35.08  .Q        .         .         .      V   .
21.750    113.8757     34.81  .Q        .         .         .      V   .
21.833    114.1136     34.55  .Q        .         .         .      V   .
21.917    114.3498     34.29  .Q        .         .         .       V  .
22.000    114.5843     34.04  .Q        .         .         .       V  .
22.083    114.8170     33.80  .Q        .         .         .       V  .
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22.167	115.0482	33.56	.Q	.	.	.	V .
22.250	115.2776	33.32	.Q	.	.	.	V .
22.333	115.5055	33.09	.Q	.	.	.	V .
22.417	115.7319	32.87	.Q	.	.	.	V .
22.500	115.9567	32.64	.Q	.	.	.	V .
22.583	116.1800	32.43	.Q	.	.	.	V .
22.667	116.4019	32.21	.Q	.	.	.	V .
22.750	116.6223	32.01	.Q	.	.	.	V .
22.833	116.8414	31.80	.Q	.	.	.	V .
22.917	117.0590	31.60	.Q	.	.	.	V .
23.000	117.2753	31.40	.Q	.	.	.	V .
23.083	117.4902	31.21	.Q	.	.	.	V.
23.167	117.7039	31.02	.Q	.	.	.	V.
23.250	117.9163	30.84	.Q	.	.	.	V.
23.333	118.1274	30.65	.Q	.	.	.	V.
23.417	118.3372	30.47	.Q	.	.	.	V.
23.500	118.5459	30.30	.Q	.	.	.	V.
23.583	118.7534	30.12	.Q	.	.	.	V.
23.667	118.9596	29.95	.Q	.	.	.	V.
23.750	119.1648	29.79	.Q	.	.	.	V.
23.833	119.3688	29.62	.Q	.	.	.	V.
23.917	119.5717	29.46	.Q	.	.	.	V.
24.000	119.7735	29.30	.Q	.	.	.	V.
24.083	119.9685	28.32	.Q	.	.	.	V.
24.167	120.1302	23.49	Q	.	.	.	V.
24.250	120.2332	14.95	Q	.	.	.	V.
24.333	120.2794	6.72	Q	.	.	.	V.
24.417	120.2977	2.66	Q	.	.	.	V.
24.500	120.3045	0.99	Q	.	.	.	V.
24.583	120.3077	0.46	Q	.	.	.	V.
24.667	120.3093	0.24	Q	.	.	.	V.
24.750	120.3100	0.10	Q	.	.	.	V.
24.833	120.3101	0.02	Q	.	.	.	V

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1490.0
10%	95.0
20%	45.0
30%	30.0

40%	25.0
50%	20.0
60%	15.0
70%	15.0
80%	10.0
90%	10.0

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****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================

         THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
         TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
         INTERVALS(Reference: the National Engineering Handbook,
         Hydrology, Chapter 17, page 17-52, August,1972,
         U.S. Department of Commerce).


         ASSUMED REGULAR CHANNEL INFORMATION:
           BASEWIDTH(FT) =   30.00     CHANNEL Z =  2.00
           UPSTREAM ELEVATION(FT) =     938.00
           DOWNSTREAM ELEVATION(FT) =     909.00
           CHANNEL LENGTH(FT) =    2185.72     MANNING'S FACTOR = 0.015
           CONSTANT LOSS RATE(CFS) =    0.00


         CHANNEL ROUTING COEFFICIENT ESTIMATED:
           MAXIMUM INFLOW(CFS) =  1018.18
           AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW =   820.95
           CHANNEL NORMAL VELOCITY FOR Q =   820.95 CFS =  14.89 FPS
           ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.898

         MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
         UNIT INTERVALS IS CSTAR = 0.985


         CONVEX METHOD CHANNEL ROUTING RESULTS:
                                          OUTFLOW LESS
          MODEL         INFLOW     ROUTED      LOSS
           TIME       (STREAM 1)    FLOW     (STREAM 1)
          (HRS)         (CFS)       (CFS)      (CFS)
           0.083          0.83        0.46        0.46
           0.167          5.52        3.41        3.41
```

0.250	13.95	10.15	10.15
0.333	22.16	18.43	18.43
0.417	26.24	24.36	24.36
0.500	27.97	27.17	27.17
0.583	28.57	28.29	28.29
0.667	28.86	28.73	28.73
0.750	29.08	28.98	28.98
0.833	29.23	29.16	29.16
0.917	29.33	29.29	29.29
1.000	29.41	29.38	29.38
1.083	29.49	29.46	29.46
1.167	29.57	29.54	29.54
1.250	29.66	29.62	29.62
1.333	29.74	29.70	29.70
1.417	29.82	29.78	29.78
1.500	29.90	29.87	29.87
1.583	29.99	29.95	29.95
1.667	30.07	30.04	30.04
1.750	30.16	30.12	30.12
1.833	30.25	30.21	30.21
1.917	30.33	30.30	30.30
2.000	30.42	30.38	30.38
2.083	30.51	30.47	30.47
2.167	30.60	30.56	30.56
2.250	30.69	30.65	30.65
2.333	30.78	30.74	30.74
2.417	30.88	30.83	30.83
2.500	30.97	30.93	30.93
2.583	31.06	31.02	31.02
2.667	31.16	31.11	31.11
2.750	31.25	31.21	31.21
2.833	31.35	31.31	31.31
2.917	31.45	31.40	31.40
3.000	31.55	31.50	31.50
3.083	31.64	31.60	31.60
3.167	31.75	31.70	31.70
3.250	31.85	31.80	31.80
3.333	31.95	31.90	31.90
3.417	32.05	32.00	32.00
3.500	32.16	32.11	32.11
3.583	32.26	32.21	32.21
3.667	32.37	32.32	32.32
3.750	32.47	32.43	32.43
3.833	32.58	32.53	32.53
3.917	32.69	32.64	32.64
4.000	32.80	32.75	32.75

4.083	32.91	32.86	32.86
4.167	33.03	32.98	32.98
4.250	33.14	33.09	33.09
4.333	33.26	33.20	33.20
4.417	33.37	33.32	33.32
4.500	33.49	33.44	33.44
4.583	33.61	33.55	33.55
4.667	33.73	33.67	33.67
4.750	33.85	33.79	33.79
4.833	33.97	33.92	33.92
4.917	34.10	34.04	34.04
5.000	34.22	34.17	34.17
5.083	34.35	34.29	34.29
5.167	34.48	34.42	34.42
5.250	34.61	34.55	34.55
5.333	34.74	34.68	34.68
5.417	34.87	34.81	34.81
5.500	35.01	34.94	34.94
5.583	35.14	35.08	35.08
5.667	35.28	35.22	35.22
5.750	35.42	35.35	35.35
5.833	35.56	35.49	35.49
5.917	35.70	35.64	35.64
6.000	35.85	35.78	35.78
6.083	35.99	35.92	35.92
6.167	36.14	36.07	36.07
6.250	36.29	36.22	36.22
6.333	36.44	36.37	36.37
6.417	36.59	36.52	36.52
6.500	36.75	36.68	36.68
6.583	36.90	36.83	36.83
6.667	37.06	36.99	36.99
6.750	37.22	37.15	37.15
6.833	37.39	37.31	37.31
6.917	37.55	37.48	37.48
7.000	37.72	37.65	37.65
7.083	37.89	37.81	37.81
7.167	38.07	37.99	37.99
7.250	38.24	38.16	38.16
7.333	38.42	38.34	38.34
7.417	38.60	38.51	38.51
7.500	38.78	38.70	38.70
7.583	38.96	38.88	38.88
7.667	39.15	39.07	39.07
7.750	39.34	39.25	39.25
7.833	39.54	39.45	39.45

7.917	39.73	39.64	39.64
8.000	39.93	39.84	39.84
8.083	40.13	40.04	40.04
8.167	40.34	40.24	40.24
8.250	40.54	40.45	40.45
8.333	40.76	40.66	40.66
8.417	40.97	40.87	40.87
8.500	41.19	41.09	41.09
8.583	41.41	41.31	41.31
8.667	41.64	41.53	41.53
8.750	41.86	41.76	41.76
8.833	42.10	41.99	41.99
8.917	42.33	42.23	42.23
9.000	42.58	42.47	42.47
9.083	42.82	42.71	42.71
9.167	43.07	42.96	42.96
9.250	43.32	43.21	43.21
9.333	43.59	43.47	43.47
9.417	43.85	43.73	43.73
9.500	44.12	43.99	43.99
9.583	44.39	44.26	44.26
9.667	44.67	44.54	44.54
9.750	44.95	44.82	44.82
9.833	45.24	45.11	45.11
9.917	45.53	45.40	45.40
10.000	45.84	45.70	45.70
10.083	46.14	46.00	46.00
10.167	46.45	46.31	46.31
10.250	46.77	46.63	46.63
10.333	47.10	46.95	46.95
10.417	47.43	47.28	47.28
10.500	47.77	47.62	47.62
10.583	48.11	47.96	47.96
10.667	48.47	48.31	48.31
10.750	48.83	48.67	48.67
10.833	49.21	49.04	49.04
10.917	49.58	49.41	49.41
11.000	49.98	49.80	49.80
11.083	50.37	50.19	50.19
11.167	50.78	50.59	50.59
11.250	51.19	51.01	51.01
11.333	51.63	51.43	51.43
11.417	52.06	51.86	51.86
11.500	52.52	52.31	52.31
11.583	52.97	52.77	52.77
11.667	53.45	53.24	53.24

11.750	53.94	53.72	53.72
11.833	54.44	54.21	54.21
11.917	54.96	54.72	54.72
12.000	55.49	55.25	55.25
12.083	55.42	55.45	55.45
12.167	52.51	53.81	53.81
12.250	46.82	49.38	49.38
12.333	41.33	43.82	43.82
12.417	38.89	40.02	40.02
12.500	38.22	38.54	38.54
12.583	38.41	38.33	38.33
12.667	38.86	38.65	38.65
12.750	39.37	39.14	39.14
12.833	39.97	39.70	39.70
12.917	40.62	40.32	40.32
13.000	41.33	41.01	41.01
13.083	42.05	41.72	41.72
13.167	42.83	42.48	42.48
13.250	43.62	43.26	43.26
13.333	44.47	44.09	44.09
13.417	45.34	44.95	44.95
13.500	46.28	45.85	45.85
13.583	47.24	46.81	46.81
13.667	48.28	47.81	47.81
13.750	49.35	48.86	48.86
13.833	50.51	49.98	49.98
13.917	51.71	51.16	51.16
14.000	53.00	52.41	52.41
14.083	54.59	53.87	53.87
14.167	57.40	56.14	56.14
14.250	61.36	59.57	59.57
14.333	65.43	63.58	63.58
14.417	68.44	67.06	67.06
14.500	70.98	69.82	69.82
14.583	73.32	72.26	72.26
14.667	75.82	74.69	74.69
14.750	78.46	77.26	77.26
14.833	81.38	80.05	80.05
14.917	84.52	83.09	83.09
15.000	88.05	86.45	86.45
15.083	91.91	90.16	90.16
15.167	96.33	94.32	94.32
15.250	101.24	99.01	99.01
15.333	106.97	104.37	104.37
15.417	114.10	110.87	110.87
15.500	125.39	120.29	120.29

15.583	140.89	133.88	133.88
15.667	158.76	150.66	150.66
15.750	176.56	168.48	168.48
15.833	197.50	188.01	188.01
15.917	226.68	213.48	213.48
16.000	283.32	257.77	257.77
16.083	431.73	364.93	364.93
16.167	767.49	616.24	616.24
16.250	1018.18	903.75	903.75
16.333	929.13	967.29	967.29
16.417	569.02	730.75	730.75
16.500	338.21	443.89	443.89
16.583	210.84	269.40	269.40
16.667	155.23	180.98	180.98
16.750	128.15	140.65	140.65
16.833	108.26	117.34	117.34
16.917	94.30	100.68	100.68
17.000	84.66	89.07	89.07
17.083	78.07	81.08	81.08
17.167	71.58	74.53	74.53
17.250	64.92	67.95	67.95
17.333	59.02	61.71	61.71
17.417	54.82	56.74	56.74
17.500	51.69	53.12	53.12
17.583	49.19	50.33	50.33
17.667	47.04	48.02	48.02
17.750	45.11	45.99	45.99
17.833	43.39	44.17	44.17
17.917	41.83	42.54	42.54
18.000	40.40	41.05	41.05
18.083	39.70	40.03	40.03
18.167	41.96	40.96	40.96
18.250	47.04	44.75	44.75
18.333	51.97	49.73	49.73
18.417	53.86	52.98	52.98
18.500	54.03	53.94	53.94
18.583	53.42	53.69	53.69
18.667	52.63	52.98	52.98
18.750	51.83	52.19	52.19
18.833	51.02	51.39	51.39
18.917	50.22	50.58	50.58
19.000	49.44	49.79	49.79
19.083	48.69	49.03	49.03
19.167	47.98	48.30	48.30
19.250	47.30	47.61	47.61
19.333	46.64	46.94	46.94

19.417	46.02	46.30	46.30
19.500	45.42	45.69	45.69
19.583	44.84	45.10	45.10
19.667	44.28	44.53	44.53
19.750	43.74	43.99	43.99
19.833	43.22	43.46	43.46
19.917	42.72	42.95	42.95
20.000	42.24	42.46	42.46
20.083	41.77	41.99	41.99
20.167	41.32	41.53	41.53
20.250	40.88	41.08	41.08
20.333	40.46	40.65	40.65
20.417	40.05	40.24	40.24
20.500	39.65	39.83	39.83
20.583	39.26	39.44	39.44
20.667	38.89	39.06	39.06
20.750	38.52	38.69	38.69
20.833	38.17	38.33	38.33
20.917	37.82	37.98	37.98
21.000	37.49	37.64	37.64
21.083	37.16	37.31	37.31
21.167	36.84	36.98	36.98
21.250	36.53	36.67	36.67
21.333	36.22	36.36	36.36
21.417	35.93	36.06	36.06
21.500	35.64	35.77	35.77
21.583	35.36	35.49	35.49
21.667	35.08	35.21	35.21
21.750	34.81	34.94	34.94
21.833	34.55	34.67	34.67
21.917	34.29	34.41	34.41
22.000	34.04	34.16	34.16
22.083	33.80	33.91	33.91
22.167	33.56	33.67	33.67
22.250	33.32	33.43	33.43
22.333	33.09	33.20	33.20
22.417	32.87	32.97	32.97
22.500	32.64	32.74	32.74
22.583	32.43	32.53	32.53
22.667	32.21	32.31	32.31
22.750	32.01	32.10	32.10
22.833	31.80	31.89	31.89
22.917	31.60	31.69	31.69
23.000	31.40	31.49	31.49
23.083	31.21	31.30	31.30
23.167	31.02	31.11	31.11

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          23.250        30.84       30.92       30.92
          23.333        30.65       30.74       30.74
          23.417        30.47       30.55       30.55
          23.500        30.30       30.38       30.38
          23.583        30.12       30.20       30.20
          23.667        29.95       30.03       30.03
          23.750        29.79       29.86       29.86
          23.833        29.62       29.70       29.70
          23.917        29.46       29.53       29.53
          24.000        29.30       29.37       29.37
================================================================================
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =    120.310 AF
    OUTFLOW VOLUME =    120.310 AF
    LOSS    VOLUME =      0.000 AF


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     428.580 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.240 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.348
         LOW LOSS FRACTION = 0.429
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.36
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.75
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.00
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.45
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  3.60

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.981
          30-MINUTE FACTOR = 0.981
```

1-HOUR FACTOR = 0.981
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.999
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 34.722

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.308	119.610
2	14.779	646.413
3	38.225	1215.257
4	66.233	1451.644
5	84.561	949.989
6	93.250	450.344
7	97.213	205.452
8	98.477	65.467
9	99.128	33.747
10	99.651	27.130
11	99.913	13.565
12	100.000	4.521

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 49.7072
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 78.7154

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

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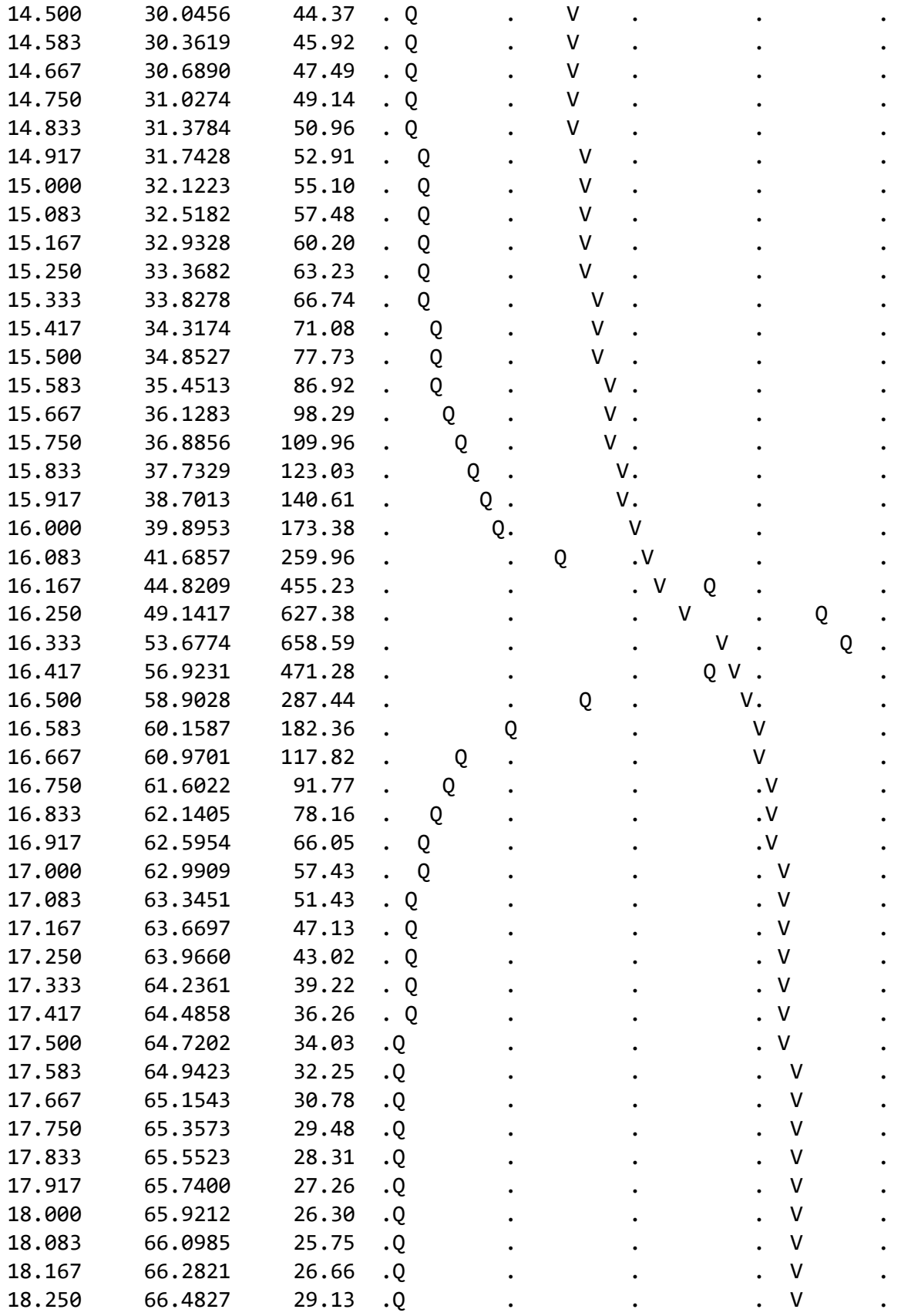
HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	175.0	350.0	525.0	700.0
0.083	0.0029	0.43	Q	.	.	.	.
0.167	0.0218	2.74	Q	.	.	.	.
0.250	0.0706	7.08	Q	.	.	.	.
0.333	0.1552	12.28	Q	.	.	.	.
0.417	0.2633	15.71	Q	.	.	.	.
0.500	0.3829	17.36	Q	.	.	.	.
0.583	0.5078	18.14	VQ	.	.	.	.
0.667	0.6346	18.42	VQ	.	.	.	.
0.750	0.7626	18.59	VQ	.	.	.	.
0.833	0.8917	18.73	VQ	.	.	.	.
0.917	1.0214	18.83	VQ	.	.	.	.
1.000	1.1515	18.90	VQ	.	.	.	.
1.083	1.2820	18.95	VQ	.	.	.	.
1.167	1.4129	19.00	VQ	.	.	.	.
1.250	1.5442	19.06	VQ	.	.	.	.
1.333	1.6758	19.11	VQ	.	.	.	.
1.417	1.8077	19.16	VQ	.	.	.	.
1.500	1.9401	19.22	VQ	.	.	.	.
1.583	2.0728	19.27	.Q	.	.	.	.
1.667	2.2059	19.32	.Q	.	.	.	.
1.750	2.3393	19.38	.Q	.	.	.	.
1.833	2.4732	19.44	.Q	.	.	.	.
1.917	2.6074	19.49	.Q	.	.	.	.
2.000	2.7421	19.55	.Q	.	.	.	.
2.083	2.8771	19.61	.Q	.	.	.	.
2.167	3.0125	19.66	.Q	.	.	.	.
2.250	3.1483	19.72	.Q	.	.	.	.
2.333	3.2846	19.78	.Q	.	.	.	.
2.417	3.4212	19.84	.Q	.	.	.	.
2.500	3.5582	19.90	.Q	.	.	.	.
2.583	3.6957	19.96	.Q	.	.	.	.
2.667	3.8336	20.02	.Q	.	.	.	.
2.750	3.9719	20.08	.QV	.	.	.	.
2.833	4.1106	20.14	.QV	.	.	.	.
2.917	4.2497	20.20	.QV	.	.	.	.

3.000	4.3893	20.27	.QV	.	.	.	.
3.083	4.5293	20.33	.QV	.	.	.	.
3.167	4.6698	20.40	.QV	.	.	.	.
3.250	4.8107	20.46	.QV	.	.	.	.
3.333	4.9521	20.53	.QV	.	.	.	.
3.417	5.0939	20.59	.QV	.	.	.	.
3.500	5.2362	20.66	.QV	.	.	.	.
3.583	5.3789	20.73	.QV	.	.	.	.
3.667	5.5222	20.79	.QV	.	.	.	.
3.750	5.6658	20.86	.QV	.	.	.	.
3.833	5.8100	20.93	.QV	.	.	.	.
3.917	5.9547	21.00	.Q V	.	.	.	.
4.000	6.0998	21.07	.Q V	.	.	.	.
4.083	6.2454	21.15	.Q V	.	.	.	.
4.167	6.3916	21.22	.Q V	.	.	.	.
4.250	6.5382	21.29	.Q V	.	.	.	.
4.333	6.6853	21.36	.Q V	.	.	.	.
4.417	6.8330	21.44	.Q V	.	.	.	.
4.500	6.9811	21.51	.Q V	.	.	.	.
4.583	7.1298	21.59	.Q V	.	.	.	.
4.667	7.2791	21.67	.Q V	.	.	.	.
4.750	7.4288	21.75	.Q V	.	.	.	.
4.833	7.5791	21.82	.Q V	.	.	.	.
4.917	7.7300	21.90	.Q V	.	.	.	.
5.000	7.8814	21.98	.Q V	.	.	.	.
5.083	8.0334	22.06	.Q V	.	.	.	.
5.167	8.1859	22.15	.Q V	.	.	.	.
5.250	8.3390	22.23	.Q V	.	.	.	.
5.333	8.4927	22.31	.Q V	.	.	.	.
5.417	8.6469	22.40	.Q V	.	.	.	.
5.500	8.8018	22.49	.Q V	.	.	.	.
5.583	8.9573	22.57	.Q V	.	.	.	.
5.667	9.1133	22.66	.Q V	.	.	.	.
5.750	9.2700	22.75	.Q V	.	.	.	.
5.833	9.4273	22.84	.Q V	.	.	.	.
5.917	9.5852	22.93	.Q V	.	.	.	.
6.000	9.7438	23.02	.Q V	.	.	.	.
6.083	9.9030	23.12	.Q V	.	.	.	.
6.167	10.0628	23.21	.Q V	.	.	.	.
6.250	10.2234	23.31	.Q V	.	.	.	.
6.333	10.3845	23.40	.Q V	.	.	.	.
6.417	10.5464	23.50	.Q V	.	.	.	.
6.500	10.7090	23.60	.Q V	.	.	.	.
6.583	10.8722	23.70	.Q V	.	.	.	.
6.667	11.0361	23.80	.Q V	.	.	.	.
6.750	11.2008	23.91	.Q V	.	.	.	.

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 6.833     11.3662     24.01  .Q   V    .         .         .         .
 6.917     11.5323     24.12  .Q   V    .         .         .         .
 7.000     11.6991     24.23  .Q   V    .         .         .         .
 7.083     11.8667     24.33  .Q    V   .         .         .         .
 7.167     12.0351     24.45  .Q    V   .         .         .         .
 7.250     12.2042     24.56  .Q    V   .         .         .         .
 7.333     12.3741     24.67  .Q    V   .         .         .         .
 7.417     12.5448     24.78  .Q    V   .         .         .         .
 7.500     12.7163     24.90  .Q    V   .         .         .         .
 7.583     12.8886     25.02  .Q    V   .         .         .         .
 7.667     13.0617     25.14  .Q    V   .         .         .         .
 7.750     13.2357     25.26  .Q    V   .         .         .         .
 7.833     13.4106     25.39  .Q    V   .         .         .         .
 7.917     13.5863     25.51  .Q    V   .         .         .         .
 8.000     13.7628     25.64  .Q    V   .         .         .         .
 8.083     13.9403     25.77  .Q     V  .         .         .         .
 8.167     14.1187     25.90  .Q     V  .         .         .         .
 8.250     14.2979     26.03  .Q     V  .         .         .         .
 8.333     14.4782     26.17  .Q     V  .         .         .         .
 8.417     14.6593     26.30  .Q     V  .         .         .         .
 8.500     14.8415     26.45  .Q     V  .         .         .         .
 8.583     15.0246     26.59  .Q     V  .         .         .         .
 8.667     15.2087     26.73  .Q     V  .         .         .         .
 8.750     15.3938     26.88  .Q     V  .         .         .         .
 8.833     15.5799     27.03  .Q     V  .         .         .         .
 8.917     15.7671     27.18  .Q      V .         .         .         .
 9.000     15.9553     27.33  .Q      V .         .         .         .
 9.083     16.1446     27.49  .Q      V .         .         .         .
 9.167     16.3350     27.65  .Q      V .         .         .         .
 9.250     16.5266     27.81  .Q      V .         .         .         .
 9.333     16.7193     27.98  .Q      V .         .         .         .
 9.417     16.9131     28.14  .Q      V .         .         .         .
 9.500     17.1081     28.32  .Q      V .         .         .         .
 9.583     17.3043     28.49  .Q      V .         .         .         .
 9.667     17.5017     28.67  .Q      V .         .         .         .
 9.750     17.7004     28.85  .Q      V .         .         .         .
 9.833     17.9004     29.03  .Q       V.         .         .         .
 9.917     18.1016     29.22  .Q       V.         .         .         .
10.000     18.3042     29.41  .Q       V.         .         .         .
10.083     18.5081     29.61  .Q       V.         .         .         .
10.167     18.7134     29.81  .Q       V.         .         .         .
10.250     18.9201     30.01  .Q       V.         .         .         .
10.333     19.1282     30.22  .Q       V.         .         .         .
10.417     19.3378     30.43  .Q       V.         .         .         .
10.500     19.5489     30.65  .Q       V.         .         .         .
10.583     19.7615     30.87  .Q        V         .         .         .
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10.667     19.9757     31.10  .Q        V         .         .         .
10.750     20.1915     31.33  .Q        V         .         .         .
10.833     20.4089     31.57  .Q        V         .         .         .
10.917     20.6279     31.81  .Q        V         .         .         .
11.000     20.8487     32.06  .Q        V         .         .         .
11.083     21.0712     32.31  .Q        V         .         .         .
11.167     21.2955     32.57  .Q        V         .         .         .
11.250     21.5217     32.84  .Q        V         .         .         .
11.333     21.7497     33.11  .Q        .V        .         .         .
11.417     21.9797     33.39  .Q        .V        .         .         .
11.500     22.2116     33.68  .Q        .V        .         .         .
11.583     22.4455     33.97  .Q        .V        .         .         .
11.667     22.6816     34.28  .Q        .V        .         .         .
11.750     22.9198     34.58  .Q        .V        .         .         .
11.833     23.1602     34.91  .Q        .V        .         .         .
11.917     23.4028     35.23  . Q       .V        .         .         .
12.000     23.6478     35.57  . Q       . V       .         .         .
12.083     23.8930     35.60  . Q       . V       .         .         .
12.167     24.1288     34.24  .Q        . V       .         .         .
12.250     24.3448     31.37  .Q        . V       .         .         .
12.333     24.5368     27.87  .Q        . V       .         .         .
12.417     24.7138     25.70  .Q        . V       .         .         .
12.500     24.8850     24.87  .Q        . V       .         .         .
12.583     25.0551     24.69  .Q        . V       .         .         .
12.667     25.2265     24.90  .Q        . V       .         .         .
12.750     25.4001     25.20  .Q        . V       .         .         .
12.833     25.5760     25.54  .Q        . V       .         .         .
12.917     25.7545     25.93  .Q        .  V      .         .         .
13.000     25.9361     26.36  .Q        .  V      .         .         .
13.083     26.1209     26.83  .Q        .  V      .         .         .
13.167     26.3090     27.31  .Q        .  V      .         .         .
13.250     26.5006     27.82  .Q        .  V      .         .         .
13.333     26.6958     28.35  .Q        .  V      .         .         .
13.417     26.8949     28.91  .Q        .  V      .         .         .
13.500     27.0980     29.49  .Q        .  V      .         .         .
13.583     27.3054     30.10  .Q        .  V      .         .         .
13.667     27.5172     30.76  .Q        .  V      .         .         .
13.750     27.7337     31.43  .Q        .   V     .         .         .
13.833     27.9552     32.16  .Q        .   V     .         .         .
13.917     28.1819     32.92  .Q        .   V     .         .         .
14.000     28.4142     33.73  .Q        .   V     .         .         .
14.083     28.6531     34.69  .Q        .   V     .         .         .
14.167     28.9024     36.20  . Q       .   V     .         .         .
14.250     29.1660     38.28  . Q       .   V     .         .         .
14.333     29.4461     40.67  . Q       .   V     .         .         .
14.417     29.7401     42.68  . Q       .    V    .         .         .
```



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18.333     66.7048     32.25  .Q        .         .         .  V      .
18.417     66.9393     34.06  .Q        .         .         .   V     .
18.500     67.1774     34.56  .Q        .         .         .   V     .
18.583     67.4146     34.45  .Q        .         .         .   V     .
18.667     67.6488     34.00  .Q        .         .         .   V     .
18.750     67.8795     33.50  .Q        .         .         .   V     .
18.833     68.1068     33.00  .Q        .         .         .   V     .
18.917     68.3306     32.50  .Q        .         .         .   V     .
19.000     68.5510     32.00  .Q        .         .         .   V     .
19.083     68.7680     31.51  .Q        .         .         .   V     .
19.167     68.9819     31.05  .Q        .         .         .    V    .
19.250     69.1926     30.60  .Q        .         .         .    V    .
19.333     69.4004     30.17  .Q        .         .         .    V    .
19.417     69.6054     29.76  .Q        .         .         .    V    .
19.500     69.8076     29.37  .Q        .         .         .    V    .
19.583     70.0073     28.99  .Q        .         .         .    V    .
19.667     70.2044     28.63  .Q        .         .         .    V    .
19.750     70.3992     28.27  .Q        .         .         .    V    .
19.833     70.5916     27.94  .Q        .         .         .    V    .
19.917     70.7817     27.61  .Q        .         .         .    V    .
20.000     70.9697     27.29  .Q        .         .         .     V   .
20.083     71.1556     26.99  .Q        .         .         .     V   .
20.167     71.3394     26.70  .Q        .         .         .     V   .
20.250     71.5213     26.41  .Q        .         .         .     V   .
20.333     71.7013     26.13  .Q        .         .         .     V   .
20.417     71.8794     25.87  .Q        .         .         .     V   .
20.500     72.0558     25.61  .Q        .         .         .     V   .
20.583     72.2304     25.35  .Q        .         .         .     V   .
20.667     72.4034     25.11  .Q        .         .         .     V   .
20.750     72.5746     24.87  .Q        .         .         .     V   .
20.833     72.7443     24.64  .Q        .         .         .     V   .
20.917     72.9125     24.42  .Q        .         .         .      V  .
21.000     73.0792     24.20  .Q        .         .         .      V  .
21.083     73.2443     23.98  .Q        .         .         .      V  .
21.167     73.4081     23.78  .Q        .         .         .      V  .
21.250     73.5705     23.58  .Q        .         .         .      V  .
21.333     73.7315     23.38  .Q        .         .         .      V  .
21.417     73.8911     23.19  .Q        .         .         .      V  .
21.500     74.0495     23.00  .Q        .         .         .      V  .
21.583     74.2067     22.82  .Q        .         .         .      V  .
21.667     74.3626     22.64  .Q        .         .         .      V  .
21.750     74.5173     22.46  .Q        .         .         .      V  .
21.833     74.6708     22.29  .Q        .         .         .      V  .
21.917     74.8232     22.12  .Q        .         .         .       V .
22.000     74.9744     21.96  .Q        .         .         .       V .
22.083     75.1246     21.80  .Q        .         .         .       V .
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22.167	75.2737	21.65	.Q	.	.	.	V .
22.250	75.4217	21.49	.Q	.	.	.	V .
22.333	75.5687	21.34	.Q	.	.	.	V .
22.417	75.7147	21.20	.Q	.	.	.	V .
22.500	75.8597	21.05	.Q	.	.	.	V .
22.583	76.0037	20.91	.Q	.	.	.	V .
22.667	76.1468	20.78	.Q	.	.	.	V .
22.750	76.2889	20.64	.Q	.	.	.	V .
22.833	76.4302	20.51	.Q	.	.	.	V .
22.917	76.5705	20.38	.Q	.	.	.	V .
23.000	76.7100	20.25	.Q	.	.	.	V .
23.083	76.8486	20.13	.Q	.	.	.	V.
23.167	76.9863	20.00	.Q	.	.	.	V.
23.250	77.1232	19.88	.Q	.	.	.	V.
23.333	77.2594	19.76	.Q	.	.	.	V.
23.417	77.3947	19.65	.Q	.	.	.	V.
23.500	77.5292	19.53	.Q	.	.	.	V.
23.583	77.6629	19.42	.Q	.	.	.	V.
23.667	77.7959	19.31	.Q	.	.	.	V.
23.750	77.9282	19.20	.Q	.	.	.	V.
23.833	78.0597	19.09	.Q	.	.	.	V.
23.917	78.1904	18.99	.Q	.	.	.	V.
24.000	78.3205	18.89	.Q	.	.	.	V.
24.083	78.4469	18.36	.Q	.	.	.	V.
24.167	78.5568	15.95	Q	.	.	.	V.
24.250	78.6363	11.54	Q	.	.	.	V.
24.333	78.6797	6.30	Q	.	.	.	V.
24.417	78.6995	2.88	Q	.	.	.	V.
24.500	78.7082	1.26	Q	.	.	.	V.
24.583	78.7118	0.52	Q	.	.	.	V.
24.667	78.7137	0.28	Q	.	.	.	V.
24.750	78.7149	0.16	Q	.	.	.	V.
24.833	78.7153	0.06	Q	.	.	.	V.
24.917	78.7154	0.02	Q	.	.	.	V

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1495.0
10%	100.0
20%	45.0

30%	30.0
40%	25.0
50%	20.0
60%	20.0
70%	15.0
80%	10.0
90%	10.0

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


**************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    101.00 IS CODE =  11
--------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
==========================================================================

            STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
--------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      425.0     850.0    1275.0    1700.0
--------------------------------------------------------------------------
   0.083      0.0061      0.88  Q         .         .         .         .
   0.167      0.0484      6.15  Q         .         .         .         .
   0.250      0.1671     17.23  Q         .         .         .         .
   0.333      0.3786     30.71  Q         .         .         .         .
   0.417      0.6545     40.07  Q         .         .         .         .
   0.500      0.9612     44.53  VQ        .         .         .         .
   0.583      1.2809     46.43  VQ        .         .         .         .
   0.667      1.6056     47.14  VQ        .         .         .         .
   0.750      1.9332     47.57  VQ        .         .         .         .
   0.833      2.2631     47.90  VQ        .         .         .         .
   0.917      2.5945     48.12  VQ        .         .         .         .
   1.000      2.9270     48.28  VQ        .         .         .         .
   1.083      3.2603     48.41  VQ        .         .         .         .
   1.167      3.5946     48.54  VQ        .         .         .         .
   1.250      3.9299     48.67  VQ        .         .         .         .
   1.333      4.2660     48.81  VQ        .         .         .         .
   1.417      4.6031     48.94  VQ        .         .         .         .
   1.500      4.9411     49.08  VQ        .         .         .         .
   1.583      5.2801     49.22  .Q        .         .         .         .
```

1.667	5.6201	49.36	.Q	.	.	.	.
1.750	5.9610	49.50	.Q	.	.	.	.
1.833	6.3029	49.64	.Q	.	.	.	.
1.917	6.6458	49.79	.Q	.	.	.	.
2.000	6.9897	49.93	.Q	.	.	.	.
2.083	7.3345	50.08	.Q	.	.	.	.
2.167	7.6804	50.22	.Q	.	.	.	.
2.250	8.0273	50.37	.Q	.	.	.	.
2.333	8.3753	50.52	.Q	.	.	.	.
2.417	8.7243	50.67	.Q	.	.	.	.
2.500	9.0743	50.83	.Q	.	.	.	.
2.583	9.4254	50.98	.Q	.	.	.	.
2.667	9.7776	51.13	.Q	.	.	.	.
2.750	10.1308	51.29	.QV	.	.	.	.
2.833	10.4852	51.45	.QV	.	.	.	.
2.917	10.8406	51.61	.QV	.	.	.	.
3.000	11.1971	51.77	.QV	.	.	.	.
3.083	11.5548	51.93	.QV	.	.	.	.
3.167	11.9136	52.10	.QV	.	.	.	.
3.250	12.2735	52.26	.QV	.	.	.	.
3.333	12.6346	52.43	.QV	.	.	.	.
3.417	12.9968	52.60	.QV	.	.	.	.
3.500	13.3602	52.77	.QV	.	.	.	.
3.583	13.7248	52.94	.QV	.	.	.	.
3.667	14.0906	53.11	.QV	.	.	.	.
3.750	14.4576	53.29	.QV	.	.	.	.
3.833	14.8258	53.47	.QV	.	.	.	.
3.917	15.1953	53.65	.Q V	.	.	.	.
4.000	15.5660	53.83	.Q V	.	.	.	.
4.083	15.9380	54.01	.Q V	.	.	.	.
4.167	16.3112	54.19	.Q V	.	.	.	.
4.250	16.6857	54.38	.Q V	.	.	.	.
4.333	17.0615	54.57	.Q V	.	.	.	.
4.417	17.4387	54.76	.Q V	.	.	.	.
4.500	17.8171	54.95	.Q V	.	.	.	.
4.583	18.1969	55.14	.Q V	.	.	.	.
4.667	18.5780	55.34	.Q V	.	.	.	.
4.750	18.9605	55.54	.Q V	.	.	.	.
4.833	19.3444	55.74	.Q V	.	.	.	.
4.917	19.7297	55.94	.Q V	.	.	.	.
5.000	20.1164	56.15	.Q V	.	.	.	.
5.083	20.5046	56.36	.Q V	.	.	.	.
5.167	20.8941	56.57	.Q V	.	.	.	.
5.250	21.2852	56.78	.Q V	.	.	.	.
5.333	21.6777	56.99	.Q V	.	.	.	.
5.417	22.0717	57.21	.Q V	.	.	.	.

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5.500     22.4672     57.43  .Q  V     .         .         .         .
5.583     22.8643     57.65  .Q  V     .         .         .         .
5.667     23.2629     57.88  .Q  V     .         .         .         .
5.750     23.6630     58.10  .Q  V     .         .         .         .
5.833     24.0648     58.33  .Q  V     .         .         .         .
5.917     24.4681     58.57  .Q  V     .         .         .         .
6.000     24.8731     58.80  .Q  V     .         .         .         .
6.083     25.2797     59.04  .Q   V    .         .         .         .
6.167     25.6880     59.28  .Q   V    .         .         .         .
6.250     26.0980     59.53  .Q   V    .         .         .         .
6.333     26.5097     59.77  .Q   V    .         .         .         .
6.417     26.9230     60.02  .Q   V    .         .         .         .
6.500     27.3382     60.28  .Q   V    .         .         .         .
6.583     27.7551     60.53  .Q   V    .         .         .         .
6.667     28.1738     60.80  .Q   V    .         .         .         .
6.750     28.5943     61.06  .Q   V    .         .         .         .
6.833     29.0167     61.33  .Q   V    .         .         .         .
6.917     29.4409     61.60  .Q   V    .         .         .         .
7.000     29.8670     61.87  .Q    V   .         .         .         .
7.083     30.2950     62.15  .Q    V   .         .         .         .
7.167     30.7250     62.43  .Q    V   .         .         .         .
7.250     31.1569     62.72  .Q    V   .         .         .         .
7.333     31.5909     63.01  .Q    V   .         .         .         .
7.417     32.0268     63.30  .Q    V   .         .         .         .
7.500     32.4648     63.60  .Q    V   .         .         .         .
7.583     32.9049     63.90  .Q    V   .         .         .         .
7.667     33.3471     64.21  .Q    V   .         .         .         .
7.750     33.7914     64.52  .Q    V   .         .         .         .
7.833     34.2379     64.83  .Q    V   .         .         .         .
7.917     34.6866     65.15  .Q    V   .         .         .         .
8.000     35.1376     65.48  .Q     V  .         .         .         .
8.083     35.5908     65.81  .Q     V  .         .         .         .
8.167     36.0463     66.14  .Q     V  .         .         .         .
8.250     36.5042     66.48  .Q     V  .         .         .         .
8.333     36.9645     66.83  .Q     V  .         .         .         .
8.417     37.4271     67.18  .Q     V  .         .         .         .
8.500     37.8922     67.54  .Q     V  .         .         .         .
8.583     38.3599     67.90  .Q     V  .         .         .         .
8.667     38.8300     68.27  .Q     V  .         .         .         .
8.750     39.3027     68.64  .Q     V  .         .         .         .
8.833     39.7781     69.02  .Q     V  .         .         .         .
8.917     40.2561     69.41  .Q      V .         .         .         .
9.000     40.7368     69.80  .Q      V .         .         .         .
9.083     41.2203     70.20  .Q      V .         .         .         .
9.167     41.7065     70.61  .Q      V .         .         .         .
9.250     42.1957     71.02  .Q      V .         .         .         .
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9.333	42.6877	71.44	.Q	V .	.	.	.
9.417	43.1827	71.87	.Q	V .	.	.	.
9.500	43.6807	72.31	.Q	V .	.	.	.
9.583	44.1817	72.75	.Q	V .	.	.	.
9.667	44.6859	73.21	.Q	V .	.	.	.
9.750	45.1933	73.67	.Q	V.	.	.	.
9.833	45.7039	74.14	.Q	V.	.	.	.
9.917	46.2178	74.62	.Q	V.	.	.	.
10.000	46.7351	75.11	.Q	V.	.	.	.
10.083	47.2558	75.61	.Q	V.	.	.	.
10.167	47.7801	76.12	.Q	V.	.	.	.
10.250	48.3079	76.64	.Q	V.	.	.	.
10.333	48.8394	77.17	.Q	V.	.	.	.
10.417	49.3745	77.71	.Q	V.	.	.	.
10.500	49.9136	78.27	.Q	V	.	.	.
10.583	50.4565	78.83	.Q	V	.	.	.
10.667	51.0034	79.41	.Q	V	.	.	.
10.750	51.5543	80.00	.Q	V	.	.	.
10.833	52.1094	80.60	.Q	V	.	.	.
10.917	52.6688	81.22	.Q	V	.	.	.
11.000	53.2325	81.85	.Q	V	.	.	.
11.083	53.8007	82.50	.Q	V	.	.	.
11.167	54.3735	83.17	.Q	V	.	.	.
11.250	54.9509	83.84	.Q	.V	.	.	.
11.333	55.5331	84.54	.Q	.V	.	.	.
11.417	56.1203	85.25	. Q	.V	.	.	.
11.500	56.7125	85.99	. Q	.V	.	.	.
11.583	57.3098	86.74	. Q	.V	.	.	.
11.667	57.9125	87.51	. Q	.V	.	.	.
11.750	58.5207	88.30	. Q	.V	.	.	.
11.833	59.1345	89.12	. Q	.V	.	.	.
11.917	59.7540	89.96	. Q	. V	.	.	.
12.000	60.3795	90.82	. Q	. V	.	.	.
12.083	61.0065	91.05	. Q	. V	.	.	.
12.167	61.6129	88.05	. Q	. V	.	.	.
12.250	62.1691	80.75	.Q	. V	.	.	.
12.333	62.6628	71.69	.Q	. V	.	.	.
12.417	63.1154	65.72	.Q	. V	.	.	.
12.500	63.5521	63.41	.Q	. V	.	.	.
12.583	63.9861	63.02	.Q	. V	.	.	.
12.667	64.4238	63.55	.Q	. V	.	.	.
12.750	64.8669	64.33	.Q	. V	.	.	.
12.833	65.3161	65.24	.Q	. V	.	.	.
12.917	65.7724	66.25	.Q	. V	.	.	.
13.000	66.2364	67.37	.Q	. V	.	.	.
13.083	66.7085	68.55	.Q	. V	.	.	.

```
13.167     67.1892     69.79  .Q        .  V      .         .         .
13.250     67.6787     71.08  .Q        .  V      .         .         .
13.333     68.1776     72.44  .Q        .  V      .         .         .
13.417     68.6862     73.85  .Q        .  V      .         .         .
13.500     69.2052     75.35  .Q        .  V      .         .         .
13.583     69.7348     76.91  .Q        .   V     .         .         .
13.667     70.2759     78.56  .Q        .   V     .         .         .
13.750     70.8289     80.30  .Q        .   V     .         .         .
13.833     71.3946     82.14  .Q        .   V     .         .         .
13.917     71.9737     84.08  .Q        .   V     .         .         .
14.000     72.5670     86.15  . Q       .   V     .         .         .
14.083     73.1770     88.57  . Q       .   V     .         .         .
14.167     73.8129     92.34  . Q       .   V     .         .         .
14.250     74.4868     97.85  . Q       .   V     .         .         .
14.333     75.2047    104.25  . Q       .    V    .         .         .
14.417     75.9605    109.74  . Q       .    V    .         .         .
14.500     76.7470    114.19  . Q       .    V    .         .         .
14.583     77.5609    118.18  . Q       .    V    .         .         .
14.667     78.4024    122.18  . Q       .    V    .         .         .
14.750     79.2729    126.40  . Q       .    V    .         .         .
14.833     80.1752    131.01  .  Q      .     V   .         .         .
14.917     81.1118    136.01  .  Q      .     V   .         .         .
15.000     82.0867    141.54  .  Q      .     V   .         .         .
15.083     83.1035    147.64  .  Q      .     V   .         .         .
15.167     84.1677    154.53  .  Q      .     V   .         .         .
15.250     85.2850    162.23  .  Q      .      V  .         .         .
15.333     86.4634    171.11  .   Q     .      V  .         .         .
15.417     87.7165    181.95  .   Q     .      V  .         .         .
15.500     89.0803    198.02  .   Q     .      V  .         .         .
15.583     90.6010    220.80  .    Q    .       V .         .         .
15.667     92.3155    248.95  .    Q    .       V .         .         .
15.750     94.2331    278.44  .     Q   .       V .         .         .
15.833     96.3753    311.04  .      Q  .        V.         .         .
15.917     98.8139    354.09  .       Q .        V.         .         .
16.000    101.7832    431.15  .         Q        V         .         .
16.083    106.0869    624.89  .         .   Q     .V        .         .
16.167    113.4662   1071.47  .         .         . V  Q    .         .
16.250    124.0112   1531.13  .         .         .   V     .     Q   .
16.333    135.2087   1625.88  .         .         .      V  .       Q .
16.417    143.4872   1202.03  .         .         .       Q .         .
16.500    148.5238    731.33  .         .      Q  .        V.         .
16.583    151.6352    451.76  .         Q         .         V         .
16.667    153.6930    298.80  .      Q  .         .         V         .
16.750    155.2937    232.42  .    Q    .         .         .V        .
16.833    156.6402    195.50  .   Q     .         .         .V        .
16.917    157.7884    166.73  .  Q      .         .         .V        .
```

```
17.000    158.7974    146.50  .  Q      .         .         .V        .
17.083    159.7100    132.51  .  Q      .         .         . V       .
17.167    160.5479    121.66  . Q       .         .         . V       .
17.250    161.3121    110.97  . Q       .         .         . V       .
17.333    162.0072    100.93  . Q       .         .         . V       .
17.417    162.6477     93.00  . Q       .         .         . V       .
17.500    163.2479     87.15  . Q       .         .         . V       .
17.583    163.8167     82.58  .Q        .         .         . V       .
17.667    164.3594     78.80  .Q        .         .         .  V      .
17.750    164.8791     75.47  .Q        .         .         .  V      .
17.833    165.3783     72.48  .Q        .         .         .  V      .
17.917    165.8590     69.79  .Q        .         .         .  V      .
18.000    166.3228     67.35  .Q        .         .         .  V      .
18.083    166.7758     65.78  .Q        .         .         .  V      .
18.167    167.2415     67.61  .Q        .         .         .  V      .
18.250    167.7503     73.88  .Q        .         .         .  V      .
18.333    168.3149     81.98  .Q        .         .         .  V      .
18.417    168.9143     87.04  . Q       .         .         .  V      .
18.500    169.5239     88.50  . Q       .         .         .   V     .
18.583    170.1309     88.14  . Q       .         .         .   V     .
18.667    170.7300     86.98  . Q       .         .         .   V     .
18.750    171.3201     85.69  . Q       .         .         .   V     .
18.833    171.9013     84.39  .Q        .         .         .   V     .
18.917    172.4735     83.08  .Q        .         .         .   V     .
19.000    173.0368     81.79  .Q        .         .         .   V     .
19.083    173.5915     80.54  .Q        .         .         .   V     .
19.167    174.1380     79.35  .Q        .         .         .   V     .
19.250    174.6767     78.21  .Q        .         .         .    V    .
19.333    175.2077     77.11  .Q        .         .         .    V    .
19.417    175.7316     76.06  .Q        .         .         .    V    .
19.500    176.2485     75.06  .Q        .         .         .    V    .
19.583    176.7588     74.09  .Q        .         .         .    V    .
19.667    177.2626     73.16  .Q        .         .         .    V    .
19.750    177.7603     72.26  .Q        .         .         .    V    .
19.833    178.2520     71.40  .Q        .         .         .    V    .
19.917    178.7379     70.56  .Q        .         .         .    V    .
20.000    179.2183     69.75  .Q        .         .         .     V   .
20.083    179.6934     68.98  .Q        .         .         .     V   .
20.167    180.1632     68.22  .Q        .         .         .     V   .
20.250    180.6281     67.49  .Q        .         .         .     V   .
20.333    181.0880     66.79  .Q        .         .         .     V   .
20.417    181.5433     66.10  .Q        .         .         .     V   .
20.500    181.9939     65.44  .Q        .         .         .     V   .
20.583    182.4402     64.79  .Q        .         .         .     V   .
20.667    182.8821     64.17  .Q        .         .         .     V   .
20.750    183.3198     63.56  .Q        .         .         .     V   .
```

20.833	183.7535	62.97	.Q	.	.	.	V .
20.917	184.1832	62.39	.Q	.	.	.	V .
21.000	184.6091	61.84	.Q	.	.	.	V .
21.083	185.0312	61.29	.Q	.	.	.	V .
21.167	185.4497	60.76	.Q	.	.	.	V .
21.250	185.8646	60.24	.Q	.	.	.	V .
21.333	186.2760	59.74	.Q	.	.	.	V .
21.417	186.6841	59.25	.Q	.	.	.	V .
21.500	187.0888	58.77	.Q	.	.	.	V .
21.583	187.4903	58.30	.Q	.	.	.	V .
21.667	187.8887	57.85	.Q	.	.	.	V .
21.750	188.2840	57.40	.Q	.	.	.	V .
21.833	188.6763	56.96	.Q	.	.	.	V .
21.917	189.0657	56.54	.Q	.	.	.	V .
22.000	189.4522	56.12	.Q	.	.	.	V .
22.083	189.8359	55.71	.Q	.	.	.	V .
22.167	190.2168	55.31	.Q	.	.	.	V .
22.250	190.5951	54.92	.Q	.	.	.	V .
22.333	190.9707	54.54	.Q	.	.	.	V .
22.417	191.3438	54.17	.Q	.	.	.	V .
22.500	191.7143	53.80	.Q	.	.	.	V .
22.583	192.0823	53.44	.Q	.	.	.	V .
22.667	192.4479	53.09	.Q	.	.	.	V .
22.750	192.8112	52.74	.Q	.	.	.	V .
22.833	193.1721	52.40	.Q	.	.	.	V .
22.917	193.5307	52.07	.Q	.	.	.	V .
23.000	193.8871	51.74	.Q	.	.	.	V .
23.083	194.2412	51.42	.Q	.	.	.	V.
23.167	194.5932	51.11	.Q	.	.	.	V.
23.250	194.9431	50.80	.Q	.	.	.	V.
23.333	195.2909	50.50	.Q	.	.	.	V.
23.417	195.6366	50.20	.Q	.	.	.	V.
23.500	195.9803	49.91	.Q	.	.	.	V.
23.583	196.3221	49.62	.Q	.	.	.	V.
23.667	196.6619	49.34	.Q	.	.	.	V.
23.750	196.9998	49.06	.Q	.	.	.	V.
23.833	197.3358	48.79	.Q	.	.	.	V.
23.917	197.6700	48.52	.Q	.	.	.	V.
24.000	198.0023	48.26	.Q	.	.	.	V.

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

Percentile of Estimated Duration

Peak Flow Rate	(minutes)
0%	1445.0
10%	100.0
20%	45.0
30%	30.0
40%	25.0
50%	20.0
60%	20.0
70%	15.0
80%	10.0
90%	10.0

END OF FLOODSCx ROUTING ANALYSIS

EXISTING 10-YEAR
REGIONAL ANALYSIS
TRIBUTARY TO EX DBL 6X6
POC #1 / NODE 101

LOSS RATE CALCULATIONS
EXISTING REGIONAL
10-YR ANALYSIS
NODE 101

****

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

==========

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Barton+Deberry-Exist-10YR
2022-03-10

==========

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 3.00 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	30.17	20.00	32.	0.975	0.738
2	23.43	20.00	69.	0.566	0.783
3	57.88	10.00	32.	0.975	0.830
4	37.59	10.00	69.	0.566	0.853
5	121.44	50.00	32.	0.975	0.461
6	93.70	50.00	69.	0.566	0.573
7	0.84	50.00	75.	0.470	0.622
8	5.36	100.00	50.	0.820	0.030
9	23.00	100.00	69.	0.566	0.223
10	8.37	100.00	79.	0.398	0.396
11	74.01	100.00	83.	0.326	0.482
12	14.07	60.00	32.	0.975	0.369
13	1.07	60.00	69.	0.566	0.503
14	59.21	10.00	32.	0.975	0.830
15	42.46	10.00	69.	0.566	0.853

TOTAL AREA (Acres) = 592.60

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.277

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.382

==========

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

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Van Buren WS-Exist-10YR
2022-03-10

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 3.00 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	21.79	20.00	32.	0.975	0.738
2	2.22	20.00	69.	0.566	0.783
3	16.61	10.00	32.	0.975	0.830
4	12.95	10.00	69.	0.566	0.853
5	118.38	50.00	32.	0.975	0.461
6	62.07	50.00	69.	0.566	0.573
7	0.77	50.00	75.	0.470	0.622
8	23.68	100.00	50.	0.820	0.030
9	4.11	100.00	69.	0.566	0.223
10	41.85	100.00	79.	0.398	0.396
11	29.94	100.00	83.	0.326	0.482
12	20.33	60.00	32.	0.975	0.369
13	2.38	60.00	69.	0.566	0.503
14	42.22	10.00	32.	0.975	0.830
15	1.33	10.00	56.	0.748	0.838
16	27.95	10.00	69.	0.566	0.853

TOTAL AREA (Acres) = 428.58

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.348

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.452

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

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



 ************************ DESCRIPTION OF STUDY ************************
* Grand Terrace                                                       *
* BD WS & VB WS- Exist-10year                                         *
* 2022-03-10                                                          *
 *********************************************************************

  FILE NAME: CALEX10.DAT
  TIME/DATE OF STUDY: 16:23 03/10/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     592.600 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.210 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.277
         LOW LOSS FRACTION = 0.382
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.30
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.63
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.85
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.57
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  3.00
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.974
30-MINUTE FACTOR = 0.974
1-HOUR FACTOR = 0.974
3-HOUR FACTOR = 0.996
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 39.683

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.872	205.853
2	19.165	1167.628
3	48.437	2097.862
4	76.826	2034.622
5	90.830	1003.627
6	96.604	413.793
7	98.430	130.854
8	99.173	53.239
9	99.669	35.567
10	99.917	17.783
11	100.000	5.928

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 51.2618
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 96.6619

==========

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

==========

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	225.0	450.0	675.0	900.0
0.083	0.0043	0.62	Q	.	.	.	.
0.167	0.0327	4.14	Q	.	.	.	.
0.250	0.1048	10.46	Q	.	.	.	.
0.333	0.2192	16.61	Q	.	.	.	.
0.417	0.3546	19.67	Q	.	.	.	.
0.500	0.4991	20.97	Q	.	.	.	.
0.583	0.6466	21.43	Q	.	.	.	.
0.667	0.7957	21.65	Q	.	.	.	.
0.750	0.9460	21.82	Q	.	.	.	.
0.833	1.0970	21.93	Q	.	.	.	.
0.917	1.2486	22.01	Q	.	.	.	.
1.000	1.4006	22.08	Q	.	.	.	.
1.083	1.5531	22.14	Q	.	.	.	.
1.167	1.7061	22.21	Q	.	.	.	.
1.250	1.8594	22.27	Q	.	.	.	.
1.333	2.0133	22.34	Q	.	.	.	.
1.417	2.1676	22.40	Q	.	.	.	.
1.500	2.3223	22.47	Q	.	.	.	.
1.583	2.4775	22.54	.Q	.	.	.	.
1.667	2.6332	22.61	.Q	.	.	.	.
1.750	2.7894	22.68	.Q	.	.	.	.
1.833	2.9460	22.75	.Q	.	.	.	.
1.917	3.1032	22.81	.Q	.	.	.	.
2.000	3.2608	22.89	.Q	.	.	.	.
2.083	3.4189	22.96	.Q	.	.	.	.
2.167	3.5775	23.03	.Q	.	.	.	.
2.250	3.7366	23.10	.Q	.	.	.	.
2.333	3.8962	23.18	.Q	.	.	.	.
2.417	4.0563	23.25	.Q	.	.	.	.
2.500	4.2169	23.32	.Q	.	.	.	.
2.583	4.3781	23.40	.Q	.	.	.	.
2.667	4.5398	23.48	.Q	.	.	.	.
2.750	4.7020	23.55	.Q	.	.	.	.
2.833	4.8647	23.63	.QV	.	.	.	.
2.917	5.0280	23.71	.QV	.	.	.	.
3.000	5.1918	23.79	.QV	.	.	.	.
3.083	5.3562	23.87	.QV	.	.	.	.
3.167	5.5211	23.95	.QV	.	.	.	.
3.250	5.6866	24.03	.QV	.	.	.	.

3.333	5.8526	24.11	.QV	.	.	.	.
3.417	6.0193	24.19	.QV	.	.	.	.
3.500	6.1865	24.28	.QV	.	.	.	.
3.583	6.3542	24.36	.QV	.	.	.	.
3.667	6.5226	24.45	.QV	.	.	.	.
3.750	6.6916	24.53	.QV	.	.	.	.
3.833	6.8611	24.62	.QV	.	.	.	.
3.917	7.0313	24.71	.QV	.	.	.	.
4.000	7.2021	24.80	.QV	.	.	.	.
4.083	7.3735	24.89	.Q V	.	.	.	.
4.167	7.5455	24.98	.Q V	.	.	.	.
4.250	7.7182	25.07	.Q V	.	.	.	.
4.333	7.8915	25.16	.Q V	.	.	.	.
4.417	8.0654	25.26	.Q V	.	.	.	.
4.500	8.2401	25.35	.Q V	.	.	.	.
4.583	8.4153	25.45	.Q V	.	.	.	.
4.667	8.5913	25.55	.Q V	.	.	.	.
4.750	8.7679	25.64	.Q V	.	.	.	.
4.833	8.9451	25.74	.Q V	.	.	.	.
4.917	9.1231	25.84	.Q V	.	.	.	.
5.000	9.3018	25.94	.Q V	.	.	.	.
5.083	9.4812	26.05	.Q V	.	.	.	.
5.167	9.6613	26.15	.Q V	.	.	.	.
5.250	9.8421	26.25	.Q V	.	.	.	.
5.333	10.0237	26.36	.Q V	.	.	.	.
5.417	10.2059	26.47	.Q V	.	.	.	.
5.500	10.3890	26.58	.Q V	.	.	.	.
5.583	10.5728	26.69	.Q V	.	.	.	.
5.667	10.7573	26.80	.Q V	.	.	.	.
5.750	10.9427	26.91	.Q V	.	.	.	.
5.833	11.1288	27.03	.Q V	.	.	.	.
5.917	11.3157	27.14	.Q V	.	.	.	.
6.000	11.5034	27.26	.Q V	.	.	.	.
6.083	11.6920	27.37	.Q V	.	.	.	.
6.167	11.8813	27.50	.Q V	.	.	.	.
6.250	12.0715	27.62	.Q V	.	.	.	.
6.333	12.2626	27.74	.Q V	.	.	.	.
6.417	12.4544	27.86	.Q V	.	.	.	.
6.500	12.6472	27.99	.Q V	.	.	.	.
6.583	12.8408	28.12	.Q V	.	.	.	.
6.667	13.0354	28.25	.Q V	.	.	.	.
6.750	13.2308	28.38	.Q V	.	.	.	.
6.833	13.4272	28.51	.Q V	.	.	.	.
6.917	13.6244	28.64	.Q V	.	.	.	.
7.000	13.8227	28.78	.Q V	.	.	.	.
7.083	14.0218	28.92	.Q V	.	.	.	.
7.167	14.2220	29.06	.Q V	.	.	.	.
7.250	14.4231	29.20	.Q V	.	.	.	.
7.333	14.6252	29.35	.Q V	.	.	.	.
7.417	14.8283	29.49	.Q V	.	.	.	.

7.500	15.0324	29.64	.Q	V	.	.	.	.
7.583	15.2376	29.79	.Q	V	.	.	.	.
7.667	15.4439	29.95	.Q	V	.	.	.	.
7.750	15.6512	30.10	.Q	V	.	.	.	.
7.833	15.8595	30.26	.Q	V	.	.	.	.
7.917	16.0690	30.42	.Q	V	.	.	.	.
8.000	16.2796	30.58	.Q	V	.	.	.	.
8.083	16.4914	30.74	.Q	V	.	.	.	.
8.167	16.7043	30.91	.Q	V	.	.	.	.
8.250	16.9183	31.08	.Q	V	.	.	.	.
8.333	17.1336	31.26	.Q	V	.	.	.	.
8.417	17.3500	31.43	.Q	V	.	.	.	.
8.500	17.5677	31.61	.Q	V	.	.	.	.
8.583	17.7867	31.79	.Q	V	.	.	.	.
8.667	18.0069	31.98	.Q	V	.	.	.	.
8.750	18.2284	32.16	.Q	V	.	.	.	.
8.833	18.4512	32.36	.Q	V	.	.	.	.
8.917	18.6754	32.55	.Q	V	.	.	.	.
9.000	18.9009	32.75	.Q	V	.	.	.	.
9.083	19.1278	32.95	.Q	V	.	.	.	.
9.167	19.3561	33.15	.Q	V	.	.	.	.
9.250	19.5859	33.36	.Q	V	.	.	.	.
9.333	19.8171	33.57	.Q	V	.	.	.	.
9.417	20.0498	33.79	.Q	V	.	.	.	.
9.500	20.2840	34.01	.Q	V	.	.	.	.
9.583	20.5198	34.23	.Q	V	.	.	.	.
9.667	20.7571	34.46	.Q	V	.	.	.	.
9.750	20.9960	34.69	.Q	V	.	.	.	.
9.833	21.2366	34.93	.Q	V	.	.	.	.
9.917	21.4789	35.17	.Q	V	.	.	.	.
10.000	21.7228	35.42	.Q	V	.	.	.	.
10.083	21.9685	35.67	.Q	V	.	.	.	.
10.167	22.2160	35.93	.Q	V	.	.	.	.
10.250	22.4652	36.19	.Q	V	.	.	.	.
10.333	22.7164	36.46	.Q	V	.	.	.	.
10.417	22.9694	36.74	.Q	V	.	.	.	.
10.500	23.2243	37.02	.Q	V	.	.	.	.
10.583	23.4812	37.30	.Q	V	.	.	.	.
10.667	23.7402	37.60	.Q	V	.	.	.	.
10.750	24.0012	37.90	.Q	V	.	.	.	.
10.833	24.2643	38.21	.Q	V	.	.	.	.
10.917	24.5296	38.52	.Q	V	.	.	.	.
11.000	24.7971	38.84	.Q	V	.	.	.	.
11.083	25.0669	39.17	.Q	V	.	.	.	.
11.167	25.3390	39.51	.Q	V	.	.	.	.
11.250	25.6135	39.85	.Q	V	.	.	.	.
11.333	25.8904	40.21	.Q	V	.	.	.	.
11.417	26.1699	40.57	.Q	V	.	.	.	.
11.500	26.4519	40.95	.Q	V	.	.	.	.
11.583	26.7366	41.33	.Q	.V	.	.	.	.

```
11.667     27.0240     41.73  .Q        .V        .         .         .
11.750     27.3142     42.13  .Q        .V        .         .         .
11.833     27.6073     42.56  .Q        .V        .         .         .
11.917     27.9033     42.98  .Q        .V        .         .         .
12.000     28.2024     43.43  .Q        .V        .         .         .
12.083     28.5031     43.67  .Q        .V        .         .         .
12.167     28.7988     42.93  .Q        .V        .         .         .
12.250     29.0827     41.23  .Q        . V       .         .         .
12.333     29.3556     39.62  .Q        . V       .         .         .
12.417     29.6247     39.07  .Q        . V       .         .         .
12.500     29.8944     39.16  .Q        . V       .         .         .
12.583     30.1668     39.55  .Q        . V       .         .         .
12.667     30.4426     40.05  .Q        . V       .         .         .
12.750     30.7221     40.58  .Q        . V       .         .         .
12.833     31.0056     41.16  .Q        . V       .         .         .
12.917     31.2933     41.77  .Q        . V       .         .         .
13.000     31.5854     42.42  .Q        .  V      .         .         .
13.083     31.8821     43.08  .Q        .  V      .         .         .
13.167     32.1836     43.78  .Q        .  V      .         .         .
13.250     32.4902     44.51  .Q        .  V      .         .         .
13.333     32.8020     45.28  . Q       .  V      .         .         .
13.417     33.1192     46.06  . Q       .  V      .         .         .
13.500     33.4423     46.91  . Q       .  V      .         .         .
13.583     33.7713     47.78  . Q       .  V      .         .         .
13.667     34.1068     48.71  . Q       .   V     .         .         .
13.750     34.4488     49.67  . Q       .   V     .         .         .
13.833     34.7980     50.70  . Q       .   V     .         .         .
13.917     35.1545     51.77  . Q       .   V     .         .         .
14.000     35.5190     52.92  . Q       .   V     .         .         .
14.083     35.8901     53.89  . Q       .   V     .         .         .
14.167     36.2609     53.84  . Q       .    V    .         .         .
14.250     36.6244     52.77  . Q       .    V    .         .         .
14.333     36.9816     51.87  . Q       .    V    .         .         .
14.417     37.3411     52.20  . Q       .    V    .         .         .
14.500     37.7084     53.34  . Q       .    V    .         .         .
14.583     38.0864     54.89  . Q       .    V    .         .         .
14.667     38.4770     56.72  . Q       .    V    .         .         .
14.750     38.8813     58.69  . Q       .     V   .         .         .
14.833     39.3009     60.93  . Q       .     V   .         .         .
14.917     39.7372     63.35  . Q       .     V   .         .         .
15.000     40.1924     66.10  . Q       .     V   .         .         .
15.083     40.6684     69.11  .  Q      .     V   .         .         .
15.167     41.1682     72.57  .  Q      .      V  .         .         .
15.250     41.6944     76.41  .  Q      .      V  .         .         .
15.333     42.2517     80.91  .  Q      .      V  .         .         .
15.417     42.8502     86.90  .  Q      .      V  .         .         .
15.500     43.5250     97.99  .   Q     .       V .         .         .
15.583     44.3117    114.22  .    Q    .       V .         .         .
15.667     45.2233    132.36  .    Q    .       V .         .         .
15.750     46.2463    148.54  .     Q   .        V.         .         .
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15.833	47.3861	165.50	. Q . V. . .
15.917	48.6776	187.53	. Q . V . .
16.000	50.2636	230.29	. Q V . .
16.083	52.6626	348.34	. . Q .V . .
16.167	56.9505	622.60	. . . V Q . .
16.250	62.6638	829.57	. . . V . Q .
16.333	67.8887	758.65	. . . V . Q .
16.417	71.0941	465.43	. . Q V. .
16.500	73.0039	277.29	. . Q . V .
16.583	74.1802	170.80	. Q . . V .
16.667	75.0244	122.57	. Q . . .V .
16.750	75.7074	99.18	. Q . . .V .
16.833	76.2761	82.58	. Q . . .V .
16.917	76.7670	71.28	. Q . . .V .
17.000	77.2050	63.60	. Q . . .V .
17.083	77.6101	58.82	. Q . . . V .
17.167	77.9965	56.10	. Q . . . V .
17.250	78.3761	55.11	. Q . . . V .
17.333	78.7515	54.50	. Q . . . V .
17.417	79.1168	53.04	. Q . . . V .
17.500	79.4694	51.19	. Q . . . V .
17.583	79.8086	49.26	. Q . . . V .
17.667	80.1354	47.45	. Q . . . V .
17.750	80.4508	45.80	. Q . . . V .
17.833	80.7557	44.27	.Q . . . V .
17.917	81.0510	42.87	.Q . . . V .
18.000	81.3372	41.57	.Q . . . V .
18.083	81.6167	40.58	.Q . . . V .
18.167	81.8969	40.68	.Q . . . V .
18.250	82.1848	41.81	.Q . . . V .
18.333	82.4804	42.93	.Q . . . V .
18.417	82.7768	43.03	.Q . . . V .
18.500	83.0700	42.57	.Q . . . V .
18.583	83.3583	41.87	.Q . . . V .
18.667	83.6416	41.13	.Q . . . V .
18.750	83.9199	40.41	.Q . . . V .
18.833	84.1935	39.72	.Q . . . V .
18.917	84.4624	39.05	.Q . . . V .
19.000	84.7268	38.40	.Q . . . V .
19.083	84.9870	37.78	.Q . . . V .
19.167	85.2432	37.19	.Q . . . V .
19.250	85.4954	36.63	.Q . . . V .
19.333	85.7440	36.09	.Q . . . V .
19.417	85.9890	35.57	.Q . . . V .
19.500	86.2306	35.08	.Q . . . V .
19.583	86.4689	34.60	.Q . . . V .
19.667	86.7040	34.14	.Q . . . V .
19.750	86.9361	33.70	.Q . . . V .
19.833	87.1653	33.28	.Q . . . V .
19.917	87.3916	32.87	.Q . . . V .

20.000	87.6153	32.47	.Q	.	.	.	V .
20.083	87.8362	32.09	.Q	.	.	.	V .
20.167	88.0547	31.72	.Q	.	.	.	V .
20.250	88.2707	31.36	.Q	.	.	.	V .
20.333	88.4842	31.01	.Q	.	.	.	V .
20.417	88.6955	30.68	.Q	.	.	.	V .
20.500	88.9045	30.35	.Q	.	.	.	V .
20.583	89.1114	30.04	.Q	.	.	.	V .
20.667	89.3162	29.73	.Q	.	.	.	V .
20.750	89.5189	29.43	.Q	.	.	.	V .
20.833	89.7196	29.14	.Q	.	.	.	V .
20.917	89.9183	28.86	.Q	.	.	.	V .
21.000	90.1152	28.59	.Q	.	.	.	V .
21.083	90.3103	28.32	.Q	.	.	.	V .
21.167	90.5036	28.06	.Q	.	.	.	V .
21.250	90.6951	27.81	.Q	.	.	.	V .
21.333	90.8849	27.57	.Q	.	.	.	V .
21.417	91.0731	27.33	.Q	.	.	.	V .
21.500	91.2597	27.09	.Q	.	.	.	V .
21.583	91.4447	26.86	.Q	.	.	.	V .
21.667	91.6282	26.64	.Q	.	.	.	V .
21.750	91.8102	26.42	.Q	.	.	.	V .
21.833	91.9907	26.21	.Q	.	.	.	V .
21.917	92.1697	26.00	.Q	.	.	.	V .
22.000	92.3474	25.80	.Q	.	.	.	V .
22.083	92.5237	25.60	.Q	.	.	.	V .
22.167	92.6987	25.41	.Q	.	.	.	V .
22.250	92.8724	25.22	.Q	.	.	.	V .
22.333	93.0448	25.03	.Q	.	.	.	V .
22.417	93.2159	24.85	.Q	.	.	.	V .
22.500	93.3858	24.67	.Q	.	.	.	V .
22.583	93.5546	24.50	.Q	.	.	.	V .
22.667	93.7221	24.33	.Q	.	.	.	V .
22.750	93.8885	24.16	.Q	.	.	.	V .
22.833	94.0537	23.99	.Q	.	.	.	V .
22.917	94.2178	23.83	.Q	.	.	.	V .
23.000	94.3809	23.67	.Q	.	.	.	V.
23.083	94.5428	23.52	.Q	.	.	.	V.
23.167	94.7038	23.37	.Q	.	.	.	V.
23.250	94.8637	23.22	.Q	.	.	.	V.
23.333	95.0225	23.07	.Q	.	.	.	V.
23.417	95.1804	22.93	.Q	.	.	.	V.
23.500	95.3374	22.78	.Q	.	.	.	V.
23.583	95.4933	22.65	.Q	.	.	.	V.
23.667	95.6483	22.51	.Q	.	.	.	V.
23.750	95.8024	22.37	Q	.	.	.	V.
23.833	95.9556	22.24	Q	.	.	.	V.
23.917	96.1079	22.11	Q	.	.	.	V.
24.000	96.2593	21.99	Q	.	.	.	V.
24.083	96.4056	21.24	Q	.	.	.	V.

```
  24.167     96.5269     17.61  Q          .          .          .        V.
  24.250     96.6042     11.21  Q          .          .          .        V.
  24.333     96.6388      5.04  Q          .          .          .        V.
  24.417     96.6526      1.99  Q          .          .          .        V.
  24.500     96.6577      0.74  Q          .          .          .        V.
  24.583     96.6600      0.34  Q          .          .          .        V.
  24.667     96.6612      0.18  Q          .          .          .        V.
  24.750     96.6617      0.07  Q          .          .          .        V.
  24.833     96.6619      0.02  Q          .          .          .        V.
--------------------------------------------------------------------------------
---
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
               0%                           1490.0
              10%                             85.0
              20%                             45.0
              30%                             30.0
              40%                             25.0
              50%                             20.0
              60%                             15.0
              70%                             15.0
              80%                             10.0
              90%                             10.0


 ********************************************************************************
   FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 5.2
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   >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
 ================================================================================

          THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
          TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
          INTERVALS(Reference: the National Engineering Handbook,
          Hydrology, Chapter 17, page 17-52, August,1972,
          U.S. Department of Commerce).


          ASSUMED REGULAR CHANNEL INFORMATION:
            BASEWIDTH(FT) =   30.00     CHANNEL Z =  2.00
            UPSTREAM ELEVATION(FT) =     938.00
            DOWNSTREAM ELEVATION(FT) =     909.00
            CHANNEL LENGTH(FT) =    2185.72     MANNING'S FACTOR = 0.015
            CONSTANT LOSS RATE(CFS) =    0.00
```

CHANNEL ROUTING COEFFICIENT ESTIMATED:
  MAXIMUM INFLOW(CFS) =   829.57
  AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW =   669.07
  CHANNEL NORMAL VELOCITY FOR Q =   669.07 CFS = 13.79 FPS
  ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.890

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 0.979

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
0.083	0.62	0.32	0.32
0.167	4.14	2.44	2.44
0.250	10.46	7.38	7.38
0.333	16.61	13.58	13.58
0.417	19.67	18.13	18.13
0.500	20.97	20.32	20.32
0.583	21.43	21.19	21.19
0.667	21.65	21.54	21.54
0.750	21.82	21.73	21.73
0.833	21.93	21.87	21.87
0.917	22.01	21.97	21.97
1.000	22.08	22.04	22.04
1.083	22.14	22.11	22.11
1.167	22.21	22.17	22.17
1.250	22.27	22.24	22.24
1.333	22.34	22.30	22.30
1.417	22.40	22.37	22.37
1.500	22.47	22.44	22.44
1.583	22.54	22.50	22.50
1.667	22.61	22.57	22.57
1.750	22.68	22.64	22.64
1.833	22.75	22.71	22.71
1.917	22.81	22.78	22.78
2.000	22.89	22.85	22.85
2.083	22.96	22.92	22.92
2.167	23.03	22.99	22.99
2.250	23.10	23.07	23.07
2.333	23.18	23.14	23.14
2.417	23.25	23.21	23.21
2.500	23.32	23.29	23.29
2.583	23.40	23.36	23.36
2.667	23.48	23.44	23.44
2.750	23.55	23.51	23.51
2.833	23.63	23.59	23.59

2.917	23.71	23.67	23.67
3.000	23.79	23.75	23.75
3.083	23.87	23.83	23.83
3.167	23.95	23.91	23.91
3.250	24.03	23.99	23.99
3.333	24.11	24.07	24.07
3.417	24.19	24.15	24.15
3.500	24.28	24.24	24.24
3.583	24.36	24.32	24.32
3.667	24.45	24.41	24.41
3.750	24.53	24.49	24.49
3.833	24.62	24.58	24.58
3.917	24.71	24.67	24.67
4.000	24.80	24.75	24.75
4.083	24.89	24.84	24.84
4.167	24.98	24.93	24.93
4.250	25.07	25.03	25.03
4.333	25.16	25.12	25.12
4.417	25.26	25.21	25.21
4.500	25.35	25.31	25.31
4.583	25.45	25.40	25.40
4.667	25.55	25.50	25.50
4.750	25.64	25.60	25.60
4.833	25.74	25.69	25.69
4.917	25.84	25.79	25.79
5.000	25.94	25.89	25.89
5.083	26.05	26.00	26.00
5.167	26.15	26.10	26.10
5.250	26.25	26.20	26.20
5.333	26.36	26.31	26.31
5.417	26.47	26.42	26.42
5.500	26.58	26.52	26.52
5.583	26.69	26.63	26.63
5.667	26.80	26.74	26.74
5.750	26.91	26.86	26.86
5.833	27.03	26.97	26.97
5.917	27.14	27.08	27.08
6.000	27.26	27.20	27.20
6.083	27.37	27.32	27.32
6.167	27.50	27.44	27.44
6.250	27.62	27.56	27.56
6.333	27.74	27.68	27.68
6.417	27.86	27.80	27.80
6.500	27.99	27.93	27.93
6.583	28.12	28.05	28.05
6.667	28.25	28.18	28.18
6.750	28.38	28.31	28.31
6.833	28.51	28.44	28.44
6.917	28.64	28.58	28.58
7.000	28.78	28.71	28.71

7.083	28.92	28.85	28.85
7.167	29.06	28.99	28.99
7.250	29.20	29.13	29.13
7.333	29.35	29.28	29.28
7.417	29.49	29.42	29.42
7.500	29.64	29.57	29.57
7.583	29.79	29.72	29.72
7.667	29.95	29.87	29.87
7.750	30.10	30.02	30.02
7.833	30.26	30.18	30.18
7.917	30.42	30.34	30.34
8.000	30.58	30.50	30.50
8.083	30.74	30.66	30.66
8.167	30.91	30.83	30.83
8.250	31.08	31.00	31.00
8.333	31.26	31.17	31.17
8.417	31.43	31.34	31.34
8.500	31.61	31.52	31.52
8.583	31.79	31.70	31.70
8.667	31.98	31.88	31.88
8.750	32.16	32.07	32.07
8.833	32.36	32.26	32.26
8.917	32.55	32.45	32.45
9.000	32.75	32.65	32.65
9.083	32.95	32.85	32.85
9.167	33.15	33.05	33.05
9.250	33.36	33.26	33.26
9.333	33.57	33.47	33.47
9.417	33.79	33.68	33.68
9.500	34.01	33.90	33.90
9.583	34.23	34.12	34.12
9.667	34.46	34.35	34.35
9.750	34.69	34.58	34.58
9.833	34.93	34.81	34.81
9.917	35.17	35.05	35.05
10.000	35.42	35.30	35.30
10.083	35.67	35.55	35.55
10.167	35.93	35.81	35.81
10.250	36.19	36.07	36.07
10.333	36.46	36.33	36.33
10.417	36.74	36.60	36.60
10.500	37.02	36.88	36.88
10.583	37.30	37.16	37.16
10.667	37.60	37.45	37.45
10.750	37.90	37.75	37.75
10.833	38.21	38.05	38.05
10.917	38.52	38.37	38.37
11.000	38.84	38.68	38.68
11.083	39.17	39.01	39.01
11.167	39.51	39.34	39.34

11.250	39.85	39.69	39.69
11.333	40.21	40.04	40.04
11.417	40.57	40.40	40.40
11.500	40.95	40.77	40.77
11.583	41.33	41.15	41.15
11.667	41.73	41.54	41.54
11.750	42.13	41.94	41.94
11.833	42.56	42.35	42.35
11.917	42.98	42.77	42.77
12.000	43.43	43.21	43.21
12.083	43.67	43.55	43.55
12.167	42.93	43.28	43.28
12.250	41.23	42.06	42.06
12.333	39.62	40.41	40.41
12.417	39.07	39.35	39.35
12.500	39.16	39.12	39.12
12.583	39.55	39.36	39.36
12.667	40.05	39.81	39.81
12.750	40.58	40.32	40.32
12.833	41.16	40.88	40.88
12.917	41.77	41.47	41.47
13.000	42.42	42.10	42.10
13.083	43.08	42.75	42.75
13.167	43.78	43.44	43.44
13.250	44.51	44.15	44.15
13.333	45.28	44.90	44.90
13.417	46.06	45.68	45.68
13.500	46.91	46.49	46.49
13.583	47.78	47.35	47.35
13.667	48.71	48.25	48.25
13.750	49.67	49.19	49.19
13.833	50.70	50.19	50.19
13.917	51.77	51.24	51.24
14.000	52.92	52.36	52.36
14.083	53.89	53.41	53.41
14.167	53.84	53.85	53.85
14.250	52.77	53.29	53.29
14.333	51.87	52.31	52.31
14.417	52.20	52.05	52.05
14.500	53.34	52.78	52.78
14.583	54.89	54.13	54.13
14.667	56.72	55.82	55.82
14.750	58.69	57.72	57.72
14.833	60.93	59.83	59.83
14.917	63.35	62.16	62.16
15.000	66.10	64.75	64.75
15.083	69.11	67.64	67.64
15.167	72.57	70.87	70.87
15.250	76.41	74.53	74.53
15.333	80.91	78.71	78.71

15.417	86.90	83.97	83.97
15.500	97.99	92.59	92.59
15.583	114.22	106.30	106.30
15.667	132.36	123.47	123.47
15.750	148.54	140.57	140.57
15.833	165.50	157.17	157.17
15.917	187.53	176.75	176.75
16.000	230.29	209.48	209.48
16.083	348.34	291.08	291.08
16.167	622.60	489.39	489.39
16.250	829.57	727.17	727.17
16.333	758.65	790.65	790.65
16.417	465.43	607.24	607.24
16.500	277.29	370.81	370.81
16.583	170.80	224.01	224.01
16.667	122.57	146.90	146.90
16.750	99.18	110.95	110.95
16.833	82.58	90.81	90.81
16.917	71.28	76.89	76.89
17.000	63.60	67.41	67.41
17.083	58.82	61.20	61.20
17.167	56.10	57.46	57.46
17.250	55.11	55.62	55.62
17.333	54.50	54.81	54.81
17.417	53.04	53.75	53.75
17.500	51.19	52.10	52.10
17.583	49.26	50.21	50.21
17.667	47.45	48.34	48.34
17.750	45.80	46.61	46.61
17.833	44.27	45.02	45.02
17.917	42.87	43.56	43.56
18.000	41.57	42.21	42.21
18.083	40.58	41.07	41.07
18.167	40.68	40.64	40.64
18.250	41.81	41.26	41.26
18.333	42.93	42.38	42.38
18.417	43.03	42.97	42.97
18.500	42.57	42.79	42.79
18.583	41.87	42.21	42.21
18.667	41.13	41.49	41.49
18.750	40.41	40.77	40.77
18.833	39.72	40.06	40.06
18.917	39.05	39.38	39.38
19.000	38.40	38.72	38.72
19.083	37.78	38.09	38.09
19.167	37.19	37.48	37.48
19.250	36.63	36.91	36.91
19.333	36.09	36.36	36.36
19.417	35.57	35.83	35.83
19.500	35.08	35.32	35.32

19.583	34.60	34.84	34.84
19.667	34.14	34.37	34.37
19.750	33.70	33.92	33.92
19.833	33.28	33.49	33.49
19.917	32.87	33.07	33.07
20.000	32.47	32.66	32.66
20.083	32.09	32.28	32.28
20.167	31.72	31.90	31.90
20.250	31.36	31.54	31.54
20.333	31.01	31.18	31.18
20.417	30.68	30.84	30.84
20.500	30.35	30.51	30.51
20.583	30.04	30.19	30.19
20.667	29.73	29.88	29.88
20.750	29.43	29.58	29.58
20.833	29.14	29.29	29.29
20.917	28.86	29.00	29.00
21.000	28.59	28.72	28.72
21.083	28.32	28.45	28.45
21.167	28.06	28.19	28.19
21.250	27.81	27.94	27.94
21.333	27.57	27.69	27.69
21.417	27.33	27.44	27.44
21.500	27.09	27.21	27.21
21.583	26.86	26.98	26.98
21.667	26.64	26.75	26.75
21.750	26.42	26.53	26.53
21.833	26.21	26.31	26.31
21.917	26.00	26.10	26.10
22.000	25.80	25.90	25.90
22.083	25.60	25.70	25.70
22.167	25.41	25.50	25.50
22.250	25.22	25.31	25.31
22.333	25.03	25.12	25.12
22.417	24.85	24.94	24.94
22.500	24.67	24.76	24.76
22.583	24.50	24.58	24.58
22.667	24.33	24.41	24.41
22.750	24.16	24.24	24.24
22.833	23.99	24.07	24.07
22.917	23.83	23.91	23.91
23.000	23.67	23.75	23.75
23.083	23.52	23.59	23.59
23.167	23.37	23.44	23.44
23.250	23.22	23.29	23.29
23.333	23.07	23.14	23.14
23.417	22.93	23.00	23.00
23.500	22.78	22.85	22.85
23.583	22.65	22.71	22.71
23.667	22.51	22.58	22.58

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         23.750        22.37       22.44       22.44
         23.833        22.24       22.31       22.31
         23.917        22.11       22.18       22.18
         24.000        21.99       22.05       22.05
================================================================================
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =     96.662 AF
    OUTFLOW VOLUME =     96.662 AF
    LOSS    VOLUME =      0.000 AF


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     428.580 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.240 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.348
         LOW LOSS FRACTION = 0.452
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.30
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.63
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.85
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.57
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  3.00

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.981
          30-MINUTE FACTOR = 0.981
           1-HOUR FACTOR = 0.981
           3-HOUR FACTOR = 0.997
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  34.722
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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.308	119.610
2	14.779	646.413
3	38.225	1215.257
4	66.233	1451.644
5	84.561	949.989
6	93.250	450.344
7	97.213	205.452
8	98.477	65.467
9	99.128	33.747
10	99.651	27.130
11	99.913	13.565
12	100.000	4.521

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 44.0079
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 63.0123

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
0.083	0.0022	0.32	Q	.	.	.	.
0.167	0.0163	2.05	Q	.	.	.	.
0.250	0.0527	5.29	Q	.	.	.	.
0.333	0.1160	9.18	Q	.	.	.	.
0.417	0.1968	11.74	Q	.	.	.	.
0.500	0.2862	12.97	Q	.	.	.	.
0.583	0.3795	13.56	Q	.	.	.	.
0.667	0.4744	13.77	Q	.	.	.	.
0.750	0.5701	13.90	Q	.	.	.	.
0.833	0.6666	14.01	Q	.	.	.	.
0.917	0.7636	14.09	Q	.	.	.	.
1.000	0.8610	14.14	Q	.	.	.	.
1.083	0.9587	14.18	Q	.	.	.	.
1.167	1.0567	14.22	Q	.	.	.	.
1.250	1.1549	14.27	Q	.	.	.	.
1.333	1.2535	14.31	Q	.	.	.	.
1.417	1.3523	14.35	Q	.	.	.	.
1.500	1.4515	14.39	Q	.	.	.	.
1.583	1.5509	14.44	Q	.	.	.	.
1.667	1.6506	14.48	QV	.	.	.	.
1.750	1.7506	14.52	QV	.	.	.	.
1.833	1.8510	14.57	QV	.	.	.	.
1.917	1.9516	14.61	QV	.	.	.	.
2.000	2.0526	14.66	QV	.	.	.	.
2.083	2.1539	14.71	QV	.	.	.	.
2.167	2.2555	14.75	QV	.	.	.	.
2.250	2.3574	14.80	QV	.	.	.	.
2.333	2.4596	14.84	QV	.	.	.	.
2.417	2.5622	14.89	QV	.	.	.	.
2.500	2.6651	14.94	QV	.	.	.	.
2.583	2.7683	14.99	QV	.	.	.	.
2.667	2.8718	15.04	.Q	.	.	.	.
2.750	2.9757	15.09	.Q	.	.	.	.
2.833	3.0800	15.14	.Q	.	.	.	.
2.917	3.1845	15.18	.QV	.	.	.	.
3.000	3.2895	15.24	.QV	.	.	.	.
3.083	3.3947	15.29	.QV	.	.	.	.
3.167	3.5004	15.34	.QV	.	.	.	.
3.250	3.6064	15.39	.QV	.	.	.	.

3.333	3.7127	15.44	.QV	.	.	.	.
3.417	3.8194	15.50	.QV	.	.	.	.
3.500	3.9265	15.55	.QV	.	.	.	.
3.583	4.0340	15.60	.QV	.	.	.	.
3.667	4.1418	15.66	.QV	.	.	.	.
3.750	4.2500	15.71	.QV	.	.	.	.
3.833	4.3586	15.77	.QV	.	.	.	.
3.917	4.4676	15.82	.QV	.	.	.	.
4.000	4.5770	15.88	.QV	.	.	.	.
4.083	4.6868	15.94	.QV	.	.	.	.
4.167	4.7969	16.00	.Q V	.	.	.	.
4.250	4.9075	16.06	.Q V	.	.	.	.
4.333	5.0185	16.12	.Q V	.	.	.	.
4.417	5.1299	16.18	.Q V	.	.	.	.
4.500	5.2417	16.24	.Q V	.	.	.	.
4.583	5.3540	16.30	.Q V	.	.	.	.
4.667	5.4666	16.36	.Q V	.	.	.	.
4.750	5.5797	16.42	.Q V	.	.	.	.
4.833	5.6933	16.49	.Q V	.	.	.	.
4.917	5.8073	16.55	.Q V	.	.	.	.
5.000	5.9217	16.61	.Q V	.	.	.	.
5.083	6.0365	16.68	.Q V	.	.	.	.
5.167	6.1519	16.75	.Q V	.	.	.	.
5.250	6.2677	16.81	.Q V	.	.	.	.
5.333	6.3839	16.88	.Q V	.	.	.	.
5.417	6.5007	16.95	.Q V	.	.	.	.
5.500	6.6179	17.02	.Q V	.	.	.	.
5.583	6.7355	17.09	.Q V	.	.	.	.
5.667	6.8537	17.16	.Q V	.	.	.	.
5.750	6.9724	17.23	.Q V	.	.	.	.
5.833	7.0916	17.30	.Q V	.	.	.	.
5.917	7.2113	17.38	.Q V	.	.	.	.
6.000	7.3315	17.45	.Q V	.	.	.	.
6.083	7.4522	17.53	.Q V	.	.	.	.
6.167	7.5734	17.60	.Q V	.	.	.	.
6.250	7.6952	17.68	.Q V	.	.	.	.
6.333	7.8175	17.76	.Q V	.	.	.	.
6.417	7.9404	17.84	.Q V	.	.	.	.
6.500	8.0638	17.92	.Q V	.	.	.	.
6.583	8.1878	18.00	.Q V	.	.	.	.
6.667	8.3123	18.08	.Q V	.	.	.	.
6.750	8.4374	18.17	.Q V	.	.	.	.
6.833	8.5631	18.25	.Q V	.	.	.	.
6.917	8.6894	18.34	.Q V	.	.	.	.
7.000	8.8163	18.43	.Q V	.	.	.	.
7.083	8.9438	18.51	.Q V	.	.	.	.
7.167	9.0720	18.60	.Q V	.	.	.	.
7.250	9.2007	18.69	.Q V	.	.	.	.
7.333	9.3301	18.79	.Q V	.	.	.	.
7.417	9.4601	18.88	.Q V	.	.	.	.

7.500	9.5908	18.97	.Q	V	.	.	.	.
7.583	9.7221	19.07	.Q	V	.	.	.	.
7.667	9.8541	19.17	.Q	V	.	.	.	.
7.750	9.9868	19.27	.Q	V	.	.	.	.
7.833	10.1202	19.37	.Q	V	.	.	.	.
7.917	10.2543	19.47	.Q	V	.	.	.	.
8.000	10.3891	19.57	.Q	V	.	.	.	.
8.083	10.5246	19.68	.Q	V	.	.	.	.
8.167	10.6609	19.79	.Q	V	.	.	.	.
8.250	10.7979	19.89	.Q	V	.	.	.	.
8.333	10.9357	20.00	.Q	V	.	.	.	.
8.417	11.0742	20.12	.Q	V	.	.	.	.
8.500	11.2135	20.23	.Q	V	.	.	.	.
8.583	11.3537	20.35	.Q	V	.	.	.	.
8.667	11.4946	20.46	.Q	V	.	.	.	.
8.750	11.6363	20.58	.Q	V	.	.	.	.
8.833	11.7789	20.70	.Q	V	.	.	.	.
8.917	11.9224	20.83	.Q	V	.	.	.	.
9.000	12.0667	20.95	.Q	V	.	.	.	.
9.083	12.2119	21.08	.Q	V	.	.	.	.
9.167	12.3580	21.21	.Q	V	.	.	.	.
9.250	12.5050	21.35	.Q	V	.	.	.	.
9.333	12.6529	21.48	.Q	V	.	.	.	.
9.417	12.8018	21.62	.Q	V	.	.	.	.
9.500	12.9517	21.76	.Q	V	.	.	.	.
9.583	13.1025	21.90	.Q	V	.	.	.	.
9.667	13.2543	22.05	.Q	V	.	.	.	.
9.750	13.4072	22.20	.Q	V	.	.	.	.
9.833	13.5611	22.35	.Q	V	.	.	.	.
9.917	13.7161	22.50	.Q	V	.	.	.	.
10.000	13.8721	22.66	.Q	V	.	.	.	.
10.083	14.0293	22.82	.Q	V	.	.	.	.
10.167	14.1876	22.98	.Q	V	.	.	.	.
10.250	14.3470	23.15	.Q	V	.	.	.	.
10.333	14.5076	23.32	.Q	V	.	.	.	.
10.417	14.6695	23.50	.Q	V	.	.	.	.
10.500	14.8325	23.68	.Q	V	.	.	.	.
10.583	14.9968	23.86	.Q	V	.	.	.	.
10.667	15.1624	24.05	.Q	V	.	.	.	.
10.750	15.3293	24.23	.Q	V	.	.	.	.
10.833	15.4976	24.43	.Q	V	.	.	.	.
10.917	15.6672	24.63	.Q	V	.	.	.	.
11.000	15.8383	24.84	.Q	V	.	.	.	.
11.083	16.0108	25.04	.Q	V	.	.	.	.
11.167	16.1847	25.26	.Q	V	.	.	.	.
11.250	16.3602	25.48	.Q	V	.	.	.	.
11.333	16.5373	25.71	.Q	V	.	.	.	.
11.417	16.7159	25.94	.Q	V	.	.	.	.
11.500	16.8962	26.18	.Q	V	.	.	.	.
11.583	17.0781	26.42	.Q	V	.	.	.	.

```
11.667     17.2618     26.67  .Q        V         .         .         .
11.750     17.4473     26.93  .Q        .V        .         .         .
11.833     17.6346     27.20  .Q        .V        .         .         .
11.917     17.8237     27.47  .Q        .V        .         .         .
12.000     18.0148     27.75  .Q        .V        .         .         .
12.083     18.2071     27.93  .Q        .V        .         .         .
12.167     18.3974     27.63  .Q        .V        .         .         .
12.250     18.5820     26.80  .Q        .V        .         .         .
12.333     18.7595     25.77  .Q        .V        .         .         .
12.417     18.9330     25.20  .Q        . V       .         .         .
12.500     19.1060     25.12  .Q        . V       .         .         .
12.583     19.2800     25.26  .Q        . V       .         .         .
12.667     19.4559     25.55  .Q        . V       .         .         .
12.750     19.6342     25.88  .Q        . V       .         .         .
12.833     19.8148     26.23  .Q        . V       .         .         .
12.917     19.9981     26.61  .Q        . V       .         .         .
13.000     20.1841     27.01  .Q        . V       .         .         .
13.083     20.3730     27.43  .Q        . V       .         .         .
13.167     20.5650     27.87  .Q        .  V      .         .         .
13.250     20.7601     28.33  .Q        .  V      .         .         .
13.333     20.9585     28.82  .Q        .  V      .         .         .
13.417     21.1604     29.31  .Q        .  V      .         .         .
13.500     21.3660     29.84  .Q        .  V      .         .         .
13.583     21.5753     30.39  . Q       .  V      .         .         .
13.667     21.7886     30.98  . Q       .  V      .         .         .
13.750     22.0061     31.58  . Q       .  V      .         .         .
13.833     22.2281     32.23  . Q       .   V     .         .         .
13.917     22.4547     32.91  . Q       .   V     .         .         .
14.000     22.6864     33.63  . Q       .   V     .         .         .
14.083     22.9222     34.25  . Q       .   V     .         .         .
14.167     23.1588     34.35  . Q       .   V     .         .         .
14.250     23.3918     33.84  . Q       .   V     .         .         .
14.333     23.6200     33.12  . Q       .   V     .         .         .
14.417     23.8472     33.00  . Q       .    V    .         .         .
14.500     24.0779     33.50  . Q       .    V    .         .         .
14.583     24.3144     34.33  . Q       .    V    .         .         .
14.667     24.5584     35.43  . Q       .    V    .         .         .
14.750     24.8107     36.64  . Q       .    V    .         .         .
14.833     25.0724     38.00  . Q       .    V    .         .         .
14.917     25.3443     39.48  . Q       .     V   .         .         .
15.000     25.6279     41.17  . Q       .     V   .         .         .
15.083     25.9242     43.02  . Q       .     V   .         .         .
15.167     26.2350     45.14  .  Q      .     V   .         .         .
15.250     26.5621     47.49  .  Q      .     V   .         .         .
15.333     26.9080     50.23  .  Q      .      V  .         .         .
15.417     27.2787     53.83  .  Q      .      V  .         .         .
15.500     27.6929     60.14  .   Q     .      V  .         .         .
15.583     28.1711     69.44  .   Q     .      V  .         .         .
15.667     28.7285     80.93  .    Q    .       V .         .         .
15.750     29.3611     91.85  .     Q   .       V .         .         .
```

15.833	30.0688	102.77	. Q . V. . .
15.917	30.8693	116.22	. Q . V. . .
16.000	31.8356	140.31	. Q. V . .
16.083	33.2663	207.75	. . Q .V . .
16.167	35.7825	365.35	. . . V Q . .
16.250	39.2731	506.83	. . . V . Q .
16.333	42.9576	534.98	. . . V . Q .
16.417	45.6018	383.95	. . . Q V . .
16.500	47.2184	234.73	. . Q . V. .
16.583	48.2396	148.27	. Q. . V .
16.667	48.8860	93.86	. Q . . .V .
16.750	49.3787	71.55	. Q . . .V .
16.833	49.7924	60.06	. Q . . .V .
16.917	50.1374	50.10	. Q . . .V .
17.000	50.4349	43.19	. Q . . . V .
17.083	50.7010	38.64	. Q . . . V .
17.167	50.9518	36.42	. Q . . . V .
17.250	51.1955	35.38	. Q . . . V .
17.333	51.4363	34.97	. Q . . . V .
17.417	51.6722	34.25	. Q . . . V .
17.500	51.9008	33.19	. Q . . . V .
17.583	52.1213	32.02	. Q . . . V .
17.667	52.3336	30.83	. Q . . . V .
17.750	52.5384	29.74	.Q . . . V .
17.833	52.7363	28.74	.Q . . . V .
17.917	52.9278	27.81	.Q . . . V .
18.000	53.1134	26.95	.Q . . . V .
18.083	53.2944	26.27	.Q . . . V .
18.167	53.4743	26.13	.Q . . . V .
18.250	53.6573	26.57	.Q . . . V .
18.333	53.8451	27.26	.Q . . . V .
18.417	54.0347	27.53	.Q . . . V .
18.500	54.2231	27.37	.Q . . . V .
18.583	54.4091	27.01	.Q . . . V .
18.667	54.5920	26.55	.Q . . . V .
18.750	54.7716	26.08	.Q . . . V .
18.833	54.9482	25.64	.Q . . . V .
18.917	55.1218	25.21	.Q . . . V .
19.000	55.2926	24.79	.Q . . . V .
19.083	55.4605	24.39	.Q . . . V .
19.167	55.6258	24.00	.Q . . . V .
19.250	55.7886	23.64	.Q . . . V .
19.333	55.9490	23.28	.Q . . . V .
19.417	56.1070	22.95	.Q . . . V .
19.500	56.2628	22.62	.Q . . . V .
19.583	56.4164	22.31	.Q . . . V .
19.667	56.5680	22.01	.Q . . . V .
19.750	56.7177	21.73	.Q . . . V .
19.833	56.8654	21.45	.Q . . . V .
19.917	57.0113	21.18	.Q . . . V .

20.000	57.1554	20.92	.Q	.	.	.	V .
20.083	57.2978	20.67	.Q	.	.	.	V .
20.167	57.4385	20.43	.Q	.	.	.	V .
20.250	57.5776	20.20	.Q	.	.	.	V .
20.333	57.7152	19.98	.Q	.	.	.	V .
20.417	57.8513	19.76	.Q	.	.	.	V .
20.500	57.9859	19.55	.Q	.	.	.	V .
20.583	58.1191	19.34	.Q	.	.	.	V .
20.667	58.2509	19.14	.Q	.	.	.	V .
20.750	58.3815	18.95	.Q	.	.	.	V .
20.833	58.5107	18.76	.Q	.	.	.	V .
20.917	58.6386	18.58	.Q	.	.	.	V .
21.000	58.7654	18.40	.Q	.	.	.	V .
21.083	58.8909	18.23	.Q	.	.	.	V .
21.167	59.0153	18.06	.Q	.	.	.	V .
21.250	59.1386	17.90	.Q	.	.	.	V .
21.333	59.2608	17.74	.Q	.	.	.	V .
21.417	59.3819	17.58	.Q	.	.	.	V .
21.500	59.5019	17.43	.Q	.	.	.	V .
21.583	59.6210	17.28	.Q	.	.	.	V .
21.667	59.7390	17.14	.Q	.	.	.	V .
21.750	59.8561	17.00	.Q	.	.	.	V .
21.833	59.9722	16.86	.Q	.	.	.	V .
21.917	60.0874	16.73	.Q	.	.	.	V .
22.000	60.2017	16.60	.Q	.	.	.	V .
22.083	60.3152	16.47	.Q	.	.	.	V .
22.167	60.4277	16.34	.Q	.	.	.	V .
22.250	60.5394	16.22	.Q	.	.	.	V .
22.333	60.6503	16.10	.Q	.	.	.	V .
22.417	60.7603	15.98	.Q	.	.	.	V .
22.500	60.8696	15.87	.Q	.	.	.	V .
22.583	60.9781	15.75	.Q	.	.	.	V .
22.667	61.0858	15.64	.Q	.	.	.	V .
22.750	61.1928	15.53	.Q	.	.	.	V .
22.833	61.2991	15.43	.Q	.	.	.	V .
22.917	61.4046	15.32	.Q	.	.	.	V .
23.000	61.5094	15.22	.Q	.	.	.	V.
23.083	61.6136	15.12	.Q	.	.	.	V.
23.167	61.7170	15.02	.Q	.	.	.	V.
23.250	61.8198	14.93	Q	.	.	.	V.
23.333	61.9220	14.83	Q	.	.	.	V.
23.417	62.0235	14.74	Q	.	.	.	V.
23.500	62.1244	14.65	Q	.	.	.	V.
23.583	62.2246	14.56	Q	.	.	.	V.
23.667	62.3243	14.47	Q	.	.	.	V.
23.750	62.4233	14.38	Q	.	.	.	V.
23.833	62.5218	14.30	Q	.	.	.	V.
23.917	62.6197	14.21	Q	.	.	.	V.
24.000	62.7170	14.13	Q	.	.	.	V.
24.083	62.8115	13.73	Q	.	.	.	V.

```
  24.167     62.8937     11.93  Q         .         .         .         V.
  24.250     62.9531      8.63  Q         .         .         .         V.
  24.333     62.9856      4.71  Q         .         .         .         V.
  24.417     63.0004      2.15  Q         .         .         .         V.
  24.500     63.0069      0.94  Q         .         .         .         V.
  24.583     63.0096      0.39  Q         .         .         .         V.
  24.667     63.0110      0.21  Q         .         .         .         V.
  24.750     63.0119      0.12  Q         .         .         .         V.
  24.833     63.0122      0.05  Q         .         .         .         V.
  24.917     63.0123      0.01  Q         .         .         .          V
--------------------------------------------------------------------------------
---
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
              0%                            1495.0
             10%                              90.0
             20%                              45.0
             30%                              30.0
             40%                              25.0
             50%                              20.0
             60%                              20.0
             70%                              15.0
             80%                              10.0
             90%                              10.0


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


 ****************************************************************************
   FLOW PROCESS FROM NODE    101.00 TO NODE    101.00 IS CODE =  11
 ----------------------------------------------------------------------------
   >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
 ============================================================================

            STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
         (Note: Time indicated is at END of Each Unit Intervals)
 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      350.0     700.0    1050.0    1400.0
 ----------------------------------------------------------------------------
    0.083      0.0044      0.64  Q         .         .         .         .
```

0.167	0.0353	4.48	Q	.	.	.	.
0.250	0.1226	12.67	Q	.	.	.	.
0.333	0.2793	22.76	Q	.	.	.	.
0.417	0.4851	29.87	Q	.	.	.	.
0.500	0.7143	33.29	Q	.	.	.	.
0.583	0.9537	34.75	Q	.	.	.	.
0.667	1.1968	35.31	VQ	.	.	.	.
0.750	1.4422	35.63	VQ	.	.	.	.
0.833	1.6894	35.89	VQ	.	.	.	.
0.917	1.9377	36.06	VQ	.	.	.	.
1.000	2.1870	36.19	VQ	.	.	.	.
1.083	2.4369	36.29	VQ	.	.	.	.
1.167	2.6876	36.40	VQ	.	.	.	.
1.250	2.9390	36.50	VQ	.	.	.	.
1.333	3.1911	36.61	VQ	.	.	.	.
1.417	3.4440	36.72	VQ	.	.	.	.
1.500	3.6977	36.83	VQ	.	.	.	.
1.583	3.9521	36.94	VQ	.	.	.	.
1.667	4.2073	37.05	.Q	.	.	.	.
1.750	4.4633	37.17	.Q	.	.	.	.
1.833	4.7200	37.28	.Q	.	.	.	.
1.917	4.9776	37.39	.Q	.	.	.	.
2.000	5.2359	37.51	.Q	.	.	.	.
2.083	5.4950	37.63	.Q	.	.	.	.
2.167	5.7550	37.74	.Q	.	.	.	.
2.250	6.0158	37.86	.Q	.	.	.	.
2.333	6.2773	37.98	.Q	.	.	.	.
2.417	6.5398	38.10	.Q	.	.	.	.
2.500	6.8030	38.23	.Q	.	.	.	.
2.583	7.0672	38.35	.Q	.	.	.	.
2.667	7.3321	38.47	.Q	.	.	.	.
2.750	7.5980	38.60	.Q	.	.	.	.
2.833	7.8647	38.73	.Q	.	.	.	.
2.917	8.1323	38.85	.QV	.	.	.	.
3.000	8.4008	38.98	.QV	.	.	.	.
3.083	8.6701	39.11	.QV	.	.	.	.
3.167	8.9404	39.25	.QV	.	.	.	.
3.250	9.2116	39.38	.QV	.	.	.	.
3.333	9.4837	39.51	.QV	.	.	.	.
3.417	9.7568	39.65	.QV	.	.	.	.
3.500	10.0308	39.79	.QV	.	.	.	.
3.583	10.3058	39.92	.QV	.	.	.	.
3.667	10.5817	40.06	.QV	.	.	.	.
3.750	10.8586	40.20	.QV	.	.	.	.
3.833	11.1364	40.35	.QV	.	.	.	.
3.917	11.4153	40.49	.QV	.	.	.	.
4.000	11.6951	40.64	.QV	.	.	.	.
4.083	11.9760	40.78	.Q V	.	.	.	.
4.167	12.2579	40.93	.Q V	.	.	.	.
4.250	12.5409	41.08	.Q V	.	.	.	.

```
4.333     12.8248     41.23  .Q V      .         .         .         .
4.417     13.1099     41.39  .Q V      .         .         .         .
4.500     13.3960     41.54  .Q V      .         .         .         .
4.583     13.6831     41.70  .Q V      .         .         .         .
4.667     13.9714     41.86  .Q V      .         .         .         .
4.750     14.2608     42.02  .Q V      .         .         .         .
4.833     14.5513     42.18  .Q V      .         .         .         .
4.917     14.8429     42.34  .Q V      .         .         .         .
5.000     15.1356     42.51  .Q V      .         .         .         .
5.083     15.4296     42.68  .Q V      .         .         .         .
5.167     15.7246     42.85  .Q V      .         .         .         .
5.250     16.0209     43.02  .Q  V     .         .         .         .
5.333     16.3183     43.19  .Q  V     .         .         .         .
5.417     16.6170     43.36  .Q  V     .         .         .         .
5.500     16.9169     43.54  .Q  V     .         .         .         .
5.583     17.2180     43.72  .Q  V     .         .         .         .
5.667     17.5203     43.90  .Q  V     .         .         .         .
5.750     17.8240     44.09  .Q  V     .         .         .         .
5.833     18.1289     44.27  .Q  V     .         .         .         .
5.917     18.4351     44.46  .Q  V     .         .         .         .
6.000     18.7426     44.65  .Q  V     .         .         .         .
6.083     19.0515     44.84  .Q  V     .         .         .         .
6.167     19.3617     45.04  .Q  V     .         .         .         .
6.250     19.6732     45.24  .Q  V     .         .         .         .
6.333     19.9861     45.44  .Q   V    .         .         .         .
6.417     20.3005     45.64  .Q   V    .         .         .         .
6.500     20.6162     45.85  .Q   V    .         .         .         .
6.583     20.9334     46.06  .Q   V    .         .         .         .
6.667     21.2521     46.27  .Q   V    .         .         .         .
6.750     21.5722     46.48  .Q   V    .         .         .         .
6.833     21.8938     46.70  .Q   V    .         .         .         .
6.917     22.2169     46.92  .Q   V    .         .         .         .
7.000     22.5415     47.14  .Q   V    .         .         .         .
7.083     22.8678     47.37  .Q   V    .         .         .         .
7.167     23.1955     47.59  .Q   V    .         .         .         .
7.250     23.5249     47.83  .Q   V    .         .         .         .
7.333     23.8559     48.06  .Q   V    .         .         .         .
7.417     24.1886     48.30  .Q    V   .         .         .         .
7.500     24.5229     48.54  .Q    V   .         .         .         .
7.583     24.8589     48.79  .Q    V   .         .         .         .
7.667     25.1966     49.04  .Q    V   .         .         .         .
7.750     25.5361     49.29  .Q    V   .         .         .         .
7.833     25.8773     49.55  .Q    V   .         .         .         .
7.917     26.2204     49.81  .Q    V   .         .         .         .
8.000     26.5652     50.07  .Q    V   .         .         .         .
8.083     26.9119     50.34  .Q    V   .         .         .         .
8.167     27.2605     50.62  .Q    V   .         .         .         .
8.250     27.6110     50.89  .Q    V   .         .         .         .
8.333     27.9634     51.17  .Q     V  .         .         .         .
8.417     28.3179     51.46  .Q     V  .         .         .         .
```

8.500	28.6743	51.75	.Q	V .	.	.	.
8.583	29.0327	52.05	.Q	V .	.	.	.
8.667	29.3932	52.35	.Q	V .	.	.	.
8.750	29.7559	52.65	.Q	V .	.	.	.
8.833	30.1206	52.97	.Q	V .	.	.	.
8.917	30.4876	53.28	.Q	V .	.	.	.
9.000	30.8568	53.60	.Q	V .	.	.	.
9.083	31.2282	53.93	.Q	V .	.	.	.
9.167	31.6019	54.26	.Q	V .	.	.	.
9.250	31.9779	54.60	.Q	V .	.	.	.
9.333	32.3564	54.95	.Q	V .	.	.	.
9.417	32.7372	55.30	.Q	V .	.	.	.
9.500	33.1206	55.66	.Q	V .	.	.	.
9.583	33.5064	56.02	.Q	V .	.	.	.
9.667	33.8948	56.40	.Q	V .	.	.	.
9.750	34.2858	56.77	.Q	V .	.	.	.
9.833	34.6795	57.16	.Q	V .	.	.	.
9.917	35.0759	57.56	.Q	V .	.	.	.
10.000	35.4750	57.96	.Q	V .	.	.	.
10.083	35.8770	58.37	.Q	V .	.	.	.
10.167	36.2819	58.79	.Q	V.	.	.	.
10.250	36.6897	59.22	.Q	V.	.	.	.
10.333	37.1006	59.65	.Q	V.	.	.	.
10.417	37.5145	60.10	.Q	V.	.	.	.
10.500	37.9315	60.56	.Q	V.	.	.	.
10.583	38.3518	61.02	.Q	V.	.	.	.
10.667	38.7754	61.50	.Q	V.	.	.	.
10.750	39.2023	61.99	.Q	V.	.	.	.
10.833	39.6326	62.49	.Q	V.	.	.	.
10.917	40.0665	63.00	.Q	V	.	.	.
11.000	40.5039	63.52	.Q	V	.	.	.
11.083	40.9451	64.05	.Q	V	.	.	.
11.167	41.3900	64.60	.Q	V	.	.	.
11.250	41.8388	65.17	.Q	V	.	.	.
11.333	42.2916	65.74	.Q	V	.	.	.
11.417	42.7484	66.33	.Q	V	.	.	.
11.500	43.2095	66.94	.Q	V	.	.	.
11.583	43.6748	67.57	.Q	V	.	.	.
11.667	44.1445	68.21	.Q	.V	.	.	.
11.750	44.6188	68.86	.Q	.V	.	.	.
11.833	45.0978	69.54	.Q	.V	.	.	.
11.917	45.5815	70.24	. Q	.V	.	.	.
12.000	46.0702	70.96	. Q	.V	.	.	.
12.083	46.5624	71.47	. Q	.V	.	.	.
12.167	47.0508	70.91	. Q	.V	.	.	.
12.250	47.5250	68.86	.Q	.V	.	.	.
12.333	47.9808	66.18	.Q	. V	.	.	.
12.417	48.4254	64.55	.Q	. V	.	.	.
12.500	48.8678	64.24	.Q	. V	.	.	.
12.583	49.3129	64.62	.Q	. V	.	.	.

```
12.667     49.7630     65.36  .Q        . V       .         .         .
12.750     50.2189     66.20  .Q        . V       .         .         .
12.833     50.6811     67.11  .Q        . V       .         .         .
12.917     51.1500     68.08  .Q        . V       .         .         .
13.000     51.6259     69.11  .Q        . V       .         .         .
13.083     52.1093     70.19  . Q       .  V      .         .         .
13.167     52.6004     71.31  . Q       .  V      .         .         .
13.250     53.0996     72.48  . Q       .  V      .         .         .
13.333     53.6073     73.71  . Q       .  V      .         .         .
13.417     54.1237     74.99  . Q       .  V      .         .         .
13.500     54.6495     76.34  . Q       .  V      .         .         .
13.583     55.1849     77.74  . Q       .  V      .         .         .
13.667     55.7305     79.23  . Q       .  V      .         .         .
13.750     56.2869     80.78  . Q       .   V     .         .         .
13.833     56.8545     82.42  . Q       .   V     .         .         .
13.917     57.4341     84.15  . Q       .   V     .         .         .
14.000     58.0262     85.99  . Q       .   V     .         .         .
14.083     58.6300     87.66  . Q       .   V     .         .         .
14.167     59.2374     88.20  . Q       .   V     .         .         .
14.250     59.8374     87.13  . Q       .   V     .         .         .
14.333     60.4259     85.44  . Q       .    V    .         .         .
14.417     61.0116     85.05  . Q       .    V    .         .         .
14.500     61.6058     86.28  . Q       .    V    .         .         .
14.583     62.2151     88.46  . Q       .    V    .         .         .
14.667     62.8435     91.25  . Q       .    V    .         .         .
14.750     63.4934     94.36  . Q       .    V    .         .         .
14.833     64.1671     97.83  . Q       .     V   .         .         .
14.917     64.8672    101.65  . Q       .     V   .         .         .
15.000     65.5967    105.92  .  Q      .     V   .         .         .
15.083     66.3588    110.66  .  Q      .     V   .         .         .
15.167     67.1578    116.01  .  Q      .     V   .         .         .
15.250     67.9981    122.02  .  Q      .      V  .         .         .
15.333     68.8861    128.94  .  Q      .      V  .         .         .
15.417     69.8351    137.80  .  Q      .      V  .         .         .
15.500     70.8870    152.73  .   Q     .      V  .         .         .
15.583     72.0973    175.74  .    Q    .       V .         .         .
15.667     73.5050    204.40  .    Q    .       V .         .         .
15.750     75.1056    232.41  .     Q   .       V .         .         .
15.833     76.8958    259.93  .      Q  .        V.         .         .
15.917     78.9135    292.97  .       Q .        V.         .         .
16.000     81.3225    349.79  .        Q.         V         .         .
16.083     84.7580    498.83  .         .   Q     .V        .         .
16.167     90.6446    854.74  .         .         . V Q     .         .
16.250     99.1432   1234.00  .         .         .   V     .    Q    .
16.333    108.2729   1325.63  .         .         .      V  .      Q  .
16.417    115.0993    991.19  .         .         .       Q .         .
16.500    119.2697    605.55  .         .      Q  .        V.         .
16.583    121.8337    372.28  .         Q         .         V         .
16.667    123.4918    240.76  .     Q   .         .         V         .
16.750    124.7486    182.50  .    Q    .         .         .V        .
```

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16.833    125.7877    150.87  .   Q     .         .         .V        .
16.917    126.6623    126.99  .  Q      .         .         .V        .
17.000    127.4240    110.60  .  Q      .         .         .V        .
17.083    128.1116     99.84  . Q       .         .         . V       .
17.167    128.7582     93.88  . Q       .         .         . V       .
17.250    129.3849     91.00  . Q       .         .         . V       .
17.333    130.0032     89.77  . Q       .         .         . V       .
17.417    130.6093     88.01  . Q       .         .         . V       .
17.500    131.1967     85.29  . Q       .         .         . V       .
17.583    131.7630     82.23  . Q       .         .         .  V      .
17.667    132.3083     79.17  . Q       .         .         .  V      .
17.750    132.8341     76.35  . Q       .         .         .  V      .
17.833    133.3421     73.76  . Q       .         .         .  V      .
17.917    133.8336     71.37  . Q       .         .         .  V      .
18.000    134.3099     69.16  .Q        .         .         .  V      .
18.083    134.7736     67.34  .Q        .         .         .  V      .
18.167    135.2335     66.77  .Q        .         .         .  V      .
18.250    135.7006     67.83  .Q        .         .         .  V      .
18.333    136.1803     69.64  .Q        .         .         .   V     .
18.417    136.6658     70.50  . Q       .         .         .   V     .
18.500    137.1490     70.16  . Q       .         .         .   V     .
18.583    137.6257     69.22  .Q        .         .         .   V     .
18.667    138.0942     68.04  .Q        .         .         .   V     .
18.750    138.5546     66.85  .Q        .         .         .   V     .
18.833    139.0071     65.70  .Q        .         .         .   V     .
18.917    139.4520     64.59  .Q        .         .         .   V     .
19.000    139.8893     63.51  .Q        .         .         .    V    .
19.083    140.3196     62.47  .Q        .         .         .    V    .
19.167    140.7430     61.49  .Q        .         .         .    V    .
19.250    141.1600     60.54  .Q        .         .         .    V    .
19.333    141.5707     59.64  .Q        .         .         .    V    .
19.417    141.9755     58.77  .Q        .         .         .    V    .
19.500    142.3746     57.94  .Q        .         .         .    V    .
19.583    142.7682     57.15  .Q        .         .         .    V    .
19.667    143.1564     56.38  .Q        .         .         .    V    .
19.750    143.5397     55.64  .Q        .         .         .    V    .
19.833    143.9180     54.93  .Q        .         .         .     V   .
19.917    144.2916     54.25  .Q        .         .         .     V   .
20.000    144.6607     53.59  .Q        .         .         .     V   .
20.083    145.0253     52.95  .Q        .         .         .     V   .
20.167    145.3858     52.33  .Q        .         .         .     V   .
20.250    145.7421     51.74  .Q        .         .         .     V   .
20.333    146.0944     51.16  .Q        .         .         .     V   .
20.417    146.4429     50.60  .Q        .         .         .     V   .
20.500    146.7877     50.06  .Q        .         .         .     V   .
20.583    147.1288     49.53  .Q        .         .         .     V   .
20.667    147.4665     49.02  .Q        .         .         .     V   .
20.750    147.8007     48.53  .Q        .         .         .      V  .
20.833    148.1316     48.05  .Q        .         .         .      V  .
20.917    148.4593     47.58  .Q        .         .         .      V  .
```

21.000	148.7838	47.13	.Q	.	.	.	V .
21.083	149.1053	46.68	.Q	.	.	.	V .
21.167	149.4239	46.25	.Q	.	.	.	V .
21.250	149.7395	45.83	.Q	.	.	.	V .
21.333	150.0524	45.43	.Q	.	.	.	V .
21.417	150.3625	45.03	.Q	.	.	.	V .
21.500	150.6699	44.64	.Q	.	.	.	V .
21.583	150.9747	44.26	.Q	.	.	.	V .
21.667	151.2770	43.89	.Q	.	.	.	V .
21.750	151.5768	43.53	.Q	.	.	.	V .
21.833	151.8742	43.18	.Q	.	.	.	V .
21.917	152.1692	42.83	.Q	.	.	.	V .
22.000	152.4618	42.50	.Q	.	.	.	V .
22.083	152.7522	42.17	.Q	.	.	.	V .
22.167	153.0404	41.84	.Q	.	.	.	V .
22.250	153.3264	41.53	.Q	.	.	.	V .
22.333	153.6103	41.22	.Q	.	.	.	V .
22.417	153.8921	40.92	.Q	.	.	.	V .
22.500	154.1719	40.62	.Q	.	.	.	V .
22.583	154.4497	40.34	.Q	.	.	.	V .
22.667	154.7255	40.05	.Q	.	.	.	V .
22.750	154.9995	39.77	.Q	.	.	.	V .
22.833	155.2715	39.50	.Q	.	.	.	V .
22.917	155.5417	39.23	.Q	.	.	.	V .
23.000	155.8101	38.97	.Q	.	.	.	V.
23.083	156.0768	38.72	.Q	.	.	.	V.
23.167	156.3417	38.46	.Q	.	.	.	V.
23.250	156.6049	38.22	.Q	.	.	.	V.
23.333	156.8664	37.97	.Q	.	.	.	V.
23.417	157.1263	37.74	.Q	.	.	.	V.
23.500	157.3846	37.50	.Q	.	.	.	V.
23.583	157.6412	37.27	.Q	.	.	.	V.
23.667	157.8964	37.04	.Q	.	.	.	V.
23.750	158.1500	36.82	.Q	.	.	.	V.
23.833	158.4021	36.60	.Q	.	.	.	V.
23.917	158.6527	36.39	.Q	.	.	.	V.
24.000	158.9018	36.18	.Q	.	.	.	V.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.0
10%	90.0
20%	45.0
30%	30.0

40%	25.0
50%	20.0
60%	20.0
70%	15.0
80%	10.0
90%	10.0

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END OF FLOODSCx ROUTING ANALYSIS

EXISTING 5-YEAR
REGIONAL ANALYSIS
TRIBUTARY TO EX DBL 6X6
POC #1 / NODE 101

LOSS RATE CALCULATIONS
EXISTING REGIONAL
5-YR ANALYSIS
NODE 101

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

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

Problem Descriptions:
Grand Terrace
Barton+Deberry WS-Exist-5year
2022-03-10

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 2.52 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	30.17	20.00	32.	0.975	0.727
2	23.43	20.00	69.	0.566	0.761
3	57.88	10.00	32.	0.975	0.818
4	37.59	10.00	69.	0.566	0.835
5	121.44	50.00	32.	0.975	0.454
6	93.70	50.00	69.	0.566	0.540
7	0.84	50.00	75.	0.470	0.586
8	5.36	100.00	50.	0.820	0.010
9	23.00	100.00	69.	0.566	0.171
10	8.37	100.00	79.	0.398	0.338
11	74.01	100.00	83.	0.326	0.425
12	14.07	60.00	32.	0.975	0.364
13	1.07	60.00	69.	0.566	0.466
14	59.21	10.00	32.	0.975	0.818
15	42.46	10.00	69.	0.566	0.835

TOTAL AREA (Acres) = 592.60

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.277

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.405

****

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

==========

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Van Buren WS -Exist-5year
2022-03-10

==========

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 2.52 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	21.79	20.00	32.	0.975	0.727
2	2.22	20.00	69.	0.566	0.761
3	16.61	10.00	32.	0.975	0.818
4	12.95	10.00	69.	0.566	0.835
5	118.38	50.00	32.	0.975	0.454
6	62.07	50.00	69.	0.566	0.540
7	0.77	50.00	75.	0.470	0.586
8	23.68	100.00	50.	0.820	0.010
9	4.11	100.00	69.	0.566	0.171
10	41.85	100.00	79.	0.398	0.338
11	29.94	100.00	83.	0.326	0.425
12	20.33	60.00	32.	0.975	0.364
13	2.38	60.00	69.	0.566	0.466
14	42.22	10.00	32.	0.975	0.818
15	1.33	10.00	56.	0.748	0.822
16	27.95	10.00	69.	0.566	0.835

TOTAL AREA (Acres) = 428.58

AREA-AVERAGED LOSS RATE, $\bar{Fm}$ (in./hr.) = 0.348

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.475

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            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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              Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:



 ************************ DESCRIPTION OF STUDY ************************
* Grand Terrace                                                       *
* BD WS & VB WD -Exist-5year                                          *
* 2022-03-10                                                          *
 *********************************************************************

  FILE NAME: CALEX5.DAT
  TIME/DATE OF STUDY: 16:31 03/10/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     592.600 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.210 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.277
         LOW LOSS FRACTION = 0.405
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.58
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.75
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.10
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.38
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.52
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.974
30-MINUTE FACTOR = 0.974
1-HOUR FACTOR = 0.974
3-HOUR FACTOR = 0.996
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 39.683

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.872	205.853
2	19.165	1167.628
3	48.437	2097.862
4	76.826	2034.622
5	90.830	1003.627
6	96.604	413.793
7	98.430	130.854
8	99.173	53.239
9	99.669	35.567
10	99.917	17.783
11	100.000	5.928

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 45.3583
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 78.8988

==========

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

==========

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	200.0	400.0	600.0	800.0
0.083	0.0032	0.47	Q	.	.	.	.
0.167	0.0246	3.11	Q	.	.	.	.
0.250	0.0788	7.87	Q	.	.	.	.
0.333	0.1649	12.49	Q	.	.	.	.
0.417	0.2668	14.80	Q	.	.	.	.
0.500	0.3755	15.78	Q	.	.	.	.
0.583	0.4866	16.13	Q	.	.	.	.
0.667	0.5988	16.29	Q	.	.	.	.
0.750	0.7119	16.42	Q	.	.	.	.
0.833	0.8256	16.51	Q	.	.	.	.
0.917	0.9398	16.58	Q	.	.	.	.
1.000	1.0543	16.63	Q	.	.	.	.
1.083	1.1692	16.68	Q	.	.	.	.
1.167	1.2845	16.73	Q	.	.	.	.
1.250	1.4000	16.78	Q	.	.	.	.
1.333	1.5160	16.84	Q	.	.	.	.
1.417	1.6323	16.89	Q	.	.	.	.
1.500	1.7490	16.94	Q	.	.	.	.
1.583	1.8661	17.00	Q	.	.	.	.
1.667	1.9836	17.05	QV	.	.	.	.
1.750	2.1014	17.11	QV	.	.	.	.
1.833	2.2196	17.16	QV	.	.	.	.
1.917	2.3382	17.22	QV	.	.	.	.
2.000	2.4572	17.28	QV	.	.	.	.
2.083	2.5766	17.33	QV	.	.	.	.
2.167	2.6964	17.39	QV	.	.	.	.
2.250	2.8165	17.45	QV	.	.	.	.
2.333	2.9371	17.51	QV	.	.	.	.
2.417	3.0581	17.57	QV	.	.	.	.
2.500	3.1795	17.63	QV	.	.	.	.
2.583	3.3014	17.69	QV	.	.	.	.
2.667	3.4236	17.75	QV	.	.	.	.
2.750	3.5463	17.81	QV	.	.	.	.
2.833	3.6694	17.87	QV	.	.	.	.
2.917	3.7929	17.94	QV	.	.	.	.
3.000	3.9169	18.00	QV	.	.	.	.
3.083	4.0413	18.06	Q V	.	.	.	.
3.167	4.1661	18.13	Q V	.	.	.	.
3.250	4.2914	18.19	Q V	.	.	.	.

3.333	4.4172	18.26	Q	V	.	.	.	.
3.417	4.5434	18.33	Q	V	.	.	.	.
3.500	4.6701	18.40	Q	V	.	.	.	.
3.583	4.7973	18.46	Q	V	.	.	.	.
3.667	4.9249	18.53	Q	V	.	.	.	.
3.750	5.0530	18.60	Q	V	.	.	.	.
3.833	5.1816	18.67	Q	V	.	.	.	.
3.917	5.3107	18.74	Q	V	.	.	.	.
4.000	5.4402	18.81	Q	V	.	.	.	.
4.083	5.5703	18.89	Q	V	.	.	.	.
4.167	5.7009	18.96	Q	V	.	.	.	.
4.250	5.8320	19.03	Q	V	.	.	.	.
4.333	5.9636	19.11	Q	V	.	.	.	.
4.417	6.0957	19.18	Q	V	.	.	.	.
4.500	6.2283	19.26	Q	V	.	.	.	.
4.583	6.3615	19.34	Q	V	.	.	.	.
4.667	6.4952	19.42	Q	V	.	.	.	.
4.750	6.6295	19.49	Q	V	.	.	.	.
4.833	6.7643	19.58	Q	V	.	.	.	.
4.917	6.8997	19.66	Q	V	.	.	.	.
5.000	7.0356	19.74	Q	V	.	.	.	.
5.083	7.1721	19.82	Q	V	.	.	.	.
5.167	7.3092	19.90	Q	V	.	.	.	.
5.250	7.4468	19.99	Q	V	.	.	.	.
5.333	7.5851	20.08	.Q	V	.	.	.	.
5.417	7.7240	20.16	.Q	V	.	.	.	.
5.500	7.8634	20.25	.Q	V	.	.	.	.
5.583	8.0035	20.34	.Q	V	.	.	.	.
5.667	8.1442	20.43	.Q	V	.	.	.	.
5.750	8.2855	20.52	.Q	V	.	.	.	.
5.833	8.4274	20.61	.Q	V	.	.	.	.
5.917	8.5700	20.70	.Q	V	.	.	.	.
6.000	8.7133	20.80	.Q	V	.	.	.	.
6.083	8.8572	20.89	.Q	V	.	.	.	.
6.167	9.0018	20.99	.Q	V	.	.	.	.
6.250	9.1470	21.09	.Q	V	.	.	.	.
6.333	9.2930	21.19	.Q	V	.	.	.	.
6.417	9.4396	21.29	.Q	V	.	.	.	.
6.500	9.5869	21.39	.Q	V	.	.	.	.
6.583	9.7350	21.50	.Q	V	.	.	.	.
6.667	9.8838	21.60	.Q	V	.	.	.	.
6.750	10.0333	21.71	.Q	V	.	.	.	.
6.833	10.1835	21.82	.Q	V	.	.	.	.
6.917	10.3345	21.92	.Q	V	.	.	.	.
7.000	10.4863	22.04	.Q	V	.	.	.	.
7.083	10.6388	22.15	.Q	V	.	.	.	.
7.167	10.7921	22.26	.Q	V	.	.	.	.
7.250	10.9463	22.38	.Q	V	.	.	.	.
7.333	11.1012	22.50	.Q	V	.	.	.	.
7.417	11.2569	22.61	.Q	V	.	.	.	.

7.500	11.4135	22.74	.Q	V	.	.	.	.
7.583	11.5709	22.86	.Q	V	.	.	.	.
7.667	11.7292	22.98	.Q	V	.	.	.	.
7.750	11.8884	23.11	.Q	V	.	.	.	.
7.833	12.0484	23.24	.Q	V	.	.	.	.
7.917	12.2094	23.37	.Q	V	.	.	.	.
8.000	12.3712	23.50	.Q	V	.	.	.	.
8.083	12.5340	23.63	.Q	V	.	.	.	.
8.167	12.6977	23.77	.Q	V	.	.	.	.
8.250	12.8624	23.91	.Q	V	.	.	.	.
8.333	13.0280	24.05	.Q	V	.	.	.	.
8.417	13.1947	24.20	.Q	V	.	.	.	.
8.500	13.3623	24.34	.Q	V	.	.	.	.
8.583	13.5310	24.49	.Q	V	.	.	.	.
8.667	13.7007	24.64	.Q	V	.	.	.	.
8.750	13.8714	24.79	.Q	V	.	.	.	.
8.833	14.0433	24.95	.Q	V	.	.	.	.
8.917	14.2162	25.11	.Q	V	.	.	.	.
9.000	14.3903	25.27	.Q	V	.	.	.	.
9.083	14.5654	25.44	.Q	V	.	.	.	.
9.167	14.7418	25.60	.Q	V	.	.	.	.
9.250	14.9193	25.77	.Q	V	.	.	.	.
9.333	15.0980	25.95	.Q	V	.	.	.	.
9.417	15.2779	26.12	.Q	V	.	.	.	.
9.500	15.4591	26.31	.Q	V	.	.	.	.
9.583	15.6415	26.49	.Q	V	.	.	.	.
9.667	15.8253	26.68	.Q	V	.	.	.	.
9.750	16.0103	26.87	.Q	V	.	.	.	.
9.833	16.1967	27.07	.Q	V	.	.	.	.
9.917	16.3845	27.26	.Q	V	.	.	.	.
10.000	16.5737	27.47	.Q	V	.	.	.	.
10.083	16.7643	27.68	.Q	V	.	.	.	.
10.167	16.9564	27.89	.Q	V	.	.	.	.
10.250	17.1499	28.10	.Q	V	.	.	.	.
10.333	17.3450	28.33	.Q	V	.	.	.	.
10.417	17.5417	28.55	.Q	V	.	.	.	.
10.500	17.7399	28.79	.Q	V	.	.	.	.
10.583	17.9398	29.02	.Q	V	.	.	.	.
10.667	18.1413	29.27	.Q	V	.	.	.	.
10.750	18.3446	29.51	.Q	V	.	.	.	.
10.833	18.5496	29.77	.Q	V	.	.	.	.
10.917	18.7564	30.02	.Q	V	.	.	.	.
11.000	18.9650	30.29	.Q	V	.	.	.	.
11.083	19.1755	30.56	.Q	V	.	.	.	.
11.167	19.3880	30.85	.Q	V	.	.	.	.
11.250	19.6024	31.13	.Q	V	.	.	.	.
11.333	19.8188	31.43	.Q	V	.	.	.	.
11.417	20.0373	31.73	.Q	V	.	.	.	.
11.500	20.2580	32.04	.Q	V	.	.	.	.
11.583	20.4809	32.36	.Q	V	.	.	.	.

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11.667     20.7060     32.69  .Q        V         .         .         .
11.750     20.9335     33.03  .Q        V         .         .         .
11.833     21.1633     33.38  .Q        V         .         .         .
11.917     21.3956     33.73  .Q        V         .         .         .
12.000     21.6305     34.10  .Q        V         .         .         .
12.083     21.8663     34.23  .Q        .V        .         .         .
12.167     22.0951     33.23  .Q        .V        .         .         .
12.250     22.3094     31.12  .Q        .V        .         .         .
12.333     22.5098     29.09  .Q        .V        .         .         .
12.417     22.7046     28.28  .Q        .V        .         .         .
12.500     22.8988     28.20  .Q        .V        .         .         .
12.583     23.0948     28.46  .Q        .V        .         .         .
12.667     23.2935     28.84  .Q        .V        .         .         .
12.750     23.4949     29.25  .Q        .V        .         .         .
12.833     23.6994     29.70  .Q        . V       .         .         .
12.917     23.9072     30.18  .Q        . V       .         .         .
13.000     24.1186     30.69  .Q        . V       .         .         .
13.083     24.3336     31.22  .Q        . V       .         .         .
13.167     24.5525     31.78  .Q        . V       .         .         .
13.250     24.7754     32.36  .Q        . V       .         .         .
13.333     25.0025     32.97  .Q        . V       .         .         .
13.417     25.2339     33.61  .Q        . V       .         .         .
13.500     25.4700     34.28  .Q        . V       .         .         .
13.583     25.7110     34.98  .Q        .  V      .         .         .
13.667     25.9571     35.73  .Q        .  V      .         .         .
13.750     26.2085     36.51  .Q        .  V      .         .         .
13.833     26.4656     37.34  .Q        .  V      .         .         .
13.917     26.7288     38.21  .Q        .  V      .         .         .
14.000     26.9984     39.15  .Q        .  V      .         .         .
14.083     27.2758     40.27  . Q       .  V      .         .         .
14.167     27.5662     42.17  . Q       .  V      .         .         .
14.250     27.8747     44.80  . Q       .   V     .         .         .
14.333     28.2018     47.50  . Q       .   V     .         .         .
14.417     28.5431     49.55  . Q       .   V     .         .         .
14.500     28.8965     51.31  . Q       .   V     .         .         .
14.583     29.2613     52.97  . Q       .   V     .         .         .
14.667     29.6383     54.74  . Q       .    V    .         .         .
14.750     30.0281     56.61  . Q       .    V    .         .         .
14.833     30.4322     58.68  . Q       .    V    .         .         .
14.917     30.8517     60.90  .  Q      .    V    .         .         .
15.000     31.2883     63.40  .  Q      .    V    .         .         .
15.083     31.7438     66.14  .  Q      .     V   .         .         .
15.167     32.2208     69.26  .  Q      .     V   .         .         .
15.250     32.7217     72.73  .  Q      .     V   .         .         .
15.333     33.2506     76.79  .  Q      .     V   .         .         .
15.417     33.8112     81.40  .   Q     .      V  .         .         .
15.500     34.4102     86.98  .   Q     .      V  .         .         .
15.583     35.0549     93.60  .   Q     .      V  .         .         .
15.667     35.7564    101.87  .    Q    .       V .         .         .
15.750     36.5329    112.74  .    Q    .       V .         .         .
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15.833	37.4302	130.30	. Q . V . . .
15.917	38.5143	157.41	. Q . V. . .
16.000	39.9166	203.62	. Q V . .
16.083	42.0760	313.54	. . Q .V . .
16.167	45.9313	559.78	. . . V Q . .
16.250	51.0489	743.08	. . . V . Q .
16.333	55.6934	674.38	. . . V . Q .
16.417	58.4879	405.76	. . Q V. .
16.500	60.1068	235.07	. .Q . V .
16.583	61.1046	144.88	. Q . . V .
16.667	61.8509	108.36	. Q . . .V .
16.750	62.4770	90.91	. Q . . .V .
16.833	63.0105	77.46	. Q . . .V .
16.917	63.4766	67.68	. Q . . . V .
17.000	63.8959	60.88	. Q . . . V .
17.083	64.2835	56.29	. Q . . . V .
17.167	64.6405	51.83	. Q . . . V .
17.250	64.9663	47.31	. Q . . . V .
17.333	65.2645	43.29	. Q . . . V .
17.417	65.5426	40.38	. Q . . . V .
17.500	65.8055	38.17	.Q . . . V .
17.583	66.0560	36.38	.Q . . . V .
17.667	66.2959	34.83	.Q . . . V .
17.750	66.5261	33.44	.Q . . . V .
17.833	66.7478	32.19	.Q . . . V .
17.917	66.9617	31.05	.Q . . . V .
18.000	67.1684	30.02	.Q . . . V .
18.083	67.3703	29.31	.Q . . . V .
18.167	67.5757	29.82	.Q . . . V .
18.250	67.7926	31.49	.Q . . . V .
18.333	68.0207	33.12	.Q . . . V .
18.417	68.2517	33.55	.Q . . . V .
18.500	68.4811	33.31	.Q . . . V .
18.583	68.7068	32.77	.Q . . . V .
18.667	68.9283	32.17	.Q . . . V .
18.750	69.1459	31.59	.Q . . . V .
18.833	69.3595	31.02	.Q . . . V .
18.917	69.5693	30.46	.Q . . . V .
19.000	69.7754	29.93	.Q . . . V .
19.083	69.9780	29.42	.Q . . . V .
19.167	70.1772	28.93	.Q . . . V .
19.250	70.3733	28.47	.Q . . . V .
19.333	70.5662	28.02	.Q . . . V .
19.417	70.7563	27.59	.Q . . . V .
19.500	70.9435	27.19	.Q . . . V .
19.583	71.1281	26.79	.Q . . . V .
19.667	71.3100	26.42	.Q . . . V .
19.750	71.4894	26.06	.Q . . . V .
19.833	71.6665	25.71	.Q . . . V .
19.917	71.8412	25.37	.Q . . . V .

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20.000     72.0137     25.05  .Q        .         .         .     V   .
20.083     72.1840     24.73  .Q        .         .         .     V   .
20.167     72.3523     24.43  .Q        .         .         .     V   .
20.250     72.5185     24.14  .Q        .         .         .     V   .
20.333     72.6828     23.85  .Q        .         .         .     V   .
20.417     72.8452     23.58  .Q        .         .         .     V   .
20.500     73.0058     23.32  .Q        .         .         .      V  .
20.583     73.1646     23.06  .Q        .         .         .      V  .
20.667     73.3216     22.81  .Q        .         .         .      V  .
20.750     73.4771     22.57  .Q        .         .         .      V  .
20.833     73.6308     22.33  .Q        .         .         .      V  .
20.917     73.7831     22.10  .Q        .         .         .      V  .
21.000     73.9338     21.88  .Q        .         .         .      V  .
21.083     74.0830     21.66  .Q        .         .         .      V  .
21.167     74.2307     21.45  .Q        .         .         .      V  .
21.250     74.3770     21.25  .Q        .         .         .      V  .
21.333     74.5220     21.05  .Q        .         .         .      V  .
21.417     74.6656     20.85  .Q        .         .         .      V  .
21.500     74.8080     20.67  .Q        .         .         .      V  .
21.583     74.9490     20.48  .Q        .         .         .      V  .
21.667     75.0888     20.30  .Q        .         .         .       V .
21.750     75.2274     20.12  .Q        .         .         .       V .
21.833     75.3648     19.95  Q         .         .         .       V .
21.917     75.5011     19.79  Q         .         .         .       V .
22.000     75.6362     19.62  Q         .         .         .       V .
22.083     75.7703     19.46  Q         .         .         .       V .
22.167     75.9032     19.30  Q         .         .         .       V .
22.250     76.0351     19.15  Q         .         .         .       V .
22.333     76.1660     19.00  Q         .         .         .       V .
22.417     76.2958     18.85  Q         .         .         .       V .
22.500     76.4247     18.71  Q         .         .         .       V .
22.583     76.5526     18.57  Q         .         .         .       V .
22.667     76.6795     18.43  Q         .         .         .       V .
22.750     76.8055     18.30  Q         .         .         .       V .
22.833     76.9307     18.17  Q         .         .         .        V.
22.917     77.0549     18.04  Q         .         .         .        V.
23.000     77.1782     17.91  Q         .         .         .        V.
23.083     77.3007     17.78  Q         .         .         .        V.
23.167     77.4223     17.66  Q         .         .         .        V.
23.250     77.5432     17.54  Q         .         .         .        V.
23.333     77.6632     17.42  Q         .         .         .        V.
23.417     77.7824     17.31  Q         .         .         .        V.
23.500     77.9008     17.20  Q         .         .         .        V.
23.583     78.0185     17.09  Q         .         .         .        V.
23.667     78.1354     16.98  Q         .         .         .        V.
23.750     78.2516     16.87  Q         .         .         .        V.
23.833     78.3670     16.76  Q         .         .         .        V.
23.917     78.4817     16.66  Q         .         .         .        V.
24.000     78.5957     16.56  Q         .         .         .        V.
24.083     78.7059     15.99  Q         .         .         .        V.
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  24.167     78.7972     13.26  Q         .         .         .        V.
  24.250     78.8553      8.44  Q         .         .         .        V.
  24.333     78.8814      3.79  Q         .         .         .        V.
  24.417     78.8917      1.50  Q         .         .         .        V.
  24.500     78.8955      0.56  Q         .         .         .        V.
  24.583     78.8973      0.26  Q         .         .         .        V.
  24.667     78.8982      0.14  Q         .         .         .        V.
  24.750     78.8986      0.05  Q         .         .         .        V.
  24.833     78.8987      0.01  Q         .         .         .        V.
--------------------------------------------------------------------------------
---
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated               Duration
        Peak Flow Rate                    (minutes)
    ======================                =========
               0%                          1490.0
              10%                            95.0
              20%                            40.0
              30%                            30.0
              40%                            25.0
              50%                            20.0
              60%                            15.0
              70%                            15.0
              80%                            10.0
              90%                            10.0


 ****************************************************************************
   FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 5.2
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   >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
 ============================================================================

          THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
          TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
          INTERVALS(Reference: the National Engineering Handbook,
          Hydrology, Chapter 17, page 17-52, August,1972,
          U.S. Department of Commerce).


          ASSUMED REGULAR CHANNEL INFORMATION:
            BASEWIDTH(FT) =   30.00     CHANNEL Z =  2.00
            UPSTREAM ELEVATION(FT) =     938.00
            DOWNSTREAM ELEVATION(FT) =     909.00
            CHANNEL LENGTH(FT) =    2185.72     MANNING'S FACTOR = 0.015
            CONSTANT LOSS RATE(CFS) =    0.00
```

CHANNEL ROUTING COEFFICIENT ESTIMATED:
  MAXIMUM INFLOW(CFS) =   743.08
  AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW =   595.75
  CHANNEL NORMAL VELOCITY FOR Q =   595.75 CFS = 13.17 FPS
  ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.886

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 0.975

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
0.083	0.47	0.23	0.23
0.167	3.11	1.77	1.77
0.250	7.87	5.44	5.44
0.333	12.49	10.11	10.11
0.417	14.80	13.58	13.58
0.500	15.78	15.26	15.26
0.583	16.13	15.94	15.94
0.667	16.29	16.20	16.20
0.750	16.42	16.36	16.36
0.833	16.51	16.47	16.47
0.917	16.58	16.55	16.55
1.000	16.63	16.60	16.60
1.083	16.68	16.65	16.65
1.167	16.73	16.71	16.71
1.250	16.78	16.76	16.76
1.333	16.84	16.81	16.81
1.417	16.89	16.86	16.86
1.500	16.94	16.92	16.92
1.583	17.00	16.97	16.97
1.667	17.05	17.03	17.03
1.750	17.11	17.08	17.08
1.833	17.16	17.14	17.14
1.917	17.22	17.19	17.19
2.000	17.28	17.25	17.25
2.083	17.33	17.31	17.31
2.167	17.39	17.36	17.36
2.250	17.45	17.42	17.42
2.333	17.51	17.48	17.48
2.417	17.57	17.54	17.54
2.500	17.63	17.60	17.60
2.583	17.69	17.66	17.66
2.667	17.75	17.72	17.72
2.750	17.81	17.78	17.78
2.833	17.87	17.84	17.84

2.917	17.94	17.90	17.90
3.000	18.00	17.97	17.97
3.083	18.06	18.03	18.03
3.167	18.13	18.10	18.10
3.250	18.19	18.16	18.16
3.333	18.26	18.23	18.23
3.417	18.33	18.29	18.29
3.500	18.40	18.36	18.36
3.583	18.46	18.43	18.43
3.667	18.53	18.50	18.50
3.750	18.60	18.56	18.56
3.833	18.67	18.63	18.63
3.917	18.74	18.71	18.71
4.000	18.81	18.78	18.78
4.083	18.89	18.85	18.85
4.167	18.96	18.92	18.92
4.250	19.03	19.00	19.00
4.333	19.11	19.07	19.07
4.417	19.18	19.14	19.14
4.500	19.26	19.22	19.22
4.583	19.34	19.30	19.30
4.667	19.42	19.38	19.38
4.750	19.49	19.45	19.45
4.833	19.58	19.53	19.53
4.917	19.66	19.61	19.61
5.000	19.74	19.70	19.70
5.083	19.82	19.78	19.78
5.167	19.90	19.86	19.86
5.250	19.99	19.95	19.95
5.333	20.08	20.03	20.03
5.417	20.16	20.12	20.12
5.500	20.25	20.20	20.20
5.583	20.34	20.29	20.29
5.667	20.43	20.38	20.38
5.750	20.52	20.47	20.47
5.833	20.61	20.56	20.56
5.917	20.70	20.66	20.66
6.000	20.80	20.75	20.75
6.083	20.89	20.85	20.85
6.167	20.99	20.94	20.94
6.250	21.09	21.04	21.04
6.333	21.19	21.14	21.14
6.417	21.29	21.24	21.24
6.500	21.39	21.34	21.34
6.583	21.50	21.44	21.44
6.667	21.60	21.55	21.55
6.750	21.71	21.65	21.65
6.833	21.82	21.76	21.76
6.917	21.92	21.87	21.87
7.000	22.04	21.98	21.98

7.083	22.15	22.09	22.09
7.167	22.26	22.20	22.20
7.250	22.38	22.32	22.32
7.333	22.50	22.44	22.44
7.417	22.61	22.55	22.55
7.500	22.74	22.67	22.67
7.583	22.86	22.80	22.80
7.667	22.98	22.92	22.92
7.750	23.11	23.04	23.04
7.833	23.24	23.17	23.17
7.917	23.37	23.30	23.30
8.000	23.50	23.43	23.43
8.083	23.63	23.57	23.57
8.167	23.77	23.70	23.70
8.250	23.91	23.84	23.84
8.333	24.05	23.98	23.98
8.417	24.20	24.12	24.12
8.500	24.34	24.27	24.27
8.583	24.49	24.41	24.41
8.667	24.64	24.56	24.56
8.750	24.79	24.72	24.72
8.833	24.95	24.87	24.87
8.917	25.11	25.03	25.03
9.000	25.27	25.19	25.19
9.083	25.44	25.35	25.35
9.167	25.60	25.52	25.52
9.250	25.77	25.69	25.69
9.333	25.95	25.86	25.86
9.417	26.12	26.03	26.03
9.500	26.31	26.21	26.21
9.583	26.49	26.40	26.40
9.667	26.68	26.58	26.58
9.750	26.87	26.77	26.77
9.833	27.07	26.97	26.97
9.917	27.26	27.16	27.16
10.000	27.47	27.36	27.36
10.083	27.68	27.57	27.57
10.167	27.89	27.78	27.78
10.250	28.10	27.99	27.99
10.333	28.33	28.21	28.21
10.417	28.55	28.44	28.44
10.500	28.79	28.67	28.67
10.583	29.02	28.90	28.90
10.667	29.27	29.14	29.14
10.750	29.51	29.38	29.38
10.833	29.77	29.64	29.64
10.917	30.02	29.89	29.89
11.000	30.29	30.16	30.16
11.083	30.56	30.42	30.42
11.167	30.85	30.70	30.70

11.250	31.13	30.98	30.98
11.333	31.43	31.28	31.28
11.417	31.73	31.57	31.57
11.500	32.04	31.88	31.88
11.583	32.36	32.20	32.20
11.667	32.69	32.52	32.52
11.750	33.03	32.85	32.85
11.833	33.38	33.20	33.20
11.917	33.73	33.55	33.55
12.000	34.10	33.91	33.91
12.083	34.23	34.16	34.16
12.167	33.23	33.73	33.73
12.250	31.12	32.19	32.19
12.333	29.09	30.14	30.14
12.417	28.28	28.72	28.72
12.500	28.20	28.25	28.25
12.583	28.46	28.33	28.33
12.667	28.84	28.65	28.65
12.750	29.25	29.04	29.04
12.833	29.70	29.47	29.47
12.917	30.18	29.93	29.93
13.000	30.69	30.43	30.43
13.083	31.22	30.95	30.95
13.167	31.78	31.49	31.49
13.250	32.36	32.06	32.06
13.333	32.97	32.66	32.66
13.417	33.61	33.28	33.28
13.500	34.28	33.93	33.93
13.583	34.98	34.62	34.62
13.667	35.73	35.35	35.35
13.750	36.51	36.11	36.11
13.833	37.34	36.91	36.91
13.917	38.21	37.76	37.76
14.000	39.15	38.66	38.66
14.083	40.27	39.69	39.69
14.167	42.17	41.20	41.20
14.250	44.80	43.45	43.45
14.333	47.50	46.11	46.11
14.417	49.55	48.48	48.48
14.500	51.31	50.40	50.40
14.583	52.97	52.11	52.11
14.667	54.74	53.83	53.83
14.750	56.61	55.64	55.64
14.833	58.68	57.61	57.61
14.917	60.90	59.76	59.76
15.000	63.40	62.12	62.12
15.083	66.14	64.73	64.73
15.167	69.26	67.65	67.65
15.250	72.73	70.95	70.95
15.333	76.79	74.70	74.70

15.417	81.40	79.03	79.03
15.500	86.98	84.11	84.11
15.583	93.60	90.20	90.20
15.667	101.87	97.62	97.62
15.750	112.74	107.16	107.16
15.833	130.30	121.32	121.32
15.917	157.41	143.54	143.54
16.000	203.62	180.02	180.02
16.083	313.54	257.66	257.66
16.167	559.78	434.51	434.51
16.250	743.08	647.71	647.71
16.333	674.38	706.51	706.51
16.417	405.76	541.69	541.69
16.500	235.07	324.37	324.37
16.583	144.88	192.51	192.51
16.667	108.36	127.94	127.94
16.750	90.91	100.18	100.18
16.833	77.46	84.46	84.46
16.917	67.68	72.77	72.77
17.000	60.88	64.43	64.43
17.083	56.29	58.69	58.69
17.167	51.83	54.14	54.14
17.250	47.31	49.64	49.64
17.333	43.29	45.37	45.37
17.417	40.38	41.90	41.90
17.500	38.17	39.32	39.32
17.583	36.38	37.31	37.31
17.667	34.83	35.63	35.63
17.750	33.44	34.16	34.16
17.833	32.19	32.83	32.83
17.917	31.05	31.64	31.64
18.000	30.02	30.55	30.55
18.083	29.31	29.68	29.68
18.167	29.82	29.58	29.58
18.250	31.49	30.65	30.65
18.333	33.12	32.28	32.28
18.417	33.55	33.31	33.31
18.500	33.31	33.42	33.42
18.583	32.77	33.04	33.04
18.667	32.17	32.48	32.48
18.750	31.59	31.89	31.89
18.833	31.02	31.31	31.31
18.917	30.46	30.75	30.75
19.000	29.93	30.20	30.20
19.083	29.42	29.68	29.68
19.167	28.93	29.18	29.18
19.250	28.47	28.71	28.71
19.333	28.02	28.25	28.25
19.417	27.59	27.81	27.81
19.500	27.19	27.40	27.40

19.583	26.79	27.00	27.00
19.667	26.42	26.61	26.61
19.750	26.06	26.24	26.24
19.833	25.71	25.89	25.89
19.917	25.37	25.54	25.54
20.000	25.05	25.21	25.21
20.083	24.73	24.89	24.89
20.167	24.43	24.59	24.59
20.250	24.14	24.29	24.29
20.333	23.85	24.00	24.00
20.417	23.58	23.72	23.72
20.500	23.32	23.45	23.45
20.583	23.06	23.19	23.19
20.667	22.81	22.94	22.94
20.750	22.57	22.69	22.69
20.833	22.33	22.45	22.45
20.917	22.10	22.22	22.22
21.000	21.88	21.99	21.99
21.083	21.66	21.78	21.78
21.167	21.45	21.56	21.56
21.250	21.25	21.35	21.35
21.333	21.05	21.15	21.15
21.417	20.85	20.96	20.96
21.500	20.67	20.76	20.76
21.583	20.48	20.58	20.58
21.667	20.30	20.39	20.39
21.750	20.12	20.22	20.22
21.833	19.95	20.04	20.04
21.917	19.79	19.87	19.87
22.000	19.62	19.71	19.71
22.083	19.46	19.54	19.54
22.167	19.30	19.39	19.39
22.250	19.15	19.23	19.23
22.333	19.00	19.08	19.08
22.417	18.85	18.93	18.93
22.500	18.71	18.79	18.79
22.583	18.57	18.64	18.64
22.667	18.43	18.50	18.50
22.750	18.30	18.37	18.37
22.833	18.17	18.23	18.23
22.917	18.04	18.10	18.10
23.000	17.91	17.97	17.97
23.083	17.78	17.85	17.85
23.167	17.66	17.73	17.73
23.250	17.54	17.60	17.60
23.333	17.42	17.49	17.49
23.417	17.31	17.37	17.37
23.500	17.20	17.25	17.25
23.583	17.09	17.14	17.14
23.667	16.98	17.03	17.03

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         23.750        16.87       16.92       16.92
         23.833        16.76       16.82       16.82
         23.917        16.66       16.71       16.71
         24.000        16.56       16.61       16.61
================================================================================
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =     78.899 AF
    OUTFLOW VOLUME =     78.899 AF
    LOSS    VOLUME =      0.000 AF


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     428.580 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.240 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.348
         LOW LOSS FRACTION = 0.475
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.58
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.75
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.10
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.38
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.52

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.981
          30-MINUTE FACTOR = 0.981
           1-HOUR FACTOR = 0.981
           3-HOUR FACTOR = 0.997
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  34.722
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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.308	119.610
2	14.779	646.413
3	38.225	1215.257
4	66.233	1451.644
5	84.561	949.989
6	93.250	450.344
7	97.213	205.452
8	98.477	65.467
9	99.128	33.747
10	99.651	27.130
11	99.913	13.565
12	100.000	4.521

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 38.6408
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 51.2570

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	125.0	250.0	375.0	500.0
0.083	0.0016	0.24	Q	.	.	.	.
0.167	0.0122	1.53	Q	.	.	.	.
0.250	0.0395	3.96	Q	.	.	.	.
0.333	0.0868	6.87	Q	.	.	.	.
0.417	0.1473	8.79	Q	.	.	.	.
0.500	0.2142	9.71	Q	.	.	.	.
0.583	0.2841	10.15	Q	.	.	.	.
0.667	0.3552	10.31	Q	.	.	.	.
0.750	0.4269	10.41	Q	.	.	.	.
0.833	0.4992	10.50	Q	.	.	.	.
0.917	0.5719	10.56	Q	.	.	.	.
1.000	0.6449	10.60	Q	.	.	.	.
1.083	0.7181	10.63	Q	.	.	.	.
1.167	0.7916	10.67	Q	.	.	.	.
1.250	0.8653	10.70	Q	.	.	.	.
1.333	0.9392	10.73	Q	.	.	.	.
1.417	1.0133	10.77	Q	.	.	.	.
1.500	1.0877	10.80	Q	.	.	.	.
1.583	1.1623	10.83	Q	.	.	.	.
1.667	1.2372	10.87	Q	.	.	.	.
1.750	1.3123	10.90	QV	.	.	.	.
1.833	1.3876	10.94	QV	.	.	.	.
1.917	1.4632	10.98	QV	.	.	.	.
2.000	1.5390	11.01	QV	.	.	.	.
2.083	1.6151	11.05	QV	.	.	.	.
2.167	1.6914	11.08	QV	.	.	.	.
2.250	1.7680	11.12	QV	.	.	.	.
2.333	1.8449	11.16	QV	.	.	.	.
2.417	1.9220	11.20	QV	.	.	.	.
2.500	1.9994	11.23	QV	.	.	.	.
2.583	2.0770	11.27	QV	.	.	.	.
2.667	2.1549	11.31	QV	.	.	.	.
2.750	2.2331	11.35	QV	.	.	.	.
2.833	2.3115	11.39	QV	.	.	.	.
2.917	2.3903	11.43	QV	.	.	.	.
3.000	2.4693	11.47	QV	.	.	.	.
3.083	2.5485	11.51	QV	.	.	.	.
3.167	2.6281	11.55	Q V	.	.	.	.
3.250	2.7080	11.59	Q V	.	.	.	.

3.333	2.7881	11.64	Q V	.	.	.	.
3.417	2.8685	11.68	Q V	.	.	.	.
3.500	2.9493	11.72	Q V	.	.	.	.
3.583	3.0303	11.76	Q V	.	.	.	.
3.667	3.1116	11.81	Q V	.	.	.	.
3.750	3.1933	11.85	Q V	.	.	.	.
3.833	3.2752	11.90	Q V	.	.	.	.
3.917	3.3574	11.94	Q V	.	.	.	.
4.000	3.4400	11.99	Q V	.	.	.	.
4.083	3.5229	12.03	Q V	.	.	.	.
4.167	3.6061	12.08	Q V	.	.	.	.
4.250	3.6896	12.13	Q V	.	.	.	.
4.333	3.7735	12.18	Q V	.	.	.	.
4.417	3.8577	12.22	Q V	.	.	.	.
4.500	3.9422	12.27	Q V	.	.	.	.
4.583	4.0270	12.32	Q V	.	.	.	.
4.667	4.1122	12.37	Q V	.	.	.	.
4.750	4.1978	12.42	Q V	.	.	.	.
4.833	4.2837	12.47	Q V	.	.	.	.
4.917	4.3699	12.52	.Q V	.	.	.	.
5.000	4.4565	12.58	.Q V	.	.	.	.
5.083	4.5435	12.63	.Q V	.	.	.	.
5.167	4.6308	12.68	.Q V	.	.	.	.
5.250	4.7186	12.74	.Q V	.	.	.	.
5.333	4.8066	12.79	.Q V	.	.	.	.
5.417	4.8951	12.84	.Q V	.	.	.	.
5.500	4.9840	12.90	.Q V	.	.	.	.
5.583	5.0732	12.96	.Q V	.	.	.	.
5.667	5.1628	13.01	.Q V	.	.	.	.
5.750	5.2529	13.07	.Q V	.	.	.	.
5.833	5.3433	13.13	.Q V	.	.	.	.
5.917	5.4341	13.19	.Q V	.	.	.	.
6.000	5.5254	13.25	.Q V	.	.	.	.
6.083	5.6171	13.31	.Q V	.	.	.	.
6.167	5.7092	13.37	.Q V	.	.	.	.
6.250	5.8017	13.44	.Q V	.	.	.	.
6.333	5.8947	13.50	.Q V	.	.	.	.
6.417	5.9881	13.56	.Q V	.	.	.	.
6.500	6.0819	13.63	.Q V	.	.	.	.
6.583	6.1762	13.69	.Q V	.	.	.	.
6.667	6.2710	13.76	.Q V	.	.	.	.
6.750	6.3662	13.83	.Q V	.	.	.	.
6.833	6.4619	13.90	.Q V	.	.	.	.
6.917	6.5581	13.97	.Q V	.	.	.	.
7.000	6.6548	14.04	.Q V	.	.	.	.
7.083	6.7519	14.11	.Q V	.	.	.	.
7.167	6.8496	14.18	.Q V	.	.	.	.
7.250	6.9477	14.25	.Q V	.	.	.	.
7.333	7.0464	14.33	.Q V	.	.	.	.
7.417	7.1456	14.40	.Q V	.	.	.	.

7.500	7.2453	14.48	.Q	V	.	.	.	.
7.583	7.3456	14.56	.Q	V	.	.	.	.
7.667	7.4464	14.64	.Q	V	.	.	.	.
7.750	7.5478	14.72	.Q	V	.	.	.	.
7.833	7.6497	14.80	.Q	V	.	.	.	.
7.917	7.7522	14.88	.Q	V	.	.	.	.
8.000	7.8553	14.97	.Q	V	.	.	.	.
8.083	7.9589	15.05	.Q	V	.	.	.	.
8.167	8.0632	15.14	.Q	V	.	.	.	.
8.250	8.1680	15.23	.Q	V	.	.	.	.
8.333	8.2735	15.32	.Q	V	.	.	.	.
8.417	8.3796	15.41	.Q	V	.	.	.	.
8.500	8.4864	15.50	.Q	V	.	.	.	.
8.583	8.5937	15.59	.Q	V	.	.	.	.
8.667	8.7018	15.69	.Q	V	.	.	.	.
8.750	8.8105	15.79	.Q	V	.	.	.	.
8.833	8.9199	15.89	.Q	V	.	.	.	.
8.917	9.0300	15.99	.Q	V	.	.	.	.
9.000	9.1408	16.09	.Q	V	.	.	.	.
9.083	9.2523	16.19	.Q	V	.	.	.	.
9.167	9.3646	16.30	.Q	V	.	.	.	.
9.250	9.4776	16.41	.Q	V	.	.	.	.
9.333	9.5914	16.52	.Q	V	.	.	.	.
9.417	9.7059	16.63	.Q	V	.	.	.	.
9.500	9.8212	16.75	.Q	V	.	.	.	.
9.583	9.9374	16.86	.Q	V	.	.	.	.
9.667	10.0543	16.98	.Q	V	.	.	.	.
9.750	10.1721	17.10	.Q	V	.	.	.	.
9.833	10.2907	17.23	.Q	V	.	.	.	.
9.917	10.4102	17.35	.Q	V	.	.	.	.
10.000	10.5306	17.48	.Q	V	.	.	.	.
10.083	10.6519	17.61	.Q	V	.	.	.	.
10.167	10.7742	17.75	.Q	V	.	.	.	.
10.250	10.8973	17.88	.Q	V	.	.	.	.
10.333	11.0215	18.03	.Q	V	.	.	.	.
10.417	11.1466	18.17	.Q	V	.	.	.	.
10.500	11.2727	18.32	.Q	V	.	.	.	.
10.583	11.3999	18.46	.Q	V	.	.	.	.
10.667	11.5281	18.62	.Q	V	.	.	.	.
10.750	11.6574	18.77	.Q	V	.	.	.	.
10.833	11.7879	18.94	.Q	V	.	.	.	.
10.917	11.9194	19.10	.Q	V	.	.	.	.
11.000	12.0521	19.27	.Q	V	.	.	.	.
11.083	12.1860	19.44	.Q	V	.	.	.	.
11.167	12.3211	19.62	.Q	V	.	.	.	.
11.250	12.4575	19.80	.Q	V	.	.	.	.
11.333	12.5952	19.99	.Q	V	.	.	.	.
11.417	12.7341	20.18	.Q	V	.	.	.	.
11.500	12.8744	20.38	.Q	V	.	.	.	.
11.583	13.0161	20.58	.Q	V	.	.	.	.

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11.667     13.1593     20.78  .Q        V         .         .         .
11.750     13.3039     21.00  .Q        V         .         .         .
11.833     13.4500     21.22  .Q        V         .         .         .
11.917     13.5977     21.44  .Q        V         .         .         .
12.000     13.7470     21.68  .Q        V         .         .         .
12.083     13.8971     21.79  .Q        V         .         .         .
12.167     14.0441     21.35  .Q        V         .         .         .
12.250     14.1840     20.31  .Q        .V        .         .         .
12.333     14.3150     19.02  .Q        .V        .         .         .
12.417     14.4408     18.27  .Q        .V        .         .         .
12.500     14.5651     18.05  .Q        .V        .         .         .
12.583     14.6898     18.10  .Q        .V        .         .         .
12.667     14.8158     18.30  .Q        .V        .         .         .
12.750     14.9436     18.55  .Q        .V        .         .         .
12.833     15.0732     18.82  .Q        .V        .         .         .
12.917     15.2048     19.11  .Q        .V        .         .         .
13.000     15.3387     19.43  .Q        .V        .         .         .
13.083     15.4748     19.76  .Q        . V       .         .         .
13.167     15.6133     20.11  .Q        . V       .         .         .
13.250     15.7543     20.48  .Q        . V       .         .         .
13.333     15.8980     20.86  .Q        . V       .         .         .
13.417     16.0444     21.26  .Q        . V       .         .         .
13.500     16.1937     21.68  .Q        . V       .         .         .
13.583     16.3461     22.12  .Q        . V       .         .         .
13.667     16.5016     22.59  .Q        . V       .         .         .
13.750     16.6606     23.08  .Q        .  V      .         .         .
13.833     16.8231     23.60  .Q        .  V      .         .         .
13.917     16.9893     24.14  .Q        .  V      .         .         .
14.000     17.1596     24.72  .Q        .  V      .         .         .
14.083     17.3345     25.40  . Q       .  V      .         .         .
14.167     17.5165     26.42  . Q       .  V      .         .         .
14.250     17.7079     27.79  . Q       .  V      .         .         .
14.333     17.9101     29.36  . Q       .  V      .         .         .
14.417     18.1215     30.70  . Q       .   V     .         .         .
14.500     18.3410     31.86  . Q       .   V     .         .         .
14.583     18.5678     32.94  . Q       .   V     .         .         .
14.667     18.8022     34.04  . Q       .   V     .         .         .
14.750     19.0446     35.20  . Q       .   V     .         .         .
14.833     19.2959     36.48  . Q       .    V    .         .         .
14.917     19.5566     37.85  .  Q      .    V    .         .         .
15.000     19.8278     39.39  .  Q      .    V    .         .         .
15.083     20.1107     41.07  .  Q      .    V    .         .         .
15.167     20.4067     42.98  .  Q      .    V    .         .         .
15.250     20.7173     45.10  .  Q      .     V   .         .         .
15.333     21.0448     47.56  .  Q      .     V   .         .         .
15.417     21.3918     50.39  .   Q     .     V   .         .         .
15.500     21.7629     53.87  .   Q     .     V   .         .         .
15.583     22.1629     58.08  .   Q     .      V  .         .         .
15.667     22.5989     63.31  .    Q    .      V  .         .         .
15.750     23.0805     69.93  .    Q    .       V .         .         .
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15.833	23.6315	80.01	. Q . V . . .
15.917	24.2874	95.23	. Q . V . . .
16.000	25.1229	121.33	. Q. V. . .
16.083	26.3940	184.56	. . Q V . .
16.167	28.6402	326.14	. . . V Q . .
16.250	31.7537	452.08	. . . V . Q .
16.333	35.0231	474.72	. . . V . Q .
16.417	37.3424	336.76	. . . Q V. . .
16.500	38.7311	201.65	. . Q . V . .
16.583	39.5992	126.04	. Q . V . .
16.667	40.1596	81.37	. Q . . .V . .
16.750	40.6017	64.19	. Q . . .V . .
16.833	40.9826	55.31	. Q . . .V . .
16.917	41.3064	47.01	. Q . . . V . .
17.000	41.5884	40.95	. Q . . . V . .
17.083	41.8414	36.74	. Q . . . V . .
17.167	42.0742	33.80	. Q . . . V . .
17.250	42.2879	31.03	. Q . . . V . .
17.333	42.4840	28.47	. Q . . . V . .
17.417	42.6662	26.45	. Q . . . V . .
17.500	42.8377	24.90	.Q . . . V . .
17.583	43.0005	23.65	.Q . . . V . .
17.667	43.1562	22.60	.Q . . . V . .
17.750	43.3054	21.67	.Q . . . V . .
17.833	43.4488	20.83	.Q . . . V . .
17.917	43.5870	20.07	.Q . . . V . .
18.000	43.7206	19.39	.Q . . . V . .
18.083	43.8506	18.88	.Q . . . V . .
18.167	43.9814	18.99	.Q . . . V . .
18.250	44.1173	19.73	.Q . . . V . .
18.333	44.2602	20.75	.Q . . . V . .
18.417	44.4066	21.26	.Q . . . V . .
18.500	44.5529	21.25	.Q . . . V . .
18.583	44.6977	21.02	.Q . . . V . .
18.667	44.8400	20.66	.Q . . . V . .
18.750	44.9797	20.29	.Q . . . V . .
18.833	45.1169	19.93	.Q . . . V . .
18.917	45.2518	19.58	.Q . . . V . .
19.000	45.3842	19.23	.Q . . . V . .
19.083	45.5144	18.90	.Q . . . V . .
19.167	45.6424	18.58	.Q . . . V . .
19.250	45.7683	18.28	.Q . . . V . .
19.333	45.8922	17.99	.Q . . . V . .
19.417	46.0142	17.72	.Q . . . V . .
19.500	46.1344	17.45	.Q . . . V . .
19.583	46.2529	17.20	.Q . . . V . .
19.667	46.3696	16.95	.Q . . . V . .
19.750	46.4848	16.72	.Q . . . V . .
19.833	46.5983	16.49	.Q . . . V . .
19.917	46.7104	16.27	.Q . . . V . .

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20.000     46.8211     16.06  .Q        .         .         .     V   .
20.083     46.9303     15.86  .Q        .         .         .     V   .
20.167     47.0382     15.67  .Q        .         .         .     V   .
20.250     47.1448     15.48  .Q        .         .         .     V   .
20.333     47.2501     15.29  .Q        .         .         .     V   .
20.417     47.3542     15.12  .Q        .         .         .     V   .
20.500     47.4571     14.94  .Q        .         .         .      V  .
20.583     47.5589     14.78  .Q        .         .         .      V  .
20.667     47.6596     14.62  .Q        .         .         .      V  .
20.750     47.7592     14.46  .Q        .         .         .      V  .
20.833     47.8577     14.31  .Q        .         .         .      V  .
20.917     47.9552     14.16  .Q        .         .         .      V  .
21.000     48.0518     14.02  .Q        .         .         .      V  .
21.083     48.1474     13.88  .Q        .         .         .      V  .
21.167     48.2420     13.74  .Q        .         .         .      V  .
21.250     48.3358     13.61  .Q        .         .         .      V  .
21.333     48.4286     13.48  .Q        .         .         .      V  .
21.417     48.5206     13.36  .Q        .         .         .      V  .
21.500     48.6117     13.23  .Q        .         .         .      V  .
21.583     48.7021     13.12  .Q        .         .         .       V .
21.667     48.7916     13.00  .Q        .         .         .       V .
21.750     48.8803     12.89  .Q        .         .         .       V .
21.833     48.9683     12.78  .Q        .         .         .       V .
21.917     49.0556     12.67  .Q        .         .         .       V .
22.000     49.1421     12.56  .Q        .         .         .       V .
22.083     49.2279     12.46  Q         .         .         .       V .
22.167     49.3130     12.36  Q         .         .         .       V .
22.250     49.3974     12.26  Q         .         .         .       V .
22.333     49.4812     12.16  Q         .         .         .       V .
22.417     49.5643     12.07  Q         .         .         .       V .
22.500     49.6468     11.98  Q         .         .         .       V .
22.583     49.7286     11.89  Q         .         .         .       V .
22.667     49.8099     11.80  Q         .         .         .       V .
22.750     49.8905     11.71  Q         .         .         .       V .
22.833     49.9706     11.63  Q         .         .         .       V .
22.917     50.0501     11.54  Q         .         .         .        V.
23.000     50.1290     11.46  Q         .         .         .        V.
23.083     50.2074     11.38  Q         .         .         .        V.
23.167     50.2852     11.30  Q         .         .         .        V.
23.250     50.3625     11.22  Q         .         .         .        V.
23.333     50.4393     11.15  Q         .         .         .        V.
23.417     50.5155     11.07  Q         .         .         .        V.
23.500     50.5913     11.00  Q         .         .         .        V.
23.583     50.6666     10.93  Q         .         .         .        V.
23.667     50.7414     10.86  Q         .         .         .        V.
23.750     50.8157     10.79  Q         .         .         .        V.
23.833     50.8895     10.72  Q         .         .         .        V.
23.917     50.9629     10.66  Q         .         .         .        V.
24.000     51.0358     10.59  Q         .         .         .        V.
24.083     51.1067     10.29  Q         .         .         .        V.
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  24.167     51.1682      8.94  Q         .         .         .         V.
  24.250     51.2127      6.46  Q         .         .         .         V.
  24.333     51.2370      3.53  Q         .         .         .         V.
  24.417     51.2481      1.61  Q         .         .         .         V.
  24.500     51.2530      0.71  Q         .         .         .         V.
  24.583     51.2550      0.29  Q         .         .         .         V.
  24.667     51.2561      0.16  Q         .         .         .         V.
  24.750     51.2567      0.09  Q         .         .         .         V.
  24.833     51.2569      0.04  Q         .         .         .         V.
  24.917     51.2570      0.01  Q         .         .         .          V
--------------------------------------------------------------------------------
---
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
              0%                            1495.0
             10%                              95.0
             20%                              45.0
             30%                              30.0
             40%                              25.0
             50%                              20.0
             60%                              20.0
             70%                              15.0
             80%                              10.0
             90%                              10.0


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


 ****************************************************************************
   FLOW PROCESS FROM NODE    101.00 TO NODE    101.00 IS CODE =  11
 ----------------------------------------------------------------------------
   >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
 ============================================================================

            STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
         (Note: Time indicated is at END of Each Unit Intervals)
 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      300.0     600.0     900.0    1200.0
 ----------------------------------------------------------------------------
    0.083      0.0032      0.47  Q         .         .         .         .
```

0.167	0.0260	3.31	Q	.	.	.	.
0.250	0.0908	9.40	Q	.	.	.	.
0.333	0.2077	16.98	Q	.	.	.	.
0.417	0.3617	22.37	Q	.	.	.	.
0.500	0.5337	24.97	Q	.	.	.	.
0.583	0.7134	26.09	Q	.	.	.	.
0.667	0.8961	26.52	Q	.	.	.	.
0.750	1.0804	26.77	Q	.	.	.	.
0.833	1.2661	26.97	Q	.	.	.	.
0.917	1.4528	27.10	Q	.	.	.	.
1.000	1.6401	27.20	Q	.	.	.	.
1.083	1.8281	27.29	Q	.	.	.	.
1.167	2.0166	27.37	Q	.	.	.	.
1.250	2.2057	27.46	Q	.	.	.	.
1.333	2.3953	27.54	Q	.	.	.	.
1.417	2.5856	27.63	Q	.	.	.	.
1.500	2.7765	27.72	Q	.	.	.	.
1.583	2.9680	27.80	Q	.	.	.	.
1.667	3.1601	27.89	Q	.	.	.	.
1.750	3.3528	27.98	QV	.	.	.	.
1.833	3.5462	28.08	QV	.	.	.	.
1.917	3.7402	28.17	QV	.	.	.	.
2.000	3.9348	28.26	QV	.	.	.	.
2.083	4.1301	28.35	QV	.	.	.	.
2.167	4.3260	28.45	QV	.	.	.	.
2.250	4.5226	28.54	QV	.	.	.	.
2.333	4.7198	28.64	QV	.	.	.	.
2.417	4.9177	28.73	QV	.	.	.	.
2.500	5.1163	28.83	QV	.	.	.	.
2.583	5.3155	28.93	QV	.	.	.	.
2.667	5.5154	29.03	QV	.	.	.	.
2.750	5.7161	29.13	QV	.	.	.	.
2.833	5.9174	29.23	QV	.	.	.	.
2.917	6.1194	29.33	QV	.	.	.	.
3.000	6.3222	29.44	QV	.	.	.	.
3.083	6.5256	29.54	Q V	.	.	.	.
3.167	6.7298	29.65	Q V	.	.	.	.
3.250	6.9347	29.76	Q V	.	.	.	.
3.333	7.1404	29.86	Q V	.	.	.	.
3.417	7.3468	29.97	Q V	.	.	.	.
3.500	7.5540	30.08	.QV	.	.	.	.
3.583	7.7619	30.19	.QV	.	.	.	.
3.667	7.9707	30.30	.QV	.	.	.	.
3.750	8.1801	30.42	.QV	.	.	.	.
3.833	8.3904	30.53	.QV	.	.	.	.
3.917	8.6015	30.65	.QV	.	.	.	.
4.000	8.8134	30.77	.QV	.	.	.	.
4.083	9.0261	30.88	.QV	.	.	.	.
4.167	9.2396	31.00	.QV	.	.	.	.
4.250	9.4539	31.12	.QV	.	.	.	.

4.333	9.6691	31.25	.QV	.	.	.	.
4.417	9.8852	31.37	.Q V	.	.	.	.
4.500	10.1020	31.49	.Q V	.	.	.	.
4.583	10.3198	31.62	.Q V	.	.	.	.
4.667	10.5384	31.75	.Q V	.	.	.	.
4.750	10.7580	31.88	.Q V	.	.	.	.
4.833	10.9784	32.01	.Q V	.	.	.	.
4.917	11.1997	32.14	.Q V	.	.	.	.
5.000	11.4220	32.27	.Q V	.	.	.	.
5.083	11.6452	32.41	.Q V	.	.	.	.
5.167	11.8693	32.54	.Q V	.	.	.	.
5.250	12.0944	32.68	.Q V	.	.	.	.
5.333	12.3204	32.82	.Q V	.	.	.	.
5.417	12.5474	32.96	.Q V	.	.	.	.
5.500	12.7754	33.10	.Q V	.	.	.	.
5.583	13.0044	33.25	.Q V	.	.	.	.
5.667	13.2344	33.40	.Q V	.	.	.	.
5.750	13.4654	33.54	.Q V	.	.	.	.
5.833	13.6975	33.70	.Q V	.	.	.	.
5.917	13.9306	33.85	.Q V	.	.	.	.
6.000	14.1648	34.00	.Q V	.	.	.	.
6.083	14.4000	34.16	.Q V	.	.	.	.
6.167	14.6363	34.32	.Q V	.	.	.	.
6.250	14.8738	34.47	.Q V	.	.	.	.
6.333	15.1123	34.64	.Q V	.	.	.	.
6.417	15.3520	34.80	.Q V	.	.	.	.
6.500	15.5928	34.97	.Q V	.	.	.	.
6.583	15.8348	35.14	.Q V	.	.	.	.
6.667	16.0780	35.31	.Q V	.	.	.	.
6.750	16.3223	35.48	.Q V	.	.	.	.
6.833	16.5679	35.66	.Q V	.	.	.	.
6.917	16.8147	35.83	.Q V	.	.	.	.
7.000	17.0627	36.02	.Q V	.	.	.	.
7.083	17.3120	36.20	.Q V	.	.	.	.
7.167	17.5626	36.38	.Q V	.	.	.	.
7.250	17.8145	36.57	.Q V	.	.	.	.
7.333	18.0677	36.76	.Q V	.	.	.	.
7.417	18.3222	36.96	.Q V	.	.	.	.
7.500	18.5781	37.15	.Q V	.	.	.	.
7.583	18.8353	37.35	.Q V	.	.	.	.
7.667	19.0940	37.56	.Q V	.	.	.	.
7.750	19.3540	37.76	.Q V	.	.	.	.
7.833	19.6155	37.97	.Q V	.	.	.	.
7.917	19.8785	38.18	.Q V	.	.	.	.
8.000	20.1430	38.40	.Q V	.	.	.	.
8.083	20.4089	38.62	.Q V	.	.	.	.
8.167	20.6764	38.84	.Q V	.	.	.	.
8.250	20.9454	39.06	.Q V	.	.	.	.
8.333	21.2161	39.30	.Q V	.	.	.	.
8.417	21.4883	39.53	.Q V	.	.	.	.

8.500	21.7622	39.77	.Q	V	.	.	.	.
8.583	22.0377	40.01	.Q	V	.	.	.	.
8.667	22.3149	40.25	.Q	V	.	.	.	.
8.750	22.5938	40.50	.Q	V	.	.	.	.
8.833	22.8745	40.76	.Q	V	.	.	.	.
8.917	23.1570	41.01	.Q	V	.	.	.	.
9.000	23.4413	41.28	.Q	V	.	.	.	.
9.083	23.7274	41.54	.Q	V	.	.	.	.
9.167	24.0154	41.82	.Q	V	.	.	.	.
9.250	24.3053	42.09	.Q	V	.	.	.	.
9.333	24.5971	42.38	.Q	V	.	.	.	.
9.417	24.8910	42.66	.Q	V	.	.	.	.
9.500	25.1868	42.96	.Q	V	.	.	.	.
9.583	25.4848	43.26	.Q	V	.	.	.	.
9.667	25.7848	43.56	.Q	V	.	.	.	.
9.750	26.0869	43.87	.Q	V	.	.	.	.
9.833	26.3913	44.19	.Q	V	.	.	.	.
9.917	26.6979	44.51	.Q	V	.	.	.	.
10.000	27.0067	44.85	.Q	V	.	.	.	.
10.083	27.3179	45.18	.Q	V	.	.	.	.
10.167	27.6314	45.53	.Q	V	.	.	.	.
10.250	27.9474	45.88	.Q	V	.	.	.	.
10.333	28.2658	46.24	.Q	V	.	.	.	.
10.417	28.5868	46.60	.Q	V	.	.	.	.
10.500	28.9104	46.98	.Q	V	.	.	.	.
10.583	29.2366	47.36	.Q	V	.	.	.	.
10.667	29.5655	47.76	.Q	V	.	.	.	.
10.750	29.8972	48.16	.Q	V	.	.	.	.
10.833	30.2317	48.57	.Q	V	.	.	.	.
10.917	30.5691	48.99	.Q	V	.	.	.	.
11.000	30.9095	49.42	.Q	V	.	.	.	.
11.083	31.2529	49.87	.Q	V	.	.	.	.
11.167	31.5995	50.32	.Q	V	.	.	.	.
11.250	31.9492	50.78	.Q	V	.	.	.	.
11.333	32.3023	51.26	.Q	V	.	.	.	.
11.417	32.6587	51.75	.Q	V	.	.	.	.
11.500	33.0186	52.26	.Q	V	.	.	.	.
11.583	33.3820	52.77	.Q	V	.	.	.	.
11.667	33.7491	53.30	.Q	V	.	.	.	.
11.750	34.1200	53.85	.Q	V	.	.	.	.
11.833	34.4948	54.41	.Q	V	.	.	.	.
11.917	34.8735	54.99	.Q	V	.	.	.	.
12.000	35.2563	55.59	.Q	V	.	.	.	.
12.083	35.6417	55.95	.Q	V	.	.	.	.
12.167	36.0210	55.08	.Q	.V	.	.	.	.
12.250	36.3826	52.50	.Q	.V	.	.	.	.
12.333	36.7212	49.16	.Q	.V	.	.	.	.
12.417	37.0448	46.98	.Q	.V	.	.	.	.
12.500	37.3637	46.31	.Q	.V	.	.	.	.
12.583	37.6835	46.43	.Q	.V	.	.	.	.

```
12.667     38.0068     46.95  .Q        .V        .         .         .
12.750     38.3346     47.59  .Q        .V        .         .         .
12.833     38.6671     48.29  .Q        .V        .         .         .
12.917     39.0049     49.04  .Q        .V        .         .         .
13.000     39.3482     49.86  .Q        . V       .         .         .
13.083     39.6975     50.71  .Q        . V       .         .         .
13.167     40.0529     51.61  .Q        . V       .         .         .
13.250     40.4147     52.54  .Q        . V       .         .         .
13.333     40.7833     53.52  .Q        . V       .         .         .
13.417     41.1589     54.54  .Q        . V       .         .         .
13.500     41.5420     55.62  .Q        . V       .         .         .
13.583     41.9328     56.74  .Q        . V       .         .         .
13.667     42.3318     57.93  .Q        .  V      .         .         .
13.750     42.7393     59.18  .Q        .  V      .         .         .
13.833     43.1561     60.51  . Q       .  V      .         .         .
13.917     43.5824     61.90  . Q       .  V      .         .         .
14.000     44.0189     63.39  . Q       .  V      .         .         .
14.083     44.4673     65.10  . Q       .  V      .         .         .
14.167     44.9330     67.62  . Q       .  V      .         .         .
14.250     45.4236     71.24  . Q       .  V      .         .         .
14.333     45.9434     75.46  . Q       .   V     .         .         .
14.417     46.4887     79.19  . Q       .   V     .         .         .
14.500     47.0552     82.26  . Q       .   V     .         .         .
14.583     47.6410     85.05  . Q       .   V     .         .         .
14.667     48.2461     87.87  . Q       .   V     .         .         .
14.750     48.8717     90.84  .  Q      .    V    .         .         .
14.833     49.5197     94.09  .  Q      .    V    .         .         .
14.917     50.1920     97.61  .  Q      .    V    .         .         .
15.000     50.8910    101.51  .  Q      .    V    .         .         .
15.083     51.6197    105.80  .  Q      .    V    .         .         .
15.167     52.3816    110.63  .  Q      .     V   .         .         .
15.250     53.1808    116.05  .  Q      .     V   .         .         .
15.333     54.0229    122.27  .   Q     .     V   .         .         .
15.417     54.9141    129.41  .   Q     .     V   .         .         .
15.500     55.8645    137.99  .   Q     .      V  .         .         .
15.583     56.8857    148.28  .   Q     .      V  .         .         .
15.667     57.9940    160.93  .    Q    .      V  .         .         .
15.750     59.2137    177.10  .    Q    .       V .         .         .
15.833     60.6003    201.33  .     Q   .       V .         .         .
15.917     62.2447    238.77  .      Q  .        V.         .         .
16.000     64.3201    301.35  .         Q        V.         .         .
16.083     67.3657    442.22  .         .   Q     V         .         .
16.167     72.6044    760.65  .         .         . V  Q    .         .
16.250     80.1787   1099.79  .         .         .   V     .     Q   .
16.333     88.3139   1181.23  .         .         .      V  .        Q.
16.417     94.3637    878.44  .         .         .        Q.         .
16.500     97.9865    526.02  .         .      Q  .         V         .
16.583    100.1804    318.55  .         Q         .         V         .
16.667    101.6219    209.31  .     Q   .         .         .V        .
16.750    102.7539    164.37  .    Q    .         .         .V        .
```

```
16.833    103.7165    139.77  .   Q     .         .         .V        .
16.917    104.5415    119.79  .  Q      .         .         . V       .
17.000    105.2673    105.38  .  Q      .         .         . V       .
17.083    105.9245     95.43  .  Q      .         .         . V       .
17.167    106.5301     87.94  . Q       .         .         . V       .
17.250    107.0857     80.68  . Q       .         .         . V       .
17.333    107.5943     73.85  . Q       .         .         .  V      .
17.417    108.0650     68.35  . Q       .         .         .  V      .
17.500    108.5073     64.22  . Q       .         .         .  V      .
17.583    108.9271     60.95  . Q       .         .         .  V      .
17.667    109.3281     58.23  .Q        .         .         .  V      .
17.750    109.7126     55.82  .Q        .         .         .  V      .
17.833    110.0821     53.66  .Q        .         .         .  V      .
17.917    110.4383     51.71  .Q        .         .         .  V      .
18.000    110.7822     49.94  .Q        .         .         .   V     .
18.083    111.1167     48.57  .Q        .         .         .   V     .
18.167    111.4511     48.56  .Q        .         .         .   V     .
18.250    111.7981     50.38  .Q        .         .         .   V     .
18.333    112.1633     53.03  .Q        .         .         .   V     .
18.417    112.5391     54.57  .Q        .         .         .   V     .
18.500    112.9157     54.68  .Q        .         .         .   V     .
18.583    113.2880     54.06  .Q        .         .         .   V     .
18.667    113.6539     53.13  .Q        .         .         .   V     .
18.750    114.0133     52.17  .Q        .         .         .    V    .
18.833    114.3662     51.24  .Q        .         .         .    V    .
18.917    114.7128     50.33  .Q        .         .         .    V    .
19.000    115.0532     49.44  .Q        .         .         .    V    .
19.083    115.3878     48.58  .Q        .         .         .    V    .
19.167    115.7168     47.77  .Q        .         .         .    V    .
19.250    116.0404     46.99  .Q        .         .         .    V    .
19.333    116.3589     46.24  .Q        .         .         .    V    .
19.417    116.6724     45.53  .Q        .         .         .    V    .
19.500    116.9813     44.85  .Q        .         .         .    V    .
19.583    117.2857     44.19  .Q        .         .         .     V   .
19.667    117.5857     43.57  .Q        .         .         .     V   .
19.750    117.8816     42.96  .Q        .         .         .     V   .
19.833    118.1734     42.38  .Q        .         .         .     V   .
19.917    118.4614     41.82  .Q        .         .         .     V   .
20.000    118.7457     41.28  .Q        .         .         .     V   .
20.083    119.0264     40.76  .Q        .         .         .     V   .
20.167    119.3036     40.25  .Q        .         .         .     V   .
20.250    119.5775     39.76  .Q        .         .         .     V   .
20.333    119.8481     39.29  .Q        .         .         .     V   .
20.417    120.1156     38.84  .Q        .         .         .     V   .
20.500    120.3800     38.40  .Q        .         .         .     V   .
20.583    120.6415     37.97  .Q        .         .         .      V  .
20.667    120.9002     37.55  .Q        .         .         .      V  .
20.750    121.1560     37.15  .Q        .         .         .      V  .
20.833    121.4092     36.76  .Q        .         .         .      V  .
20.917    121.6598     36.38  .Q        .         .         .      V  .
```

21.000	121.9078	36.01	.Q	.	.	.	V .
21.083	122.1533	35.65	.Q	.	.	.	V .
21.167	122.3965	35.30	.Q	.	.	.	V .
21.250	122.6373	34.96	.Q	.	.	.	V .
21.333	122.8758	34.63	.Q	.	.	.	V .
21.417	123.1121	34.31	.Q	.	.	.	V .
21.500	123.3463	34.00	.Q	.	.	.	V .
21.583	123.5783	33.69	.Q	.	.	.	V .
21.667	123.8083	33.39	.Q	.	.	.	V .
21.750	124.0363	33.10	.Q	.	.	.	V .
21.833	124.2623	32.82	.Q	.	.	.	V .
21.917	124.4864	32.54	.Q	.	.	.	V .
22.000	124.7086	32.27	.Q	.	.	.	V .
22.083	124.9290	32.00	.Q	.	.	.	V .
22.167	125.1476	31.74	.Q	.	.	.	V .
22.250	125.3645	31.49	.Q	.	.	.	V .
22.333	125.5796	31.24	.Q	.	.	.	V .
22.417	125.7931	31.00	.Q	.	.	.	V .
22.500	126.0050	30.76	.Q	.	.	.	V .
22.583	126.2152	30.53	.Q	.	.	.	V .
22.667	126.4239	30.30	.Q	.	.	.	V .
22.750	126.6311	30.08	.Q	.	.	.	V .
22.833	126.8367	29.86	Q	.	.	.	V .
22.917	127.0409	29.64	Q	.	.	.	V.
23.000	127.2436	29.43	Q	.	.	.	V.
23.083	127.4449	29.23	Q	.	.	.	V.
23.167	127.6448	29.03	Q	.	.	.	V.
23.250	127.8433	28.83	Q	.	.	.	V.
23.333	128.0405	28.63	Q	.	.	.	V.
23.417	128.2364	28.44	Q	.	.	.	V.
23.500	128.4310	28.26	Q	.	.	.	V.
23.583	128.6243	28.07	Q	.	.	.	V.
23.667	128.8164	27.89	Q	.	.	.	V.
23.750	129.0073	27.71	Q	.	.	.	V.
23.833	129.1970	27.54	Q	.	.	.	V.
23.917	129.3855	27.37	Q	.	.	.	V.
24.000	129.5728	27.20	Q	.	.	.	V.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.0
10%	100.0
20%	45.0
30%	30.0

40%	25.0
50%	20.0
60%	20.0
70%	15.0
80%	10.0
90%	10.0

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END OF FLOODSCx ROUTING ANALYSIS

EXISTING 2-YEAR
REGIONAL ANALYSIS
TRIBUTARY TO EX DBL 6X6
POC #1 / NODE 101

LOSS RATE CALCULATIONS
EXISTING REGIONAL
2-YR ANALYSIS
NODE 101

****

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

==========

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Barton+Deberry-Exist-2year
2022-03-14

==========

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 1.80 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	30.17	20.00	32.	0.975	0.701
2	23.43	20.00	69.	0.566	0.717
3	57.88	10.00	32.	0.975	0.788
4	37.59	10.00	69.	0.566	0.797
5	121.44	50.00	32.	0.975	0.438
6	93.70	50.00	69.	0.566	0.480
7	0.84	50.00	75.	0.470	0.518
8	5.36	100.00	50.	0.820	0.000
9	23.00	100.00	69.	0.566	0.084
10	8.37	100.00	79.	0.398	0.228
11	74.01	100.00	83.	0.326	0.312
12	14.07	60.00	32.	0.975	0.350
13	1.07	60.00	69.	0.566	0.401
14	59.21	10.00	32.	0.975	0.788
15	42.46	10.00	69.	0.566	0.797

TOTAL AREA (Acres) = 592.60

AREA-AVERAGED LOSS RATE, $\bar{Fm}$ (in./hr.) = 0.277

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.452

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

==========

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Van Buren WS-Exist-2year
2022-03-14

==========

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 1.80 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	21.79	20.00	32.	0.975	0.701
2	2.22	20.00	69.	0.566	0.717
3	16.61	10.00	32.	0.975	0.788
4	12.95	10.00	69.	0.566	0.797
5	118.38	50.00	32.	0.975	0.438
6	62.07	50.00	69.	0.566	0.480
7	0.77	50.00	75.	0.470	0.518
8	23.68	100.00	50.	0.820	0.000
9	4.11	100.00	69.	0.566	0.084
10	41.85	100.00	79.	0.398	0.228
11	29.94	100.00	83.	0.326	0.312
12	20.33	60.00	32.	0.975	0.350
13	2.38	60.00	69.	0.566	0.401
14	42.22	10.00	32.	0.975	0.788
15	1.33	10.00	56.	0.748	0.789
16	27.95	10.00	69.	0.566	0.797

TOTAL AREA (Acres) = 428.58

AREA-AVERAGED LOSS RATE, $\bar{Fm}$ (in./hr.) = 0.348

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.519

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            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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              Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:



 ************************ DESCRIPTION OF STUDY ************************
* Grand Terrace                                                       *
* BD WS & VB WS-Exist-2year                                           *
* 2022-03-14                                                          *
 *********************************************************************

  FILE NAME: CALEX2.DAT
  TIME/DATE OF STUDY: 16:15 03/14/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     592.600 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.210 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.277
         LOW LOSS FRACTION = 0.452
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.22
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.45
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  0.87
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  1.80
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.974
30-MINUTE FACTOR = 0.974
1-HOUR FACTOR = 0.974
3-HOUR FACTOR = 0.996
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 39.683

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.872	205.853
2	19.165	1167.628
3	48.437	2097.862
4	76.826	2034.622
5	90.830	1003.627
6	96.604	413.793
7	98.430	130.854
8	99.173	53.239
9	99.669	35.567
10	99.917	17.783
11	100.000	5.928

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 36.1036
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 52.6534

==========

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

==========

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
0.083	0.0017	0.25	Q	.	.	.	.
0.167	0.0133	1.67	Q	.	.	.	.
0.250	0.0424	4.24	Q	.	.	.	.
0.333	0.0888	6.73	Q	.	.	.	.
0.417	0.1437	7.97	Q	.	.	.	.
0.500	0.2022	8.50	Q	.	.	.	.
0.583	0.2621	8.69	Q	.	.	.	.
0.667	0.3226	8.79	Q	.	.	.	.
0.750	0.3836	8.86	Q	.	.	.	.
0.833	0.4450	8.91	Q	.	.	.	.
0.917	0.5066	8.95	Q	.	.	.	.
1.000	0.5685	8.98	Q	.	.	.	.
1.083	0.6306	9.01	Q	.	.	.	.
1.167	0.6928	9.05	Q	.	.	.	.
1.250	0.7554	9.08	Q	.	.	.	.
1.333	0.8181	9.11	Q	.	.	.	.
1.417	0.8811	9.14	Q	.	.	.	.
1.500	0.9443	9.18	Q	.	.	.	.
1.583	1.0077	9.21	Q	.	.	.	.
1.667	1.0714	9.24	Q	.	.	.	.
1.750	1.1352	9.28	Q	.	.	.	.
1.833	1.1994	9.31	Q	.	.	.	.
1.917	1.2637	9.35	Q	.	.	.	.
2.000	1.3284	9.38	QV	.	.	.	.
2.083	1.3932	9.42	QV	.	.	.	.
2.167	1.4583	9.45	QV	.	.	.	.
2.250	1.5237	9.49	QV	.	.	.	.
2.333	1.5893	9.53	QV	.	.	.	.
2.417	1.6551	9.56	QV	.	.	.	.
2.500	1.7212	9.60	QV	.	.	.	.
2.583	1.7876	9.64	QV	.	.	.	.
2.667	1.8542	9.67	QV	.	.	.	.
2.750	1.9211	9.71	QV	.	.	.	.
2.833	1.9883	9.75	QV	.	.	.	.
2.917	2.0557	9.79	QV	.	.	.	.
3.000	2.1234	9.83	QV	.	.	.	.
3.083	2.1914	9.87	QV	.	.	.	.
3.167	2.2597	9.91	QV	.	.	.	.
3.250	2.3282	9.95	QV	.	.	.	.

3.333	2.3970	9.99	QV	.	.	.	.
3.417	2.4661	10.03	QV	.	.	.	.
3.500	2.5355	10.08	QV	.	.	.	.
3.583	2.6052	10.12	QV	.	.	.	.
3.667	2.6752	10.16	Q V	.	.	.	.
3.750	2.7455	10.21	Q V	.	.	.	.
3.833	2.8161	10.25	Q V	.	.	.	.
3.917	2.8870	10.29	Q V	.	.	.	.
4.000	2.9582	10.34	Q V	.	.	.	.
4.083	3.0297	10.38	Q V	.	.	.	.
4.167	3.1015	10.43	Q V	.	.	.	.
4.250	3.1737	10.48	Q V	.	.	.	.
4.333	3.2461	10.52	Q V	.	.	.	.
4.417	3.3189	10.57	Q V	.	.	.	.
4.500	3.3921	10.62	Q V	.	.	.	.
4.583	3.4655	10.67	Q V	.	.	.	.
4.667	3.5393	10.72	Q V	.	.	.	.
4.750	3.6135	10.77	Q V	.	.	.	.
4.833	3.6880	10.82	Q V	.	.	.	.
4.917	3.7628	10.87	Q V	.	.	.	.
5.000	3.8380	10.92	Q V	.	.	.	.
5.083	3.9136	10.97	Q V	.	.	.	.
5.167	3.9895	11.02	Q V	.	.	.	.
5.250	4.0658	11.08	Q V	.	.	.	.
5.333	4.1425	11.13	Q V	.	.	.	.
5.417	4.2195	11.19	Q V	.	.	.	.
5.500	4.2970	11.24	Q V	.	.	.	.
5.583	4.3748	11.30	Q V	.	.	.	.
5.667	4.4530	11.36	Q V	.	.	.	.
5.750	4.5316	11.41	Q V	.	.	.	.
5.833	4.6106	11.47	Q V	.	.	.	.
5.917	4.6900	11.53	Q V	.	.	.	.
6.000	4.7699	11.59	Q V	.	.	.	.
6.083	4.8501	11.65	Q V	.	.	.	.
6.167	4.9308	11.71	Q V	.	.	.	.
6.250	5.0119	11.78	Q V	.	.	.	.
6.333	5.0934	11.84	Q V	.	.	.	.
6.417	5.1754	11.90	Q V	.	.	.	.
6.500	5.2579	11.97	Q V	.	.	.	.
6.583	5.3407	12.04	Q V	.	.	.	.
6.667	5.4241	12.10	Q V	.	.	.	.
6.750	5.5079	12.17	Q V	.	.	.	.
6.833	5.5922	12.24	Q V	.	.	.	.
6.917	5.6770	12.31	Q V	.	.	.	.
7.000	5.7623	12.38	Q V	.	.	.	.
7.083	5.8480	12.45	Q V	.	.	.	.
7.167	5.9343	12.53	Q V	.	.	.	.
7.250	6.0211	12.60	Q V	.	.	.	.
7.333	6.1084	12.68	Q V	.	.	.	.
7.417	6.1962	12.75	Q V	.	.	.	.

7.500	6.2845	12.83	Q	V	.	.	.	.
7.583	6.3734	12.91	Q	V	.	.	.	.
7.667	6.4629	12.99	Q	V	.	.	.	.
7.750	6.5529	13.07	Q	V	.	.	.	.
7.833	6.6435	13.15	Q	V	.	.	.	.
7.917	6.7347	13.24	Q	V	.	.	.	.
8.000	6.8264	13.32	Q	V	.	.	.	.
8.083	6.9188	13.41	Q	V	.	.	.	.
8.167	7.0117	13.50	Q	V	.	.	.	.
8.250	7.1053	13.59	Q	V	.	.	.	.
8.333	7.1995	13.68	Q	V	.	.	.	.
8.417	7.2944	13.77	Q	V	.	.	.	.
8.500	7.3899	13.87	Q	V	.	.	.	.
8.583	7.4861	13.96	Q	V	.	.	.	.
8.667	7.5829	14.06	Q	V	.	.	.	.
8.750	7.6805	14.16	Q	V	.	.	.	.
8.833	7.7787	14.26	Q	V	.	.	.	.
8.917	7.8776	14.37	Q	V	.	.	.	.
9.000	7.9773	14.47	Q	V	.	.	.	.
9.083	8.0777	14.58	Q	V	.	.	.	.
9.167	8.1789	14.69	Q	V	.	.	.	.
9.250	8.2809	14.80	Q	V	.	.	.	.
9.333	8.3836	14.92	Q	V	.	.	.	.
9.417	8.4871	15.03	.Q	V	.	.	.	.
9.500	8.5915	15.15	.Q	V	.	.	.	.
9.583	8.6966	15.27	.Q	V	.	.	.	.
9.667	8.8027	15.40	.Q	V	.	.	.	.
9.750	8.9096	15.52	.Q	V	.	.	.	.
9.833	9.0174	15.65	.Q	V	.	.	.	.
9.917	9.1260	15.78	.Q	V	.	.	.	.
10.000	9.2357	15.92	.Q	V	.	.	.	.
10.083	9.3462	16.05	.Q	V	.	.	.	.
10.167	9.4578	16.19	.Q	V	.	.	.	.
10.250	9.5703	16.34	.Q	V	.	.	.	.
10.333	9.6838	16.49	.Q	V	.	.	.	.
10.417	9.7984	16.63	.Q	V	.	.	.	.
10.500	9.9140	16.79	.Q	V	.	.	.	.
10.583	10.0307	16.95	.Q	V	.	.	.	.
10.667	10.1485	17.11	.Q	V	.	.	.	.
10.750	10.2675	17.27	.Q	V	.	.	.	.
10.833	10.3876	17.44	.Q	V	.	.	.	.
10.917	10.5090	17.62	.Q	V	.	.	.	.
11.000	10.6315	17.80	.Q	V	.	.	.	.
11.083	10.7553	17.98	.Q	V	.	.	.	.
11.167	10.8804	18.17	.Q	V	.	.	.	.
11.250	11.0069	18.36	.Q	V	.	.	.	.
11.333	11.1347	18.56	.Q	V	.	.	.	.
11.417	11.2639	18.76	.Q	V	.	.	.	.
11.500	11.3945	18.97	.Q	V	.	.	.	.
11.583	11.5267	19.19	.Q	V	.	.	.	.

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11.667     11.6604     19.41  .Q      V .         .         .         .
11.750     11.7956     19.64  .Q      V .         .         .         .
11.833     11.9325     19.87  .Q       V.         .         .         .
11.917     12.0710     20.12  .Q       V.         .         .         .
12.000     12.2113     20.37  .Q       V.         .         .         .
12.083     12.3532     20.60  .Q       V.         .         .         .
12.167     12.4959     20.73  .Q       V.         .         .         .
12.250     12.6388     20.75  .Q       V.         .         .         .
12.333     12.7820     20.79  .Q       V.         .         .         .
12.417     12.9263     20.95  .Q       V.         .         .         .
12.500     13.0723     21.21  .Q       V.         .         .         .
12.583     13.2204     21.50  .Q        V         .         .         .
12.667     13.3707     21.82  .Q        V         .         .         .
12.750     13.5233     22.15  .Q        V         .         .         .
12.833     13.6783     22.50  .Q        V         .         .         .
12.917     13.8357     22.87  .Q        V         .         .         .
13.000     13.9959     23.25  .Q        V         .         .         .
13.083     14.1587     23.64  .Q        V         .         .         .
13.167     14.3244     24.06  .Q        V         .         .         .
13.250     14.4931     24.49  .Q        .V        .         .         .
13.333     14.6649     24.95  .Q        .V        .         .         .
13.417     14.8399     25.42  .Q        .V        .         .         .
13.500     15.0185     25.92  .Q        .V        .         .         .
13.583     15.2005     26.44  .Q        .V        .         .         .
13.667     15.3865     27.00  .Q        .V        .         .         .
13.750     15.5764     27.57  .Q        .V        .         .         .
13.833     15.7705     28.19  .Q        .V        .         .         .
13.917     15.9691     28.84  .Q        . V       .         .         .
14.000     16.1725     29.53  .Q        . V       .         .         .
14.083     16.3813     30.31  . Q       . V       .         .         .
14.167     16.5973     31.37  . Q       . V       .         .         .
14.250     16.8224     32.69  . Q       . V       .         .         .
14.333     17.0571     34.08  . Q       . V       .         .         .
14.417     17.3000     35.27  . Q       .  V      .         .         .
14.500     17.5510     36.43  . Q       .  V      .         .         .
14.583     17.8099     37.59  . Q       .  V      .         .         .
14.667     18.0774     38.85  . Q       .  V      .         .         .
14.750     18.3542     40.19  . Q       .  V      .         .         .
14.833     18.6413     41.68  . Q       .   V     .         .         .
14.917     18.9394     43.28  . Q       .   V     .         .         .
15.000     19.2499     45.09  .  Q      .   V     .         .         .
15.083     19.5741     47.07  .  Q      .   V     .         .         .
15.167     19.9139     49.33  .  Q      .    V    .         .         .
15.250     20.2709     51.85  .  Q      .    V    .         .         .
15.333     20.6483     54.79  .  Q      .    V    .         .         .
15.417     21.0507     58.44  .  Q      .    V    .         .         .
15.500     21.4930     64.22  .   Q     .     V   .         .         .
15.583     21.9899     72.16  .   Q     .     V   .         .         .
15.667     22.5499     81.31  .    Q    .      V  .         .         .
15.750     23.1721     90.34  .     Q   .      V  .         .         .
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15.833	23.8648	100.58	. Q . V . . .
15.917	24.6491	113.89	. Q . V . . .
16.000	25.6013	138.25	. Q. V. . .
16.083	27.0750	213.98	. . Q V . .
16.167	29.8808	407.41	. . . V Q . .
16.250	33.7449	561.07	. . . V . Q .
16.333	37.3078	517.32	. . . V . Q .
16.417	39.4504	311.11	. . Q V. .
16.500	40.6983	181.20	. . Q . V .
16.583	41.4579	110.29	. Q . . .V .
16.667	42.0120	80.45	. Q . . .V .
16.750	42.4688	66.34	. Q . . . V .
16.833	42.8532	55.81	. Q . . . V .
16.917	43.1866	48.41	. Q . . . V .
17.000	43.4852	43.35	. Q . . . V .
17.083	43.7610	40.05	. Q . . . V .
17.167	44.0168	37.14	. Q . . . V .
17.250	44.2540	34.44	. Q . . . V .
17.333	44.4750	32.10	. Q . . . V .
17.417	44.6833	30.24	. Q . . . V .
17.500	44.8812	28.73	.Q . . . V .
17.583	45.0702	27.44	.Q . . . V .
17.667	45.2513	26.31	.Q . . . V .
17.750	45.4255	25.28	.Q . . . V .
17.833	45.5932	24.36	.Q . . . V .
17.917	45.7552	23.52	.Q . . . V .
18.000	45.9119	22.75	.Q . . . V .
18.083	46.0638	22.06	.Q . . . V .
18.167	46.2122	21.55	.Q . . . V .
18.250	46.3582	21.19	.Q . . . V .
18.333	46.5019	20.87	.Q . . . V .
18.417	46.6428	20.45	.Q . . . V .
18.500	46.7805	20.00	.Q . . . V .
18.583	46.9151	19.54	.Q . . . V .
18.667	47.0466	19.10	.Q . . . V .
18.750	47.1753	18.68	.Q . . . V .
18.833	47.3012	18.29	.Q . . . V .
18.917	47.4246	17.91	.Q . . . V .
19.000	47.5454	17.55	.Q . . . V .
19.083	47.6640	17.21	.Q . . . V .
19.167	47.7802	16.89	.Q . . . V .
19.250	47.8944	16.58	.Q . . . V .
19.333	48.0065	16.28	.Q . . . V .
19.417	48.1167	16.00	.Q . . . V .
19.500	48.2251	15.73	.Q . . . V .
19.583	48.3316	15.47	.Q . . . V .
19.667	48.4365	15.22	.Q . . . V .
19.750	48.5397	14.99	Q . . . V .
19.833	48.6413	14.76	Q . . . V .
19.917	48.7415	14.54	Q . . . V .

20.000	48.8401	14.33	Q	.	.	.	V .
20.083	48.9374	14.12	Q	.	.	.	V .
20.167	49.0333	13.93	Q	.	.	.	V .
20.250	49.1279	13.74	Q	.	.	.	V .
20.333	49.2212	13.55	Q	.	.	.	V .
20.417	49.3133	13.37	Q	.	.	.	V .
20.500	49.4043	13.20	Q	.	.	.	V .
20.583	49.4941	13.04	Q	.	.	.	V .
20.667	49.5827	12.88	Q	.	.	.	V .
20.750	49.6703	12.72	Q	.	.	.	V .
20.833	49.7569	12.57	Q	.	.	.	V .
20.917	49.8425	12.42	Q	.	.	.	V .
21.000	49.9270	12.28	Q	.	.	.	V .
21.083	50.0107	12.14	Q	.	.	.	V .
21.167	50.0934	12.01	Q	.	.	.	V .
21.250	50.1752	11.88	Q	.	.	.	V .
21.333	50.2561	11.75	Q	.	.	.	V .
21.417	50.3362	11.63	Q	.	.	.	V .
21.500	50.4154	11.51	Q	.	.	.	V .
21.583	50.4939	11.39	Q	.	.	.	V .
21.667	50.5715	11.28	Q	.	.	.	V .
21.750	50.6484	11.16	Q	.	.	.	V .
21.833	50.7245	11.06	Q	.	.	.	V .
21.917	50.7999	10.95	Q	.	.	.	V .
22.000	50.8746	10.85	Q	.	.	.	V .
22.083	50.9486	10.75	Q	.	.	.	V .
22.167	51.0220	10.65	Q	.	.	.	V .
22.250	51.0946	10.55	Q	.	.	.	V .
22.333	51.1666	10.46	Q	.	.	.	V .
22.417	51.2380	10.36	Q	.	.	.	V .
22.500	51.3088	10.27	Q	.	.	.	V .
22.583	51.3789	10.19	Q	.	.	.	V.
22.667	51.4485	10.10	Q	.	.	.	V.
22.750	51.5175	10.02	Q	.	.	.	V.
22.833	51.5859	9.93	Q	.	.	.	V.
22.917	51.6538	9.85	Q	.	.	.	V.
23.000	51.7211	9.77	Q	.	.	.	V.
23.083	51.7879	9.70	Q	.	.	.	V.
23.167	51.8541	9.62	Q	.	.	.	V.
23.250	51.9199	9.55	Q	.	.	.	V.
23.333	51.9851	9.47	Q	.	.	.	V.
23.417	52.0499	9.40	Q	.	.	.	V.
23.500	52.1141	9.33	Q	.	.	.	V.
23.583	52.1779	9.26	Q	.	.	.	V.
23.667	52.2412	9.20	Q	.	.	.	V.
23.750	52.3041	9.13	Q	.	.	.	V.
23.833	52.3665	9.06	Q	.	.	.	V.
23.917	52.4285	9.00	Q	.	.	.	V.
24.000	52.4901	8.94	Q	.	.	.	V.
24.083	52.5495	8.62	Q	.	.	.	V.

24.167	52.5987	7.15	Q	.	.	.	V.
24.250	52.6300	4.55	Q	.	.	.	V.
24.333	52.6441	2.04	Q	.	.	.	V.
24.417	52.6496	0.81	Q	.	.	.	V.
24.500	52.6517	0.30	Q	.	.	.	V.
24.583	52.6526	0.14	Q	.	.	.	V.
24.667	52.6531	0.07	Q	.	.	.	V.
24.750	52.6533	0.03	Q	.	.	.	V.
24.833	52.6534	0.01	Q	.	.	.	V

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1490.0
10%	85.0
20%	40.0
30%	30.0
40%	20.0
50%	20.0
60%	15.0
70%	15.0
80%	10.0
90%	10.0

****
FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 5.2

>>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
==========

THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
INTERVALS(Reference: the National Engineering Handbook,
Hydrology, Chapter 17, page 17-52, August,1972,
U.S. Department of Commerce).

ASSUMED REGULAR CHANNEL INFORMATION:
BASEWIDTH(FT) = 30.00 CHANNEL Z = 2.00
UPSTREAM ELEVATION(FT) = 938.00
DOWNSTREAM ELEVATION(FT) = 909.00
CHANNEL LENGTH(FT) = 2185.72 MANNING'S FACTOR = 0.015
CONSTANT LOSS RATE(CFS) = 0.00

CHANNEL ROUTING COEFFICIENT ESTIMATED:
  MAXIMUM INFLOW(CFS) =   561.07
  AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW =   449.23
  CHANNEL NORMAL VELOCITY FOR Q =   449.23 CFS = 11.90 FPS
  ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.875

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 0.962

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
0.083	0.25	0.11	0.11
0.167	1.67	0.88	0.88
0.250	4.24	2.79	2.79
0.333	6.73	5.29	5.29
0.417	7.97	7.23	7.23
0.500	8.50	8.18	8.18
0.583	8.69	8.57	8.57
0.667	8.79	8.73	8.73
0.750	8.86	8.82	8.82
0.833	8.91	8.88	8.88
0.917	8.95	8.93	8.93
1.000	8.98	8.96	8.96
1.083	9.01	9.00	9.00
1.167	9.05	9.03	9.03
1.250	9.08	9.06	9.06
1.333	9.11	9.09	9.09
1.417	9.14	9.12	9.12
1.500	9.18	9.16	9.16
1.583	9.21	9.19	9.19
1.667	9.24	9.22	9.22
1.750	9.28	9.26	9.26
1.833	9.31	9.29	9.29
1.917	9.35	9.33	9.33
2.000	9.38	9.36	9.36
2.083	9.42	9.40	9.40
2.167	9.45	9.43	9.43
2.250	9.49	9.47	9.47
2.333	9.53	9.50	9.50
2.417	9.56	9.54	9.54
2.500	9.60	9.58	9.58
2.583	9.64	9.62	9.62
2.667	9.67	9.65	9.65
2.750	9.71	9.69	9.69
2.833	9.75	9.73	9.73

2.917	9.79	9.77	9.77
3.000	9.83	9.81	9.81
3.083	9.87	9.85	9.85
3.167	9.91	9.89	9.89
3.250	9.95	9.93	9.93
3.333	9.99	9.97	9.97
3.417	10.03	10.01	10.01
3.500	10.08	10.05	10.05
3.583	10.12	10.09	10.09
3.667	10.16	10.14	10.14
3.750	10.21	10.18	10.18
3.833	10.25	10.22	10.22
3.917	10.29	10.27	10.27
4.000	10.34	10.31	10.31
4.083	10.38	10.36	10.36
4.167	10.43	10.40	10.40
4.250	10.48	10.45	10.45
4.333	10.52	10.50	10.50
4.417	10.57	10.54	10.54
4.500	10.62	10.59	10.59
4.583	10.67	10.64	10.64
4.667	10.72	10.69	10.69
4.750	10.77	10.74	10.74
4.833	10.82	10.79	10.79
4.917	10.87	10.84	10.84
5.000	10.92	10.89	10.89
5.083	10.97	10.94	10.94
5.167	11.02	10.99	10.99
5.250	11.08	11.05	11.05
5.333	11.13	11.10	11.10
5.417	11.19	11.16	11.16
5.500	11.24	11.21	11.21
5.583	11.30	11.27	11.27
5.667	11.36	11.32	11.32
5.750	11.41	11.38	11.38
5.833	11.47	11.44	11.44
5.917	11.53	11.50	11.50
6.000	11.59	11.56	11.56
6.083	11.65	11.62	11.62
6.167	11.71	11.68	11.68
6.250	11.78	11.74	11.74
6.333	11.84	11.80	11.80
6.417	11.90	11.87	11.87
6.500	11.97	11.93	11.93
6.583	12.04	12.00	12.00
6.667	12.10	12.06	12.06
6.750	12.17	12.13	12.13
6.833	12.24	12.20	12.20
6.917	12.31	12.27	12.27
7.000	12.38	12.34	12.34

7.083	12.45	12.41	12.41
7.167	12.53	12.48	12.48
7.250	12.60	12.56	12.56
7.333	12.68	12.63	12.63
7.417	12.75	12.71	12.71
7.500	12.83	12.79	12.79
7.583	12.91	12.86	12.86
7.667	12.99	12.94	12.94
7.750	13.07	13.02	13.02
7.833	13.15	13.11	13.11
7.917	13.24	13.19	13.19
8.000	13.32	13.27	13.27
8.083	13.41	13.36	13.36
8.167	13.50	13.45	13.45
8.250	13.59	13.54	13.54
8.333	13.68	13.63	13.63
8.417	13.77	13.72	13.72
8.500	13.87	13.81	13.81
8.583	13.96	13.91	13.91
8.667	14.06	14.01	14.01
8.750	14.16	14.10	14.10
8.833	14.26	14.21	14.21
8.917	14.37	14.31	14.31
9.000	14.47	14.41	14.41
9.083	14.58	14.52	14.52
9.167	14.69	14.63	14.63
9.250	14.80	14.74	14.74
9.333	14.92	14.85	14.85
9.417	15.03	14.97	14.97
9.500	15.15	15.08	15.08
9.583	15.27	15.20	15.20
9.667	15.40	15.32	15.32
9.750	15.52	15.45	15.45
9.833	15.65	15.58	15.58
9.917	15.78	15.71	15.71
10.000	15.92	15.84	15.84
10.083	16.05	15.98	15.98
10.167	16.19	16.11	16.11
10.250	16.34	16.26	16.26
10.333	16.49	16.40	16.40
10.417	16.63	16.55	16.55
10.500	16.79	16.70	16.70
10.583	16.95	16.86	16.86
10.667	17.11	17.02	17.02
10.750	17.27	17.18	17.18
10.833	17.44	17.35	17.35
10.917	17.62	17.52	17.52
11.000	17.80	17.69	17.69
11.083	17.98	17.87	17.87
11.167	18.17	18.06	18.06

11.250	18.36	18.25	18.25
11.333	18.56	18.44	18.44
11.417	18.76	18.64	18.64
11.500	18.97	18.85	18.85
11.583	19.19	19.06	19.06
11.667	19.41	19.28	19.28
11.750	19.64	19.51	19.51
11.833	19.87	19.74	19.74
11.917	20.12	19.98	19.98
12.000	20.37	20.22	20.22
12.083	20.60	20.47	20.47
12.167	20.73	20.65	20.65
12.250	20.75	20.73	20.73
12.333	20.79	20.76	20.76
12.417	20.95	20.86	20.86
12.500	21.21	21.06	21.06
12.583	21.50	21.33	21.33
12.667	21.82	21.64	21.64
12.750	22.15	21.96	21.96
12.833	22.50	22.30	22.30
12.917	22.87	22.66	22.66
13.000	23.25	23.03	23.03
13.083	23.64	23.42	23.42
13.167	24.06	23.82	23.82
13.250	24.49	24.24	24.24
13.333	24.95	24.69	24.69
13.417	25.42	25.15	25.15
13.500	25.92	25.63	25.63
13.583	26.44	26.14	26.14
13.667	27.00	26.68	26.68
13.750	27.57	27.24	27.24
13.833	28.19	27.84	27.84
13.917	28.84	28.47	28.47
14.000	29.53	29.13	29.13
14.083	30.31	29.86	29.86
14.167	31.37	30.76	30.76
14.250	32.69	31.94	31.94
14.333	34.08	33.28	33.28
14.417	35.27	34.58	34.58
14.500	36.43	35.77	35.77
14.583	37.59	36.93	36.93
14.667	38.85	38.13	38.13
14.750	40.19	39.42	39.42
14.833	41.68	40.83	40.83
14.917	43.28	42.37	42.37
15.000	45.09	44.06	44.06
15.083	47.07	45.94	45.94
15.167	49.33	48.04	48.04
15.250	51.85	50.41	50.41
15.333	54.79	53.11	53.11

15.417	58.44	56.35	56.35
15.500	64.22	60.94	60.94
15.583	72.16	67.64	67.64
15.667	81.31	76.08	76.08
15.750	90.34	85.15	85.15
15.833	100.58	94.72	94.72
15.917	113.89	106.30	106.30
16.000	138.25	124.49	124.49
16.083	213.98	171.58	171.58
16.167	407.41	298.83	298.83
16.250	561.07	472.00	472.00
16.333	517.32	538.17	538.17
16.417	311.11	425.95	425.95
16.500	181.20	257.37	257.37
16.583	110.29	152.37	152.37
16.667	80.45	98.53	98.53
16.750	66.34	74.82	74.82
16.833	55.81	61.95	61.95
16.917	48.41	52.73	52.73
17.000	43.35	46.31	46.31
17.083	40.05	41.99	41.99
17.167	37.14	38.82	38.82
17.250	34.44	36.00	36.00
17.333	32.10	33.45	33.45
17.417	30.24	31.32	31.32
17.500	28.73	29.61	29.61
17.583	27.44	28.19	28.19
17.667	26.31	26.96	26.96
17.750	25.28	25.87	25.87
17.833	24.36	24.89	24.89
17.917	23.52	24.00	24.00
18.000	22.75	23.19	23.19
18.083	22.06	22.46	22.46
18.167	21.55	21.85	21.85
18.250	21.19	21.40	21.40
18.333	20.87	21.06	21.06
18.417	20.45	20.69	20.69
18.500	20.00	20.26	20.26
18.583	19.54	19.80	19.80
18.667	19.10	19.35	19.35
18.750	18.68	18.92	18.92
18.833	18.29	18.51	18.51
18.917	17.91	18.13	18.13
19.000	17.55	17.76	17.76
19.083	17.21	17.41	17.41
19.167	16.89	17.07	17.07
19.250	16.58	16.75	16.75
19.333	16.28	16.45	16.45
19.417	16.00	16.16	16.16
19.500	15.73	15.89	15.89

19.583	15.47	15.62	15.62
19.667	15.22	15.37	15.37
19.750	14.99	15.12	15.12
19.833	14.76	14.89	14.89
19.917	14.54	14.66	14.66
20.000	14.33	14.45	14.45
20.083	14.12	14.24	14.24
20.167	13.93	14.04	14.04
20.250	13.74	13.84	13.84
20.333	13.55	13.66	13.66
20.417	13.37	13.48	13.48
20.500	13.20	13.30	13.30
20.583	13.04	13.13	13.13
20.667	12.88	12.97	12.97
20.750	12.72	12.81	12.81
20.833	12.57	12.66	12.66
20.917	12.42	12.51	12.51
21.000	12.28	12.36	12.36
21.083	12.14	12.22	12.22
21.167	12.01	12.09	12.09
21.250	11.88	11.95	11.95
21.333	11.75	11.82	11.82
21.417	11.63	11.70	11.70
21.500	11.51	11.58	11.58
21.583	11.39	11.46	11.46
21.667	11.28	11.34	11.34
21.750	11.16	11.23	11.23
21.833	11.06	11.12	11.12
21.917	10.95	11.01	11.01
22.000	10.85	10.91	10.91
22.083	10.75	10.80	10.80
22.167	10.65	10.70	10.70
22.250	10.55	10.61	10.61
22.333	10.46	10.51	10.51
22.417	10.36	10.42	10.42
22.500	10.27	10.33	10.33
22.583	10.19	10.24	10.24
22.667	10.10	10.15	10.15
22.750	10.02	10.06	10.06
22.833	9.93	9.98	9.98
22.917	9.85	9.90	9.90
23.000	9.77	9.82	9.82
23.083	9.70	9.74	9.74
23.167	9.62	9.66	9.66
23.250	9.55	9.59	9.59
23.333	9.47	9.52	9.52
23.417	9.40	9.44	9.44
23.500	9.33	9.37	9.37
23.583	9.26	9.30	9.30
23.667	9.20	9.23	9.23

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         23.750         9.13         9.17         9.17
         23.833         9.06         9.10         9.10
         23.917         9.00         9.04         9.04
         24.000         8.94         8.97         8.97
================================================================================
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =     52.653 AF
    OUTFLOW VOLUME =     52.653 AF
    LOSS    VOLUME =      0.000 AF


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     428.580 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.240 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.348
         LOW LOSS FRACTION = 0.519
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.22
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.45
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  0.87
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  1.80

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.981
          30-MINUTE FACTOR = 0.981
           1-HOUR FACTOR = 0.981
           3-HOUR FACTOR = 0.997
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  34.722
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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.308	119.610
2	14.779	646.413
3	38.225	1215.257
4	66.233	1451.644
5	84.561	949.989
6	93.250	450.344
7	97.213	205.452
8	98.477	65.467
9	99.128	33.747
10	99.651	27.130
11	99.913	13.565
12	100.000	4.521

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 30.1311
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 34.0830

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	100.0	200.0	300.0	400.0
0.083	0.0009	0.13	Q	.	.	.	.
0.167	0.0065	0.82	Q	.	.	.	.
0.250	0.0211	2.12	Q	.	.	.	.
0.333	0.0465	3.68	Q	.	.	.	.
0.417	0.0789	4.71	Q	.	.	.	.
0.500	0.1148	5.21	Q	.	.	.	.
0.583	0.1522	5.44	Q	.	.	.	.
0.667	0.1903	5.53	Q	.	.	.	.
0.750	0.2288	5.59	Q	.	.	.	.
0.833	0.2676	5.63	Q	.	.	.	.
0.917	0.3066	5.67	Q	.	.	.	.
1.000	0.3459	5.69	Q	.	.	.	.
1.083	0.3852	5.71	Q	.	.	.	.
1.167	0.4247	5.73	Q	.	.	.	.
1.250	0.4643	5.75	Q	.	.	.	.
1.333	0.5041	5.77	Q	.	.	.	.
1.417	0.5440	5.80	Q	.	.	.	.
1.500	0.5841	5.82	Q	.	.	.	.
1.583	0.6243	5.84	Q	.	.	.	.
1.667	0.6646	5.86	Q	.	.	.	.
1.750	0.7051	5.88	Q	.	.	.	.
1.833	0.7458	5.90	Q	.	.	.	.
1.917	0.7866	5.92	Q	.	.	.	.
2.000	0.8275	5.95	Q	.	.	.	.
2.083	0.8686	5.97	QV	.	.	.	.
2.167	0.9099	5.99	QV	.	.	.	.
2.250	0.9513	6.01	QV	.	.	.	.
2.333	0.9929	6.04	QV	.	.	.	.
2.417	1.0346	6.06	QV	.	.	.	.
2.500	1.0765	6.08	QV	.	.	.	.
2.583	1.1186	6.11	QV	.	.	.	.
2.667	1.1608	6.13	QV	.	.	.	.
2.750	1.2032	6.16	QV	.	.	.	.
2.833	1.2458	6.18	QV	.	.	.	.
2.917	1.2885	6.21	QV	.	.	.	.
3.000	1.3314	6.23	QV	.	.	.	.
3.083	1.3745	6.26	QV	.	.	.	.
3.167	1.4178	6.28	QV	.	.	.	.
3.250	1.4612	6.31	QV	.	.	.	.

3.333	1.5048	6.33	QV	.	.	.	.
3.417	1.5486	6.36	QV	.	.	.	.
3.500	1.5926	6.39	QV	.	.	.	.
3.583	1.6368	6.41	QV	.	.	.	.
3.667	1.6811	6.44	QV	.	.	.	.
3.750	1.7257	6.47	Q V	.	.	.	.
3.833	1.7704	6.50	Q V	.	.	.	.
3.917	1.8153	6.52	Q V	.	.	.	.
4.000	1.8604	6.55	Q V	.	.	.	.
4.083	1.9057	6.58	Q V	.	.	.	.
4.167	1.9513	6.61	Q V	.	.	.	.
4.250	1.9970	6.64	Q V	.	.	.	.
4.333	2.0429	6.67	Q V	.	.	.	.
4.417	2.0890	6.70	Q V	.	.	.	.
4.500	2.1354	6.73	Q V	.	.	.	.
4.583	2.1819	6.76	Q V	.	.	.	.
4.667	2.2287	6.79	Q V	.	.	.	.
4.750	2.2757	6.82	Q V	.	.	.	.
4.833	2.3229	6.85	Q V	.	.	.	.
4.917	2.3703	6.89	Q V	.	.	.	.
5.000	2.4180	6.92	Q V	.	.	.	.
5.083	2.4658	6.95	Q V	.	.	.	.
5.167	2.5140	6.99	Q V	.	.	.	.
5.250	2.5623	7.02	Q V	.	.	.	.
5.333	2.6109	7.05	Q V	.	.	.	.
5.417	2.6597	7.09	Q V	.	.	.	.
5.500	2.7087	7.12	Q V	.	.	.	.
5.583	2.7580	7.16	Q V	.	.	.	.
5.667	2.8076	7.19	Q V	.	.	.	.
5.750	2.8574	7.23	Q V	.	.	.	.
5.833	2.9075	7.27	Q V	.	.	.	.
5.917	2.9578	7.31	Q V	.	.	.	.
6.000	3.0083	7.34	Q V	.	.	.	.
6.083	3.0592	7.38	Q V	.	.	.	.
6.167	3.1103	7.42	Q V	.	.	.	.
6.250	3.1617	7.46	Q V	.	.	.	.
6.333	3.2133	7.50	Q V	.	.	.	.
6.417	3.2653	7.54	Q V	.	.	.	.
6.500	3.3175	7.58	Q V	.	.	.	.
6.583	3.3700	7.62	Q V	.	.	.	.
6.667	3.4228	7.67	Q V	.	.	.	.
6.750	3.4759	7.71	Q V	.	.	.	.
6.833	3.5293	7.75	Q V	.	.	.	.
6.917	3.5830	7.80	Q V	.	.	.	.
7.000	3.6370	7.84	Q V	.	.	.	.
7.083	3.6913	7.89	Q V	.	.	.	.
7.167	3.7459	7.93	Q V	.	.	.	.
7.250	3.8009	7.98	Q V	.	.	.	.
7.333	3.8562	8.03	Q V	.	.	.	.
7.417	3.9118	8.08	Q V	.	.	.	.

7.500	3.9678	8.13	Q	V	.	.	.	.
7.583	4.0241	8.18	Q	V	.	.	.	.
7.667	4.0807	8.23	Q	V	.	.	.	.
7.750	4.1377	8.28	Q	V	.	.	.	.
7.833	4.1951	8.33	Q	V	.	.	.	.
7.917	4.2528	8.38	Q	V	.	.	.	.
8.000	4.3109	8.44	Q	V	.	.	.	.
8.083	4.3694	8.49	Q	V	.	.	.	.
8.167	4.4283	8.55	Q	V	.	.	.	.
8.250	4.4875	8.60	Q	V	.	.	.	.
8.333	4.5472	8.66	Q	V	.	.	.	.
8.417	4.6072	8.72	Q	V	.	.	.	.
8.500	4.6677	8.78	Q	V	.	.	.	.
8.583	4.7286	8.84	Q	V	.	.	.	.
8.667	4.7899	8.90	Q	V	.	.	.	.
8.750	4.8517	8.97	Q	V	.	.	.	.
8.833	4.9139	9.03	Q	V	.	.	.	.
8.917	4.9765	9.10	Q	V	.	.	.	.
9.000	5.0396	9.16	Q	V	.	.	.	.
9.083	5.1032	9.23	Q	V	.	.	.	.
9.167	5.1672	9.30	Q	V	.	.	.	.
9.250	5.2317	9.37	Q	V	.	.	.	.
9.333	5.2968	9.44	Q	V	.	.	.	.
9.417	5.3623	9.51	Q	V	.	.	.	.
9.500	5.4283	9.59	Q	V	.	.	.	.
9.583	5.4949	9.67	Q	V	.	.	.	.
9.667	5.5620	9.74	Q	V	.	.	.	.
9.750	5.6297	9.82	Q	V	.	.	.	.
9.833	5.6979	9.90	Q	V	.	.	.	.
9.917	5.7667	9.99	Q	V	.	.	.	.
10.000	5.8360	10.07	.Q	V	.	.	.	.
10.083	5.9060	10.16	.Q	V	.	.	.	.
10.167	5.9766	10.25	.Q	V	.	.	.	.
10.250	6.0478	10.34	.Q	V	.	.	.	.
10.333	6.1196	10.43	.Q	V	.	.	.	.
10.417	6.1921	10.52	.Q	V	.	.	.	.
10.500	6.2652	10.62	.Q	V	.	.	.	.
10.583	6.3390	10.72	.Q	V	.	.	.	.
10.667	6.4136	10.82	.Q	V	.	.	.	.
10.750	6.4888	10.93	.Q	V	.	.	.	.
10.833	6.5648	11.03	.Q	V	.	.	.	.
10.917	6.6415	11.14	.Q	V	.	.	.	.
11.000	6.7190	11.25	.Q	V	.	.	.	.
11.083	6.7973	11.37	.Q	V	.	.	.	.
11.167	6.8765	11.49	.Q	V	.	.	.	.
11.250	6.9564	11.61	.Q	V	.	.	.	.
11.333	7.0372	11.73	.Q	V	.	.	.	.
11.417	7.1189	11.86	.Q	V	.	.	.	.
11.500	7.2015	11.99	.Q	V	.	.	.	.
11.583	7.2850	12.13	.Q	V	.	.	.	.

```
11.667      7.3695     12.27  .Q      V .         .         .         .
11.750      7.4550     12.41  .Q      V .         .         .         .
11.833      7.5415     12.56  .Q      V .         .         .         .
11.917      7.6291     12.71  .Q      V .         .         .         .
12.000      7.7177     12.87  .Q       V.         .         .         .
12.083      7.8074     13.02  .Q       V.         .         .         .
12.167      7.8977     13.12  .Q       V.         .         .         .
12.250      7.9883     13.15  .Q       V.         .         .         .
12.333      8.0790     13.17  .Q       V.         .         .         .
12.417      8.1702     13.25  .Q       V.         .         .         .
12.500      8.2624     13.39  .Q       V.         .         .         .
12.583      8.3558     13.56  .Q       V.         .         .         .
12.667      8.4505     13.76  .Q       V.         .         .         .
12.750      8.5467     13.96  .Q        V         .         .         .
12.833      8.6443     14.18  .Q        V         .         .         .
12.917      8.7436     14.40  .Q        V         .         .         .
13.000      8.8444     14.64  .Q        V         .         .         .
13.083      8.9470     14.89  .Q        V         .         .         .
13.167      9.0513     15.15  .Q        V         .         .         .
13.250      9.1575     15.42  .Q        V         .         .         .
13.333      9.2656     15.70  .Q        V         .         .         .
13.417      9.3758     16.00  .Q        .V        .         .         .
13.500      9.4882     16.31  .Q        .V        .         .         .
13.583      9.6027     16.64  .Q        .V        .         .         .
13.667      9.7197     16.98  .Q        .V        .         .         .
13.750      9.8391     17.34  .Q        .V        .         .         .
13.833      9.9612     17.73  .Q        .V        .         .         .
13.917     10.0860     18.13  .Q        .V        .         .         .
14.000     10.2138     18.56  .Q        .V        .         .         .
14.083     10.3449     19.03  .Q        . V       .         .         .
14.167     10.4799     19.61  .Q        . V       .         .         .
14.250     10.6198     20.30  . Q       . V       .         .         .
14.333     10.7649     21.08  . Q       . V       .         .         .
14.417     10.9152     21.81  . Q       . V       .         .         .
14.500     11.0703     22.53  . Q       . V       .         .         .
14.583     11.2305     23.25  . Q       .  V      .         .         .
14.667     11.3960     24.03  . Q       .  V      .         .         .
14.750     11.5671     24.85  . Q       .  V      .         .         .
14.833     11.7445     25.76  . Q       .  V      .         .         .
14.917     11.9287     26.75  . Q       .  V      .         .         .
15.000     12.1205     27.85  . Q       .   V     .         .         .
15.083     12.3206     29.05  . Q       .   V     .         .         .
15.167     12.5302     30.43  .  Q      .   V     .         .         .
15.250     12.7503     31.96  .  Q      .   V     .         .         .
15.333     12.9826     33.73  .  Q      .    V    .         .         .
15.417     13.2300     35.92  .  Q      .    V    .         .         .
15.500     13.5005     39.29  .  Q      .    V    .         .         .
15.583     13.8031     43.93  .   Q     .     V   .         .         .
15.667     14.1453     49.68  .   Q     .     V   .         .         .
15.750     14.5277     55.53  .    Q    .      V  .         .         .
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15.833     14.9540     61.90  .     Q   .      V  .          .          .
15.917     15.4353     69.88  .     Q   .       V .          .          .
16.000     16.0103     83.49  .       Q .       V .          .          .
16.083     16.8753    125.60  .         . Q      V.          .          .
16.167     18.4826    233.37  .         .         .V Q       .          .
16.250     20.7858    334.43  .         .         .   V      .  Q       .
16.333     23.2615    359.47  .         .         .      V   .    Q     .
16.417     25.0260    256.22  .         .         .    Q   V.           .
16.500     26.0852    153.79  .         .    Q    .         V           .
16.583     26.7473     96.13  .        Q.         .         .V          .
16.667     27.1649     60.64  .     Q   .         .         .V          .
16.750     27.4882     46.94  .   Q     .         .         . V         .
16.833     27.7639     40.03  .   Q     .         .         . V         .
16.917     27.9957     33.66  .  Q      .         .         . V         .
17.000     28.1962     29.12  . Q       .         .         .  V        .
17.083     28.3755     26.03  . Q       .         .         .  V        .
17.167     28.5412     24.05  . Q       .         .         .  V        .
17.250     28.6950     22.34  . Q       .         .         .  V        .
17.333     28.8386     20.85  . Q       .         .         .  V        .
17.417     28.9737     19.61  .Q        .         .         .   V       .
17.500     29.1018     18.59  .Q        .         .         .   V       .
17.583     29.2238     17.72  .Q        .         .         .   V       .
17.667     29.3406     16.96  .Q        .         .         .   V       .
17.750     29.4528     16.29  .Q        .         .         .   V       .
17.833     29.5608     15.67  .Q        .         .         .   V       .
17.917     29.6649     15.12  .Q        .         .         .   V       .
18.000     29.7655     14.61  .Q        .         .         .   V       .
18.083     29.8630     14.16  .Q        .         .         .    V      .
18.167     29.9580     13.80  .Q        .         .         .    V      .
18.250     30.0513     13.54  .Q        .         .         .    V      .
18.333     30.1430     13.32  .Q        .         .         .    V      .
18.417     30.2331     13.08  .Q        .         .         .    V      .
18.500     30.3213     12.80  .Q        .         .         .    V      .
18.583     30.4075     12.52  .Q        .         .         .    V      .
18.667     30.4917     12.23  .Q        .         .         .    V      .
18.750     30.5741     11.96  .Q        .         .         .    V      .
18.833     30.6547     11.71  .Q        .         .         .    V      .
18.917     30.7337     11.46  .Q        .         .         .     V     .
19.000     30.8110     11.23  .Q        .         .         .     V     .
19.083     30.8869     11.01  .Q        .         .         .     V     .
19.167     30.9612     10.80  .Q        .         .         .     V     .
19.250     31.0342     10.60  .Q        .         .         .     V     .
19.333     31.1059     10.41  .Q        .         .         .     V     .
19.417     31.1764     10.23  .Q        .         .         .     V     .
19.500     31.2456     10.05  .Q        .         .         .     V     .
19.583     31.3137      9.89  Q         .         .         .     V     .
19.667     31.3807      9.73  Q         .         .         .     V     .
19.750     31.4466      9.57  Q         .         .         .     V     .
19.833     31.5115      9.42  Q         .         .         .     V     .
19.917     31.5754      9.28  Q         .         .         .      V    .
```

20.000	31.6384	9.15	Q	.	.	.	V .
20.083	31.7005	9.01	Q	.	.	.	V .
20.167	31.7617	8.89	Q	.	.	.	V .
20.250	31.8221	8.77	Q	.	.	.	V .
20.333	31.8816	8.65	Q	.	.	.	V .
20.417	31.9404	8.53	Q	.	.	.	V .
20.500	31.9984	8.42	Q	.	.	.	V .
20.583	32.0557	8.32	Q	.	.	.	V .
20.667	32.1123	8.21	Q	.	.	.	V .
20.750	32.1681	8.11	Q	.	.	.	V .
20.833	32.2233	8.02	Q	.	.	.	V .
20.917	32.2779	7.92	Q	.	.	.	V .
21.000	32.3318	7.83	Q	.	.	.	V .
21.083	32.3852	7.74	Q	.	.	.	V .
21.167	32.4379	7.66	Q	.	.	.	V .
21.250	32.4900	7.57	Q	.	.	.	V .
21.333	32.5416	7.49	Q	.	.	.	V .
21.417	32.5926	7.41	Q	.	.	.	V .
21.500	32.6431	7.33	Q	.	.	.	V .
21.583	32.6931	7.26	Q	.	.	.	V .
21.667	32.7426	7.19	Q	.	.	.	V .
21.750	32.7916	7.11	Q	.	.	.	V .
21.833	32.8401	7.04	Q	.	.	.	V .
21.917	32.8882	6.98	Q	.	.	.	V .
22.000	32.9358	6.91	Q	.	.	.	V .
22.083	32.9829	6.85	Q	.	.	.	V .
22.167	33.0296	6.78	Q	.	.	.	V .
22.250	33.0759	6.72	Q	.	.	.	V .
22.333	33.1218	6.66	Q	.	.	.	V .
22.417	33.1672	6.60	Q	.	.	.	V .
22.500	33.2123	6.54	Q	.	.	.	V .
22.583	33.2570	6.49	Q	.	.	.	V.
22.667	33.3013	6.43	Q	.	.	.	V.
22.750	33.3452	6.38	Q	.	.	.	V.
22.833	33.3888	6.33	Q	.	.	.	V.
22.917	33.4320	6.27	Q	.	.	.	V.
23.000	33.4748	6.22	Q	.	.	.	V.
23.083	33.5173	6.17	Q	.	.	.	V.
23.167	33.5595	6.13	Q	.	.	.	V.
23.250	33.6014	6.08	Q	.	.	.	V.
23.333	33.6429	6.03	Q	.	.	.	V.
23.417	33.6841	5.99	Q	.	.	.	V.
23.500	33.7250	5.94	Q	.	.	.	V.
23.583	33.7657	5.90	Q	.	.	.	V.
23.667	33.8060	5.85	Q	.	.	.	V.
23.750	33.8460	5.81	Q	.	.	.	V.
23.833	33.8857	5.77	Q	.	.	.	V.
23.917	33.9252	5.73	Q	.	.	.	V.
24.000	33.9643	5.69	Q	.	.	.	V.
24.083	34.0024	5.52	Q	.	.	.	V.

```
  24.167     34.0354      4.79  Q         .         .         .         V.
  24.250     34.0592      3.46  Q         .         .         .         V.
  24.333     34.0722      1.89  Q         .         .         .         V.
  24.417     34.0782      0.86  Q         .         .         .         V.
  24.500     34.0808      0.38  Q         .         .         .         V.
  24.583     34.0819      0.16  Q         .         .         .         V.
  24.667     34.0825      0.09  Q         .         .         .         V.
  24.750     34.0828      0.05  Q         .         .         .         V.
  24.833     34.0829      0.02  Q         .         .         .         V.
  24.917     34.0830      0.00  Q         .         .         .         V.
--------------------------------------------------------------------------------
---
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
              0%                            1495.0
             10%                              85.0
             20%                              40.0
             30%                              30.0
             40%                              25.0
             50%                              20.0
             60%                              20.0
             70%                              15.0
             80%                              10.0
             90%                              10.0


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


 ********************************************************************************
   FLOW PROCESS FROM NODE    101.00 TO NODE    101.00 IS CODE =  11
 --------------------------------------------------------------------------------
   >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
 ================================================================================

             STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
         (Note: Time indicated is at END of Each Unit Intervals)
 --------------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      225.0     450.0     675.0     900.0
 --------------------------------------------------------------------------------
    0.083      0.0017      0.24  Q         .         .         .         .
```

0.167	0.0134	1.70	Q	.	.	.	.
0.250	0.0472	4.91	Q	.	.	.	.
0.333	0.1090	8.97	Q	.	.	.	.
0.417	0.1912	11.94	Q	.	.	.	.
0.500	0.2834	13.39	Q	.	.	.	.
0.583	0.3799	14.02	Q	.	.	.	.
0.667	0.4782	14.26	Q	.	.	.	.
0.750	0.5773	14.40	Q	.	.	.	.
0.833	0.6773	14.52	Q	.	.	.	.
0.917	0.7778	14.60	Q	.	.	.	.
1.000	0.8788	14.66	Q	.	.	.	.
1.083	0.9801	14.71	Q	.	.	.	.
1.167	1.0817	14.76	Q	.	.	.	.
1.250	1.1838	14.81	Q	.	.	.	.
1.333	1.2861	14.87	Q	.	.	.	.
1.417	1.3889	14.92	Q	.	.	.	.
1.500	1.4920	14.97	Q	.	.	.	.
1.583	1.5955	15.03	Q	.	.	.	.
1.667	1.6994	15.08	Q	.	.	.	.
1.750	1.8036	15.14	Q	.	.	.	.
1.833	1.9083	15.19	Q	.	.	.	.
1.917	2.0133	15.25	Q	.	.	.	.
2.000	2.1187	15.31	Q	.	.	.	.
2.083	2.2246	15.37	QV	.	.	.	.
2.167	2.3308	15.42	QV	.	.	.	.
2.250	2.4374	15.48	QV	.	.	.	.
2.333	2.5445	15.54	QV	.	.	.	.
2.417	2.6519	15.60	QV	.	.	.	.
2.500	2.7598	15.66	QV	.	.	.	.
2.583	2.8681	15.72	QV	.	.	.	.
2.667	2.9768	15.79	QV	.	.	.	.
2.750	3.0859	15.85	QV	.	.	.	.
2.833	3.1955	15.91	QV	.	.	.	.
2.917	3.3055	15.97	QV	.	.	.	.
3.000	3.4160	16.04	QV	.	.	.	.
3.083	3.5269	16.10	QV	.	.	.	.
3.167	3.6382	16.17	QV	.	.	.	.
3.250	3.7500	16.23	QV	.	.	.	.
3.333	3.8623	16.30	QV	.	.	.	.
3.417	3.9750	16.37	QV	.	.	.	.
3.500	4.0882	16.44	QV	.	.	.	.
3.583	4.2019	16.51	QV	.	.	.	.
3.667	4.3161	16.58	QV	.	.	.	.
3.750	4.4307	16.65	Q V	.	.	.	.
3.833	4.5459	16.72	Q V	.	.	.	.
3.917	4.6615	16.79	Q V	.	.	.	.
4.000	4.7777	16.86	Q V	.	.	.	.
4.083	4.8943	16.94	Q V	.	.	.	.
4.167	5.0115	17.01	Q V	.	.	.	.
4.250	5.1292	17.09	Q V	.	.	.	.

4.333	5.2474	17.16	Q	V	.	.	.	.
4.417	5.3661	17.24	Q	V	.	.	.	.
4.500	5.4854	17.32	Q	V	.	.	.	.
4.583	5.6053	17.40	Q	V	.	.	.	.
4.667	5.7256	17.48	Q	V	.	.	.	.
4.750	5.8466	17.56	Q	V	.	.	.	.
4.833	5.9681	17.64	Q	V	.	.	.	.
4.917	6.0901	17.72	Q	V	.	.	.	.
5.000	6.2128	17.81	Q	V	.	.	.	.
5.083	6.3360	17.89	Q	V	.	.	.	.
5.167	6.4599	17.98	Q	V	.	.	.	.
5.250	6.5843	18.07	Q	V	.	.	.	.
5.333	6.7093	18.15	Q	V	.	.	.	.
5.417	6.8349	18.24	Q	V	.	.	.	.
5.500	6.9612	18.33	Q	V	.	.	.	.
5.583	7.0881	18.43	Q	V	.	.	.	.
5.667	7.2156	18.52	Q	V	.	.	.	.
5.750	7.3438	18.61	Q	V	.	.	.	.
5.833	7.4727	18.71	Q	V	.	.	.	.
5.917	7.6022	18.80	Q	V	.	.	.	.
6.000	7.7323	18.90	Q	V	.	.	.	.
6.083	7.8632	19.00	Q	V	.	.	.	.
6.167	7.9947	19.10	Q	V	.	.	.	.
6.250	8.1270	19.20	Q	V	.	.	.	.
6.333	8.2599	19.30	Q	V	.	.	.	.
6.417	8.3936	19.41	Q	V	.	.	.	.
6.500	8.5280	19.51	Q	V	.	.	.	.
6.583	8.6631	19.62	Q	V	.	.	.	.
6.667	8.7990	19.73	Q	V	.	.	.	.
6.750	8.9356	19.84	Q	V	.	.	.	.
6.833	9.0731	19.95	Q	V	.	.	.	.
6.917	9.2112	20.07	Q	V	.	.	.	.
7.000	9.3502	20.18	Q	V	.	.	.	.
7.083	9.4900	20.30	Q	V	.	.	.	.
7.167	9.6307	20.42	Q	V	.	.	.	.
7.250	9.7721	20.54	Q	V	.	.	.	.
7.333	9.9144	20.66	Q	V	.	.	.	.
7.417	10.0575	20.78	Q	V	.	.	.	.
7.500	10.2015	20.91	Q	V	.	.	.	.
7.583	10.3464	21.04	Q	V	.	.	.	.
7.667	10.4922	21.17	Q	V	.	.	.	.
7.750	10.6389	21.30	Q	V	.	.	.	.
7.833	10.7865	21.44	Q	V	.	.	.	.
7.917	10.9351	21.57	Q	V	.	.	.	.
8.000	11.0846	21.71	Q	V	.	.	.	.
8.083	11.2351	21.85	Q	V	.	.	.	.
8.167	11.3866	22.00	Q	V	.	.	.	.
8.250	11.5391	22.14	Q	V	.	.	.	.
8.333	11.6926	22.29	Q	V	.	.	.	.
8.417	11.8471	22.44	Q	V	.	.	.	.

8.500	12.0028	22.59	.Q	V	.	.	.	.
8.583	12.1594	22.75	.Q	V	.	.	.	.
8.667	12.3172	22.91	.Q	V	.	.	.	.
8.750	12.4761	23.07	.Q	V	.	.	.	.
8.833	12.6361	23.24	.Q	V	.	.	.	.
8.917	12.7973	23.40	.Q	V	.	.	.	.
9.000	12.9597	23.57	.Q	V	.	.	.	.
9.083	13.1232	23.75	.Q	V	.	.	.	.
9.167	13.2880	23.93	.Q	V	.	.	.	.
9.250	13.4540	24.11	.Q	V	.	.	.	.
9.333	13.6213	24.29	.Q	V	.	.	.	.
9.417	13.7899	24.48	.Q	V	.	.	.	.
9.500	13.9599	24.67	.Q	V	.	.	.	.
9.583	14.1311	24.87	.Q	V	.	.	.	.
9.667	14.3038	25.07	.Q	V	.	.	.	.
9.750	14.4778	25.27	.Q	V	.	.	.	.
9.833	14.6533	25.48	.Q	V	.	.	.	.
9.917	14.8303	25.69	.Q	V	.	.	.	.
10.000	15.0087	25.91	.Q	V	.	.	.	.
10.083	15.1887	26.13	.Q	V	.	.	.	.
10.167	15.3703	26.36	.Q	V	.	.	.	.
10.250	15.5534	26.59	.Q	V	.	.	.	.
10.333	15.7382	26.83	.Q	V	.	.	.	.
10.417	15.9246	27.07	.Q	V	.	.	.	.
10.500	16.1128	27.32	.Q	V	.	.	.	.
10.583	16.3027	27.58	.Q	V	.	.	.	.
10.667	16.4944	27.84	.Q	V	.	.	.	.
10.750	16.6880	28.10	.Q	V	.	.	.	.
10.833	16.8834	28.38	.Q	V	.	.	.	.
10.917	17.0808	28.66	.Q	V	.	.	.	.
11.000	17.2802	28.95	.Q	V	.	.	.	.
11.083	17.4816	29.24	.Q	V	.	.	.	.
11.167	17.6850	29.55	.Q	V	.	.	.	.
11.250	17.8907	29.86	.Q	V	.	.	.	.
11.333	18.0985	30.18	.Q	V	.	.	.	.
11.417	18.3086	30.50	.Q	V	.	.	.	.
11.500	18.5210	30.84	.Q	V	.	.	.	.
11.583	18.7358	31.19	.Q	V	.	.	.	.
11.667	18.9531	31.55	.Q	V	.	.	.	.
11.750	19.1729	31.92	.Q	V	.	.	.	.
11.833	19.3954	32.30	.Q	V	.	.	.	.
11.917	19.6205	32.69	.Q	V	.	.	.	.
12.000	19.8484	33.09	.Q	V	.	.	.	.
12.083	20.0790	33.49	.Q	V	.	.	.	.
12.167	20.3116	33.77	.Q	V	.	.	.	.
12.250	20.5450	33.89	.Q	V	.	.	.	.
12.333	20.7787	33.93	.Q	V	.	.	.	.
12.417	21.0136	34.11	.Q	V	.	.	.	.
12.500	21.2508	34.45	.Q	V	.	.	.	.
12.583	21.4911	34.89	.Q	V	.	.	.	.

```
12.667     21.7349     35.40  .Q        V         .         .         .
12.750     21.9823     35.93  .Q        V         .         .         .
12.833     22.2336     36.48  .Q        V         .         .         .
12.917     22.4889     37.06  .Q        V         .         .         .
13.000     22.7483     37.67  .Q        V         .         .         .
13.083     23.0121     38.31  .Q        V         .         .         .
13.167     23.2805     38.97  .Q        V         .         .         .
13.250     23.5537     39.66  .Q        V         .         .         .
13.333     23.8319     40.39  .Q        V         .         .         .
13.417     24.1152     41.15  .Q        .V        .         .         .
13.500     24.4041     41.94  .Q        .V        .         .         .
13.583     24.6987     42.78  .Q        .V        .         .         .
13.667     24.9994     43.66  .Q        .V        .         .         .
13.750     25.3064     44.58  .Q        .V        .         .         .
13.833     25.6202     45.56  . Q       .V        .         .         .
13.917     25.9411     46.59  . Q       .V        .         .         .
14.000     26.2696     47.69  . Q       . V       .         .         .
14.083     26.6063     48.89  . Q       . V       .         .         .
14.167     26.9532     50.37  . Q       . V       .         .         .
14.250     27.3130     52.24  . Q       . V       .         .         .
14.333     27.6874     54.36  . Q       . V       .         .         .
14.417     28.0758     56.39  . Q       . V       .         .         .
14.500     28.4773     58.30  . Q       .  V      .         .         .
14.583     28.8917     60.18  . Q       .  V      .         .         .
14.667     29.3198     62.16  . Q       .  V      .         .         .
14.750     29.7625     64.27  . Q       .  V      .         .         .
14.833     30.2211     66.59  . Q       .  V      .         .         .
14.917     30.6970     69.11  .  Q       .   V     .         .         .
15.000     31.1923     71.91  .  Q       .   V     .         .         .
15.083     31.7087     74.99  .  Q       .   V     .         .         .
15.167     32.2491     78.47  .  Q       .   V     .         .         .
15.250     32.8164     82.36  .  Q       .    V    .         .         .
15.333     33.4144     86.84  .  Q       .    V    .         .         .
15.417     34.0500     92.28  .   Q      .    V    .         .         .
15.500     34.7402    100.23  .   Q      .     V   .         .         .
15.583     35.5087    111.58  .   Q      .     V   .         .         .
15.667     36.3748    125.76  .    Q     .     V   .         .         .
15.750     37.3437    140.68  .     Q    .      V  .         .         .
15.833     38.4223    156.62  .     Q    .      V  .         .         .
15.917     39.6357    176.19  .      Q   .       V .         .         .
16.000     41.0681    207.98  .        Q.       V .         .         .
16.083     43.1148    297.18  .         .  Q     V.         .         .
16.167     46.7801    532.21  .         .         .V Q       .         .
16.250     52.3341    806.43  .         .         .   V      .    Q    .
16.333     58.5162    897.64  .         .         .     V    .         Q.
16.417     63.2143    682.17  .         .         .        VQ         .
16.500     66.0459    411.15  .         .       Q .         V         .
16.583     67.7574    248.50  .         .Q        .         .V        .
16.667     68.8536    159.18  .      Q  .         .         .V        .
16.750     69.6922    121.77  .    Q    .         .         . V       .
```

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16.833     70.3946    101.98  .   Q     .         .         . V       .
16.917     70.9895     86.39  .  Q      .         .         . V       .
17.000     71.5090     75.43  .  Q      .         .         . V       .
17.083     71.9775     68.02  .  Q      .         .         .  V      .
17.167     72.4105     62.88  . Q       .         .         .  V      .
17.250     72.8123     58.34  . Q       .         .         .  V      .
17.333     73.1862     54.30  . Q       .         .         .  V      .
17.417     73.5370     50.93  . Q       .         .         .  V      .
17.500     73.8690     48.20  . Q       .         .         .   V     .
17.583     74.1852     45.91  . Q       .         .         .   V     .
17.667     74.4877     43.93  .Q        .         .         .   V     .
17.750     74.7780     42.16  .Q        .         .         .   V     .
17.833     75.0574     40.57  .Q        .         .         .   V     .
17.917     75.3269     39.12  .Q        .         .         .   V     .
18.000     75.5872     37.80  .Q        .         .         .   V     .
18.083     75.8394     36.62  .Q        .         .         .   V     .
18.167     76.0849     35.65  .Q        .         .         .    V    .
18.250     76.3255     34.94  .Q        .         .         .    V    .
18.333     76.5623     34.38  .Q        .         .         .    V    .
18.417     76.7949     33.77  .Q        .         .         .    V    .
18.500     77.0226     33.06  .Q        .         .         .    V    .
18.583     77.2451     32.32  .Q        .         .         .    V    .
18.667     77.4627     31.59  .Q        .         .         .    V    .
18.750     77.6754     30.88  .Q        .         .         .    V    .
18.833     77.8835     30.22  .Q        .         .         .    V    .
18.917     78.0873     29.59  .Q        .         .         .     V   .
19.000     78.2869     28.99  .Q        .         .         .     V   .
19.083     78.4826     28.42  .Q        .         .         .     V   .
19.167     78.6746     27.87  .Q        .         .         .     V   .
19.250     78.8630     27.35  .Q        .         .         .     V   .
19.333     79.0480     26.86  .Q        .         .         .     V   .
19.417     79.2297     26.39  .Q        .         .         .     V   .
19.500     79.4083     25.94  .Q        .         .         .     V   .
19.583     79.5840     25.51  .Q        .         .         .     V   .
19.667     79.7568     25.09  .Q        .         .         .     V   .
19.750     79.9269     24.70  .Q        .         .         .     V   .
19.833     80.0944     24.31  .Q        .         .         .     V   .
19.917     80.2593     23.95  .Q        .         .         .      V  .
20.000     80.4218     23.59  .Q        .         .         .      V  .
20.083     80.5819     23.25  .Q        .         .         .      V  .
20.167     80.7398     22.93  .Q        .         .         .      V  .
20.250     80.8956     22.61  .Q        .         .         .      V  .
20.333     81.0492     22.31  Q         .         .         .      V  .
20.417     81.2008     22.01  Q         .         .         .      V  .
20.500     81.3504     21.73  Q         .         .         .      V  .
20.583     81.4981     21.45  Q         .         .         .      V  .
20.667     81.6440     21.18  Q         .         .         .      V  .
20.750     81.7881     20.92  Q         .         .         .      V  .
20.833     81.9305     20.67  Q         .         .         .      V  .
20.917     82.0712     20.43  Q         .         .         .      V  .
```

21.000	82.2102	20.19	Q	.	.	.	V .
21.083	82.3477	19.96	Q	.	.	.	V .
21.167	82.4837	19.74	Q	.	.	.	V .
21.250	82.6181	19.52	Q	.	.	.	V .
21.333	82.7511	19.31	Q	.	.	.	V .
21.417	82.8827	19.11	Q	.	.	.	V .
21.500	83.0130	18.91	Q	.	.	.	V .
21.583	83.1419	18.72	Q	.	.	.	V .
21.667	83.2694	18.53	Q	.	.	.	V .
21.750	83.3958	18.34	Q	.	.	.	V .
21.833	83.5209	18.16	Q	.	.	.	V .
21.917	83.6447	17.99	Q	.	.	.	V .
22.000	83.7674	17.82	Q	.	.	.	V .
22.083	83.8890	17.65	Q	.	.	.	V .
22.167	84.0094	17.49	Q	.	.	.	V .
22.250	84.1287	17.33	Q	.	.	.	V .
22.333	84.2470	17.17	Q	.	.	.	V .
22.417	84.3642	17.02	Q	.	.	.	V .
22.500	84.4804	16.87	Q	.	.	.	V .
22.583	84.5955	16.72	Q	.	.	.	V.
22.667	84.7097	16.58	Q	.	.	.	V.
22.750	84.8230	16.44	Q	.	.	.	V.
22.833	84.9353	16.31	Q	.	.	.	V.
22.917	85.0467	16.17	Q	.	.	.	V.
23.000	85.1572	16.04	Q	.	.	.	V.
23.083	85.2668	15.91	Q	.	.	.	V.
23.167	85.3755	15.79	Q	.	.	.	V.
23.250	85.4834	15.67	Q	.	.	.	V.
23.333	85.5905	15.55	Q	.	.	.	V.
23.417	85.6967	15.43	Q	.	.	.	V.
23.500	85.8022	15.31	Q	.	.	.	V.
23.583	85.9069	15.20	Q	.	.	.	V.
23.667	86.0108	15.09	Q	.	.	.	V.
23.750	86.1139	14.98	Q	.	.	.	V.
23.833	86.2163	14.87	Q	.	.	.	V.
23.917	86.3180	14.76	Q	.	.	.	V.
24.000	86.4190	14.66	Q	.	.	.	V.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.0
10%	90.0
20%	40.0
30%	30.0

40%	25.0
50%	20.0
60%	15.0
70%	15.0
80%	10.0
90%	5.0

==========

END OF FLOODSCx ROUTING ANALYSIS

EXISTING 100-YEAR
REGIONAL ANALYSIS
TRIBUTARY TO RIVERSIDE CANAL
POC #2 / NODE 200

LOSS RATE CALCULATIONS
EXISTING REGIONAL
100-YR ANALYSIS
NODE 200

****
NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS
==========
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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Canal
2022-03-08
==========
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 4.75 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	0.87	10.00	32.(AMC II)	0.742	0.870
2	2.15	10.00	69.(AMC II)	0.272	0.923
3	168.79	50.00	32.(AMC II)	0.742	0.548
4	7.88	50.00	69.(AMC II)	0.272	0.816
5	0.52	50.00	75.(AMC II)	0.210	0.869
6	33.46	100.00	50.(AMC II)	0.495	0.390
7	0.01	100.00	69.(AMC II)	0.272	0.681
8	15.17	100.00	79.(AMC II)	0.170	0.832
9	120.64	100.00	83.(AMC II)	0.133	0.902
10	36.67	60.00	32.(AMC II)	0.742	0.468
11	34.58	60.00	69.(AMC II)	0.272	0.789
12	52.37	10.00	32.(AMC II)	0.742	0.870
13	2.22	10.00	69.(AMC II)	0.272	0.923

TOTAL AREA (Acres) = 475.33

AREA-AVERAGED LOSS RATE, $\bar{Fm}$ (in./hr.) = 0.263

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.309
==========

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

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



 ************************ DESCRIPTION OF STUDY ************************
* GRAND TERRACE GATEWAY                                               *
* REGIONAL-CANAL OUTLET- EXISTING CONDITION                           *
* CT 2022-03-08                                                       *
 **********************************************************************

  FILE NAME: REGEX-C.DAT
  TIME/DATE OF STUDY: 09:13 03/09/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     475.330 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.250 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.263
         LOW LOSS FRACTION = 0.309
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  2.25
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  4.75
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.979
30-MINUTE FACTOR = 0.979
1-HOUR FACTOR = 0.979
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 33.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.170	124.751
2	13.591	656.557
3	35.416	1254.590
4	62.732	1570.249
5	82.211	1119.784
6	91.877	555.655
7	96.496	265.528
8	98.279	102.463
9	98.906	36.074
10	99.441	30.709
11	99.776	19.297
12	99.944	9.649
13	100.000	3.216

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 52.9216
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 134.9804

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	225.0	450.0	675.0	900.0
0.083	0.0053	0.77	Q	.	.	.	.
0.167	0.0384	4.80	Q	.	.	.	.
0.250	0.1246	12.53	Q	.	.	.	.
0.333	0.2776	22.20	Q	.	.	.	.
0.417	0.4782	29.14	VQ	.	.	.	.
0.500	0.7029	32.62	VQ	.	.	.	.
0.583	0.9394	34.33	VQ	.	.	.	.
0.667	1.1807	35.05	VQ	.	.	.	.
0.750	1.4242	35.35	VQ	.	.	.	.
0.833	1.6696	35.63	VQ	.	.	.	.
0.917	1.9164	35.84	VQ	.	.	.	.
1.000	2.1643	35.99	VQ	.	.	.	.
1.083	2.4129	36.10	VQ	.	.	.	.
1.167	2.6621	36.19	VQ	.	.	.	.
1.250	2.9119	36.28	VQ	.	.	.	.
1.333	3.1624	36.37	VQ	.	.	.	.
1.417	3.4136	36.47	.Q	.	.	.	.
1.500	3.6654	36.56	.Q	.	.	.	.
1.583	3.9178	36.65	.Q	.	.	.	.
1.667	4.1709	36.75	.Q	.	.	.	.
1.750	4.4247	36.85	.Q	.	.	.	.
1.833	4.6791	36.95	.Q	.	.	.	.
1.917	4.9343	37.04	.Q	.	.	.	.
2.000	5.1901	37.14	.Q	.	.	.	.
2.083	5.4466	37.24	.Q	.	.	.	.
2.167	5.7037	37.34	.Q	.	.	.	.
2.250	5.9616	37.44	.Q	.	.	.	.
2.333	6.2202	37.55	.Q	.	.	.	.
2.417	6.4795	37.65	.Q	.	.	.	.
2.500	6.7395	37.75	.Q	.	.	.	.
2.583	7.0003	37.86	.QV	.	.	.	.
2.667	7.2617	37.97	.QV	.	.	.	.
2.750	7.5240	38.07	.QV	.	.	.	.
2.833	7.7869	38.18	.QV	.	.	.	.
2.917	8.0506	38.29	.QV	.	.	.	.
3.000	8.3151	38.40	.QV	.	.	.	.
3.083	8.5803	38.51	.QV	.	.	.	.
3.167	8.8463	38.62	.QV	.	.	.	.
3.250	9.1131	38.74	.QV	.	.	.	.

3.333	9.3807	38.85	.QV	.	.	.	.
3.417	9.6490	38.97	.QV	.	.	.	.
3.500	9.9182	39.08	.QV	.	.	.	.
3.583	10.1882	39.20	.Q V	.	.	.	.
3.667	10.4589	39.32	.Q V	.	.	.	.
3.750	10.7306	39.44	.Q V	.	.	.	.
3.833	11.0030	39.56	.Q V	.	.	.	.
3.917	11.2763	39.68	.Q V	.	.	.	.
4.000	11.5504	39.80	.Q V	.	.	.	.
4.083	11.8254	39.93	.Q V	.	.	.	.
4.167	12.1013	40.05	.Q V	.	.	.	.
4.250	12.3780	40.18	.Q V	.	.	.	.
4.333	12.6556	40.31	.Q V	.	.	.	.
4.417	12.9341	40.44	.Q V	.	.	.	.
4.500	13.2135	40.57	.Q V	.	.	.	.
4.583	13.4938	40.70	.Q V	.	.	.	.
4.667	13.7751	40.84	.Q V	.	.	.	.
4.750	14.0572	40.97	.Q V	.	.	.	.
4.833	14.3404	41.11	.Q V	.	.	.	.
4.917	14.6244	41.24	.Q V	.	.	.	.
5.000	14.9094	41.39	.Q V	.	.	.	.
5.083	15.1954	41.53	.Q V	.	.	.	.
5.167	15.4824	41.67	.Q V	.	.	.	.
5.250	15.7704	41.81	.Q V	.	.	.	.
5.333	16.0593	41.96	.Q V	.	.	.	.
5.417	16.3493	42.10	.Q V	.	.	.	.
5.500	16.6403	42.25	.Q V	.	.	.	.
5.583	16.9323	42.40	.Q V	.	.	.	.
5.667	17.2254	42.56	.Q V	.	.	.	.
5.750	17.5196	42.71	.Q V	.	.	.	.
5.833	17.8148	42.87	.Q V	.	.	.	.
5.917	18.1111	43.02	.Q V	.	.	.	.
6.000	18.4085	43.18	.Q V	.	.	.	.
6.083	18.7070	43.34	.Q V	.	.	.	.
6.167	19.0067	43.51	.Q V	.	.	.	.
6.250	19.3074	43.67	.Q V	.	.	.	.
6.333	19.6094	43.84	.Q V	.	.	.	.
6.417	19.9125	44.01	.Q V	.	.	.	.
6.500	20.2167	44.18	.Q V	.	.	.	.
6.583	20.5222	44.35	.Q V	.	.	.	.
6.667	20.8289	44.53	.Q V	.	.	.	.
6.750	21.1368	44.71	.Q V	.	.	.	.
6.833	21.4460	44.89	.Q V	.	.	.	.
6.917	21.7564	45.07	. Q V	.	.	.	.
7.000	22.0680	45.26	. Q V	.	.	.	.
7.083	22.3810	45.44	. Q V	.	.	.	.
7.167	22.6953	45.63	. Q V	.	.	.	.
7.250	23.0109	45.82	. Q V	.	.	.	.
7.333	23.3278	46.02	. Q V	.	.	.	.
7.417	23.6461	46.22	. Q V	.	.	.	.

```
 7.500     23.9658     46.42  . Q    V  .         .         .         .
 7.583     24.2869     46.62  . Q    V  .         .         .         .
 7.667     24.6094     46.83  . Q    V  .         .         .         .
 7.750     24.9333     47.04  . Q    V  .         .         .         .
 7.833     25.2587     47.25  . Q    V  .         .         .         .
 7.917     25.5856     47.46  . Q    V  .         .         .         .
 8.000     25.9140     47.68  . Q    V  .         .         .         .
 8.083     26.2439     47.90  . Q    V  .         .         .         .
 8.167     26.5753     48.13  . Q    V  .         .         .         .
 8.250     26.9084     48.35  . Q    V  .         .         .         .
 8.333     27.2430     48.59  . Q     V .         .         .         .
 8.417     27.5792     48.82  . Q     V .         .         .         .
 8.500     27.9171     49.06  . Q     V .         .         .         .
 8.583     28.2566     49.30  . Q     V .         .         .         .
 8.667     28.5979     49.55  . Q     V .         .         .         .
 8.750     28.9408     49.80  . Q     V .         .         .         .
 8.833     29.2855     50.05  . Q     V .         .         .         .
 8.917     29.6320     50.31  . Q     V .         .         .         .
 9.000     29.9803     50.57  . Q     V .         .         .         .
 9.083     30.3304     50.84  . Q     V .         .         .         .
 9.167     30.6824     51.11  . Q      V.         .         .         .
 9.250     31.0363     51.39  . Q      V.         .         .         .
 9.333     31.3922     51.67  . Q      V.         .         .         .
 9.417     31.7500     51.95  . Q      V.         .         .         .
 9.500     32.1098     52.25  . Q      V.         .         .         .
 9.583     32.4717     52.54  . Q      V.         .         .         .
 9.667     32.8356     52.84  . Q      V.         .         .         .
 9.750     33.2016     53.15  . Q      V.         .         .         .
 9.833     33.5698     53.46  . Q      V.         .         .         .
 9.917     33.9402     53.78  . Q       V         .         .         .
10.000     34.3129     54.11  . Q       V         .         .         .
10.083     34.6878     54.44  . Q       V         .         .         .
10.167     35.0650     54.78  . Q       V         .         .         .
10.250     35.4446     55.12  . Q       V         .         .         .
10.333     35.8267     55.47  . Q       V         .         .         .
10.417     36.2112     55.83  . Q       V         .         .         .
10.500     36.5982     56.20  . Q       V         .         .         .
10.583     36.9878     56.57  . Q       V         .         .         .
10.667     37.3800     56.95  . Q       .V        .         .         .
10.750     37.7749     57.34  . Q       .V        .         .         .
10.833     38.1726     57.74  . Q       .V        .         .         .
10.917     38.5731     58.15  . Q       .V        .         .         .
11.000     38.9764     58.57  . Q       .V        .         .         .
11.083     39.3827     58.99  . Q       .V        .         .         .
11.167     39.7920     59.43  . Q       .V        .         .         .
11.250     40.2043     59.87  . Q       .V        .         .         .
11.333     40.6198     60.33  . Q       . V       .         .         .
11.417     41.0386     60.80  . Q       . V       .         .         .
11.500     41.4606     61.28  . Q       . V       .         .         .
11.583     41.8861     61.77  . Q       . V       .         .         .
```

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11.667     42.3150     62.28  . Q       . V       .         .         .
11.750     42.7475     62.80  . Q       . V       .         .         .
11.833     43.1837     63.34  . Q       . V       .         .         .
11.917     43.6237     63.88  . Q       . V       .         .         .
12.000     44.0675     64.45  . Q       .  V      .         .         .
12.083     44.5114     64.44  . Q       .  V      .         .         .
12.167     44.9383     61.99  . Q       .  V      .         .         .
12.250     45.3293     56.77  . Q       .  V      .         .         .
12.333     45.6743     50.09  . Q       .  V      .         .         .
12.417     45.9876     45.49  . Q       .  V      .         .         .
12.500     46.2874     43.53  .Q        .  V      .         .         .
12.583     46.5829     42.92  .Q        .  V      .         .         .
12.667     46.8797     43.09  .Q        .  V      .         .         .
12.750     47.1799     43.59  .Q        .  V      .         .         .
12.833     47.4840     44.15  .Q        .   V     .         .         .
12.917     47.7924     44.78  .Q        .   V     .         .         .
13.000     48.1057     45.49  . Q       .   V     .         .         .
13.083     48.4243     46.26  . Q       .   V     .         .         .
13.167     48.7486     47.09  . Q       .   V     .         .         .
13.250     49.0788     47.94  . Q       .   V     .         .         .
13.333     49.4152     48.85  . Q       .   V     .         .         .
13.417     49.7581     49.78  . Q       .   V     .         .         .
13.500     50.1077     50.77  . Q       .   V     .         .         .
13.583     50.4645     51.81  . Q       .   V     .         .         .
13.667     50.8289     52.91  . Q       .    V    .         .         .
13.750     51.2011     54.05  . Q       .    V    .         .         .
13.833     51.5818     55.27  . Q       .    V    .         .         .
13.917     51.9713     56.55  . Q       .    V    .         .         .
14.000     52.3702     57.92  . Q       .    V    .         .         .
14.083     52.7809     59.63  . Q       .    V    .         .         .
14.167     53.2119     62.58  . Q       .    V    .         .         .
14.250     53.6726     66.90  . Q       .    V    .         .         .
14.333     54.1688     72.05  .  Q      .     V   .         .         .
14.417     54.6950     76.40  .  Q      .     V   .         .         .
14.500     55.2443     79.76  .  Q      .     V   .         .         .
14.583     55.8136     82.65  .  Q      .     V   .         .         .
14.667     56.4020     85.43  .  Q      .     V   .         .         .
14.750     57.0098     88.26  .  Q      .     V   .         .         .
14.833     57.6390     91.36  .   Q     .      V  .         .         .
14.917     58.2912     94.69  .   Q     .      V  .         .         .
15.000     58.9687     98.38  .   Q     .      V  .         .         .
15.083     59.6740    102.40  .   Q     .      V  .         .         .
15.167     60.4106    106.96  .   Q     .      V  .         .         .
15.250     61.1820    112.01  .   Q     .       V .         .         .
15.333     61.9936    117.85  .    Q    .       V .         .         .
15.417     62.8574    125.41  .    Q    .       V .         .         .
15.500     63.8096    138.26  .     Q   .       V .         .         .
15.583     64.8911    157.05  .     Q   .        V.         .         .
15.667     66.1342    180.49  .       Q .        V.         .         .
15.750     67.5266    202.18  .       Q .         V         .         .
```

15.833	69.0377	219.41	. Q. V . .
15.917	70.6681	236.73	. Q V . .
16.000	72.5266	269.86	. .Q .V . .
16.083	75.0786	370.54	. . Q . V . .
16.167	79.2203	601.38	. . . V Q . .
16.250	84.8423	816.32	. . . V . Q .
16.333	90.9300	883.94	. . . V . Q.
16.417	95.6615	687.01	. . . V Q .
16.500	98.7818	453.08	. . Q V. .
16.583	100.9042	308.17	. . Q . V. .
16.667	102.3677	212.50	. Q. . V .
16.750	103.4739	160.61	. Q . . V .
16.833	104.4226	137.75	. Q . . V .
16.917	105.2439	119.26	. Q . . .V .
17.000	105.9698	105.39	. Q . . .V .
17.083	106.6230	94.85	. Q . . .V .
17.167	107.2141	85.82	. Q . . .V .
17.250	107.7495	77.74	. Q . . .V .
17.333	108.2312	69.95	. Q . . . V .
17.417	108.6710	63.85	. Q . . . V .
17.500	109.0808	59.51	. Q . . . V .
17.583	109.4676	56.17	. Q . . . V .
17.667	109.8361	53.50	. Q . . . V .
17.750	110.1890	51.24	. Q . . . V .
17.833	110.5278	49.19	. Q . . . V .
17.917	110.8539	47.36	. Q . . . V .
18.000	111.1686	45.70	. Q . . . V .
18.083	111.4769	44.77	.Q . . . V .
18.167	111.7966	46.42	. Q . . . V .
18.250	112.1474	50.94	. Q . . . V .
18.333	112.5398	56.97	. Q . . . V .
18.417	112.9596	60.96	. Q . . . V .
18.500	113.3892	62.38	. Q . . . V .
18.583	113.8196	62.50	. Q . . . V .
18.667	114.2461	61.92	. Q . . . V .
18.750	114.6667	61.08	. Q . . . V .
18.833	115.0818	60.27	. Q . . . V .
18.917	115.4912	59.45	. Q . . . V .
19.000	115.8950	58.62	. Q . . . V .
19.083	116.2931	57.81	. Q . . . V .
19.167	116.6858	57.02	. Q . . . V .
19.250	117.0732	56.26	. Q . . . V .
19.333	117.4557	55.53	. Q . . . V .
19.417	117.8333	54.83	. Q . . . V .
19.500	118.2063	54.16	. Q . . . V .
19.583	118.5748	53.51	. Q . . . V .
19.667	118.9391	52.89	. Q . . . V .
19.750	119.2992	52.29	. Q . . . V .
19.833	119.6553	51.71	. Q . . . V .
19.917	120.0076	51.15	. Q . . . V .

```
20.000    120.3562     50.61  . Q       .         .         .    V    .
20.083    120.7011     50.09  . Q       .         .         .    V    .
20.167    121.0426     49.58  . Q       .         .         .    V    .
20.250    121.3807     49.09  . Q       .         .         .    V    .
20.333    121.7156     48.62  . Q       .         .         .     V   .
20.417    122.0472     48.16  . Q       .         .         .     V   .
20.500    122.3758     47.71  . Q       .         .         .     V   .
20.583    122.7014     47.28  . Q       .         .         .     V   .
20.667    123.0241     46.86  . Q       .         .         .     V   .
20.750    123.3440     46.45  . Q       .         .         .     V   .
20.833    123.6611     46.05  . Q       .         .         .     V   .
20.917    123.9756     45.66  . Q       .         .         .     V   .
21.000    124.2874     45.28  . Q       .         .         .     V   .
21.083    124.5967     44.91  .Q        .         .         .     V   .
21.167    124.9036     44.55  .Q        .         .         .      V  .
21.250    125.2080     44.20  .Q        .         .         .      V  .
21.333    125.5101     43.86  .Q        .         .         .      V  .
21.417    125.8099     43.53  .Q        .         .         .      V  .
21.500    126.1074     43.20  .Q        .         .         .      V  .
21.583    126.4028     42.89  .Q        .         .         .      V  .
21.667    126.6960     42.57  .Q        .         .         .      V  .
21.750    126.9871     42.27  .Q        .         .         .      V  .
21.833    127.2762     41.97  .Q        .         .         .      V  .
21.917    127.5633     41.68  .Q        .         .         .      V  .
22.000    127.8484     41.40  .Q        .         .         .      V  .
22.083    128.1316     41.12  .Q        .         .         .      V  .
22.167    128.4130     40.85  .Q        .         .         .       V .
22.250    128.6925     40.58  .Q        .         .         .       V .
22.333    128.9702     40.32  .Q        .         .         .       V .
22.417    129.2461     40.07  .Q        .         .         .       V .
22.500    129.5204     39.82  .Q        .         .         .       V .
22.583    129.7929     39.57  .Q        .         .         .       V .
22.667    130.0638     39.33  .Q        .         .         .       V .
22.750    130.3330     39.09  .Q        .         .         .       V .
22.833    130.6007     38.86  .Q        .         .         .       V .
22.917    130.8668     38.64  .Q        .         .         .       V .
23.000    131.1313     38.41  .Q        .         .         .       V .
23.083    131.3943     38.19  .Q        .         .         .       V .
23.167    131.6559     37.98  .Q        .         .         .        V.
23.250    131.9160     37.77  .Q        .         .         .        V.
23.333    132.1747     37.56  .Q        .         .         .        V.
23.417    132.4319     37.35  .Q        .         .         .        V.
23.500    132.6878     37.15  .Q        .         .         .        V.
23.583    132.9423     36.96  .Q        .         .         .        V.
23.667    133.1955     36.76  .Q        .         .         .        V.
23.750    133.4473     36.57  .Q        .         .         .        V.
23.833    133.6979     36.38  .Q        .         .         .        V.
23.917    133.9472     36.20  .Q        .         .         .        V.
24.000    134.1953     36.02  .Q        .         .         .        V.
24.083    134.4368     35.07  .Q        .         .         .        V.
```

24.167	134.6494	30.87	.Q	.	.	.	V.
24.250	134.8079	23.02	.Q	.	.	.	V.
24.333	134.8993	13.27	Q	.	.	.	V.
24.417	134.9429	6.33	Q	.	.	.	V.
24.500	134.9628	2.89	Q	.	.	.	V.
24.583	134.9714	1.25	Q	.	.	.	V.
24.667	134.9756	0.61	Q	.	.	.	V.
24.750	134.9783	0.39	Q	.	.	.	V.
24.833	134.9797	0.20	Q	.	.	.	V.
24.917	134.9802	0.08	Q	.	.	.	V.
25.000	134.9804	0.02	Q	.	.	.	V.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1500.0
10%	140.0
20%	65.0
30%	40.0
40%	30.0
50%	25.0
60%	20.0
70%	15.0
80%	10.0
90%	10.0

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END OF FLOODSCx ROUTING ANALYSIS

EXISTING 25-YEAR
REGIONAL ANALYSIS
TRIBUTARY TO RIVERSIDE CANAL
POC #2 / NODE 200

LOSS RATE CALCULATIONS

EXISTING REGIONAL
25-YR ANALYSIS
NODE 200

****

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

==========

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Canal WS-Exist-25year
2022-03-10

==========

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 3.60 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	0.87	10.00	32.	0.975	0.842
2	2.15	10.00	69.	0.566	0.870
3	168.79	50.00	32.	0.975	0.468
4	7.88	50.00	69.	0.566	0.608
5	0.52	50.00	75.	0.470	0.658
6	33.46	100.00	50.	0.820	0.061
7	0.01	100.00	69.	0.566	0.282
8	15.17	100.00	79.	0.398	0.457
9	120.64	100.00	83.	0.326	0.540
10	36.67	60.00	32.	0.975	0.374
11	34.58	60.00	69.	0.566	0.543
12	52.37	10.00	32.	0.975	0.842
13	2.22	10.00	69.	0.566	0.870

TOTAL AREA (Acres) = 475.33

AREA-AVERAGED LOSS RATE, $\bar{Fm}$ (in./hr.) = 0.413

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.497

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            F L O O D    R O U T I N G    A N A L Y S I S
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              Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:



 ************************ DESCRIPTION OF STUDY ************************
* Grand Terrace                                                       *
* Canal WS - Exist-25year                                             *
* 2022-03-10                                                          *
 **********************************************************************

  FILE NAME: CNLEX25.DAT
  TIME/DATE OF STUDY: 16:19 03/10/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     475.330 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.250 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.413
         LOW LOSS FRACTION = 0.497
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.36
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.75
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.00
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.45
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  3.60
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.979
30-MINUTE FACTOR = 0.979
1-HOUR FACTOR = 0.979
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 33.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.170	124.751
2	13.591	656.557
3	35.416	1254.590
4	62.732	1570.249
5	82.211	1119.784
6	91.877	555.655
7	96.496	265.528
8	98.279	102.463
9	98.906	36.074
10	99.441	30.709
11	99.776	19.297
12	99.944	9.649
13	100.000	3.216

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 64.0138
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 78.4085

==========

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	175.0	350.0	525.0	700.0
0.083	0.0027	0.39	Q	.	.	.	.
0.167	0.0196	2.46	Q	.	.	.	.
0.250	0.0638	6.41	Q	.	.	.	.
0.333	0.1421	11.37	Q	.	.	.	.
0.417	0.2448	14.92	Q	.	.	.	.
0.500	0.3599	16.70	Q	.	.	.	.
0.583	0.4810	17.58	VQ	.	.	.	.
0.667	0.6046	17.95	VQ	.	.	.	.
0.750	0.7293	18.11	VQ	.	.	.	.
0.833	0.8551	18.26	VQ	.	.	.	.
0.917	0.9816	18.37	VQ	.	.	.	.
1.000	1.1087	18.45	VQ	.	.	.	.
1.083	1.2361	18.51	VQ	.	.	.	.
1.167	1.3640	18.56	VQ	.	.	.	.
1.250	1.4921	18.61	VQ	.	.	.	.
1.333	1.6207	18.66	VQ	.	.	.	.
1.417	1.7495	18.71	VQ	.	.	.	.
1.500	1.8788	18.77	VQ	.	.	.	.
1.583	2.0084	18.82	.Q	.	.	.	.
1.667	2.1384	18.87	.Q	.	.	.	.
1.750	2.2687	18.93	.Q	.	.	.	.
1.833	2.3995	18.98	.Q	.	.	.	.
1.917	2.5306	19.04	.Q	.	.	.	.
2.000	2.6621	19.09	.Q	.	.	.	.
2.083	2.7939	19.15	.Q	.	.	.	.
2.167	2.9262	19.20	.Q	.	.	.	.
2.250	3.0588	19.26	.Q	.	.	.	.
2.333	3.1919	19.32	.Q	.	.	.	.
2.417	3.3253	19.37	.Q	.	.	.	.
2.500	3.4591	19.43	.Q	.	.	.	.
2.583	3.5934	19.49	.Q	.	.	.	.
2.667	3.7280	19.55	.Q	.	.	.	.
2.750	3.8631	19.61	.Q	.	.	.	.
2.833	3.9986	19.67	.QV	.	.	.	.
2.917	4.1345	19.73	.QV	.	.	.	.
3.000	4.2708	19.79	.QV	.	.	.	.
3.083	4.4075	19.86	.QV	.	.	.	.
3.167	4.5447	19.92	.QV	.	.	.	.

3.250	4.6823	19.98	.QV	.	.	.	.
3.333	4.8204	20.05	.QV	.	.	.	.
3.417	4.9589	20.11	.QV	.	.	.	.
3.500	5.0978	20.18	.QV	.	.	.	.
3.583	5.2372	20.24	.QV	.	.	.	.
3.667	5.3771	20.31	.QV	.	.	.	.
3.750	5.5174	20.37	.QV	.	.	.	.
3.833	5.6582	20.44	.QV	.	.	.	.
3.917	5.7995	20.51	.QV	.	.	.	.
4.000	5.9412	20.58	.Q V	.	.	.	.
4.083	6.0834	20.65	.Q V	.	.	.	.
4.167	6.2261	20.72	.Q V	.	.	.	.
4.250	6.3693	20.79	.Q V	.	.	.	.
4.333	6.5130	20.86	.Q V	.	.	.	.
4.417	6.6572	20.94	.Q V	.	.	.	.
4.500	6.8019	21.01	.Q V	.	.	.	.
4.583	6.9471	21.08	.Q V	.	.	.	.
4.667	7.0928	21.16	.Q V	.	.	.	.
4.750	7.2391	21.23	.Q V	.	.	.	.
4.833	7.3858	21.31	.Q V	.	.	.	.
4.917	7.5332	21.39	.Q V	.	.	.	.
5.000	7.6810	21.47	.Q V	.	.	.	.
5.083	7.8294	21.55	.Q V	.	.	.	.
5.167	7.9784	21.63	.Q V	.	.	.	.
5.250	8.1279	21.71	.Q V	.	.	.	.
5.333	8.2779	21.79	.Q V	.	.	.	.
5.417	8.4286	21.87	.Q V	.	.	.	.
5.500	8.5798	21.96	.Q V	.	.	.	.
5.583	8.7316	22.04	.Q V	.	.	.	.
5.667	8.8840	22.13	.Q V	.	.	.	.
5.750	9.0370	22.21	.Q V	.	.	.	.
5.833	9.1906	22.30	.Q V	.	.	.	.
5.917	9.3448	22.39	.Q V	.	.	.	.
6.000	9.4996	22.48	.Q V	.	.	.	.
6.083	9.6551	22.57	.Q V	.	.	.	.
6.167	9.8112	22.67	.Q V	.	.	.	.
6.250	9.9679	22.76	.Q V	.	.	.	.
6.333	10.1253	22.85	.Q V	.	.	.	.
6.417	10.2834	22.95	.Q V	.	.	.	.
6.500	10.4421	23.05	.Q V	.	.	.	.
6.583	10.6015	23.14	.Q V	.	.	.	.
6.667	10.7616	23.24	.Q V	.	.	.	.
6.750	10.9223	23.34	.Q V	.	.	.	.
6.833	11.0838	23.45	.Q V	.	.	.	.
6.917	11.2460	23.55	.Q V	.	.	.	.
7.000	11.4089	23.65	.Q V	.	.	.	.
7.083	11.5725	23.76	.Q V	.	.	.	.
7.167	11.7369	23.87	.Q V	.	.	.	.
7.250	11.9021	23.98	.Q V	.	.	.	.
7.333	12.0680	24.09	.Q V	.	.	.	.

```
 7.417     12.2346     24.20  .Q    V   .         .         .         .
 7.500     12.4021     24.31  .Q    V   .         .         .         .
 7.583     12.5703     24.43  .Q    V   .         .         .         .
 7.667     12.7394     24.55  .Q    V   .         .         .         .
 7.750     12.9092     24.66  .Q    V   .         .         .         .
 7.833     13.0799     24.79  .Q    V   .         .         .         .
 7.917     13.2515     24.91  .Q    V   .         .         .         .
 8.000     13.4239     25.03  .Q    V   .         .         .         .
 8.083     13.5971     25.16  .Q    V   .         .         .         .
 8.167     13.7713     25.29  .Q     V  .         .         .         .
 8.250     13.9463     25.42  .Q     V  .         .         .         .
 8.333     14.1223     25.55  .Q     V  .         .         .         .
 8.417     14.2992     25.68  .Q     V  .         .         .         .
 8.500     14.4770     25.82  .Q     V  .         .         .         .
 8.583     14.6557     25.96  .Q     V  .         .         .         .
 8.667     14.8355     26.10  .Q     V  .         .         .         .
 8.750     15.0162     26.24  .Q     V  .         .         .         .
 8.833     15.1979     26.39  .Q     V  .         .         .         .
 8.917     15.3806     26.53  .Q     V  .         .         .         .
 9.000     15.5644     26.68  .Q     V  .         .         .         .
 9.083     15.7492     26.84  .Q      V .         .         .         .
 9.167     15.9351     26.99  .Q      V .         .         .         .
 9.250     16.1221     27.15  .Q      V .         .         .         .
 9.333     16.3102     27.31  .Q      V .         .         .         .
 9.417     16.4994     27.47  .Q      V .         .         .         .
 9.500     16.6898     27.64  .Q      V .         .         .         .
 9.583     16.8813     27.81  .Q      V .         .         .         .
 9.667     17.0740     27.99  .Q      V .         .         .         .
 9.750     17.2680     28.16  .Q      V .         .         .         .
 9.833     17.4632     28.34  .Q      V .         .         .         .
 9.917     17.6596     28.52  .Q       V.         .         .         .
10.000     17.8574     28.71  .Q       V.         .         .         .
10.083     18.0564     28.90  .Q       V.         .         .         .
10.167     18.2568     29.10  .Q       V.         .         .         .
10.250     18.4586     29.29  .Q       V.         .         .         .
10.333     18.6617     29.50  .Q       V.         .         .         .
10.417     18.8663     29.70  .Q       V.         .         .         .
10.500     19.0723     29.92  .Q       V.         .         .         .
10.583     19.2799     30.13  .Q       V.         .         .         .
10.667     19.4889     30.35  .Q       V.         .         .         .
10.750     19.6995     30.58  .Q        V         .         .         .
10.833     19.9117     30.81  .Q        V         .         .         .
10.917     20.1255     31.04  .Q        V         .         .         .
11.000     20.3410     31.29  .Q        V         .         .         .
11.083     20.5581     31.53  .Q        V         .         .         .
11.167     20.7771     31.79  .Q        V         .         .         .
11.250     20.9978     32.05  .Q        V         .         .         .
11.333     21.2203     32.31  .Q        V         .         .         .
11.417     21.4447     32.58  .Q        V         .         .         .
11.500     21.6711     32.87  .Q        .V        .         .         .
```

11.583	21.8994	33.15	.Q	.V	.	.	.
11.667	22.1297	33.45	.Q	.V	.	.	.
11.750	22.3621	33.75	.Q	.V	.	.	.
11.833	22.5967	34.06	.Q	.V	.	.	.
11.917	22.8335	34.38	.Q	.V	.	.	.
12.000	23.0725	34.71	.Q	.V	.	.	.
12.083	23.3119	34.75	.Q	.V	.	.	.
12.167	23.5431	33.57	.Q	. V	.	.	.
12.250	23.7565	30.98	.Q	. V	.	.	.
12.333	23.9470	27.66	.Q	. V	.	.	.
12.417	24.1218	25.39	.Q	. V	.	.	.
12.500	24.2902	24.45	.Q	. V	.	.	.
12.583	24.4567	24.18	.Q	. V	.	.	.
12.667	24.6242	24.32	.Q	. V	.	.	.
12.750	24.7937	24.61	.Q	. V	.	.	.
12.833	24.9655	24.94	.Q	. V	.	.	.
12.917	25.1398	25.31	.Q	. V	.	.	.
13.000	25.3170	25.72	.Q	. V	.	.	.
13.083	25.4972	26.17	.Q	. V	.	.	.
13.167	25.6807	26.64	.Q	. V	.	.	.
13.250	25.8675	27.13	.Q	. V	.	.	.
13.333	26.0579	27.65	.Q	. V	.	.	.
13.417	26.2520	28.19	.Q	. V	.	.	.
13.500	26.4501	28.76	.Q	. V	.	.	.
13.583	26.6522	29.35	.Q	. V	.	.	.
13.667	26.8587	29.98	.Q	. V	.	.	.
13.750	27.0697	30.64	.Q	. V	.	.	.
13.833	27.2856	31.34	.Q	. V	.	.	.
13.917	27.5066	32.08	.Q	. V	.	.	.
14.000	27.7329	32.87	.Q	. V	.	.	.
14.083	27.9657	33.80	.Q	. V	.	.	.
14.167	28.2084	35.24	. Q	. V	.	.	.
14.250	28.4648	37.22	. Q	. V	.	.	.
14.333	28.7372	39.56	. Q	. V	.	.	.
14.417	29.0237	41.60	. Q	. V	.	.	.
14.500	29.3219	43.30	. Q	. V	.	.	.
14.583	29.6308	44.85	. Q	. V	.	.	.
14.667	29.9503	46.39	. Q	. V	.	.	.
14.750	30.2808	47.99	. Q	. V	.	.	.
14.833	30.6234	49.75	. Q	. V	.	.	.
14.917	30.9791	51.65	. Q	. V	.	.	.
15.000	31.3494	53.76	. Q	. V	.	.	.
15.083	31.7356	56.07	. Q	. V	.	.	.
15.167	32.1398	58.69	. Q	. V	.	.	.
15.250	32.5641	61.61	. Q	. V	.	.	.
15.333	33.0117	64.99	. Q	. V	.	.	.
15.417	33.4878	69.14	. Q	. V	.	.	.
15.500	34.0068	75.35	. Q	. V	.	.	.
15.583	34.5846	83.90	. Q	. V	.	.	.
15.667	35.2362	94.61	. Q	. V	.	.	.

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15.750     35.9654    105.88  .     Q   .       V .         .         .
15.833     36.7810    118.42  .     Q   .       V .         .         .
15.917     37.7125    135.27  .      Q  .        V.         .         .
16.000     38.8626    166.98  .        Q.        V.         .         .
16.083     40.6122    254.05  .          .   Q     V         .         .
16.167     43.7241    451.85  .          .         . V  Q    .         .
16.250     48.1073    636.43  .          .         .   V     .     Q   .
16.333     52.8795    692.93  .          .         .     V   .        Q.
16.417     56.4583    519.64  .          .         .       VQ.         .
16.500     58.6521    318.54  .          .       Q .        V.         .
16.583     60.0352    200.83  .         .Q         .         V         .
16.667     60.9225    128.83  .      Q  .         .         .V        .
16.750     61.5628     92.98  .    Q    .         .         .V        .
16.833     62.1102     79.48  .   Q     .         .         .V        .
16.917     62.5771     67.80  .  Q      .         .         .V        .
17.000     62.9820     58.79  .  Q      .         .         . V       .
17.083     63.3407     52.08  . Q       .         .         . V       .
17.167     63.6633     46.85  . Q       .         .         . V       .
17.250     63.9577     42.74  . Q       .         .         . V       .
17.333     64.2257     38.92  . Q       .         .         . V       .
17.417     64.4727     35.87  . Q       .         .         . V       .
17.500     64.7040     33.59  .Q        .         .         .  V      .
17.583     64.9229     31.78  .Q        .         .         .  V      .
17.667     65.1315     30.29  .Q        .         .         .  V      .
17.750     65.3312     29.00  .Q        .         .         .  V      .
17.833     65.5229     27.84  .Q        .         .         .  V      .
17.917     65.7074     26.79  .Q        .         .         .  V      .
18.000     65.8854     25.84  .Q        .         .         .  V      .
18.083     66.0594     25.27  .Q        .         .         .  V      .
18.167     66.2385     26.00  .Q        .         .         .  V      .
18.250     66.4326     28.18  .Q        .         .         .  V      .
18.333     66.6470     31.13  .Q        .         .         .  V      .
18.417     66.8746     33.05  .Q        .         .         .   V     .
18.500     67.1065     33.67  .Q        .         .         .   V     .
18.583     67.3382     33.65  .Q        .         .         .   V     .
18.667     67.5674     33.27  .Q        .         .         .   V     .
18.750     67.7931     32.77  .Q        .         .         .   V     .
18.833     68.0154     32.29  .Q        .         .         .   V     .
18.917     68.2344     31.80  .Q        .         .         .   V     .
19.000     68.4502     31.32  .Q        .         .         .   V     .
19.083     68.6626     30.85  .Q        .         .         .    V    .
19.167     68.8719     30.39  .Q        .         .         .    V    .
19.250     69.0782     29.95  .Q        .         .         .    V    .
19.333     69.2816     29.53  .Q        .         .         .    V    .
19.417     69.4822     29.13  .Q        .         .         .    V    .
19.500     69.6802     28.74  .Q        .         .         .    V    .
19.583     69.8755     28.37  .Q        .         .         .    V    .
19.667     70.0685     28.01  .Q        .         .         .    V    .
19.750     70.2590     27.67  .Q        .         .         .    V    .
19.833     70.4473     27.34  .Q        .         .         .    V    .
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19.917     70.6333     27.02  .Q        .         .         .     V   .
20.000     70.8173     26.71  .Q        .         .         .     V   .
20.083     70.9991     26.41  .Q        .         .         .     V   .
20.167     71.1790     26.12  .Q        .         .         .     V   .
20.250     71.3570     25.84  .Q        .         .         .     V   .
20.333     71.5331     25.57  .Q        .         .         .     V   .
20.417     71.7073     25.30  .Q        .         .         .     V   .
20.500     71.8799     25.05  .Q        .         .         .     V   .
20.583     72.0507     24.80  .Q        .         .         .     V   .
20.667     72.2198     24.56  .Q        .         .         .     V   .
20.750     72.3874     24.33  .Q        .         .         .     V   .
20.833     72.5534     24.10  .Q        .         .         .      V  .
20.917     72.7179     23.88  .Q        .         .         .      V  .
21.000     72.8809     23.67  .Q        .         .         .      V  .
21.083     73.0425     23.46  .Q        .         .         .      V  .
21.167     73.2026     23.26  .Q        .         .         .      V  .
21.250     73.3614     23.06  .Q        .         .         .      V  .
21.333     73.5189     22.87  .Q        .         .         .      V  .
21.417     73.6751     22.68  .Q        .         .         .      V  .
21.500     73.8300     22.49  .Q        .         .         .      V  .
21.583     73.9837     22.31  .Q        .         .         .      V  .
21.667     74.1361     22.14  .Q        .         .         .      V  .
21.750     74.2874     21.97  .Q        .         .         .      V  .
21.833     74.4376     21.80  .Q        .         .         .      V  .
21.917     74.5866     21.64  .Q        .         .         .       V .
22.000     74.7345     21.48  .Q        .         .         .       V .
22.083     74.8813     21.32  .Q        .         .         .       V .
22.167     75.0271     21.17  .Q        .         .         .       V .
22.250     75.1718     21.02  .Q        .         .         .       V .
22.333     75.3156     20.87  .Q        .         .         .       V .
22.417     75.4583     20.73  .Q        .         .         .       V .
22.500     75.6001     20.59  .Q        .         .         .       V .
22.583     75.7410     20.45  .Q        .         .         .       V .
22.667     75.8809     20.32  .Q        .         .         .       V .
22.750     76.0199     20.18  .Q        .         .         .       V .
22.833     76.1580     20.05  .Q        .         .         .       V .
22.917     76.2952     19.93  .Q        .         .         .       V .
23.000     76.4316     19.80  .Q        .         .         .       V .
23.083     76.5671     19.68  .Q        .         .         .        V.
23.167     76.7018     19.56  .Q        .         .         .        V.
23.250     76.8357     19.44  .Q        .         .         .        V.
23.333     76.9688     19.32  .Q        .         .         .        V.
23.417     77.1011     19.21  .Q        .         .         .        V.
23.500     77.2326     19.10  .Q        .         .         .        V.
23.583     77.3633     18.99  .Q        .         .         .        V.
23.667     77.4934     18.88  .Q        .         .         .        V.
23.750     77.6227     18.77  .Q        .         .         .        V.
23.833     77.7512     18.67  .Q        .         .         .        V.
23.917     77.8791     18.57  .Q        .         .         .        V.
24.000     78.0062     18.46  .Q        .         .         .        V.
```

24.083	78.1300	17.97	.Q	.	.	.	V.
24.167	78.2389	15.81	Q	.	.	.	V.
24.250	78.3201	11.79	Q	.	.	.	V.
24.333	78.3670	6.80	Q	.	.	.	V.
24.417	78.3893	3.24	Q	.	.	.	V.
24.500	78.3995	1.48	Q	.	.	.	V.
24.583	78.4039	0.64	Q	.	.	.	V.
24.667	78.4061	0.31	Q	.	.	.	V.
24.750	78.4074	0.20	Q	.	.	.	V.
24.833	78.4081	0.10	Q	.	.	.	V.
24.917	78.4084	0.04	Q	.	.	.	V.
25.000	78.4085	0.01	Q	.	.	.	V.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1500.0
10%	85.0
20%	40.0
30%	30.0
40%	25.0
50%	20.0
60%	20.0
70%	15.0
80%	10.0
90%	10.0

END OF FLOODSCx ROUTING ANALYSIS

EXISTING 10-YEAR
REGIONAL ANALYSIS
TRIBUTARY TO RIVERSIDE CANAL
POC #2 / NODE 200

LOSS RATE CALCULATIONS
EXISTING REGIONAL
10-YR ANALYSIS
NODE 200

****

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

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

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Problem Descriptions:
Grand Terrace
Canal WS-Exist-10YR
2022-03-10

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*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 3.00 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	0.87	10.00	32.	0.975	0.830
2	2.15	10.00	69.	0.566	0.853
3	168.79	50.00	32.	0.975	0.461
4	7.88	50.00	69.	0.566	0.573
5	0.52	50.00	75.	0.470	0.622
6	33.46	100.00	50.	0.820	0.030
7	0.01	100.00	69.	0.566	0.223
8	15.17	100.00	79.	0.398	0.396
9	120.64	100.00	83.	0.326	0.482
10	36.67	60.00	32.	0.975	0.369
11	34.58	60.00	69.	0.566	0.503
12	52.37	10.00	32.	0.975	0.830
13	2.22	10.00	69.	0.566	0.853

TOTAL AREA (Acres) = 475.33

AREA-AVERAGED LOSS RATE, $\bar{Fm}$ (in./hr.) = 0.413

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.523

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

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



 ************************ DESCRIPTION OF STUDY ************************
* Grand Terrace                                                       *
* Canal WS-Exist-10year                                               *
* 2022-03-10                                                          *
 *********************************************************************

  FILE NAME: CNLEX10.DAT
  TIME/DATE OF STUDY: 16:25 03/10/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     475.330 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.250 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.413
         LOW LOSS FRACTION = 0.523
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.30
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.63
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.85
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.57
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  3.00
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.979
30-MINUTE FACTOR = 0.979
1-HOUR FACTOR = 0.979
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 33.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.170	124.751
2	13.591	656.557
3	35.416	1254.590
4	62.732	1570.249
5	82.211	1119.784
6	91.877	555.655
7	96.496	265.528
8	98.279	102.463
9	98.906	36.074
10	99.441	30.709
11	99.776	19.297
12	99.944	9.649
13	100.000	3.216

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 56.5921
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 62.0948

==========

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
0.083	0.0020	0.29	Q	.	.	.	.
0.167	0.0145	1.82	Q	.	.	.	.
0.250	0.0471	4.73	Q	.	.	.	.
0.333	0.1049	8.39	Q	.	.	.	.
0.417	0.1808	11.02	Q	.	.	.	.
0.500	0.2658	12.34	Q	.	.	.	.
0.583	0.3552	12.99	Q	.	.	.	.
0.667	0.4466	13.26	Q	.	.	.	.
0.750	0.5387	13.38	Q	.	.	.	.
0.833	0.6317	13.49	Q	.	.	.	.
0.917	0.7252	13.58	Q	.	.	.	.
1.000	0.8191	13.64	Q	.	.	.	.
1.083	0.9134	13.69	Q	.	.	.	.
1.167	1.0079	13.73	Q	.	.	.	.
1.250	1.1027	13.77	Q	.	.	.	.
1.333	1.1978	13.81	Q	.	.	.	.
1.417	1.2932	13.85	Q	.	.	.	.
1.500	1.3889	13.89	Q	.	.	.	.
1.583	1.4848	13.93	Q	.	.	.	.
1.667	1.5811	13.97	QV	.	.	.	.
1.750	1.6776	14.02	QV	.	.	.	.
1.833	1.7744	14.06	QV	.	.	.	.
1.917	1.8716	14.10	QV	.	.	.	.
2.000	1.9690	14.15	QV	.	.	.	.
2.083	2.0667	14.19	QV	.	.	.	.
2.167	2.1648	14.24	QV	.	.	.	.
2.250	2.2631	14.28	QV	.	.	.	.
2.333	2.3618	14.33	QV	.	.	.	.
2.417	2.4607	14.37	QV	.	.	.	.
2.500	2.5600	14.42	QV	.	.	.	.
2.583	2.6596	14.46	QV	.	.	.	.
2.667	2.7596	14.51	QV	.	.	.	.
2.750	2.8598	14.56	QV	.	.	.	.
2.833	2.9604	14.61	QV	.	.	.	.
2.917	3.0613	14.65	QV	.	.	.	.
3.000	3.1626	14.70	Q V	.	.	.	.
3.083	3.2642	14.75	Q V	.	.	.	.
3.167	3.3661	14.80	Q V	.	.	.	.

3.250	3.4684	14.85	Q V	.	.	.	.
3.333	3.5710	14.90	Q V	.	.	.	.
3.417	3.6740	14.95	Q V	.	.	.	.
3.500	3.7773	15.00	.QV	.	.	.	.
3.583	3.8810	15.06	.QV	.	.	.	.
3.667	3.9851	15.11	.QV	.	.	.	.
3.750	4.0895	15.16	.QV	.	.	.	.
3.833	4.1943	15.22	.QV	.	.	.	.
3.917	4.2994	15.27	.QV	.	.	.	.
4.000	4.4050	15.33	.QV	.	.	.	.
4.083	4.5109	15.38	.QV	.	.	.	.
4.167	4.6172	15.44	.QV	.	.	.	.
4.250	4.7239	15.49	.Q V	.	.	.	.
4.333	4.8310	15.55	.Q V	.	.	.	.
4.417	4.9385	15.61	.Q V	.	.	.	.
4.500	5.0464	15.67	.Q V	.	.	.	.
4.583	5.1547	15.73	.Q V	.	.	.	.
4.667	5.2634	15.79	.Q V	.	.	.	.
4.750	5.3725	15.85	.Q V	.	.	.	.
4.833	5.4821	15.91	.Q V	.	.	.	.
4.917	5.5921	15.97	.Q V	.	.	.	.
5.000	5.7025	16.03	.Q V	.	.	.	.
5.083	5.8133	16.09	.Q V	.	.	.	.
5.167	5.9246	16.16	.Q V	.	.	.	.
5.250	6.0363	16.22	.Q V	.	.	.	.
5.333	6.1485	16.29	.Q V	.	.	.	.
5.417	6.2611	16.35	.Q V	.	.	.	.
5.500	6.3742	16.42	.Q V	.	.	.	.
5.583	6.4878	16.49	.Q V	.	.	.	.
5.667	6.6018	16.56	.Q V	.	.	.	.
5.750	6.7163	16.63	.Q V	.	.	.	.
5.833	6.8313	16.70	.Q V	.	.	.	.
5.917	6.9467	16.77	.Q V	.	.	.	.
6.000	7.0627	16.84	.Q V	.	.	.	.
6.083	7.1792	16.91	.Q V	.	.	.	.
6.167	7.2962	16.99	.Q V	.	.	.	.
6.250	7.4137	17.06	.Q V	.	.	.	.
6.333	7.5317	17.14	.Q V	.	.	.	.
6.417	7.6502	17.21	.Q V	.	.	.	.
6.500	7.7693	17.29	.Q V	.	.	.	.
6.583	7.8889	17.37	.Q V	.	.	.	.
6.667	8.0091	17.45	.Q V	.	.	.	.
6.750	8.1298	17.53	.Q V	.	.	.	.
6.833	8.2511	17.61	.Q V	.	.	.	.
6.917	8.3729	17.69	.Q V	.	.	.	.
7.000	8.4953	17.78	.Q V	.	.	.	.
7.083	8.6184	17.86	.Q V	.	.	.	.
7.167	8.7420	17.95	.Q V	.	.	.	.
7.250	8.8662	18.03	.Q V	.	.	.	.
7.333	8.9910	18.12	.Q V	.	.	.	.

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 7.417     9.1164    18.21  .Q  V    .        .        .        .
 7.500     9.2425    18.31  .Q  V    .        .        .        .
 7.583     9.3692    18.40  .Q   V   .        .        .        .
 7.667     9.4966    18.49  .Q   V   .        .        .        .
 7.750     9.6246    18.59  .Q   V   .        .        .        .
 7.833     9.7533    18.68  .Q   V   .        .        .        .
 7.917     9.8826    18.78  .Q   V   .        .        .        .
 8.000    10.0127    18.88  .Q   V   .        .        .        .
 8.083    10.1434    18.98  .Q   V   .        .        .        .
 8.167    10.2748    19.09  .Q   V   .        .        .        .
 8.250    10.4070    19.19  .Q   V   .        .        .        .
 8.333    10.5399    19.30  .Q   V   .        .        .        .
 8.417    10.6736    19.40  .Q   V   .        .        .        .
 8.500    10.8080    19.52  .Q   V   .        .        .        .
 8.583    10.9431    19.63  .Q    V  .        .        .        .
 8.667    11.0791    19.74  .Q    V  .        .        .        .
 8.750    11.2158    19.85  .Q    V  .        .        .        .
 8.833    11.3534    19.97  .Q    V  .        .        .        .
 8.917    11.4917    20.09  .Q    V  .        .        .        .
 9.000    11.6309    20.21  .Q    V  .        .        .        .
 9.083    11.7710    20.34  .Q    V  .        .        .        .
 9.167    11.9119    20.46  .Q    V  .        .        .        .
 9.250    12.0537    20.59  .Q    V  .        .        .        .
 9.333    12.1964    20.72  .Q    V  .        .        .        .
 9.417    12.3400    20.85  .Q    V  .        .        .        .
 9.500    12.4846    20.99  .Q     V .        .        .        .
 9.583    12.6301    21.12  .Q     V .        .        .        .
 9.667    12.7765    21.27  .Q     V .        .        .        .
 9.750    12.9239    21.41  .Q     V .        .        .        .
 9.833    13.0724    21.55  .Q     V .        .        .        .
 9.917    13.2219    21.70  .Q     V .        .        .        .
10.000    13.3724    21.85  .Q     V .        .        .        .
10.083    13.5239    22.01  .Q     V .        .        .        .
10.167    13.6766    22.17  .Q     V .        .        .        .
10.250    13.8304    22.33  .Q     V .        .        .        .
10.333    13.9853    22.49  .Q      V.        .        .        .
10.417    14.1414    22.66  .Q      V.        .        .        .
10.500    14.2986    22.83  .Q      V.        .        .        .
10.583    14.4571    23.01  .Q      V.        .        .        .
10.667    14.6168    23.19  .Q      V.        .        .        .
10.750    14.7777    23.37  .Q      V.        .        .        .
10.833    14.9400    23.56  .Q      V.        .        .        .
10.917    15.1036    23.75  .Q      V.        .        .        .
11.000    15.2685    23.95  .Q      V.        .        .        .
11.083    15.4349    24.15  .Q      V.        .        .        .
11.167    15.6026    24.36  .Q       V        .        .        .
11.250    15.7718    24.57  .Q       V        .        .        .
11.333    15.9425    24.79  .Q       V        .        .        .
11.417    16.1148    25.01  .Q       V        .        .        .
11.500    16.2886    25.24  .Q       V        .        .        .
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11.583     16.4640     25.47  .Q        V         .         .         .
11.667     16.6412     25.72  .Q        V         .         .         .
11.750     16.8200     25.96  .Q        V         .         .         .
11.833     17.0005     26.22  .Q        V         .         .         .
11.917     17.1829     26.48  .Q        .V        .         .         .
12.000     17.3672     26.75  .Q        .V        .         .         .
12.083     17.5526     26.93  .Q        .V        .         .         .
12.167     17.7364     26.69  .Q        .V        .         .         .
12.250     17.9153     25.97  .Q        .V        .         .         .
12.333     18.0875     25.01  .Q        .V        .         .         .
12.417     18.2556     24.41  .Q        .V        .         .         .
12.500     18.4228     24.28  .Q        .V        .         .         .
12.583     18.5908     24.39  .Q        .V        .         .         .
12.667     18.7605     24.64  .Q        . V       .         .         .
12.750     18.9324     24.96  .Q        . V       .         .         .
12.833     19.1066     25.30  .Q        . V       .         .         .
12.917     19.2833     25.65  .Q        . V       .         .         .
13.000     19.4626     26.04  .Q        . V       .         .         .
13.083     19.6447     26.44  .Q        . V       .         .         .
13.167     19.8297     26.87  .Q        . V       .         .         .
13.250     20.0177     27.30  .Q        . V       .         .         .
13.333     20.2090     27.77  .Q        .  V      .         .         .
13.417     20.4035     28.25  .Q        .  V      .         .         .
13.500     20.6016     28.76  .Q        .  V      .         .         .
13.583     20.8032     29.28  .Q        .  V      .         .         .
13.667     21.0088     29.84  .Q        .  V      .         .         .
13.750     21.2183     30.43  . Q       .  V      .         .         .
13.833     21.4321     31.05  . Q       .  V      .         .         .
13.917     21.6504     31.69  . Q       .  V      .         .         .
14.000     21.8735     32.39  . Q       .   V     .         .         .
14.083     22.1007     32.99  . Q       .   V     .         .         .
14.167     22.3290     33.15  . Q       .   V     .         .         .
14.250     22.5548     32.78  . Q       .   V     .         .         .
14.333     22.7762     32.16  . Q       .   V     .         .         .
14.417     22.9966     31.99  . Q       .   V     .         .         .
14.500     23.2199     32.43  . Q       .   V     .         .         .
14.583     23.4485     33.20  . Q       .    V    .         .         .
14.667     23.6842     34.22  . Q       .    V    .         .         .
14.750     23.9279     35.38  . Q       .    V    .         .         .
14.833     24.1805     36.68  . Q       .    V    .         .         .
14.917     24.4429     38.10  . Q       .    V    .         .         .
15.000     24.7163     39.70  . Q       .    V    .         .         .
15.083     25.0020     41.47  . Q       .     V   .         .         .
15.167     25.3014     43.49  . Q       .     V   .         .         .
15.250     25.6164     45.73  .  Q      .     V   .         .         .
15.333     25.9493     48.34  .  Q      .     V   .         .         .
15.417     26.3056     51.73  .  Q      .     V   .         .         .
15.500     26.7016     57.51  .  Q      .      V  .         .         .
15.583     27.1562     66.00  .   Q     .      V  .         .         .
15.667     27.6846     76.72  .    Q    .      V  .         .         .
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15.750     28.2854     87.24  .    Q    .       V .         .         .
15.833     28.9583     97.70  .     Q   .       V .         .         .
15.917     29.7189    110.45  .      Q  .        V.         .         .
16.000     30.6359    133.14  .       Q .        V.         .         .
16.083     32.0123    199.86  .         .  Q      V         .         .
16.167     34.4791    358.17  .         .         . VQ      .         .
16.250     37.9874    509.41  .         .         .   V     .  Q      .
16.333     41.8380    559.10  .         .         .     V   .      Q  .
16.417     44.7366    420.89  .         .         .       Q .         .
16.500     46.5163    258.40  .         .      Q  .        V.         .
16.583     47.6338    162.26  .         Q         .         V         .
16.667     48.3377    102.20  .     Q   .         .         .V        .
16.750     48.8332     71.96  .   Q     .         .         .V        .
16.833     49.2507     60.62  .   Q     .         .         .V        .
16.917     49.6024     51.07  .  Q      .         .         .V        .
17.000     49.9045     43.86  . Q       .         .         . V       .
17.083     50.1715     38.77  . Q       .         .         . V       .
17.167     50.4173     35.70  . Q       .         .         . V       .
17.250     50.6546     34.46  . Q       .         .         . V       .
17.333     50.8882     33.91  . Q       .         .         . V       .
17.417     51.1169     33.21  . Q       .         .         . V       .
17.500     51.3386     32.19  . Q       .         .         .  V      .
17.583     51.5526     31.07  . Q       .         .         .  V      .
17.667     51.7587     29.93  .Q        .         .         .  V      .
17.750     51.9575     28.85  .Q        .         .         .  V      .
17.833     52.1494     27.87  .Q        .         .         .  V      .
17.917     52.3352     26.97  .Q        .         .         .  V      .
18.000     52.5152     26.14  .Q        .         .         .  V      .
18.083     52.6906     25.46  .Q        .         .         .  V      .
18.167     52.8646     25.27  .Q        .         .         .   V     .
18.250     53.0410     25.61  .Q        .         .         .   V     .
18.333     53.2218     26.24  .Q        .         .         .   V     .
18.417     53.4046     26.55  .Q        .         .         .   V     .
18.500     53.5866     26.43  .Q        .         .         .   V     .
18.583     53.7664     26.11  .Q        .         .         .   V     .
18.667     53.9433     25.68  .Q        .         .         .   V     .
18.750     54.1171     25.23  .Q        .         .         .   V     .
18.833     54.2879     24.80  .Q        .         .         .   V     .
18.917     54.4559     24.39  .Q        .         .         .    V    .
19.000     54.6211     23.98  .Q        .         .         .    V    .
19.083     54.7836     23.59  .Q        .         .         .    V    .
19.167     54.9435     23.22  .Q        .         .         .    V    .
19.250     55.1009     22.86  .Q        .         .         .    V    .
19.333     55.2560     22.52  .Q        .         .         .    V    .
19.417     55.4089     22.19  .Q        .         .         .    V    .
19.500     55.5596     21.88  .Q        .         .         .    V    .
19.583     55.7082     21.58  .Q        .         .         .    V    .
19.667     55.8548     21.29  .Q        .         .         .    V    .
19.750     55.9995     21.01  .Q        .         .         .     V   .
19.833     56.1423     20.74  .Q        .         .         .     V   .
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19.917     56.2834     20.48  .Q        .         .         .     V   .
20.000     56.4227     20.23  .Q        .         .         .     V   .
20.083     56.5604     19.99  .Q        .         .         .     V   .
20.167     56.6964     19.76  .Q        .         .         .     V   .
20.250     56.8309     19.53  .Q        .         .         .     V   .
20.333     56.9640     19.31  .Q        .         .         .     V   .
20.417     57.0955     19.10  .Q        .         .         .     V   .
20.500     57.2257     18.90  .Q        .         .         .     V   .
20.583     57.3544     18.70  .Q        .         .         .     V   .
20.667     57.4819     18.51  .Q        .         .         .      V  .
20.750     57.6080     18.32  .Q        .         .         .      V  .
20.833     57.7329     18.14  .Q        .         .         .      V  .
20.917     57.8566     17.96  .Q        .         .         .      V  .
21.000     57.9791     17.79  .Q        .         .         .      V  .
21.083     58.1005     17.62  .Q        .         .         .      V  .
21.167     58.2207     17.46  .Q        .         .         .      V  .
21.250     58.3399     17.30  .Q        .         .         .      V  .
21.333     58.4580     17.14  .Q        .         .         .      V  .
21.417     58.5750     16.99  .Q        .         .         .      V  .
21.500     58.6910     16.85  .Q        .         .         .      V  .
21.583     58.8061     16.70  .Q        .         .         .      V  .
21.667     58.9202     16.56  .Q        .         .         .      V  .
21.750     59.0333     16.43  .Q        .         .         .       V .
21.833     59.1455     16.30  .Q        .         .         .       V .
21.917     59.2569     16.17  .Q        .         .         .       V .
22.000     59.3673     16.04  .Q        .         .         .       V .
22.083     59.4769     15.91  .Q        .         .         .       V .
22.167     59.5857     15.79  .Q        .         .         .       V .
22.250     59.6936     15.67  .Q        .         .         .       V .
22.333     59.8007     15.56  .Q        .         .         .       V .
22.417     59.9071     15.44  .Q        .         .         .       V .
22.500     60.0127     15.33  .Q        .         .         .       V .
22.583     60.1175     15.22  .Q        .         .         .       V .
22.667     60.2216     15.11  .Q        .         .         .       V .
22.750     60.3250     15.01  .Q        .         .         .       V .
22.833     60.4277     14.91  Q         .         .         .       V .
22.917     60.5296     14.81  Q         .         .         .       V .
23.000     60.6309     14.71  Q         .         .         .        V.
23.083     60.7315     14.61  Q         .         .         .        V.
23.167     60.8315     14.51  Q         .         .         .        V.
23.250     60.9308     14.42  Q         .         .         .        V.
23.333     61.0295     14.33  Q         .         .         .        V.
23.417     61.1276     14.24  Q         .         .         .        V.
23.500     61.2250     14.15  Q         .         .         .        V.
23.583     61.3219     14.06  Q         .         .         .        V.
23.667     61.4182     13.98  Q         .         .         .        V.
23.750     61.5139     13.90  Q         .         .         .        V.
23.833     61.6090     13.81  Q         .         .         .        V.
23.917     61.7036     13.73  Q         .         .         .        V.
24.000     61.7976     13.65  Q         .         .         .        V.
```

24.083	61.8891	13.28	Q	.	.	.	V.
24.167	61.9696	11.69	Q	.	.	.	V.
24.250	62.0296	8.71	Q	.	.	.	V.
24.333	62.0641	5.02	Q	.	.	.	V.
24.417	62.0806	2.40	Q	.	.	.	V.
24.500	62.0882	1.09	Q	.	.	.	V.
24.583	62.0914	0.47	Q	.	.	.	V.
24.667	62.0930	0.23	Q	.	.	.	V.
24.750	62.0940	0.15	Q	.	.	.	V.
24.833	62.0946	0.08	Q	.	.	.	V.
24.917	62.0948	0.03	Q	.	.	.	V.
25.000	62.0948	0.01	Q	.	.	.	V.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1500.0
10%	85.0
20%	40.0
30%	30.0
40%	25.0
50%	20.0
60%	20.0
70%	15.0
80%	10.0
90%	10.0

END OF FLOODSCx ROUTING ANALYSIS

EXISTING 5-YEAR
REGIONAL ANALYSIS
TRIBUTARY TO RIVERSIDE CANAL
POC #2 / NODE 200

LOSS RATE CALCULATIONS
EXISTING REGIONAL
5-YR ANALYSIS
NODE 200

****

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

==========

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Canal WS -Exist-5year
2022-03-10

==========

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 2.52 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	0.87	10.00	32.	0.975	0.818
2	2.15	10.00	69.	0.566	0.835
3	168.79	50.00	32.	0.975	0.454
4	7.88	50.00	69.	0.566	0.540
5	0.52	50.00	75.	0.470	0.586
6	33.46	100.00	50.	0.820	0.010
7	0.01	100.00	69.	0.566	0.171
8	15.17	100.00	79.	0.398	0.338
9	120.64	100.00	83.	0.326	0.425
10	36.67	60.00	32.	0.975	0.364
11	34.58	60.00	69.	0.566	0.466
12	52.37	10.00	32.	0.975	0.818
13	2.22	10.00	69.	0.566	0.835

TOTAL AREA (Acres) = 475.33

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.413

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.548

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

            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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              Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:



 ************************ DESCRIPTION OF STUDY ************************
* Grand Terrace                                                       *
* Canal WS-Exist-5year                                                *
* 2022-03-10                                                          *
 *********************************************************************

  FILE NAME: CNLEX5.DAT
  TIME/DATE OF STUDY: 16:29 03/10/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     475.330 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.250 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.413
         LOW LOSS FRACTION = 0.548
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.58
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.75
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.10
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.38
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.52
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.979
30-MINUTE FACTOR = 0.979
1-HOUR FACTOR = 0.979
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 33.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.170	124.751
2	13.591	656.557
3	35.416	1254.590
4	62.732	1570.249
5	82.211	1119.784
6	91.877	555.655
7	96.496	265.528
8	98.279	102.463
9	98.906	36.074
10	99.441	30.709
11	99.776	19.297
12	99.944	9.649
13	100.000	3.216

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 49.5705
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 50.1276

==========

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

==========

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	125.0	250.0	375.0	500.0
0.083	0.0015	0.21	Q	.	.	.	.
0.167	0.0107	1.34	Q	.	.	.	.
0.250	0.0349	3.50	Q	.	.	.	.
0.333	0.0777	6.21	Q	.	.	.	.
0.417	0.1339	8.16	Q	.	.	.	.
0.500	0.1968	9.14	Q	.	.	.	.
0.583	0.2630	9.62	Q	.	.	.	.
0.667	0.3307	9.83	Q	.	.	.	.
0.750	0.3990	9.92	Q	.	.	.	.
0.833	0.4679	10.00	Q	.	.	.	.
0.917	0.5372	10.06	Q	.	.	.	.
1.000	0.6068	10.11	Q	.	.	.	.
1.083	0.6767	10.15	Q	.	.	.	.
1.167	0.7468	10.18	Q	.	.	.	.
1.250	0.8172	10.21	Q	.	.	.	.
1.333	0.8877	10.24	Q	.	.	.	.
1.417	0.9585	10.28	Q	.	.	.	.
1.500	1.0295	10.31	Q	.	.	.	.
1.583	1.1007	10.34	Q	.	.	.	.
1.667	1.1721	10.37	Q	.	.	.	.
1.750	1.2438	10.41	Q	.	.	.	.
1.833	1.3157	10.44	QV	.	.	.	.
1.917	1.3879	10.48	QV	.	.	.	.
2.000	1.4602	10.51	QV	.	.	.	.
2.083	1.5329	10.54	QV	.	.	.	.
2.167	1.6057	10.58	QV	.	.	.	.
2.250	1.6788	10.61	QV	.	.	.	.
2.333	1.7522	10.65	QV	.	.	.	.
2.417	1.8258	10.69	QV	.	.	.	.
2.500	1.8996	10.72	QV	.	.	.	.
2.583	1.9737	10.76	QV	.	.	.	.
2.667	2.0481	10.80	QV	.	.	.	.
2.750	2.1227	10.83	QV	.	.	.	.
2.833	2.1976	10.87	QV	.	.	.	.
2.917	2.2727	10.91	QV	.	.	.	.
3.000	2.3481	10.95	QV	.	.	.	.
3.083	2.4238	10.99	QV	.	.	.	.
3.167	2.4997	11.03	QV	.	.	.	.

3.250	2.5759	11.07	Q V	.	.	.	.
3.333	2.6524	11.11	Q V	.	.	.	.
3.417	2.7292	11.15	Q V	.	.	.	.
3.500	2.8062	11.19	Q V	.	.	.	.
3.583	2.8836	11.23	Q V	.	.	.	.
3.667	2.9612	11.27	Q V	.	.	.	.
3.750	3.0391	11.31	Q V	.	.	.	.
3.833	3.1173	11.36	Q V	.	.	.	.
3.917	3.1958	11.40	Q V	.	.	.	.
4.000	3.2746	11.44	Q V	.	.	.	.
4.083	3.3537	11.49	Q V	.	.	.	.
4.167	3.4331	11.53	Q V	.	.	.	.
4.250	3.5128	11.57	Q V	.	.	.	.
4.333	3.5929	11.62	Q V	.	.	.	.
4.417	3.6732	11.67	Q V	.	.	.	.
4.500	3.7539	11.71	Q V	.	.	.	.
4.583	3.8349	11.76	Q V	.	.	.	.
4.667	3.9162	11.81	Q V	.	.	.	.
4.750	3.9978	11.85	Q V	.	.	.	.
4.833	4.0798	11.90	Q V	.	.	.	.
4.917	4.1621	11.95	Q V	.	.	.	.
5.000	4.2448	12.00	Q V	.	.	.	.
5.083	4.3278	12.05	Q V	.	.	.	.
5.167	4.4111	12.10	Q V	.	.	.	.
5.250	4.4948	12.15	Q V	.	.	.	.
5.333	4.5789	12.21	Q V	.	.	.	.
5.417	4.6633	12.26	Q V	.	.	.	.
5.500	4.7481	12.31	Q V	.	.	.	.
5.583	4.8333	12.37	Q V	.	.	.	.
5.667	4.9188	12.42	Q V	.	.	.	.
5.750	5.0047	12.47	Q V	.	.	.	.
5.833	5.0910	12.53	.Q V	.	.	.	.
5.917	5.1777	12.59	.Q V	.	.	.	.
6.000	5.2648	12.65	.Q V	.	.	.	.
6.083	5.3523	12.70	.Q V	.	.	.	.
6.167	5.4402	12.76	.Q V	.	.	.	.
6.250	5.5285	12.82	.Q V	.	.	.	.
6.333	5.6172	12.88	.Q V	.	.	.	.
6.417	5.7063	12.94	.Q V	.	.	.	.
6.500	5.7959	13.00	.Q V	.	.	.	.
6.583	5.8859	13.07	.Q V	.	.	.	.
6.667	5.9763	13.13	.Q V	.	.	.	.
6.750	6.0672	13.19	.Q V	.	.	.	.
6.833	6.1585	13.26	.Q V	.	.	.	.
6.917	6.2503	13.33	.Q V	.	.	.	.
7.000	6.3425	13.39	.Q V	.	.	.	.
7.083	6.4352	13.46	.Q V	.	.	.	.
7.167	6.5284	13.53	.Q V	.	.	.	.
7.250	6.6221	13.60	.Q V	.	.	.	.
7.333	6.7163	13.67	.Q V	.	.	.	.

7.417	6.8109	13.74	.Q	V	.	.	.	.
7.500	6.9061	13.82	.Q	V	.	.	.	.
7.583	7.0017	13.89	.Q	V	.	.	.	.
7.667	7.0979	13.97	.Q	V	.	.	.	.
7.750	7.1946	14.04	.Q	V	.	.	.	.
7.833	7.2919	14.12	.Q	V	.	.	.	.
7.917	7.3897	14.20	.Q	V	.	.	.	.
8.000	7.4880	14.28	.Q	V	.	.	.	.
8.083	7.5869	14.36	.Q	V	.	.	.	.
8.167	7.6864	14.44	.Q	V	.	.	.	.
8.250	7.7865	14.53	.Q	V	.	.	.	.
8.333	7.8871	14.61	.Q	V	.	.	.	.
8.417	7.9883	14.70	.Q	V	.	.	.	.
8.500	8.0902	14.79	.Q	V	.	.	.	.
8.583	8.1926	14.88	.Q	V	.	.	.	.
8.667	8.2957	14.97	.Q	V	.	.	.	.
8.750	8.3995	15.06	.Q	V	.	.	.	.
8.833	8.5038	15.16	.Q	V	.	.	.	.
8.917	8.6089	15.25	.Q	V	.	.	.	.
9.000	8.7146	15.35	.Q	V	.	.	.	.
9.083	8.8210	15.45	.Q	V	.	.	.	.
9.167	8.9281	15.55	.Q	V	.	.	.	.
9.250	9.0359	15.65	.Q	V	.	.	.	.
9.333	9.1444	15.76	.Q	V	.	.	.	.
9.417	9.2537	15.87	.Q	V	.	.	.	.
9.500	9.3637	15.98	.Q	V	.	.	.	.
9.583	9.4745	16.09	.Q	V	.	.	.	.
9.667	9.5861	16.20	.Q	V	.	.	.	.
9.750	9.6984	16.31	.Q	V	.	.	.	.
9.833	9.8116	16.43	.Q	V	.	.	.	.
9.917	9.9256	16.55	.Q	V	.	.	.	.
10.000	10.0405	16.68	.Q	V	.	.	.	.
10.083	10.1562	16.80	.Q	V	.	.	.	.
10.167	10.2728	16.93	.Q	V	.	.	.	.
10.250	10.3903	17.06	.Q	V	.	.	.	.
10.333	10.5087	17.19	.Q	V	.	.	.	.
10.417	10.6281	17.33	.Q	V	.	.	.	.
10.500	10.7484	17.47	.Q	V	.	.	.	.
10.583	10.8697	17.61	.Q	V	.	.	.	.
10.667	10.9920	17.76	.Q	V	.	.	.	.
10.750	11.1153	17.91	.Q	V	.	.	.	.
10.833	11.2397	18.06	.Q	V	.	.	.	.
10.917	11.3652	18.22	.Q	V	.	.	.	.
11.000	11.4917	18.38	.Q	V	.	.	.	.
11.083	11.6194	18.54	.Q	V	.	.	.	.
11.167	11.7483	18.71	.Q	V	.	.	.	.
11.250	11.8784	18.88	.Q	V	.	.	.	.
11.333	12.0096	19.06	.Q	V	.	.	.	.
11.417	12.1422	19.24	.Q	V	.	.	.	.
11.500	12.2760	19.43	.Q	V	.	.	.	.

```
11.583     12.4111     19.62  .Q       V.          .          .          .
11.667     12.5476     19.82  .Q        V          .          .          .
11.750     12.6855     20.02  .Q        V          .          .          .
11.833     12.8249     20.23  .Q        V          .          .          .
11.917     12.9657     20.45  .Q        V          .          .          .
12.000     13.1080     20.67  .Q        V          .          .          .
12.083     13.2512     20.78  .Q        V          .          .          .
12.167     13.3918     20.42  .Q        V          .          .          .
12.250     13.5262     19.51  .Q        V          .          .          .
12.333     13.6524     18.32  .Q        V          .          .          .
12.417     13.7732     17.54  .Q        V          .          .          .
12.500     13.8922     17.28  .Q        .V         .          .          .
12.583     14.0113     17.29  .Q        .V         .          .          .
12.667     14.1316     17.46  .Q        .V         .          .          .
12.750     14.2535     17.70  .Q        .V         .          .          .
12.833     14.3772     17.95  .Q        .V         .          .          .
12.917     14.5027     18.23  .Q        .V         .          .          .
13.000     14.6303     18.53  .Q        .V         .          .          .
13.083     14.7600     18.84  .Q        .V         .          .          .
13.167     14.8921     19.17  .Q        .V         .          .          .
13.250     15.0265     19.52  .Q        .V         .          .          .
13.333     15.1634     19.88  .Q        . V        .          .          .
13.417     15.3030     20.26  .Q        . V        .          .          .
13.500     15.4453     20.66  .Q        . V        .          .          .
13.583     15.5904     21.08  .Q        . V        .          .          .
13.667     15.7387     21.52  .Q        . V        .          .          .
13.750     15.8901     21.98  .Q        . V        .          .          .
13.833     16.0449     22.48  .Q        . V        .          .          .
13.917     16.2032     22.99  .Q        . V        .          .          .
14.000     16.3654     23.55  .Q        .  V       .          .          .
14.083     16.5320     24.19  .Q        .  V       .          .          .
14.167     16.7052     25.14  . Q       .  V       .          .          .
14.250     16.8871     26.42  . Q       .  V       .          .          .
14.333     17.0795     27.93  . Q       .  V       .          .          .
14.417     17.2810     29.26  . Q       .  V       .          .          .
14.500     17.4903     30.39  . Q       .  V       .          .          .
14.583     17.7068     31.44  . Q       .   V      .          .          .
14.667     17.9306     32.50  . Q       .   V      .          .          .
14.750     18.1620     33.59  . Q       .   V      .          .          .
14.833     18.4017     34.80  . Q       .   V      .          .          .
14.917     18.6504     36.11  . Q       .   V      .          .          .
15.000     18.9091     37.56  .  Q      .    V     .          .          .
15.083     19.1787     39.15  .  Q      .    V     .          .          .
15.167     19.4607     40.95  .  Q      .    V     .          .          .
15.250     19.7565     42.95  .  Q      .    V     .          .          .
15.333     20.0682     45.26  .  Q      .     V    .          .          .
15.417     20.3982     47.92  .  Q      .     V    .          .          .
15.500     20.7504     51.14  .   Q     .     V    .          .          .
15.583     21.1293     55.01  .   Q     .     V    .          .          .
15.667     21.5413     59.81  .   Q     .      V   .          .          .
```

15.750	21.9954	65.94	. Q . V . . .
15.833	22.5130	75.16	. Q . V . . .
15.917	23.1263	89.05	. Q . V . . .
16.000	23.9057	113.16	. Q. V. . .
16.083	25.1130	175.31	. . Q V . .
16.167	27.2970	317.12	. . .V Q . .
16.250	30.4078	451.69	. . . V . Q .
16.333	33.8103	494.04	. . . V . Q.
16.417	36.3469	368.31	. . . Q. .
16.500	37.8753	221.93	. . Q . V .
16.583	38.8227	137.56	. .Q . V .
16.667	39.4266	87.68	. Q . . .V .
16.750	39.8646	63.60	. Q . . .V .
16.833	40.2433	54.98	. Q . . . V .
16.917	40.5684	47.21	. Q . . . V .
17.000	40.8510	41.03	. Q . . . V .
17.083	41.1014	36.37	. Q . . . V .
17.167	41.3274	32.81	. Q . . . V .
17.250	41.5346	30.09	. Q . . . V .
17.333	41.7246	27.58	. Q . . . V .
17.417	41.9006	25.55	. Q . . . V .
17.500	42.0659	24.01	.Q . . . V .
17.583	42.2227	22.76	.Q . . . V .
17.667	42.3723	21.73	.Q . . . V .
17.750	42.5157	20.82	.Q . . . V .
17.833	42.6536	20.01	.Q . . . V .
17.917	42.7863	19.28	.Q . . . V .
18.000	42.9145	18.61	.Q . . . V .
18.083	43.0392	18.11	.Q . . . V .
18.167	43.1642	18.15	.Q . . . V .
18.250	43.2935	18.77	.Q . . . V .
18.333	43.4291	19.70	.Q . . . V .
18.417	43.5685	20.24	.Q . . . V .
18.500	43.7082	20.28	.Q . . . V .
18.583	43.8466	20.09	.Q . . . V .
18.667	43.9827	19.77	.Q . . . V .
18.750	44.1164	19.41	.Q . . . V .
18.833	44.2477	19.07	.Q . . . V .
18.917	44.3767	18.73	.Q . . . V .
19.000	44.5035	18.41	.Q . . . V .
19.083	44.6280	18.09	.Q . . . V .
19.167	44.7505	17.78	.Q . . . V .
19.250	44.8710	17.49	.Q . . . V .
19.333	44.9896	17.22	.Q . . . V .
19.417	45.1063	16.95	.Q . . . V .
19.500	45.2213	16.70	.Q . . . V .
19.583	45.3346	16.45	.Q . . . V .
19.667	45.4463	16.22	.Q . . . V .
19.750	45.5565	15.99	.Q . . . V .
19.833	45.6651	15.78	.Q . . . V .

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19.917     45.7723     15.57  .Q        .         .         .     V   .
20.000     45.8781     15.36  .Q        .         .         .     V   .
20.083     45.9826     15.17  .Q        .         .         .     V   .
20.167     46.0858     14.98  .Q        .         .         .     V   .
20.250     46.1877     14.80  .Q        .         .         .     V   .
20.333     46.2885     14.63  .Q        .         .         .     V   .
20.417     46.3880     14.46  .Q        .         .         .      V  .
20.500     46.4865     14.29  .Q        .         .         .      V  .
20.583     46.5838     14.13  .Q        .         .         .      V  .
20.667     46.6801     13.98  .Q        .         .         .      V  .
20.750     46.7753     13.83  .Q        .         .         .      V  .
20.833     46.8695     13.68  .Q        .         .         .      V  .
20.917     46.9628     13.54  .Q        .         .         .      V  .
21.000     47.0551     13.40  .Q        .         .         .      V  .
21.083     47.1465     13.27  .Q        .         .         .      V  .
21.167     47.2369     13.14  .Q        .         .         .      V  .
21.250     47.3266     13.01  .Q        .         .         .      V  .
21.333     47.4153     12.89  .Q        .         .         .      V  .
21.417     47.5033     12.77  .Q        .         .         .      V  .
21.500     47.5904     12.65  .Q        .         .         .      V  .
21.583     47.6768     12.54  .Q        .         .         .       V .
21.667     47.7623     12.43  Q         .         .         .       V .
21.750     47.8472     12.32  Q         .         .         .       V .
21.833     47.9313     12.21  Q         .         .         .       V .
21.917     48.0147     12.11  Q         .         .         .       V .
22.000     48.0974     12.01  Q         .         .         .       V .
22.083     48.1794     11.91  Q         .         .         .       V .
22.167     48.2607     11.81  Q         .         .         .       V .
22.250     48.3414     11.72  Q         .         .         .       V .
22.333     48.4215     11.63  Q         .         .         .       V .
22.417     48.5009     11.53  Q         .         .         .       V .
22.500     48.5798     11.45  Q         .         .         .       V .
22.583     48.6580     11.36  Q         .         .         .       V .
22.667     48.7357     11.28  Q         .         .         .       V .
22.750     48.8127     11.19  Q         .         .         .       V .
22.833     48.8893     11.11  Q         .         .         .        V.
22.917     48.9652     11.03  Q         .         .         .        V.
23.000     49.0407     10.95  Q         .         .         .        V.
23.083     49.1156     10.88  Q         .         .         .        V.
23.167     49.1900     10.80  Q         .         .         .        V.
23.250     49.2638     10.73  Q         .         .         .        V.
23.333     49.3372     10.65  Q         .         .         .        V.
23.417     49.4101     10.58  Q         .         .         .        V.
23.500     49.4825     10.51  Q         .         .         .        V.
23.583     49.5545     10.45  Q         .         .         .        V.
23.667     49.6259     10.38  Q         .         .         .        V.
23.750     49.6969     10.31  Q         .         .         .        V.
23.833     49.7675     10.25  Q         .         .         .        V.
23.917     49.8377     10.18  Q         .         .         .        V.
24.000     49.9073     10.12  Q         .         .         .        V.
```

24.083	49.9751	9.84	Q	.	.	.	V.
24.167	50.0348	8.66	Q	.	.	.	V.
24.250	50.0792	6.45	Q	.	.	.	V.
24.333	50.1048	3.72	Q	.	.	.	V.
24.417	50.1171	1.77	Q	.	.	.	V.
24.500	50.1226	0.81	Q	.	.	.	V.
24.583	50.1250	0.35	Q	.	.	.	V.
24.667	50.1262	0.17	Q	.	.	.	V.
24.750	50.1270	0.11	Q	.	.	.	V.
24.833	50.1274	0.06	Q	.	.	.	V.
24.917	50.1275	0.02	Q	.	.	.	V.
25.000	50.1276	0.01	Q	.	.	.	V.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1500.0
10%	85.0
20%	40.0
30%	30.0
40%	25.0
50%	20.0
60%	20.0
70%	15.0
80%	10.0
90%	10.0

END OF FLOODSCx ROUTING ANALYSIS

EXISTING 2-YEAR
REGIONAL ANALYSIS
TRIBUTARY TO RIVERSIDE CANAL
POC #2 / NODE 200

LOSS RATE CALCULATIONS
EXISTING REGIONAL
2-YR ANALYSIS
NODE 200

****

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

==========

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Canal-Exist-2year
2022-03-14

==========

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 1.80 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	0.87	10.00	32.	0.975	0.788
2	2.15	10.00	69.	0.566	0.797
3	168.79	50.00	32.	0.975	0.438
4	7.88	50.00	69.	0.566	0.480
5	0.52	50.00	75.	0.470	0.518
6	33.46	100.00	50.	0.820	0.000
7	0.01	100.00	69.	0.566	0.084
8	15.17	100.00	79.	0.398	0.228
9	120.64	100.00	83.	0.326	0.312
10	36.67	60.00	32.	0.975	0.350
11	34.58	60.00	69.	0.566	0.401
12	52.37	10.00	32.	0.975	0.788
13	2.22	10.00	69.	0.566	0.797

TOTAL AREA (Acres) = 475.33

AREA-AVERAGED LOSS RATE, $\bar{Fm}$ (in./hr.) = 0.413

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.598

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

            F L O O D    R O U T I N G    A N A L Y S I S
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              Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:



 ************************ DESCRIPTION OF STUDY ************************
* Grand Terrace                                                       *
* Canal WS-Exist-2year                                                *
* 2022-03-14                                                          *
 *********************************************************************

  FILE NAME: CNLEX2.DAT
  TIME/DATE OF STUDY: 16:17 03/14/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     475.330 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.250 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.413
         LOW LOSS FRACTION = 0.598
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.22
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.45
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  0.87
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  1.80
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.979
30-MINUTE FACTOR = 0.979
1-HOUR FACTOR = 0.979
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 33.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.170	124.751
2	13.591	656.557
3	35.416	1254.590
4	62.732	1570.249
5	82.211	1119.784
6	91.877	555.655
7	96.496	265.528
8	98.279	102.463
9	98.906	36.074
10	99.441	30.709
11	99.776	19.297
12	99.944	9.649
13	100.000	3.216

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 38.5943
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 32.6203

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	100.0	200.0	300.0	400.0
0.083	0.0008	0.11	Q	.	.	.	.
0.167	0.0056	0.70	Q	.	.	.	.
0.250	0.0181	1.82	Q	.	.	.	.
0.333	0.0404	3.23	Q	.	.	.	.
0.417	0.0696	4.24	Q	.	.	.	.
0.500	0.1023	4.75	Q	.	.	.	.
0.583	0.1368	5.01	Q	.	.	.	.
0.667	0.1720	5.11	Q	.	.	.	.
0.750	0.2076	5.16	Q	.	.	.	.
0.833	0.2435	5.21	Q	.	.	.	.
0.917	0.2796	5.25	Q	.	.	.	.
1.000	0.3159	5.27	Q	.	.	.	.
1.083	0.3524	5.29	Q	.	.	.	.
1.167	0.3890	5.31	Q	.	.	.	.
1.250	0.4257	5.33	Q	.	.	.	.
1.333	0.4625	5.35	Q	.	.	.	.
1.417	0.4995	5.37	Q	.	.	.	.
1.500	0.5366	5.39	Q	.	.	.	.
1.583	0.5739	5.41	Q	.	.	.	.
1.667	0.6112	5.43	Q	.	.	.	.
1.750	0.6488	5.45	Q	.	.	.	.
1.833	0.6864	5.47	Q	.	.	.	.
1.917	0.7242	5.49	Q	.	.	.	.
2.000	0.7622	5.51	Q	.	.	.	.
2.083	0.8003	5.53	Q	.	.	.	.
2.167	0.8385	5.55	QV	.	.	.	.
2.250	0.8769	5.57	QV	.	.	.	.
2.333	0.9154	5.59	QV	.	.	.	.
2.417	0.9541	5.62	QV	.	.	.	.
2.500	0.9929	5.64	QV	.	.	.	.
2.583	1.0319	5.66	QV	.	.	.	.
2.667	1.0710	5.68	QV	.	.	.	.
2.750	1.1103	5.70	QV	.	.	.	.
2.833	1.1497	5.73	QV	.	.	.	.
2.917	1.1893	5.75	QV	.	.	.	.
3.000	1.2290	5.77	QV	.	.	.	.
3.083	1.2690	5.80	QV	.	.	.	.
3.167	1.3090	5.82	QV	.	.	.	.

3.250	1.3493	5.84	QV	.	.	.	.
3.333	1.3897	5.87	QV	.	.	.	.
3.417	1.4303	5.89	QV	.	.	.	.
3.500	1.4710	5.92	QV	.	.	.	.
3.583	1.5119	5.94	QV	.	.	.	.
3.667	1.5530	5.97	QV	.	.	.	.
3.750	1.5943	5.99	QV	.	.	.	.
3.833	1.6357	6.02	Q V	.	.	.	.
3.917	1.6773	6.04	Q V	.	.	.	.
4.000	1.7191	6.07	Q V	.	.	.	.
4.083	1.7611	6.10	Q V	.	.	.	.
4.167	1.8033	6.12	Q V	.	.	.	.
4.250	1.8456	6.15	Q V	.	.	.	.
4.333	1.8882	6.18	Q V	.	.	.	.
4.417	1.9309	6.21	Q V	.	.	.	.
4.500	1.9739	6.23	Q V	.	.	.	.
4.583	2.0170	6.26	Q V	.	.	.	.
4.667	2.0603	6.29	Q V	.	.	.	.
4.750	2.1038	6.32	Q V	.	.	.	.
4.833	2.1476	6.35	Q V	.	.	.	.
4.917	2.1915	6.38	Q V	.	.	.	.
5.000	2.2356	6.41	Q V	.	.	.	.
5.083	2.2800	6.44	Q V	.	.	.	.
5.167	2.3246	6.47	Q V	.	.	.	.
5.250	2.3693	6.50	Q V	.	.	.	.
5.333	2.4143	6.53	Q V	.	.	.	.
5.417	2.4596	6.57	Q V	.	.	.	.
5.500	2.5050	6.60	Q V	.	.	.	.
5.583	2.5507	6.63	Q V	.	.	.	.
5.667	2.5966	6.66	Q V	.	.	.	.
5.750	2.6427	6.70	Q V	.	.	.	.
5.833	2.6891	6.73	Q V	.	.	.	.
5.917	2.7357	6.77	Q V	.	.	.	.
6.000	2.7825	6.80	Q V	.	.	.	.
6.083	2.8296	6.84	Q V	.	.	.	.
6.167	2.8770	6.87	Q V	.	.	.	.
6.250	2.9246	6.91	Q V	.	.	.	.
6.333	2.9724	6.95	Q V	.	.	.	.
6.417	3.0205	6.99	Q V	.	.	.	.
6.500	3.0689	7.02	Q V	.	.	.	.
6.583	3.1175	7.06	Q V	.	.	.	.
6.667	3.1664	7.10	Q V	.	.	.	.
6.750	3.2156	7.14	Q V	.	.	.	.
6.833	3.2651	7.18	Q V	.	.	.	.
6.917	3.3148	7.22	Q V	.	.	.	.
7.000	3.3648	7.26	Q V	.	.	.	.
7.083	3.4151	7.31	Q V	.	.	.	.
7.167	3.4658	7.35	Q V	.	.	.	.
7.250	3.5167	7.39	Q V	.	.	.	.
7.333	3.5679	7.44	Q V	.	.	.	.

7.417	3.6194	7.48	Q	V	.	.	.	.
7.500	3.6712	7.53	Q	V	.	.	.	.
7.583	3.7234	7.57	Q	V	.	.	.	.
7.667	3.7758	7.62	Q	V	.	.	.	.
7.750	3.8286	7.67	Q	V	.	.	.	.
7.833	3.8818	7.71	Q	V	.	.	.	.
7.917	3.9352	7.76	Q	V	.	.	.	.
8.000	3.9890	7.81	Q	V	.	.	.	.
8.083	4.0432	7.86	Q	V	.	.	.	.
8.167	4.0977	7.92	Q	V	.	.	.	.
8.250	4.1526	7.97	Q	V	.	.	.	.
8.333	4.2079	8.02	Q	V	.	.	.	.
8.417	4.2635	8.08	Q	V	.	.	.	.
8.500	4.3195	8.13	Q	V	.	.	.	.
8.583	4.3759	8.19	Q	V	.	.	.	.
8.667	4.4327	8.25	Q	V	.	.	.	.
8.750	4.4898	8.30	Q	V	.	.	.	.
8.833	4.5474	8.36	Q	V	.	.	.	.
8.917	4.6055	8.42	Q	V	.	.	.	.
9.000	4.6639	8.48	Q	V	.	.	.	.
9.083	4.7228	8.55	Q	V	.	.	.	.
9.167	4.7821	8.61	Q	V	.	.	.	.
9.250	4.8418	8.68	Q	V	.	.	.	.
9.333	4.9020	8.74	Q	V	.	.	.	.
9.417	4.9627	8.81	Q	V	.	.	.	.
9.500	5.0239	8.88	Q	V	.	.	.	.
9.583	5.0855	8.95	Q	V	.	.	.	.
9.667	5.1476	9.02	Q	V	.	.	.	.
9.750	5.2103	9.10	Q	V	.	.	.	.
9.833	5.2735	9.17	Q	V	.	.	.	.
9.917	5.3371	9.25	Q	V	.	.	.	.
10.000	5.4014	9.33	Q	V	.	.	.	.
10.083	5.4661	9.41	Q	V	.	.	.	.
10.167	5.5315	9.49	Q	V	.	.	.	.
10.250	5.5974	9.57	Q	V	.	.	.	.
10.333	5.6639	9.66	Q	V	.	.	.	.
10.417	5.7310	9.74	Q	V	.	.	.	.
10.500	5.7987	9.83	Q	V	.	.	.	.
10.583	5.8671	9.92	Q	V	.	.	.	.
10.667	5.9361	10.02	.Q	V	.	.	.	.
10.750	6.0057	10.11	.Q	V	.	.	.	.
10.833	6.0761	10.21	.Q	V	.	.	.	.
10.917	6.1471	10.31	.Q	V	.	.	.	.
11.000	6.2189	10.42	.Q	V	.	.	.	.
11.083	6.2914	10.52	.Q	V	.	.	.	.
11.167	6.3646	10.63	.Q	V	.	.	.	.
11.250	6.4386	10.75	.Q	V	.	.	.	.
11.333	6.5134	10.86	.Q	V	.	.	.	.
11.417	6.5890	10.98	.Q	V	.	.	.	.
11.500	6.6655	11.10	.Q	V	.	.	.	.

```
11.583      6.7428     11.23  .Q      V .          .          .          .
11.667      6.8210     11.36  .Q      V .          .          .          .
11.750      6.9001     11.49  .Q      V .          .          .          .
11.833      6.9802     11.62  .Q      V .          .          .          .
11.917      7.0612     11.77  .Q      V .          .          .          .
12.000      7.1432     11.91  .Q      V .          .          .          .
12.083      7.2262     12.05  .Q      V .          .          .          .
12.167      7.3098     12.14  .Q      V .          .          .          .
12.250      7.3938     12.19  .Q       V.          .          .          .
12.333      7.4779     12.21  .Q       V.          .          .          .
12.417      7.5624     12.27  .Q       V.          .          .          .
12.500      7.6478     12.40  .Q       V.          .          .          .
12.583      7.7343     12.55  .Q       V.          .          .          .
12.667      7.8220     12.73  .Q       V.          .          .          .
12.750      7.9110     12.92  .Q       V.          .          .          .
12.833      8.0014     13.13  .Q       V.          .          .          .
12.917      8.0932     13.33  .Q       V.          .          .          .
13.000      8.1865     13.55  .Q        V          .          .          .
13.083      8.2814     13.78  .Q        V          .          .          .
13.167      8.3780     14.02  .Q        V          .          .          .
13.250      8.4762     14.27  .Q        V          .          .          .
13.333      8.5763     14.53  .Q        V          .          .          .
13.417      8.6782     14.80  .Q        V          .          .          .
13.500      8.7822     15.09  .Q        V          .          .          .
13.583      8.8881     15.39  .Q        V          .          .          .
13.667      8.9963     15.71  .Q        .V         .          .          .
13.750      9.1068     16.04  .Q        .V         .          .          .
13.833      9.2196     16.39  .Q        .V         .          .          .
13.917      9.3351     16.76  .Q        .V         .          .          .
14.000      9.4533     17.16  .Q        .V         .          .          .
14.083      9.5744     17.59  .Q        .V         .          .          .
14.167      9.6993     18.13  .Q        .V         .          .          .
14.250      9.8286     18.77  .Q        . V        .          .          .
14.333      9.9629     19.50  .Q        . V        .          .          .
14.417     10.1021     20.21  . Q       . V        .          .          .
14.500     10.2459     20.88  . Q       . V        .          .          .
14.583     10.3943     21.56  . Q       . V        .          .          .
14.667     10.5477     22.27  . Q       . V        .          .          .
14.750     10.7063     23.03  . Q       .  V       .          .          .
14.833     10.8706     23.86  . Q       .  V       .          .          .
14.917     11.0412     24.77  . Q       .  V       .          .          .
15.000     11.2188     25.78  . Q       .  V       .          .          .
15.083     11.4040     26.89  . Q       .  V       .          .          .
15.167     11.5978     28.14  . Q       .   V      .          .          .
15.250     11.8013     29.54  . Q       .   V      .          .          .
15.333     12.0159     31.16  .  Q      .   V      .          .          .
15.417     12.2442     33.15  .  Q      .    V     .          .          .
15.500     12.4931     36.13  .  Q      .    V     .          .          .
15.583     12.7701     40.23  .   Q     .    V     .          .          .
15.667     13.0826     45.37  .   Q     .     V    .          .          .
```

15.750	13.4320	50.73	. Q . V . . .
15.833	13.8214	56.54	. Q . V . . .
15.917	14.2606	63.78	. Q . V . . .
16.000	14.7841	76.00	. Q . V . . .
16.083	15.5862	116.47	. .Q V. . .
16.167	17.1196	222.66	. . V Q . .
16.250	19.3826	328.58	. . . V . Q .
16.333	21.9237	368.96	. . . V . Q .
16.417	23.8301	276.82	. . . Q V. .
16.500	24.9770	166.52	. . Q . V .
16.583	25.6866	103.03	. Q . .V .
16.667	26.1294	64.31	. Q . . . V .
16.750	26.4418	45.35	. Q . . . V .
16.833	26.7093	38.84	. Q . . . V .
16.917	26.9365	32.99	. Q . . . V .
17.000	27.1324	28.44	. Q . . . V .
17.083	27.3052	25.09	. Q . . . V .
17.167	27.4613	22.66	. Q . . . V .
17.250	27.6060	21.01	. Q . . . V .
17.333	27.7407	19.56	.Q . . . V .
17.417	27.8672	18.36	.Q . . . V .
17.500	27.9869	17.38	.Q . . . V .
17.583	28.1009	16.55	.Q . . . V .
17.667	28.2099	15.83	.Q . . . V .
17.750	28.3145	15.19	.Q . . . V .
17.833	28.4152	14.61	.Q . . . V .
17.917	28.5122	14.09	.Q . . . V .
18.000	28.6059	13.61	.Q . . . V .
18.083	28.6968	13.19	.Q . . . V .
18.167	28.7852	12.84	.Q . . . V .
18.250	28.8719	12.59	.Q . . . V .
18.333	28.9572	12.38	.Q . . . V .
18.417	29.0409	12.16	.Q . . . V .
18.500	29.1228	11.90	.Q . . . V .
18.583	29.2030	11.64	.Q . . . V .
18.667	29.2813	11.37	.Q . . . V .
18.750	29.3579	11.12	.Q . . . V .
18.833	29.4328	10.88	.Q . . . V .
18.917	29.5062	10.65	.Q . . . V .
19.000	29.5781	10.44	.Q . . . V .
19.083	29.6486	10.23	.Q . . . V .
19.167	29.7177	10.04	.Q . . . V .
19.250	29.7855	9.85	Q . . . V .
19.333	29.8521	9.67	Q . . . V .
19.417	29.9176	9.50	Q . . . V .
19.500	29.9819	9.34	Q . . . V .
19.583	30.0451	9.18	Q . . . V .
19.667	30.1073	9.03	Q . . . V .
19.750	30.1686	8.89	Q . . . V .
19.833	30.2289	8.75	Q . . . V .

19.917	30.2882	8.62	Q	.	.	.	V .
20.000	30.3468	8.49	Q	.	.	.	V .
20.083	30.4044	8.37	Q	.	.	.	V .
20.167	30.4613	8.25	Q	.	.	.	V .
20.250	30.5173	8.14	Q	.	.	.	V .
20.333	30.5726	8.03	Q	.	.	.	V .
20.417	30.6272	7.92	Q	.	.	.	V .
20.500	30.6811	7.82	Q	.	.	.	V .
20.583	30.7342	7.72	Q	.	.	.	V .
20.667	30.7868	7.63	Q	.	.	.	V .
20.750	30.8386	7.53	Q	.	.	.	V .
20.833	30.8899	7.44	Q	.	.	.	V .
20.917	30.9405	7.35	Q	.	.	.	V .
21.000	30.9906	7.27	Q	.	.	.	V .
21.083	31.0401	7.19	Q	.	.	.	V .
21.167	31.0890	7.11	Q	.	.	.	V .
21.250	31.1374	7.03	Q	.	.	.	V .
21.333	31.1853	6.95	Q	.	.	.	V .
21.417	31.2327	6.88	Q	.	.	.	V .
21.500	31.2796	6.81	Q	.	.	.	V .
21.583	31.3260	6.74	Q	.	.	.	V .
21.667	31.3719	6.67	Q	.	.	.	V .
21.750	31.4174	6.60	Q	.	.	.	V .
21.833	31.4624	6.54	Q	.	.	.	V .
21.917	31.5070	6.47	Q	.	.	.	V .
22.000	31.5512	6.41	Q	.	.	.	V .
22.083	31.5949	6.35	Q	.	.	.	V .
22.167	31.6383	6.29	Q	.	.	.	V .
22.250	31.6812	6.24	Q	.	.	.	V .
22.333	31.7238	6.18	Q	.	.	.	V .
22.417	31.7660	6.13	Q	.	.	.	V .
22.500	31.8078	6.07	Q	.	.	.	V.
22.583	31.8493	6.02	Q	.	.	.	V.
22.667	31.8904	5.97	Q	.	.	.	V.
22.750	31.9311	5.92	Q	.	.	.	V.
22.833	31.9716	5.87	Q	.	.	.	V.
22.917	32.0117	5.82	Q	.	.	.	V.
23.000	32.0514	5.77	Q	.	.	.	V.
23.083	32.0909	5.73	Q	.	.	.	V.
23.167	32.1300	5.68	Q	.	.	.	V.
23.250	32.1689	5.64	Q	.	.	.	V.
23.333	32.2074	5.60	Q	.	.	.	V.
23.417	32.2457	5.55	Q	.	.	.	V.
23.500	32.2836	5.51	Q	.	.	.	V.
23.583	32.3213	5.47	Q	.	.	.	V.
23.667	32.3587	5.43	Q	.	.	.	V.
23.750	32.3958	5.39	Q	.	.	.	V.
23.833	32.4327	5.35	Q	.	.	.	V.
23.917	32.4693	5.31	Q	.	.	.	V.
24.000	32.5056	5.28	Q	.	.	.	V.

24.083	32.5410	5.13	Q	.	.	.	V.
24.167	32.5720	4.51	Q	.	.	.	V.
24.250	32.5951	3.36	Q	.	.	.	V.
24.333	32.6085	1.94	Q	.	.	.	V.
24.417	32.6148	0.92	Q	.	.	.	V.
24.500	32.6177	0.42	Q	.	.	.	V.
24.583	32.6190	0.18	Q	.	.	.	V.
24.667	32.6196	0.09	Q	.	.	.	V.
24.750	32.6200	0.06	Q	.	.	.	V.
24.833	32.6202	0.03	Q	.	.	.	V.
24.917	32.6203	0.01	Q	.	.	.	V.
25.000	32.6203	0.00	Q	.	.	.	V.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1500.0
10%	80.0
20%	40.0
30%	30.0
40%	25.0
50%	20.0
60%	20.0
70%	15.0
80%	10.0
90%	5.0

END OF FLOODSCx ROUTING ANALYSIS

Appendix B
Proposed Condition Hydrology
County Method (AES)

PROPOSED UNMITIGATED 100-YEAR PROJECT ON-SITE ANALYSIS

LOSS RATE CALCULATIONS
PROJECT ON-SITE
100-YR ANALYSIS (UNMITIGATED)

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




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

 Problem Descriptions:
  Grand Terrace
  Local-100yr-Proposed
  01-14-2022
==========================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     4.75 (inches)

    SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
         1         13.40       20.00       32.(AMC II)     0.742       0.789
         2         25.84       20.00       69.(AMC II)     0.272       0.896
         3         17.83       10.00       32.(AMC II)     0.742       0.870
         4         15.07       10.00       69.(AMC II)     0.272       0.923
         5          1.42      100.00       50.(AMC II)     0.495       0.390
         6          0.98      100.00       69.(AMC II)     0.272       0.681
         7         10.32      100.00       79.(AMC II)     0.170       0.832
         8          2.08       10.00       32.(AMC II)     0.742       0.870
         9          0.10       10.00       56.(AMC II)     0.423       0.904
        10         11.48       10.00       69.(AMC II)     0.272       0.923

    TOTAL AREA (Acres) =     98.52

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.084

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.132
==========================================================================
```

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_____________________________________________________________________________
*****************************************************************************

             F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* Grand Terrace                                                           *
* SAUH-Local-Proposed Condition                                           *
* 2022-01-14                                                              *
 *************************************************************************

  FILE NAME: PRLOC100.DAT
  TIME/DATE OF STUDY: 11:31 01/14/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      98.520 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.100 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.084
         LOW LOSS FRACTION = 0.132
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  2.25
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  4.75

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.996
          30-MINUTE FACTOR = 0.996
           1-HOUR FACTOR = 0.996
```

3-HOUR FACTOR = 0.999
6-HOUR FACTOR = 1.000
24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 83.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	12.091	144.062
2	66.357	646.568
3	94.973	340.956
4	99.026	48.287
5	99.610	6.962
6	99.903	3.481
7	100.000	1.160

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 4.5389
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 34.4331

==========

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

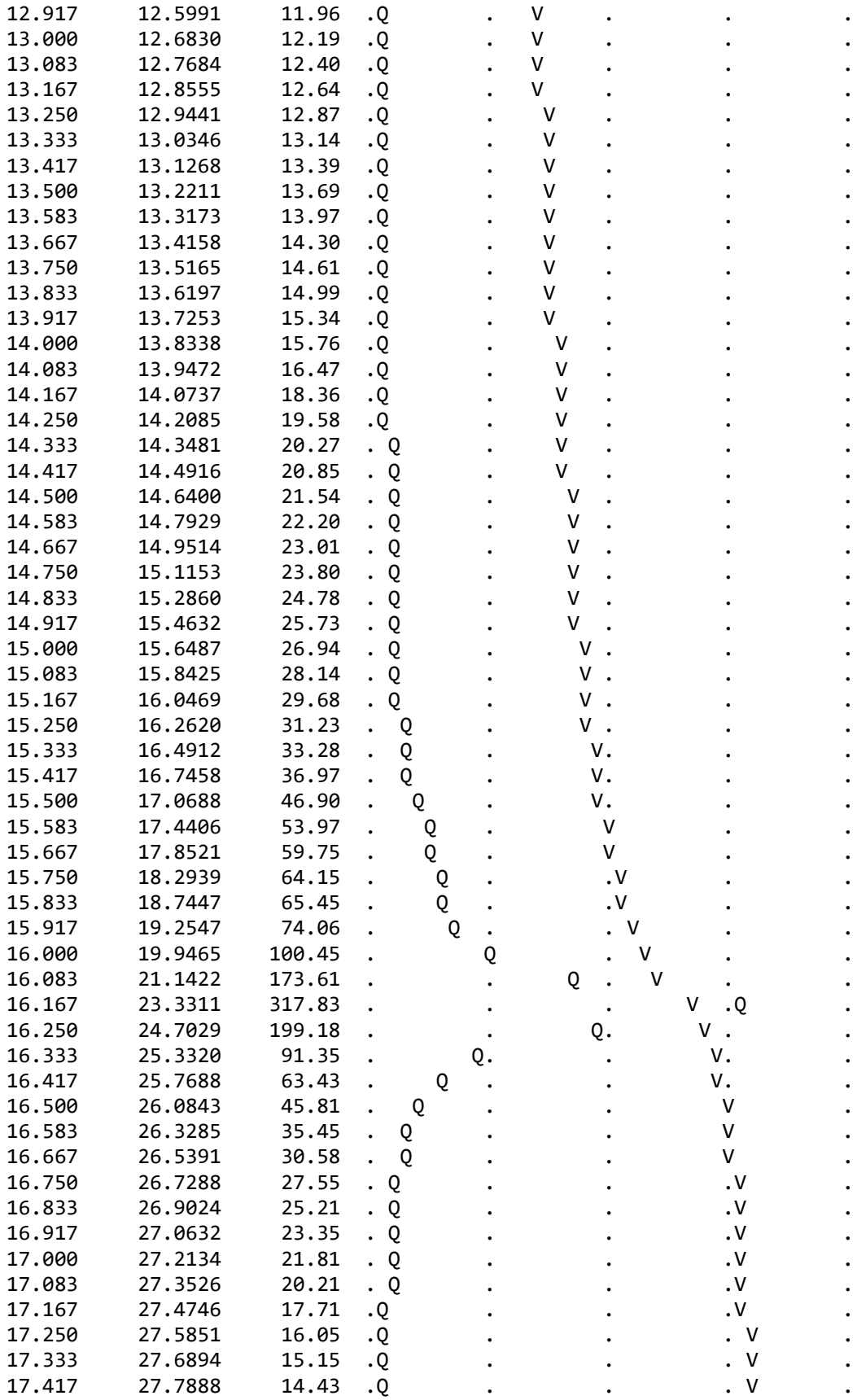
==========

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	100.0	200.0	300.0	400.0
0.083	0.0077	1.11	Q	.	.	.	.
0.167	0.0497	6.11	Q	.	.	.	.
0.250	0.1100	8.75	Q	.	.	.	.
0.333	0.1730	9.15	Q	.	.	.	.
0.417	0.2365	9.22	Q	.	.	.	.
0.500	0.3004	9.27	Q	.	.	.	.
0.583	0.3644	9.30	Q	.	.	.	.
0.667	0.4287	9.33	Q	.	.	.	.
0.750	0.4931	9.35	Q	.	.	.	.
0.833	0.5576	9.37	Q	.	.	.	.
0.917	0.6223	9.40	Q	.	.	.	.
1.000	0.6872	9.42	Q	.	.	.	.
1.083	0.7523	9.44	Q	.	.	.	.
1.167	0.8175	9.47	Q	.	.	.	.
1.250	0.8828	9.49	QV	.	.	.	.
1.333	0.9484	9.52	QV	.	.	.	.
1.417	1.0141	9.54	QV	.	.	.	.
1.500	1.0800	9.57	QV	.	.	.	.
1.583	1.1461	9.59	QV	.	.	.	.
1.667	1.2123	9.62	QV	.	.	.	.
1.750	1.2787	9.64	QV	.	.	.	.
1.833	1.3453	9.67	QV	.	.	.	.
1.917	1.4121	9.69	QV	.	.	.	.
2.000	1.4790	9.72	QV	.	.	.	.
2.083	1.5461	9.75	QV	.	.	.	.
2.167	1.6135	9.78	QV	.	.	.	.
2.250	1.6810	9.80	QV	.	.	.	.
2.333	1.7487	9.83	Q V	.	.	.	.
2.417	1.8165	9.85	Q V	.	.	.	.
2.500	1.8846	9.88	Q V	.	.	.	.
2.583	1.9529	9.91	Q V	.	.	.	.
2.667	2.0213	9.94	Q V	.	.	.	.
2.750	2.0900	9.97	Q V	.	.	.	.
2.833	2.1588	10.00	Q V	.	.	.	.
2.917	2.2278	10.02	.QV	.	.	.	.
3.000	2.2971	10.06	.QV	.	.	.	.
3.083	2.3665	10.08	.QV	.	.	.	.
3.167	2.4362	10.11	.QV	.	.	.	.
3.250	2.5061	10.14	.QV	.	.	.	.
3.333	2.5761	10.17	.QV	.	.	.	.
3.417	2.6464	10.20	.Q V	.	.	.	.
3.500	2.7169	10.24	.Q V	.	.	.	.
3.583	2.7876	10.27	.Q V	.	.	.	.
3.667	2.8585	10.30	.Q V	.	.	.	.

3.750	2.9297	10.33	.Q	V	.	.	.	.
3.833	3.0010	10.36	.Q	V	.	.	.	.
3.917	3.0726	10.39	.Q	V	.	.	.	.
4.000	3.1444	10.43	.Q	V	.	.	.	.
4.083	3.2165	10.46	.Q	V	.	.	.	.
4.167	3.2887	10.49	.Q	V	.	.	.	.
4.250	3.3612	10.53	.Q	V	.	.	.	.
4.333	3.4340	10.56	.Q	V	.	.	.	.
4.417	3.5069	10.59	.Q	V	.	.	.	.
4.500	3.5802	10.63	.Q	V	.	.	.	.
4.583	3.6536	10.66	.Q	V	.	.	.	.
4.667	3.7273	10.70	.Q	V	.	.	.	.
4.750	3.8013	10.74	.Q	V	.	.	.	.
4.833	3.8755	10.77	.Q	V	.	.	.	.
4.917	3.9499	10.81	.Q	V	.	.	.	.
5.000	4.0246	10.85	.Q	V	.	.	.	.
5.083	4.0996	10.88	.Q	V	.	.	.	.
5.167	4.1748	10.92	.Q	V	.	.	.	.
5.250	4.2503	10.96	.Q	V	.	.	.	.
5.333	4.3261	11.00	.Q	V	.	.	.	.
5.417	4.4021	11.04	.Q	V	.	.	.	.
5.500	4.4784	11.08	.Q	V	.	.	.	.
5.583	4.5549	11.12	.Q	V	.	.	.	.
5.667	4.6318	11.16	.Q	V	.	.	.	.
5.750	4.7089	11.20	.Q	V	.	.	.	.
5.833	4.7864	11.24	.Q	V	.	.	.	.
5.917	4.8641	11.28	.Q	V	.	.	.	.
6.000	4.9421	11.33	.Q	V	.	.	.	.
6.083	5.0204	11.37	.Q	V	.	.	.	.
6.167	5.0990	11.41	.Q	V	.	.	.	.
6.250	5.1779	11.46	.Q	V	.	.	.	.
6.333	5.2571	11.50	.Q	V	.	.	.	.
6.417	5.3366	11.55	.Q	V	.	.	.	.
6.500	5.4164	11.59	.Q	V	.	.	.	.
6.583	5.4966	11.64	.Q	V	.	.	.	.
6.667	5.5771	11.69	.Q	V	.	.	.	.
6.750	5.6579	11.73	.Q	V	.	.	.	.
6.833	5.7390	11.78	.Q	V	.	.	.	.
6.917	5.8205	11.83	.Q	V	.	.	.	.
7.000	5.9023	11.88	.Q	V	.	.	.	.
7.083	5.9844	11.93	.Q	V	.	.	.	.
7.167	6.0670	11.98	.Q	V	.	.	.	.
7.250	6.1498	12.03	.Q	V	.	.	.	.
7.333	6.2330	12.08	.Q	V	.	.	.	.
7.417	6.3166	12.13	.Q	V	.	.	.	.
7.500	6.4006	12.19	.Q	V	.	.	.	.
7.583	6.4849	12.24	.Q	V	.	.	.	.
7.667	6.5696	12.30	.Q	V	.	.	.	.
7.750	6.6547	12.35	.Q	V	.	.	.	.
7.833	6.7402	12.41	.Q	V	.	.	.	.
7.917	6.8261	12.47	.Q	V	.	.	.	.
8.000	6.9123	12.53	.Q	V	.	.	.	.
8.083	6.9990	12.59	.Q	V	.	.	.	.
8.167	7.0861	12.65	.Q	V	.	.	.	.
8.250	7.1737	12.71	.Q	V	.	.	.	.

```
 8.333      7.2616     12.77  .Q      V .          .          .          .
 8.417      7.3500     12.83  .Q      V .          .          .          .
 8.500      7.4388     12.90  .Q      V .          .          .          .
 8.583      7.5281     12.96  .Q      V .          .          .          .
 8.667      7.6178     13.03  .Q      V .          .          .          .
 8.750      7.7080     13.09  .Q      V .          .          .          .
 8.833      7.7987     13.17  .Q       V.          .          .          .
 8.917      7.8898     13.23  .Q       V.          .          .          .
 9.000      7.9815     13.31  .Q       V.          .          .          .
 9.083      8.0736     13.37  .Q       V.          .          .          .
 9.167      8.1662     13.45  .Q       V.          .          .          .
 9.250      8.2593     13.52  .Q       V.          .          .          .
 9.333      8.3530     13.60  .Q       V.          .          .          .
 9.417      8.4472     13.67  .Q       V.          .          .          .
 9.500      8.5419     13.76  .Q       V.          .          .          .
 9.583      8.6372     13.83  .Q        V          .          .          .
 9.667      8.7331     13.92  .Q        V          .          .          .
 9.750      8.8295     14.00  .Q        V          .          .          .
 9.833      8.9265     14.09  .Q        V          .          .          .
 9.917      9.0240     14.17  .Q        V          .          .          .
10.000      9.1222     14.26  .Q        V          .          .          .
10.083      9.2210     14.34  .Q        V          .          .          .
10.167      9.3205     14.44  .Q        V          .          .          .
10.250      9.4206     14.53  .Q        V          .          .          .
10.333      9.5213     14.63  .Q        .V         .          .          .
10.417      9.6227     14.72  .Q        .V         .          .          .
10.500      9.7248     14.83  .Q        .V         .          .          .
10.583      9.8276     14.92  .Q        .V         .          .          .
10.667      9.9311     15.03  .Q        .V         .          .          .
10.750     10.0353     15.13  .Q        .V         .          .          .
10.833     10.1403     15.25  .Q        .V         .          .          .
10.917     10.2460     15.35  .Q        .V         .          .          .
11.000     10.3526     15.47  .Q        . V        .          .          .
11.083     10.4599     15.58  .Q        . V        .          .          .
11.167     10.5680     15.71  .Q        . V        .          .          .
11.250     10.6770     15.82  .Q        . V        .          .          .
11.333     10.7869     15.95  .Q        . V        .          .          .
11.417     10.8976     16.07  .Q        . V        .          .          .
11.500     11.0092     16.21  .Q        . V        .          .          .
11.583     11.1217     16.34  .Q        . V        .          .          .
11.667     11.2353     16.49  .Q        .  V       .          .          .
11.750     11.3498     16.62  .Q        .  V       .          .          .
11.833     11.4653     16.78  .Q        .  V       .          .          .
11.917     11.5818     16.92  .Q        .  V       .          .          .
12.000     11.6994     17.08  .Q        .  V       .          .          .
12.083     11.8123     16.38  .Q        .  V       .          .          .
12.167     11.9001     12.75  .Q        .  V       .          .          .
12.250     11.9751     10.90  .Q        .  V       .          .          .
12.333     12.0494     10.78  .Q        .  V       .          .          .
12.417     12.1243     10.89  .Q        .   V      .          .          .
12.500     12.2004     11.04  .Q        .   V      .          .          .
12.583     12.2775     11.20  .Q        .   V      .          .          .
12.667     12.3560     11.39  .Q        .   V      .          .          .
12.750     12.4356     11.57  .Q        .   V      .          .          .
12.833     12.5167     11.77  .Q        .   V      .          .          .
```



17.500	27.8838	13.80	.Q	.	.	.	V	.
17.583	27.9750	13.24	.Q	.	.	.	V	.
17.667	28.0626	12.73	.Q	.	.	.	V	.
17.750	28.1471	12.27	.Q	.	.	.	V	.
17.833	28.2287	11.84	.Q	.	.	.	V	.
17.917	28.3076	11.45	.Q	.	.	.	V	.
18.000	28.3840	11.10	.Q	.	.	.	V	.
18.083	28.4639	11.61	.Q	.	.	.	V	.
18.167	28.5679	15.09	.Q	.	.	.	V	.
18.250	28.6834	16.78	.Q	.	.	.	V	.
18.333	28.7989	16.76	.Q	.	.	.	V	.
18.417	28.9125	16.51	.Q	.	.	.	V	.
18.500	29.0245	16.25	.Q	.	.	.	V	.
18.583	29.1346	16.00	.Q	.	.	.	V	.
18.667	29.2431	15.75	.Q	.	.	.	V	.
18.750	29.3499	15.51	.Q	.	.	.	V	.
18.833	29.4551	15.28	.Q	.	.	.	V	.
18.917	29.5589	15.07	.Q	.	.	.	V	.
19.000	29.6612	14.86	.Q	.	.	.	V	.
19.083	29.7622	14.66	.Q	.	.	.	V	.
19.167	29.8619	14.47	.Q	.	.	.	V	.
19.250	29.9603	14.29	.Q	.	.	.	V	.
19.333	30.0575	14.11	.Q	.	.	.	V	.
19.417	30.1535	13.95	.Q	.	.	.	V	.
19.500	30.2485	13.78	.Q	.	.	.	V	.
19.583	30.3423	13.63	.Q	.	.	.	V	.
19.667	30.4351	13.48	.Q	.	.	.	V	.
19.750	30.5269	13.33	.Q	.	.	.	V	.
19.833	30.6178	13.19	.Q	.	.	.	V	.
19.917	30.7076	13.05	.Q	.	.	.	V	.
20.000	30.7966	12.92	.Q	.	.	.	V	.
20.083	30.8847	12.79	.Q	.	.	.	V	.
20.167	30.9720	12.67	.Q	.	.	.	V	.
20.250	31.0584	12.55	.Q	.	.	.	V	.
20.333	31.1440	12.43	.Q	.	.	.	V	.
20.417	31.2289	12.32	.Q	.	.	.	V	.
20.500	31.3130	12.21	.Q	.	.	.	V	.
20.583	31.3963	12.10	.Q	.	.	.	V	.
20.667	31.4790	12.00	.Q	.	.	.	V	.
20.750	31.5609	11.90	.Q	.	.	.	V	.
20.833	31.6421	11.80	.Q	.	.	.	V	.
20.917	31.7227	11.70	.Q	.	.	.	V	.
21.000	31.8027	11.61	.Q	.	.	.	V	.
21.083	31.8820	11.52	.Q	.	.	.	V	.
21.167	31.9607	11.43	.Q	.	.	.	V	.
21.250	32.0388	11.34	.Q	.	.	.	V	.
21.333	32.1163	11.26	.Q	.	.	.	V	.
21.417	32.1933	11.17	.Q	.	.	.	V	.
21.500	32.2697	11.09	.Q	.	.	.	V	.
21.583	32.3455	11.01	.Q	.	.	.	V	.
21.667	32.4208	10.94	.Q	.	.	.	V	.
21.750	32.4956	10.86	.Q	.	.	.	V	.
21.833	32.5699	10.79	.Q	.	.	.	V	.
21.917	32.6437	10.71	.Q	.	.	.	V	.
22.000	32.7170	10.64	.Q	.	.	.	V	.

22.083	32.7898	10.57	.Q	.	.	.	V .
22.167	32.8622	10.51	.Q	.	.	.	V .
22.250	32.9341	10.44	.Q	.	.	.	V .
22.333	33.0055	10.37	.Q	.	.	.	V .
22.417	33.0765	10.31	.Q	.	.	.	V .
22.500	33.1471	10.25	.Q	.	.	.	V .
22.583	33.2172	10.18	.Q	.	.	.	V .
22.667	33.2869	10.12	.Q	.	.	.	V .
22.750	33.3562	10.06	.Q	.	.	.	V .
22.833	33.4252	10.01	.Q	.	.	.	V .
22.917	33.4937	9.95	Q	.	.	.	V .
23.000	33.5618	9.89	Q	.	.	.	V .
23.083	33.6296	9.84	Q	.	.	.	V.
23.167	33.6969	9.78	Q	.	.	.	V.
23.250	33.7640	9.73	Q	.	.	.	V.
23.333	33.8306	9.68	Q	.	.	.	V.
23.417	33.8969	9.63	Q	.	.	.	V.
23.500	33.9628	9.58	Q	.	.	.	V.
23.583	34.0285	9.53	Q	.	.	.	V.
23.667	34.0937	9.48	Q	.	.	.	V.
23.750	34.1587	9.43	Q	.	.	.	V.
23.833	34.2233	9.38	Q	.	.	.	V.
23.917	34.2876	9.33	Q	.	.	.	V.
24.000	34.3515	9.29	Q	.	.	.	V.
24.083	34.4075	8.13	Q	.	.	.	V.
24.167	34.4290	3.11	Q	.	.	.	V.
24.250	34.4322	0.46	Q	.	.	.	V.
24.333	34.4328	0.09	Q	.	.	.	V.
24.417	34.4330	0.04	Q	.	.	.	V.
24.500	34.4331	0.01	Q	.	.	.	V

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1470.0
10%	80.0
20%	40.0
30%	20.0
40%	15.0
50%	15.0
60%	10.0
70%	5.0
80%	5.0
90%	5.0

==========

END OF FLOODSCx ROUTING ANALYSIS

PROPOSED UNMITIGATED 100-YEAR REGIONAL ANALYSIS TRIBUTARY TO EX DBL 6X6 POC #1 / NODE 101

LOSS RATE CALCULATIONS
PROJECT REGIONAL
100-YR ANALYSIS
NODE 101 (UNMITIGATED)

****
NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS
==========
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Ver. 22.0 Release Date: 07/01/2011005 License ID 1673

Analysis prepared by:

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Problem Descriptions:
Grand Terrace
Barton+Deberry-100yr-Proposed
01-13-2022
==========
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 4.75 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	30.16	20.00	32.(AMC II)	0.742	0.789
2	23.43	20.00	69.(AMC II)	0.272	0.896
3	57.55	10.00	32.(AMC II)	0.742	0.870
4	37.59	10.00	69.(AMC II)	0.272	0.923
5	121.44	50.00	32.(AMC II)	0.742	0.548
6	93.70	50.00	69.(AMC II)	0.272	0.816
7	0.84	50.00	75.(AMC II)	0.210	0.869
8	0.91	100.00	50.(AMC II)	0.495	0.390
9	23.00	100.00	69.(AMC II)	0.272	0.681
10	0.56	100.00	79.(AMC II)	0.170	0.832
11	74.01	100.00	83.(AMC II)	0.133	0.902
12	14.07	60.00	32.(AMC II)	0.742	0.468
13	1.07	60.00	69.(AMC II)	0.272	0.789
14	58.07	10.00	32.(AMC II)	0.742	0.870
15	41.55	10.00	69.(AMC II)	0.272	0.923

TOTAL AREA (Acres) = 577.95

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.169

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.216
==========

****

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

==========

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
VanBuren WS- Proposed 100 yr
2022-03-08

==========

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 4.75 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	35.19	20.00	32.(AMC II)	0.742	0.789
2	28.06	20.00	69.(AMC II)	0.272	0.896
3	29.80	10.00	32.(AMC II)	0.742	0.870
4	27.82	10.00	69.(AMC II)	0.272	0.923
5	118.35	50.00	32.(AMC II)	0.742	0.548
6	62.06	50.00	69.(AMC II)	0.272	0.816
7	0.77	50.00	75.(AMC II)	0.210	0.869
8	9.14	100.00	50.(AMC II)	0.495	0.390
9	4.16	100.00	69.(AMC II)	0.272	0.681
10	16.79	100.00	79.(AMC II)	0.170	0.832
11	29.95	100.00	83.(AMC II)	0.133	0.902
12	20.33	60.00	32.(AMC II)	0.742	0.468
13	2.38	60.00	69.(AMC II)	0.272	0.789
14	44.08	10.00	32.(AMC II)	0.742	0.870
15	1.28	10.00	56.(AMC II)	0.423	0.904
16	36.16	10.00	69.(AMC II)	0.272	0.923

TOTAL AREA (Acres) = 466.32

AREA-AVERAGED LOSS RATE, $\bar{Fm}$ (in./hr.) = 0.190

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.244

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

            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:



 ************************ DESCRIPTION OF STUDY ************************
* GRAND TERRACE GATEWAY                                               *
* REGIONAL-CALTRANS OUTLET-PROP 100 YR                                *
* CT 2022-03-08                                                       *
 **********************************************************************

  FILE NAME: CALPR100.DAT
  TIME/DATE OF STUDY: 15:53 03/10/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     577.950 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.210 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.169
         LOW LOSS FRACTION = 0.216
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  2.25
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  4.75
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.974
30-MINUTE FACTOR = 0.974
1-HOUR FACTOR = 0.974
3-HOUR FACTOR = 0.996
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 39.683

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.872	200.764
2	19.165	1138.762
3	48.437	2045.999
4	76.826	1984.323
5	90.830	978.816
6	96.604	403.564
7	98.430	127.619
8	99.173	51.923
9	99.669	34.688
10	99.917	17.344
11	100.000	5.781

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 44.7420
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 183.6693

==========

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

==========

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	325.0	650.0	975.0	1300.0
0.083	0.0096	1.40	Q	.	.	.	.
0.167	0.0740	9.34	Q	.	.	.	.
0.250	0.2367	23.63	Q	.	.	.	.
0.333	0.4952	37.52	VQ	.	.	.	.
0.417	0.8012	44.43	VQ	.	.	.	.
0.500	1.1273	47.36	VQ	.	.	.	.
0.583	1.4604	48.36	VQ	.	.	.	.
0.667	1.7968	48.84	VQ	.	.	.	.
0.750	2.1356	49.20	VQ	.	.	.	.
0.833	2.4762	49.45	VQ	.	.	.	.
0.917	2.8178	49.61	VQ	.	.	.	.
1.000	3.1603	49.73	VQ	.	.	.	.
1.083	3.5037	49.86	VQ	.	.	.	.
1.167	3.8480	49.99	VQ	.	.	.	.
1.250	4.1931	50.11	VQ	.	.	.	.
1.333	4.5391	50.24	VQ	.	.	.	.
1.417	4.8860	50.37	.Q	.	.	.	.
1.500	5.2338	50.50	.Q	.	.	.	.
1.583	5.5825	50.63	.Q	.	.	.	.
1.667	5.9321	50.77	.Q	.	.	.	.
1.750	6.2827	50.90	.Q	.	.	.	.
1.833	6.6342	51.03	.Q	.	.	.	.
1.917	6.9866	51.17	.Q	.	.	.	.
2.000	7.3399	51.31	.Q	.	.	.	.
2.083	7.6942	51.45	.Q	.	.	.	.
2.167	8.0495	51.59	.Q	.	.	.	.
2.250	8.4057	51.73	.Q	.	.	.	.
2.333	8.7630	51.87	.Q	.	.	.	.
2.417	9.1212	52.01	.Q	.	.	.	.
2.500	9.4804	52.16	.QV	.	.	.	.
2.583	9.8406	52.30	.QV	.	.	.	.
2.667	10.2018	52.45	.QV	.	.	.	.
2.750	10.5640	52.60	.QV	.	.	.	.
2.833	10.9273	52.75	.QV	.	.	.	.
2.917	11.2916	52.90	.QV	.	.	.	.
3.000	11.6570	53.05	.QV	.	.	.	.
3.083	12.0234	53.20	.QV	.	.	.	.
3.167	12.3909	53.36	.QV	.	.	.	.
3.250	12.7594	53.51	.QV	.	.	.	.

3.333	13.1291	53.67	.QV	.	.	.	.
3.417	13.4998	53.83	.QV	.	.	.	.
3.500	13.8717	54.00	.Q V	.	.	.	.
3.583	14.2447	54.16	.Q V	.	.	.	.
3.667	14.6188	54.32	.Q V	.	.	.	.
3.750	14.9940	54.49	.Q V	.	.	.	.
3.833	15.3705	54.66	.Q V	.	.	.	.
3.917	15.7480	54.82	.Q V	.	.	.	.
4.000	16.1268	55.00	.Q V	.	.	.	.
4.083	16.5068	55.17	.Q V	.	.	.	.
4.167	16.8879	55.34	.Q V	.	.	.	.
4.250	17.2703	55.52	.Q V	.	.	.	.
4.333	17.6538	55.70	.Q V	.	.	.	.
4.417	18.0387	55.88	.Q V	.	.	.	.
4.500	18.4247	56.06	.Q V	.	.	.	.
4.583	18.8121	56.24	.Q V	.	.	.	.
4.667	19.2007	56.43	.Q V	.	.	.	.
4.750	19.5906	56.61	.Q V	.	.	.	.
4.833	19.9818	56.80	.Q V	.	.	.	.
4.917	20.3743	56.99	.Q V	.	.	.	.
5.000	20.7681	57.19	.Q V	.	.	.	.
5.083	21.1633	57.38	.Q V	.	.	.	.
5.167	21.5599	57.58	.Q V	.	.	.	.
5.250	21.9578	57.78	.Q V	.	.	.	.
5.333	22.3571	57.98	.Q V	.	.	.	.
5.417	22.7579	58.18	.Q V	.	.	.	.
5.500	23.1600	58.39	.Q V	.	.	.	.
5.583	23.5636	58.60	.Q V	.	.	.	.
5.667	23.9686	58.81	.Q V	.	.	.	.
5.750	24.3751	59.02	.Q V	.	.	.	.
5.833	24.7831	59.24	.Q V	.	.	.	.
5.917	25.1926	59.46	.Q V	.	.	.	.
6.000	25.6037	59.68	.Q V	.	.	.	.
6.083	26.0162	59.90	.Q V	.	.	.	.
6.167	26.4304	60.13	.Q V	.	.	.	.
6.250	26.8461	60.36	.Q V	.	.	.	.
6.333	27.2634	60.59	.Q V	.	.	.	.
6.417	27.6823	60.83	.Q V	.	.	.	.
6.500	28.1029	61.07	.Q V	.	.	.	.
6.583	28.5251	61.31	.Q V	.	.	.	.
6.667	28.9490	61.55	.Q V	.	.	.	.
6.750	29.3746	61.80	.Q V	.	.	.	.
6.833	29.8019	62.05	.Q V	.	.	.	.
6.917	30.2310	62.30	.Q V	.	.	.	.
7.000	30.6618	62.56	.Q V	.	.	.	.
7.083	31.0945	62.82	.Q V	.	.	.	.
7.167	31.5289	63.08	.Q V	.	.	.	.
7.250	31.9652	63.35	.Q V	.	.	.	.
7.333	32.4033	63.62	.Q V	.	.	.	.
7.417	32.8434	63.89	.Q V	.	.	.	.

7.500	33.2853	64.17	.Q	V	.	.	.
7.583	33.7292	64.45	.Q	V	.	.	.
7.667	34.1751	64.74	.Q	V	.	.	.
7.750	34.6229	65.03	. Q	V	.	.	.
7.833	35.0728	65.32	. Q	V	.	.	.
7.917	35.5247	65.62	. Q	V	.	.	.
8.000	35.9788	65.93	. Q	V	.	.	.
8.083	36.4349	66.23	. Q	V	.	.	.
8.167	36.8932	66.55	. Q	V	.	.	.
8.250	37.3537	66.86	. Q	V	.	.	.
8.333	37.8164	67.18	. Q	V	.	.	.
8.417	38.2813	67.51	. Q	V	.	.	.
8.500	38.7486	67.84	. Q	V	.	.	.
8.583	39.2181	68.18	. Q	V	.	.	.
8.667	39.6900	68.52	. Q	V	.	.	.
8.750	40.1643	68.87	. Q	V	.	.	.
8.833	40.6410	69.22	. Q	V	.	.	.
8.917	41.1202	69.58	. Q	V	.	.	.
9.000	41.6019	69.95	. Q	V.	.	.	.
9.083	42.0862	70.31	. Q	V.	.	.	.
9.167	42.5731	70.70	. Q	V.	.	.	.
9.250	43.0626	71.08	. Q	V.	.	.	.
9.333	43.5548	71.47	. Q	V.	.	.	.
9.417	44.0497	71.86	. Q	V.	.	.	.
9.500	44.5475	72.27	. Q	V.	.	.	.
9.583	45.0480	72.68	. Q	V.	.	.	.
9.667	45.5515	73.10	. Q	V.	.	.	.
9.750	46.0579	73.53	. Q	V	.	.	.
9.833	46.5673	73.97	. Q	V	.	.	.
9.917	47.0797	74.41	. Q	V	.	.	.
10.000	47.5953	74.86	. Q	V	.	.	.
10.083	48.1141	75.32	. Q	V	.	.	.
10.167	48.6361	75.80	. Q	V	.	.	.
10.250	49.1614	76.27	. Q	V	.	.	.
10.333	49.6901	76.77	. Q	V	.	.	.
10.417	50.2221	77.26	. Q	V	.	.	.
10.500	50.7578	77.77	. Q	.V	.	.	.
10.583	51.2970	78.29	. Q	.V	.	.	.
10.667	51.8399	78.83	. Q	.V	.	.	.
10.750	52.3865	79.37	. Q	.V	.	.	.
10.833	52.9370	79.93	. Q	.V	.	.	.
10.917	53.4913	80.49	. Q	.V	.	.	.
11.000	54.0497	81.08	. Q	.V	.	.	.
11.083	54.6121	81.67	. Q	.V	.	.	.
11.167	55.1788	82.28	. Q	. V	.	.	.
11.250	55.7498	82.90	. Q	. V	.	.	.
11.333	56.3251	83.55	. Q	. V	.	.	.
11.417	56.9050	84.19	. Q	. V	.	.	.
11.500	57.4895	84.87	. Q	. V	.	.	.
11.583	58.0787	85.55	. Q	. V	.	.	.

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11.667     58.6728     86.27  . Q       . V       .         .         .
11.750     59.2719     86.99  . Q       . V       .         .         .
11.833     59.8762     87.74  . Q       .  V      .         .         .
11.917     60.4857     88.50  . Q       .  V      .         .         .
12.000     61.1006     89.29  . Q       .  V      .         .         .
12.083     61.7139     89.04  . Q       .  V      .         .         .
12.167     62.2916     83.89  . Q       .  V      .         .         .
12.250     62.8011     73.97  . Q       .  V      .         .         .
12.333     63.2445     64.39  .Q        .  V      .         .         .
12.417     63.6582     60.07  .Q        .  V      .         .         .
12.500     64.0632     58.81  .Q        .  V      .         .         .
12.583     64.4696     59.00  .Q        .   V     .         .         .
12.667     64.8803     59.65  .Q        .   V     .         .         .
12.750     65.2963     60.40  .Q        .   V     .         .         .
12.833     65.7184     61.29  .Q        .   V     .         .         .
12.917     66.1473     62.27  .Q        .   V     .         .         .
13.000     66.5835     63.34  .Q        .   V     .         .         .
13.083     67.0274     64.44  .Q        .   V     .         .         .
13.167     67.4792     65.61  . Q       .   V     .         .         .
13.250     67.9393     66.81  . Q       .   V     .         .         .
13.333     68.4083     68.09  . Q       .   V     .         .         .
13.417     68.8863     69.41  . Q       .    V    .         .         .
13.500     69.3740     70.82  . Q       .    V    .         .         .
13.583     69.8717     72.27  . Q       .    V    .         .         .
13.667     70.3802     73.83  . Q       .    V    .         .         .
13.750     70.8998     75.45  . Q       .    V    .         .         .
13.833     71.4314     77.19  . Q       .    V    .         .         .
13.917     71.9754     78.99  . Q       .    V    .         .         .
14.000     72.5329     80.95  . Q       .    V    .         .         .
14.083     73.1079     83.49  . Q       .    V    .         .         .
14.167     73.7181     88.60  . Q       .     V   .         .         .
14.250     74.3802     96.13  . Q       .     V   .         .         .
14.333     75.0950    103.79  .  Q      .     V   .         .         .
14.417     75.8464    109.10  .  Q      .     V   .         .         .
14.500     76.6265    113.27  .  Q      .     V   .         .         .
14.583     77.4318    116.93  .  Q      .     V   .         .         .
14.667     78.2635    120.76  .  Q      .      V  .         .         .
14.750     79.1229    124.79  .  Q      .      V  .         .         .
14.833     80.0129    129.22  .  Q      .      V  .         .         .
14.917     80.9355    133.97  .   Q     .      V  .         .         .
15.000     81.8948    139.29  .   Q     .      V  .         .         .
15.083     82.8941    145.10  .   Q     .       V .         .         .
15.167     83.9392    151.74  .   Q     .       V .         .         .
15.250     85.0349    159.10  .   Q     .       V .         .         .
15.333     86.1896    167.67  .    Q    .       V .         .         .
15.417     87.4228    179.05  .    Q    .        V.         .         .
15.500     88.8013    200.16  .     Q   .        V.         .         .
15.583     90.3917    230.92  .      Q  .        V.         .         .
15.667     92.2151    264.77  .       Q .         V         .         .
15.750     94.2296    292.50  .        Q.         V         .         .
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15.833	96.3884	313.45	. Q. V . .
15.917	98.6976	335.30	. Q .V . .
16.000	101.3795	389.41	. .Q . V . .
16.083	105.1971	554.31	. . Q . V . .
16.167	111.6066	930.67	. . . V Q . .
16.250	119.9598	1212.88	. . . V . Q .
16.333	127.6750	1120.25	. . . V . Q .
16.417	132.6774	726.35	. . . Q V . .
16.500	135.9011	468.08	. . Q . V. .
16.583	138.0587	313.29	. Q. . V .
16.667	139.6868	236.40	. Q . . V .
16.750	141.0379	196.18	. Q . . V .
16.833	142.1931	167.73	. Q . . V .
16.917	143.2133	148.13	. Q . . .V .
17.000	144.1381	134.28	. Q . . .V .
17.083	144.9928	124.11	. Q . . .V .
17.167	145.7735	113.36	. Q . . .V .
17.250	146.4740	101.70	. Q . . .V .
17.333	147.1026	91.27	. Q . . . V .
17.417	147.6823	84.18	. Q . . . V .
17.500	148.2275	79.15	. Q . . . V .
17.583	148.7460	75.29	. Q . . . V .
17.667	149.2419	72.00	. Q . . . V .
17.750	149.7177	69.07	. Q . . . V .
17.833	150.1753	66.46	. Q . . . V .
17.917	150.6168	64.09	.Q . . . V .
18.000	151.0434	61.94	.Q . . . V .
18.083	151.4636	61.02	.Q . . . V .
18.167	151.9124	65.16	. Q . . . V .
18.250	152.4232	74.16	. Q . . . V .
18.333	152.9941	82.90	. Q . . . V .
18.417	153.5892	86.41	. Q . . . V .
18.500	154.1881	86.96	. Q . . . V .
18.583	154.7813	86.14	. Q . . . V .
18.667	155.3666	84.99	. Q . . . V .
18.750	155.9439	83.82	. Q . . . V .
18.833	156.5130	82.63	. Q . . . V .
18.917	157.0739	81.44	. Q . . . V .
19.000	157.6267	80.27	. Q . . . V .
19.083	158.1719	79.16	. Q . . . V .
19.167	158.7097	78.09	. Q . . . V .
19.250	159.2404	77.06	. Q . . . V .
19.333	159.7644	76.08	. Q . . . V .
19.417	160.2819	75.14	. Q . . . V .
19.500	160.7932	74.23	. Q . . . V .
19.583	161.2984	73.36	. Q . . . V .
19.667	161.7978	72.52	. Q . . . V .
19.750	162.2917	71.71	. Q . . . V .
19.833	162.7801	70.92	. Q . . . V .
19.917	163.2633	70.16	. Q . . . V .

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20.000    163.7415     69.43  . Q       .         .         .    V    .
20.083    164.2148     68.73  . Q       .         .         .    V    .
20.167    164.6834     68.04  . Q       .         .         .    V    .
20.250    165.1475     67.38  . Q       .         .         .    V    .
20.333    165.6070     66.73  . Q       .         .         .     V   .
20.417    166.0623     66.11  . Q       .         .         .     V   .
20.500    166.5134     65.50  . Q       .         .         .     V   .
20.583    166.9604     64.91  .Q        .         .         .     V   .
20.667    167.4035     64.34  .Q        .         .         .     V   .
20.750    167.8428     63.78  .Q        .         .         .     V   .
20.833    168.2783     63.24  .Q        .         .         .     V   .
20.917    168.7102     62.71  .Q        .         .         .     V   .
21.000    169.1385     62.19  .Q        .         .         .     V   .
21.083    169.5634     61.69  .Q        .         .         .     V   .
21.167    169.9849     61.20  .Q        .         .         .      V  .
21.250    170.4032     60.73  .Q        .         .         .      V  .
21.333    170.8182     60.26  .Q        .         .         .      V  .
21.417    171.2301     59.81  .Q        .         .         .      V  .
21.500    171.6390     59.37  .Q        .         .         .      V  .
21.583    172.0449     58.93  .Q        .         .         .      V  .
21.667    172.4478     58.51  .Q        .         .         .      V  .
21.750    172.8479     58.10  .Q        .         .         .      V  .
21.833    173.2453     57.69  .Q        .         .         .      V  .
21.917    173.6399     57.30  .Q        .         .         .      V  .
22.000    174.0318     56.91  .Q        .         .         .      V  .
22.083    174.4212     56.53  .Q        .         .         .      V  .
22.167    174.8080     56.16  .Q        .         .         .       V .
22.250    175.1922     55.80  .Q        .         .         .       V .
22.333    175.5741     55.44  .Q        .         .         .       V .
22.417    175.9535     55.09  .Q        .         .         .       V .
22.500    176.3306     54.75  .Q        .         .         .       V .
22.583    176.7054     54.42  .Q        .         .         .       V .
22.667    177.0779     54.09  .Q        .         .         .       V .
22.750    177.4481     53.76  .Q        .         .         .       V .
22.833    177.8162     53.45  .Q        .         .         .       V .
22.917    178.1822     53.14  .Q        .         .         .       V .
23.000    178.5460     52.83  .Q        .         .         .       V .
23.083    178.9078     52.53  .Q        .         .         .       V .
23.167    179.2676     52.24  .Q        .         .         .        V.
23.250    179.6254     51.95  .Q        .         .         .        V.
23.333    179.9812     51.66  .Q        .         .         .        V.
23.417    180.3351     51.39  .Q        .         .         .        V.
23.500    180.6871     51.11  .Q        .         .         .        V.
23.583    181.0372     50.84  .Q        .         .         .        V.
23.667    181.3855     50.58  .Q        .         .         .        V.
23.750    181.7320     50.31  .Q        .         .         .        V.
23.833    182.0768     50.06  .Q        .         .         .        V.
23.917    182.4198     49.81  .Q        .         .         .        V.
24.000    182.7611     49.56  .Q        .         .         .        V.
24.083    183.0911     47.91  .Q        .         .         .        V.
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  24.167    183.3649     39.75  .Q        .         .         .         V.
  24.250    183.5392     25.31  Q         .         .         .         V.
  24.333    183.6175     11.37  Q         .         .         .         V.
  24.417    183.6485      4.50  Q         .         .         .         V.
  24.500    183.6600      1.67  Q         .         .         .         V.
  24.583    183.6653      0.77  Q         .         .         .         V.
  24.667    183.6681      0.41  Q         .         .         .         V.
  24.750    183.6692      0.16  Q         .         .         .         V.
  24.833    183.6694      0.04  Q         .         .         .          V
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    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
               0%                           1490.0
              10%                            145.0
              20%                             60.0
              30%                             35.0
              40%                             25.0
              50%                             20.0
              60%                             15.0
              70%                             15.0
              80%                             10.0
              90%                             10.0


 ********************************************************************************
   FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 5.2
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   >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
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          THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
          TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
          INTERVALS(Reference: the National Engineering Handbook,
          Hydrology, Chapter 17, page 17-52, August,1972,
          U.S. Department of Commerce).


          ASSUMED REGULAR CHANNEL INFORMATION:
            BASEWIDTH(FT) =   30.00     CHANNEL Z =  2.00
            UPSTREAM ELEVATION(FT) =     938.00
            DOWNSTREAM ELEVATION(FT) =     909.00
            CHANNEL LENGTH(FT) =    2185.72     MANNING'S FACTOR = 0.015
            CONSTANT LOSS RATE(CFS) =    0.00
```

CHANNEL ROUTING COEFFICIENT ESTIMATED:
  MAXIMUM INFLOW(CFS) = 1212.88
  AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW =   997.54
  CHANNEL NORMAL VELOCITY FOR Q =   997.54 CFS = 15.82 FPS
  ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.903

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 0.989

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
0.083	1.40	0.81	0.81
0.167	9.34	5.98	5.98
0.250	23.63	17.56	17.56
0.333	37.52	31.59	31.59
0.417	44.43	41.45	41.45
0.500	47.36	46.09	46.09
0.583	48.36	47.92	47.92
0.667	48.84	48.63	48.63
0.750	49.20	49.05	49.05
0.833	49.45	49.34	49.34
0.917	49.61	49.54	49.54
1.000	49.73	49.68	49.68
1.083	49.86	49.81	49.81
1.167	49.99	49.93	49.93
1.250	50.11	50.06	50.06
1.333	50.24	50.19	50.19
1.417	50.37	50.32	50.32
1.500	50.50	50.45	50.45
1.583	50.63	50.58	50.58
1.667	50.77	50.71	50.71
1.750	50.90	50.84	50.84
1.833	51.03	50.98	50.98
1.917	51.17	51.11	51.11
2.000	51.31	51.25	51.25
2.083	51.45	51.39	51.39
2.167	51.59	51.53	51.53
2.250	51.73	51.67	51.67
2.333	51.87	51.81	51.81
2.417	52.01	51.95	51.95
2.500	52.16	52.09	52.09
2.583	52.30	52.24	52.24
2.667	52.45	52.39	52.39
2.750	52.60	52.53	52.53
2.833	52.75	52.68	52.68

2.917	52.90	52.83	52.83
3.000	53.05	52.99	52.99
3.083	53.20	53.14	53.14
3.167	53.36	53.29	53.29
3.250	53.51	53.45	53.45
3.333	53.67	53.61	53.61
3.417	53.83	53.76	53.76
3.500	54.00	53.93	53.93
3.583	54.16	54.09	54.09
3.667	54.32	54.25	54.25
3.750	54.49	54.42	54.42
3.833	54.66	54.58	54.58
3.917	54.82	54.75	54.75
4.000	55.00	54.92	54.92
4.083	55.17	55.09	55.09
4.167	55.34	55.27	55.27
4.250	55.52	55.44	55.44
4.333	55.70	55.62	55.62
4.417	55.88	55.80	55.80
4.500	56.06	55.98	55.98
4.583	56.24	56.16	56.16
4.667	56.43	56.35	56.35
4.750	56.61	56.53	56.53
4.833	56.80	56.72	56.72
4.917	56.99	56.91	56.91
5.000	57.19	57.10	57.10
5.083	57.38	57.30	57.30
5.167	57.58	57.50	57.50
5.250	57.78	57.69	57.69
5.333	57.98	57.90	57.90
5.417	58.18	58.10	58.10
5.500	58.39	58.30	58.30
5.583	58.60	58.51	58.51
5.667	58.81	58.72	58.72
5.750	59.02	58.93	58.93
5.833	59.24	59.15	59.15
5.917	59.46	59.37	59.37
6.000	59.68	59.59	59.59
6.083	59.90	59.81	59.81
6.167	60.13	60.04	60.04
6.250	60.36	60.26	60.26
6.333	60.59	60.49	60.49
6.417	60.83	60.73	60.73
6.500	61.07	60.96	60.96
6.583	61.31	61.20	61.20
6.667	61.55	61.45	61.45
6.750	61.80	61.69	61.69
6.833	62.05	61.94	61.94
6.917	62.30	62.19	62.19
7.000	62.56	62.45	62.45

7.083	62.82	62.71	62.71
7.167	63.08	62.97	62.97
7.250	63.35	63.23	63.23
7.333	63.62	63.50	63.50
7.417	63.89	63.78	63.78
7.500	64.17	64.05	64.05
7.583	64.45	64.33	64.33
7.667	64.74	64.62	64.62
7.750	65.03	64.91	64.91
7.833	65.32	65.20	65.20
7.917	65.62	65.49	65.49
8.000	65.93	65.80	65.80
8.083	66.23	66.10	66.10
8.167	66.55	66.41	66.41
8.250	66.86	66.73	66.73
8.333	67.18	67.05	67.05
8.417	67.51	67.37	67.37
8.500	67.84	67.70	67.70
8.583	68.18	68.03	68.03
8.667	68.52	68.37	68.37
8.750	68.87	68.72	68.72
8.833	69.22	69.07	69.07
8.917	69.58	69.43	69.43
9.000	69.95	69.79	69.79
9.083	70.31	70.16	70.16
9.167	70.70	70.53	70.53
9.250	71.08	70.91	70.91
9.333	71.47	71.30	71.30
9.417	71.86	71.70	71.70
9.500	72.27	72.10	72.10
9.583	72.68	72.51	72.51
9.667	73.10	72.92	72.92
9.750	73.53	73.35	73.35
9.833	73.97	73.78	73.78
9.917	74.41	74.22	74.22
10.000	74.86	74.67	74.67
10.083	75.32	75.13	75.13
10.167	75.80	75.59	75.59
10.250	76.27	76.07	76.07
10.333	76.77	76.55	76.55
10.417	77.26	77.05	77.05
10.500	77.77	77.56	77.56
10.583	78.29	78.07	78.07
10.667	78.83	78.60	78.60
10.750	79.37	79.14	79.14
10.833	79.93	79.69	79.69
10.917	80.49	80.25	80.25
11.000	81.08	80.83	80.83
11.083	81.67	81.42	81.42
11.167	82.28	82.02	82.02

11.250	82.90	82.64	82.64
11.333	83.55	83.27	83.27
11.417	84.19	83.92	83.92
11.500	84.87	84.58	84.58
11.583	85.55	85.26	85.26
11.667	86.27	85.96	85.96
11.750	86.99	86.68	86.68
11.833	87.74	87.42	87.42
11.917	88.50	88.17	88.17
12.000	89.29	88.95	88.95
12.083	89.04	89.14	89.14
12.167	83.89	86.07	86.07
12.250	73.97	78.18	78.18
12.333	64.39	68.48	68.48
12.417	60.07	61.94	61.94
12.500	58.81	59.36	59.36
12.583	59.00	58.93	58.93
12.667	59.65	59.37	59.37
12.750	60.40	60.08	60.08
12.833	61.29	60.91	60.91
12.917	62.27	61.85	61.85
13.000	63.34	62.89	62.89
13.083	64.44	63.97	63.97
13.167	65.61	65.11	65.11
13.250	66.81	66.30	66.30
13.333	68.09	67.54	67.54
13.417	69.41	68.84	68.84
13.500	70.82	70.21	70.21
13.583	72.27	71.65	71.65
13.667	73.83	73.16	73.16
13.750	75.45	74.76	74.76
13.833	77.19	76.44	76.44
13.917	78.99	78.22	78.22
14.000	80.95	80.11	80.11
14.083	83.49	82.41	82.41
14.167	88.60	86.43	86.43
14.250	96.13	92.93	92.93
14.333	103.79	100.52	100.52
14.417	109.10	106.82	106.82
14.500	113.27	111.49	111.49
14.583	116.93	115.37	115.37
14.667	120.76	119.13	119.13
14.750	124.79	123.07	123.07
14.833	129.22	127.33	127.33
14.917	133.97	131.94	131.94
15.000	139.29	137.02	137.02
15.083	145.10	142.62	142.62
15.167	151.74	148.91	148.91
15.250	159.10	155.96	155.96
15.333	167.67	164.02	164.02

15.417	179.05	174.21	174.21
15.500	200.16	191.19	191.19
15.583	230.92	217.83	217.83
15.667	264.77	250.33	250.33
15.750	292.50	280.63	280.63
15.833	313.45	304.48	304.48
15.917	335.30	325.97	325.97
16.000	389.41	366.46	366.46
16.083	554.31	484.43	484.43
16.167	930.67	770.97	770.97
16.250	1212.88	1091.96	1091.96
16.333	1120.25	1158.04	1158.04
16.417	726.35	893.10	893.10
16.500	468.08	578.96	578.96
16.583	313.29	379.86	379.86
16.667	236.40	269.60	269.60
16.750	196.18	213.53	213.53
16.833	167.73	179.93	179.93
16.917	148.13	156.54	156.54
17.000	134.28	140.22	140.22
17.083	124.11	128.47	128.47
17.167	113.36	117.95	117.95
17.250	101.70	106.68	106.68
17.333	91.27	95.73	95.73
17.417	84.18	87.22	87.22
17.500	79.15	81.31	81.31
17.583	75.29	76.95	76.95
17.667	72.00	73.41	73.41
17.750	69.07	70.33	70.33
17.833	66.46	67.58	67.58
17.917	64.09	65.10	65.10
18.000	61.94	62.86	62.86
18.083	61.02	61.42	61.42
18.167	65.16	63.42	63.42
18.250	74.16	70.34	70.34
18.333	82.90	79.17	79.17
18.417	86.41	84.89	84.89
18.500	86.96	86.71	86.71
18.583	86.14	86.48	86.48
18.667	84.99	85.48	85.48
18.750	83.82	84.32	84.32
18.833	82.63	83.14	83.14
18.917	81.44	81.95	81.95
19.000	80.27	80.77	80.77
19.083	79.16	79.63	79.63
19.167	78.09	78.54	78.54
19.250	77.06	77.50	77.50
19.333	76.08	76.50	76.50
19.417	75.14	75.54	75.54
19.500	74.23	74.62	74.62

19.583	73.36	73.73	73.73
19.667	72.52	72.88	72.88
19.750	71.71	72.05	72.05
19.833	70.92	71.26	71.26
19.917	70.16	70.49	70.49
20.000	69.43	69.75	69.75
20.083	68.73	69.03	69.03
20.167	68.04	68.33	68.33
20.250	67.38	67.66	67.66
20.333	66.73	67.01	67.01
20.417	66.11	66.37	66.37
20.500	65.50	65.76	65.76
20.583	64.91	65.16	65.16
20.667	64.34	64.58	64.58
20.750	63.78	64.02	64.02
20.833	63.24	63.47	63.47
20.917	62.71	62.93	62.93
21.000	62.19	62.41	62.41
21.083	61.69	61.91	61.91
21.167	61.20	61.41	61.41
21.250	60.73	60.93	60.93
21.333	60.26	60.46	60.46
21.417	59.81	60.00	60.00
21.500	59.37	59.56	59.56
21.583	58.93	59.12	59.12
21.667	58.51	58.69	58.69
21.750	58.10	58.27	58.27
21.833	57.69	57.87	57.87
21.917	57.30	57.47	57.47
22.000	56.91	57.08	57.08
22.083	56.53	56.69	56.69
22.167	56.16	56.32	56.32
22.250	55.80	55.95	55.95
22.333	55.44	55.59	55.59
22.417	55.09	55.24	55.24
22.500	54.75	54.90	54.90
22.583	54.42	54.56	54.56
22.667	54.09	54.23	54.23
22.750	53.76	53.90	53.90
22.833	53.45	53.58	53.58
22.917	53.14	53.27	53.27
23.000	52.83	52.96	52.96
23.083	52.53	52.66	52.66
23.167	52.24	52.36	52.36
23.250	51.95	52.07	52.07
23.333	51.66	51.79	51.79
23.417	51.39	51.50	51.50
23.500	51.11	51.23	51.23
23.583	50.84	50.96	50.96
23.667	50.58	50.69	50.69

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         23.750        50.31       50.43       50.43
         23.833        50.06       50.17       50.17
         23.917        49.81       49.91       49.91
         24.000        49.56       49.66       49.66
================================================================================
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =    183.669 AF
    OUTFLOW VOLUME =    183.669 AF
    LOSS    VOLUME =      0.000 AF


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     466.320 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.240 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190
         LOW LOSS FRACTION = 0.244
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  2.25
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  4.75

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.979
          30-MINUTE FACTOR = 0.979
           1-HOUR FACTOR = 0.979
           3-HOUR FACTOR = 0.997
           6-HOUR FACTOR = 0.998
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  34.722
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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.308	130.143
2	14.779	703.335
3	38.225	1322.270
4	66.233	1579.474
5	84.561	1033.643
6	93.250	490.001
7	97.213	223.544
8	98.477	71.232
9	99.128	36.719
10	99.651	29.519
11	99.913	14.759
12	100.000	4.920

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 40.7318
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 143.6061

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	250.0	500.0	750.0	1000.0
0.083	0.0060	0.88	Q	.	.	.	.
0.167	0.0446	5.61	Q	.	.	.	.
0.250	0.1446	14.51	Q	.	.	.	.
0.333	0.3179	25.16	VQ	.	.	.	.
0.417	0.5394	32.17	VQ	.	.	.	.
0.500	0.7842	35.54	VQ	.	.	.	.
0.583	1.0400	37.13	VQ	.	.	.	.
0.667	1.2996	37.70	VQ	.	.	.	.
0.750	1.5616	38.04	VQ	.	.	.	.
0.833	1.8256	38.33	VQ	.	.	.	.
0.917	2.0910	38.53	VQ	.	.	.	.
1.000	2.3572	38.66	VQ	.	.	.	.
1.083	2.6242	38.76	VQ	.	.	.	.
1.167	2.8917	38.85	VQ	.	.	.	.
1.250	3.1600	38.95	VQ	.	.	.	.
1.333	3.4290	39.05	VQ	.	.	.	.
1.417	3.6986	39.15	.Q	.	.	.	.
1.500	3.9690	39.25	.Q	.	.	.	.
1.583	4.2400	39.36	.Q	.	.	.	.
1.667	4.5118	39.46	.Q	.	.	.	.
1.750	4.7842	39.56	.Q	.	.	.	.
1.833	5.0574	39.67	.Q	.	.	.	.
1.917	5.3314	39.77	.Q	.	.	.	.
2.000	5.6060	39.88	.Q	.	.	.	.
2.083	5.8814	39.99	.Q	.	.	.	.
2.167	6.1575	40.10	.Q	.	.	.	.
2.250	6.4344	40.20	.Q	.	.	.	.
2.333	6.7121	40.32	.Q	.	.	.	.
2.417	6.9905	40.43	.Q	.	.	.	.
2.500	7.2697	40.54	.QV	.	.	.	.
2.583	7.5496	40.65	.QV	.	.	.	.
2.667	7.8304	40.77	.QV	.	.	.	.
2.750	8.1119	40.88	.QV	.	.	.	.
2.833	8.3943	41.00	.QV	.	.	.	.
2.917	8.6774	41.11	.QV	.	.	.	.
3.000	8.9614	41.23	.QV	.	.	.	.
3.083	9.2462	41.35	.QV	.	.	.	.
3.167	9.5318	41.47	.QV	.	.	.	.
3.250	9.8182	41.59	.QV	.	.	.	.

3.333	10.1055	41.72	.QV	.	.	.	.
3.417	10.3937	41.84	.QV	.	.	.	.
3.500	10.6827	41.96	.QV	.	.	.	.
3.583	10.9726	42.09	.Q V	.	.	.	.
3.667	11.2633	42.22	.Q V	.	.	.	.
3.750	11.5550	42.35	.Q V	.	.	.	.
3.833	11.8475	42.48	.Q V	.	.	.	.
3.917	12.1409	42.61	.Q V	.	.	.	.
4.000	12.4353	42.74	.Q V	.	.	.	.
4.083	12.7306	42.87	.Q V	.	.	.	.
4.167	13.0268	43.01	.Q V	.	.	.	.
4.250	13.3239	43.15	.Q V	.	.	.	.
4.333	13.6220	43.28	.Q V	.	.	.	.
4.417	13.9211	43.42	.Q V	.	.	.	.
4.500	14.2211	43.56	.Q V	.	.	.	.
4.583	14.5221	43.71	.Q V	.	.	.	.
4.667	14.8241	43.85	.Q V	.	.	.	.
4.750	15.1271	43.99	.Q V	.	.	.	.
4.833	15.4311	44.14	.Q V	.	.	.	.
4.917	15.7361	44.29	.Q V	.	.	.	.
5.000	16.0422	44.44	.Q V	.	.	.	.
5.083	16.3493	44.59	.Q V	.	.	.	.
5.167	16.6574	44.74	.Q V	.	.	.	.
5.250	16.9666	44.90	.Q V	.	.	.	.
5.333	17.2769	45.06	.Q V	.	.	.	.
5.417	17.5883	45.21	.Q V	.	.	.	.
5.500	17.9008	45.37	.Q V	.	.	.	.
5.583	18.2144	45.53	.Q V	.	.	.	.
5.667	18.5291	45.70	.Q V	.	.	.	.
5.750	18.8450	45.86	.Q V	.	.	.	.
5.833	19.1620	46.03	.Q V	.	.	.	.
5.917	19.4802	46.20	.Q V	.	.	.	.
6.000	19.7996	46.37	.Q V	.	.	.	.
6.083	20.1201	46.54	.Q V	.	.	.	.
6.167	20.4419	46.72	.Q V	.	.	.	.
6.250	20.7649	46.90	.Q V	.	.	.	.
6.333	21.0891	47.08	.Q V	.	.	.	.
6.417	21.4146	47.26	.Q V	.	.	.	.
6.500	21.7414	47.45	.Q V	.	.	.	.
6.583	22.0694	47.63	.Q V	.	.	.	.
6.667	22.3987	47.82	.Q V	.	.	.	.
6.750	22.7294	48.01	.Q V	.	.	.	.
6.833	23.0614	48.21	.Q V	.	.	.	.
6.917	23.3947	48.40	.Q V	.	.	.	.
7.000	23.7294	48.60	.Q V	.	.	.	.
7.083	24.0655	48.80	.Q V	.	.	.	.
7.167	24.4031	49.01	.Q V	.	.	.	.
7.250	24.7420	49.21	.Q V	.	.	.	.
7.333	25.0823	49.42	.Q V	.	.	.	.
7.417	25.4242	49.63	.Q V	.	.	.	.

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 7.500     25.7675     49.85  .Q     V  .         .         .         .
 7.583     26.1123     50.07  . Q    V  .         .         .         .
 7.667     26.4587     50.29  . Q    V  .         .         .         .
 7.750     26.8066     50.51  . Q    V  .         .         .         .
 7.833     27.1560     50.74  . Q    V  .         .         .         .
 7.917     27.5071     50.97  . Q    V  .         .         .         .
 8.000     27.8597     51.21  . Q    V  .         .         .         .
 8.083     28.2140     51.44  . Q    V  .         .         .         .
 8.167     28.5700     51.69  . Q    V  .         .         .         .
 8.250     28.9277     51.93  . Q     V .         .         .         .
 8.333     29.2870     52.18  . Q     V .         .         .         .
 8.417     29.6482     52.43  . Q     V .         .         .         .
 8.500     30.0110     52.69  . Q     V .         .         .         .
 8.583     30.3757     52.95  . Q     V .         .         .         .
 8.667     30.7422     53.22  . Q     V .         .         .         .
 8.750     31.1105     53.48  . Q     V .         .         .         .
 8.833     31.4808     53.76  . Q     V .         .         .         .
 8.917     31.8529     54.03  . Q     V .         .         .         .
 9.000     32.2270     54.32  . Q     V .         .         .         .
 9.083     32.6031     54.60  . Q      V.         .         .         .
 9.167     32.9811     54.90  . Q      V.         .         .         .
 9.250     33.3613     55.19  . Q      V.         .         .         .
 9.333     33.7435     55.50  . Q      V.         .         .         .
 9.417     34.1278     55.80  . Q      V.         .         .         .
 9.500     34.5143     56.12  . Q      V.         .         .         .
 9.583     34.9029     56.43  . Q      V.         .         .         .
 9.667     35.2938     56.76  . Q      V.         .         .         .
 9.750     35.6870     57.09  . Q      V.         .         .         .
 9.833     36.0825     57.43  . Q       V         .         .         .
 9.917     36.4804     57.77  . Q       V         .         .         .
10.000     36.8807     58.12  . Q       V         .         .         .
10.083     37.2834     58.47  . Q       V         .         .         .
10.167     37.6886     58.84  . Q       V         .         .         .
10.250     38.0964     59.21  . Q       V         .         .         .
10.333     38.5068     59.59  . Q       V         .         .         .
10.417     38.9198     59.97  . Q       V         .         .         .
10.500     39.3356     60.37  . Q       V         .         .         .
10.583     39.7541     60.77  . Q       .V        .         .         .
10.667     40.1754     61.18  . Q       .V        .         .         .
10.750     40.5997     61.60  . Q       .V        .         .         .
10.833     41.0269     62.03  . Q       .V        .         .         .
10.917     41.4571     62.47  . Q       .V        .         .         .
11.000     41.8904     62.92  . Q       .V        .         .         .
11.083     42.3269     63.37  . Q       .V        .         .         .
11.167     42.7666     63.85  . Q       .V        .         .         .
11.250     43.2096     64.33  . Q       . V       .         .         .
11.333     43.6561     64.82  . Q       . V       .         .         .
11.417     44.1060     65.32  . Q       . V       .         .         .
11.500     44.5594     65.85  . Q       . V       .         .         .
11.583     45.0165     66.37  . Q       . V       .         .         .
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11.667     45.4774     66.92  . Q       . V       .         .         .
11.750     45.9422     67.48  . Q       . V       .         .         .
11.833     46.4109     68.06  . Q       . V       .         .         .
11.917     46.8836     68.64  . Q       .  V      .         .         .
12.000     47.3605     69.25  . Q       .  V      .         .         .
12.083     47.8372     69.21  . Q       .  V      .         .         .
12.167     48.2937     66.28  . Q       .  V      .         .         .
12.250     48.7083     60.21  . Q       .  V      .         .         .
12.333     49.0723     52.84  . Q       .  V      .         .         .
12.417     49.4045     48.24  .Q        .  V      .         .         .
12.500     49.7241     46.41  .Q        .  V      .         .         .
12.583     50.0405     45.94  .Q        .  V      .         .         .
12.667     50.3592     46.28  .Q        .   V     .         .         .
12.750     50.6816     46.81  .Q        .   V     .         .         .
12.833     51.0082     47.42  .Q        .   V     .         .         .
12.917     51.3396     48.12  .Q        .   V     .         .         .
13.000     51.6765     48.91  .Q        .   V     .         .         .
13.083     52.0191     49.76  .Q        .   V     .         .         .
13.167     52.3680     50.65  . Q       .   V     .         .         .
13.250     52.7231     51.57  . Q       .   V     .         .         .
13.333     53.0850     52.55  . Q       .   V     .         .         .
13.417     53.4538     53.55  . Q       .   V     .         .         .
13.500     53.8300     54.63  . Q       .   V     .         .         .
13.583     54.2139     55.74  . Q       .    V    .         .         .
13.667     54.6060     56.93  . Q       .    V    .         .         .
13.750     55.0066     58.16  . Q       .    V    .         .         .
13.833     55.4163     59.49  . Q       .    V    .         .         .
13.917     55.8355     60.87  . Q       .    V    .         .         .
14.000     56.2649     62.35  . Q       .    V    .         .         .
14.083     56.7072     64.21  . Q       .    V    .         .         .
14.167     57.1722     67.52  . Q       .    V    .         .         .
14.250     57.6706     72.37  . Q       .     V   .         .         .
14.333     58.2078     78.00  .  Q      .     V   .         .         .
14.417     58.7761     82.53  .  Q      .     V   .         .         .
14.500     59.3686     86.02  .  Q      .     V   .         .         .
14.583     59.9819     89.06  .  Q      .     V   .         .         .
14.667     60.6156     92.01  .  Q      .     V   .         .         .
14.750     61.2703     95.07  .  Q      .      V  .         .         .
14.833     61.9483     98.43  .  Q      .      V  .         .         .
14.917     62.6510    102.03  .   Q     .      V  .         .         .
15.000     63.3812    106.03  .   Q     .      V  .         .         .
15.083     64.1415    110.39  .   Q     .      V  .         .         .
15.167     64.9358    115.34  .   Q     .       V .         .         .
15.250     65.7680    120.84  .   Q     .       V .         .         .
15.333     66.6441    127.20  .    Q    .       V .         .         .
15.417     67.5773    135.50  .    Q    .       V .         .         .
15.500     68.6100    149.95  .    Q    .        V.         .         .
15.583     69.7884    171.10  .     Q   .        V.         .         .
15.667     71.1446    196.93  .      Q  .        V.         .         .
15.750     72.6596    219.98  .       Q .         V         .         .
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15.833     74.2995    238.11  .        Q.         V          .          .
15.917     76.0668    256.61  .         Q         .V         .          .
16.000     78.0860    293.19  .         .Q        .V         .          .
16.083     80.8543    401.96  .         .     Q   . V        .          .
16.167     85.3229    648.84  .         .         .  V Q     .          .
16.250     91.2879    866.13  .         .         .    V     .   Q      .
16.333     97.5446    908.47  .         .         .      V   .     Q    .
16.417    102.2131    677.87  .         .         .      QV  .          .
16.500    105.2839    445.88  .         .      Q  .        V.          .
16.583    107.3812    304.53  .         . Q       .        V.          .
16.667    108.8317    210.61  .       Q .         .         V          .
16.750    109.9858    167.58  .     Q   .         .         V          .
16.833    110.9742    143.51  .    Q    .         .         V          .
16.917    111.8256    123.62  .   Q     .         .         .V         .
17.000    112.5803    109.58  .   Q     .         .         .V         .
17.083    113.2641     99.29  .  Q      .         .         .V         .
17.167    113.8894     90.79  .  Q      .         .         .V         .
17.250    114.4552     82.16  .  Q      .         .         .V         .
17.333    114.9642     73.91  . Q       .         .         . V        .
17.417    115.4303     67.67  . Q       .         .         . V        .
17.500    115.8656     63.21  . Q       .         .         . V        .
17.583    116.2774     59.79  . Q       .         .         . V        .
17.667    116.6702     57.04  . Q       .         .         . V        .
17.750    117.0465     54.64  . Q       .         .         . V        .
17.833    117.4079     52.48  . Q       .         .         . V        .
17.917    117.7561     50.55  . Q       .         .         . V        .
18.000    118.0922     48.80  .Q        .         .         . V        .
18.083    118.4218     47.87  .Q        .         .         . V        .
18.167    118.7659     49.96  .Q        .         .         .  V       .
18.250    119.1467     55.29  . Q       .         .         .  V       .
18.333    119.5735     61.97  . Q       .         .         .  V       .
18.417    120.0276     65.93  . Q       .         .         .  V       .
18.500    120.4903     67.18  . Q       .         .         .  V       .
18.583    120.9526     67.13  . Q       .         .         .  V       .
18.667    121.4097     66.37  . Q       .         .         .  V       .
18.750    121.8606     65.48  . Q       .         .         .  V       .
18.833    122.3056     64.61  . Q       .         .         .   V      .
18.917    122.7445     63.72  . Q       .         .         .   V      .
19.000    123.1771     62.82  . Q       .         .         .   V      .
19.083    123.6036     61.93  . Q       .         .         .   V      .
19.167    124.0244     61.09  . Q       .         .         .   V      .
19.250    124.4395     60.28  . Q       .         .         .   V      .
19.333    124.8493     59.50  . Q       .         .         .   V      .
19.417    125.2539     58.75  . Q       .         .         .   V      .
19.500    125.6536     58.04  . Q       .         .         .   V      .
19.583    126.0485     57.35  . Q       .         .         .    V     .
19.667    126.4389     56.68  . Q       .         .         .    V     .
19.750    126.8249     56.04  . Q       .         .         .    V     .
19.833    127.2066     55.42  . Q       .         .         .    V     .
19.917    127.5842     54.83  . Q       .         .         .    V     .
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20.000    127.9578     54.25  . Q       .         .         .    V    .
20.083    128.3275     53.69  . Q       .         .         .    V    .
20.167    128.6936     53.15  . Q       .         .         .    V    .
20.250    129.0560     52.63  . Q       .         .         .    V    .
20.333    129.4149     52.12  . Q       .         .         .     V   .
20.417    129.7705     51.63  . Q       .         .         .     V   .
20.500    130.1228     51.15  . Q       .         .         .     V   .
20.583    130.4718     50.68  . Q       .         .         .     V   .
20.667    130.8178     50.23  . Q       .         .         .     V   .
20.750    131.1607     49.79  .Q        .         .         .     V   .
20.833    131.5007     49.37  .Q        .         .         .     V   .
20.917    131.8379     48.95  .Q        .         .         .     V   .
21.000    132.1722     48.55  .Q        .         .         .     V   .
21.083    132.5038     48.15  .Q        .         .         .     V   .
21.167    132.8328     47.77  .Q        .         .         .     V   .
21.250    133.1593     47.40  .Q        .         .         .      V  .
21.333    133.4832     47.03  .Q        .         .         .      V  .
21.417    133.8046     46.67  .Q        .         .         .      V  .
21.500    134.1236     46.33  .Q        .         .         .      V  .
21.583    134.4404     45.99  .Q        .         .         .      V  .
21.667    134.7548     45.65  .Q        .         .         .      V  .
21.750    135.0670     45.33  .Q        .         .         .      V  .
21.833    135.3770     45.01  .Q        .         .         .      V  .
21.917    135.6848     44.70  .Q        .         .         .      V  .
22.000    135.9906     44.40  .Q        .         .         .      V  .
22.083    136.2943     44.10  .Q        .         .         .      V  .
22.167    136.5960     43.81  .Q        .         .         .       V .
22.250    136.8958     43.52  .Q        .         .         .       V .
22.333    137.1936     43.24  .Q        .         .         .       V .
22.417    137.4895     42.97  .Q        .         .         .       V .
22.500    137.7836     42.70  .Q        .         .         .       V .
22.583    138.0759     42.44  .Q        .         .         .       V .
22.667    138.3664     42.18  .Q        .         .         .       V .
22.750    138.6552     41.93  .Q        .         .         .       V .
22.833    138.9422     41.68  .Q        .         .         .       V .
22.917    139.2276     41.44  .Q        .         .         .       V .
23.000    139.5114     41.20  .Q        .         .         .       V .
23.083    139.7935     40.96  .Q        .         .         .       V .
23.167    140.0740     40.73  .Q        .         .         .        V.
23.250    140.3530     40.51  .Q        .         .         .        V.
23.333    140.6304     40.28  .Q        .         .         .        V.
23.417    140.9063     40.06  .Q        .         .         .        V.
23.500    141.1808     39.85  .Q        .         .         .        V.
23.583    141.4538     39.64  .Q        .         .         .        V.
23.667    141.7253     39.43  .Q        .         .         .        V.
23.750    141.9955     39.23  .Q        .         .         .        V.
23.833    142.2643     39.02  .Q        .         .         .        V.
23.917    142.5317     38.83  .Q        .         .         .        V.
24.000    142.7977     38.63  .Q        .         .         .        V.
24.083    143.0565     37.57  .Q        .         .         .        V.
```

```
  24.167    143.2814     32.66  .Q        .         .         .         V.
  24.250    143.4441     23.62  Q         .         .         .         V.
  24.333    143.5329     12.90  Q         .         .         .         V.
  24.417    143.5735      5.90  Q         .         .         .         V.
  24.500    143.5913      2.58  Q         .         .         .         V.
  24.583    143.5986      1.07  Q         .         .         .         V.
  24.667    143.6026      0.58  Q         .         .         .         V.
  24.750    143.6049      0.33  Q         .         .         .         V.
  24.833    143.6059      0.13  Q         .         .         .         V.
  24.917    143.6061      0.03  Q         .         .         .          V
--------------------------------------------------------------------------------
---
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
               0%                           1495.0
              10%                            150.0
              20%                             65.0
              30%                             40.0
              40%                             30.0
              50%                             20.0
              60%                             20.0
              70%                             20.0
              80%                             10.0
              90%                             10.0


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

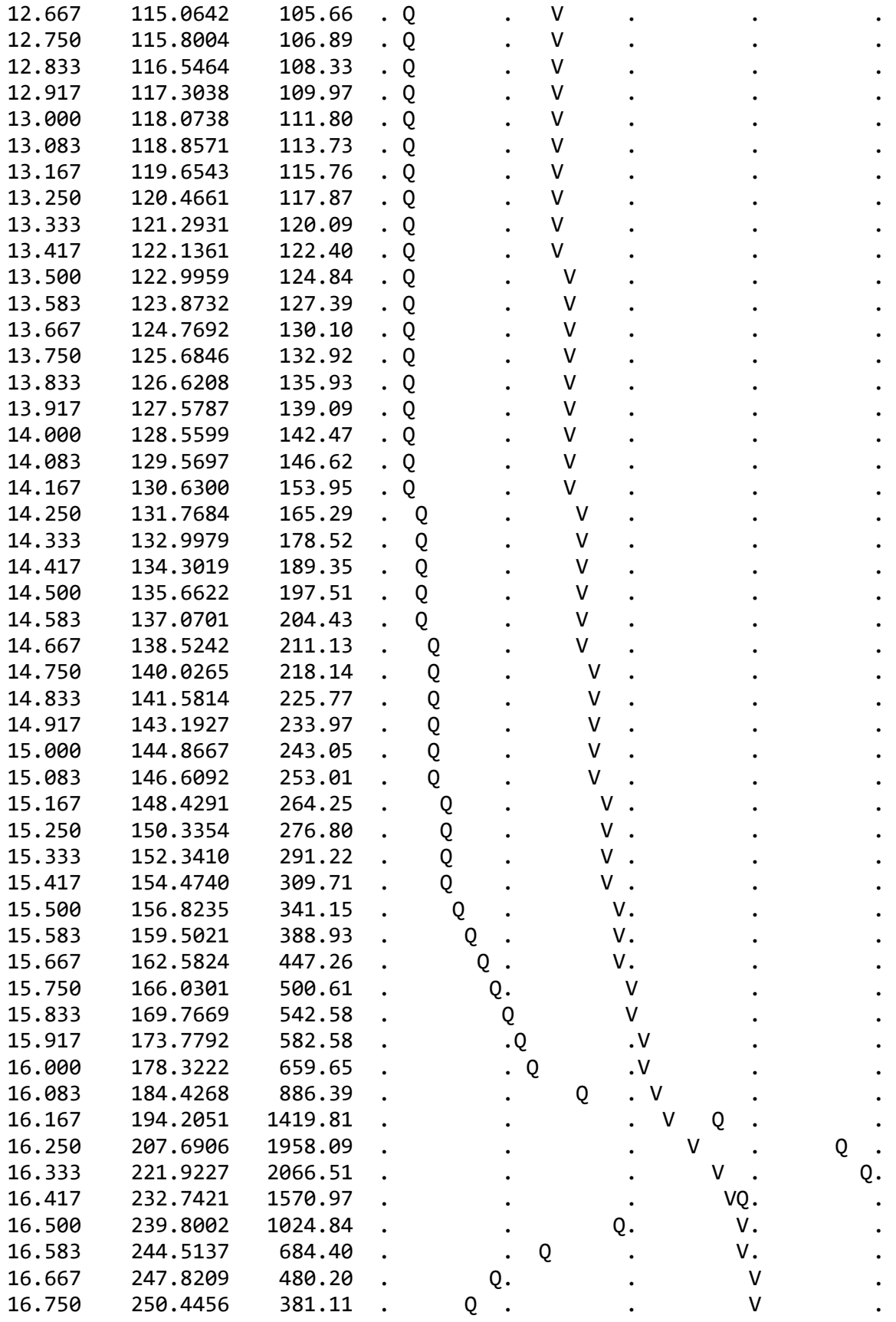

 ****************************************************************************
   FLOW PROCESS FROM NODE    101.00 TO NODE    101.00 IS CODE =  11
 ----------------------------------------------------------------------------
   >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
 ============================================================================

             STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
         (Note: Time indicated is at END of Each Unit Intervals)
 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      525.0    1050.0    1575.0    2100.0
 ----------------------------------------------------------------------------
    0.083      0.0116      1.68  Q         .         .         .         .
```

0.167	0.0914	11.59	Q	.	.	.	.
0.250	0.3123	32.07	Q	.	.	.	.
0.333	0.7032	56.75	VQ	.	.	.	.
0.417	1.2102	73.62	VQ	.	.	.	.
0.500	1.7724	81.63	VQ	.	.	.	.
0.583	2.3582	85.05	VQ	.	.	.	.
0.667	2.9528	86.34	VQ	.	.	.	.
0.750	3.5526	87.09	VQ	.	.	.	.
0.833	4.1564	87.68	VQ	.	.	.	.
0.917	4.7629	88.07	VQ	.	.	.	.
1.000	5.3713	88.34	VQ	.	.	.	.
1.083	5.9813	88.56	VQ	.	.	.	.
1.167	6.5927	88.79	VQ	.	.	.	.
1.250	7.2057	89.01	VQ	.	.	.	.
1.333	7.8203	89.24	VQ	.	.	.	.
1.417	8.4365	89.47	.Q	.	.	.	.
1.500	9.0543	89.70	.Q	.	.	.	.
1.583	9.6736	89.93	.Q	.	.	.	.
1.667	10.2946	90.17	.Q	.	.	.	.
1.750	10.9173	90.40	.Q	.	.	.	.
1.833	11.5415	90.64	.Q	.	.	.	.
1.917	12.1675	90.88	.Q	.	.	.	.
2.000	12.7951	91.13	.Q	.	.	.	.
2.083	13.4244	91.37	.Q	.	.	.	.
2.167	14.0554	91.62	.Q	.	.	.	.
2.250	14.6881	91.87	.Q	.	.	.	.
2.333	15.3225	92.12	.Q	.	.	.	.
2.417	15.9587	92.38	.Q	.	.	.	.
2.500	16.5967	92.63	.QV	.	.	.	.
2.583	17.2364	92.89	.QV	.	.	.	.
2.667	17.8780	93.15	.QV	.	.	.	.
2.750	18.5213	93.41	.QV	.	.	.	.
2.833	19.1665	93.68	.QV	.	.	.	.
2.917	19.8135	93.95	.QV	.	.	.	.
3.000	20.4624	94.22	.QV	.	.	.	.
3.083	21.1131	94.49	.QV	.	.	.	.
3.167	21.7658	94.76	.QV	.	.	.	.
3.250	22.4203	95.04	.QV	.	.	.	.
3.333	23.0768	95.32	.QV	.	.	.	.
3.417	23.7352	95.60	.QV	.	.	.	.
3.500	24.3956	95.89	.QV	.	.	.	.
3.583	25.0580	96.18	.Q V	.	.	.	.
3.667	25.7224	96.47	.Q V	.	.	.	.
3.750	26.3888	96.76	.Q V	.	.	.	.
3.833	27.0573	97.06	.Q V	.	.	.	.
3.917	27.7278	97.36	.Q V	.	.	.	.
4.000	28.4004	97.66	.Q V	.	.	.	.
4.083	29.0751	97.97	.Q V	.	.	.	.
4.167	29.7520	98.28	.Q V	.	.	.	.
4.250	30.4309	98.59	.Q V	.	.	.	.

```
4.333     31.1121     98.90  .Q V      .         .         .         .
4.417     31.7954     99.22  .Q V      .         .         .         .
4.500     32.4810     99.54  .Q V      .         .         .         .
4.583     33.1688     99.87  .Q  V     .         .         .         .
4.667     33.8589    100.20  .Q  V     .         .         .         .
4.750     34.5512    100.53  .Q  V     .         .         .         .
4.833     35.2458    100.86  .Q  V     .         .         .         .
4.917     35.9428    101.20  .Q  V     .         .         .         .
5.000     36.6421    101.54  .Q  V     .         .         .         .
5.083     37.3439    101.89  .Q  V     .         .         .         .
5.167     38.0480    102.24  .Q  V     .         .         .         .
5.250     38.7545    102.59  .Q  V     .         .         .         .
5.333     39.4636    102.95  .Q  V     .         .         .         .
5.417     40.1751    103.31  .Q  V     .         .         .         .
5.500     40.8891    103.68  .Q  V     .         .         .         .
5.583     41.6057    104.05  .Q   V    .         .         .         .
5.667     42.3248    104.42  .Q   V    .         .         .         .
5.750     43.0466    104.80  .Q   V    .         .         .         .
5.833     43.7710    105.18  . Q  V    .         .         .         .
5.917     44.4980    105.57  . Q  V    .         .         .         .
6.000     45.2278    105.96  . Q  V    .         .         .         .
6.083     45.9602    106.35  . Q  V    .         .         .         .
6.167     46.6955    106.76  . Q  V    .         .         .         .
6.250     47.4335    107.16  . Q  V    .         .         .         .
6.333     48.1744    107.57  . Q  V    .         .         .         .
6.417     48.9181    107.99  . Q  V    .         .         .         .
6.500     49.6647    108.41  . Q   V   .         .         .         .
6.583     50.4142    108.83  . Q   V   .         .         .         .
6.667     51.1668    109.27  . Q   V   .         .         .         .
6.750     51.9223    109.70  . Q   V   .         .         .         .
6.833     52.6809    110.15  . Q   V   .         .         .         .
6.917     53.4426    110.59  . Q   V   .         .         .         .
7.000     54.2074    111.05  . Q   V   .         .         .         .
7.083     54.9753    111.51  . Q   V   .         .         .         .
7.167     55.7465    111.97  . Q   V   .         .         .         .
7.250     56.5209    112.45  . Q   V   .         .         .         .
7.333     57.2986    112.93  . Q    V  .         .         .         .
7.417     58.0797    113.41  . Q    V  .         .         .         .
7.500     58.8641    113.90  . Q    V  .         .         .         .
7.583     59.6520    114.40  . Q    V  .         .         .         .
7.667     60.4434    114.91  . Q    V  .         .         .         .
7.750     61.2383    115.42  . Q    V  .         .         .         .
7.833     62.0368    115.94  . Q    V  .         .         .         .
7.917     62.8389    116.47  . Q    V  .         .         .         .
8.000     63.6447    117.00  . Q    V  .         .         .         .
8.083     64.4542    117.55  . Q    V  .         .         .         .
8.167     65.2676    118.10  . Q    V  .         .         .         .
8.250     66.0848    118.66  . Q     V .         .         .         .
8.333     66.9059    119.23  . Q     V .         .         .         .
8.417     67.7310    119.80  . Q     V .         .         .         .
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8.500	68.5601	120.39	. Q	V .	.	.	.
8.583	69.3933	120.98	. Q	V .	.	.	.
8.667	70.2307	121.59	. Q	V .	.	.	.
8.750	71.0723	122.20	. Q	V .	.	.	.
8.833	71.9183	122.83	. Q	V .	.	.	.
8.917	72.7685	123.46	. Q	V .	.	.	.
9.000	73.6233	124.11	. Q	V .	.	.	.
9.083	74.4825	124.76	. Q	V.	.	.	.
9.167	75.3464	125.43	. Q	V.	.	.	.
9.250	76.2149	126.11	. Q	V.	.	.	.
9.333	77.0881	126.80	. Q	V.	.	.	.
9.417	77.9662	127.50	. Q	V.	.	.	.
9.500	78.8492	128.22	. Q	V.	.	.	.
9.583	79.7372	128.94	. Q	V.	.	.	.
9.667	80.6304	129.68	. Q	V.	.	.	.
9.750	81.5287	130.44	. Q	V.	.	.	.
9.833	82.4323	131.21	. Q	V	.	.	.
9.917	83.3414	131.99	. Q	V	.	.	.
10.000	84.2559	132.79	. Q	V	.	.	.
10.083	85.1760	133.60	. Q	V	.	.	.
10.167	86.1018	134.43	. Q	V	.	.	.
10.250	87.0335	135.28	. Q	V	.	.	.
10.333	87.9711	136.14	. Q	V	.	.	.
10.417	88.9148	137.02	. Q	V	.	.	.
10.500	89.8647	137.92	. Q	V	.	.	.
10.583	90.8209	138.84	. Q	.V	.	.	.
10.667	91.7836	139.78	. Q	.V	.	.	.
10.750	92.7528	140.74	. Q	.V	.	.	.
10.833	93.7289	141.72	. Q	.V	.	.	.
10.917	94.7118	142.72	. Q	.V	.	.	.
11.000	95.7018	143.75	. Q	.V	.	.	.
11.083	96.6989	144.79	. Q	.V	.	.	.
11.167	97.7035	145.87	. Q	.V	.	.	.
11.250	98.7157	146.96	. Q	. V	.	.	.
11.333	99.7356	148.09	. Q	. V	.	.	.
11.417	100.7634	149.24	. Q	. V	.	.	.
11.500	101.7994	150.43	. Q	. V	.	.	.
11.583	102.8437	151.64	. Q	. V	.	.	.
11.667	103.8967	152.88	. Q	. V	.	.	.
11.750	104.9583	154.16	. Q	. V	.	.	.
11.833	106.0291	155.47	. Q	. V	.	.	.
11.917	107.1091	156.82	. Q	. V	.	.	.
12.000	108.1987	158.21	. Q	. V	.	.	.
12.083	109.2893	158.35	. Q	. V	.	.	.
12.167	110.3385	152.35	. Q	. V	.	.	.
12.250	111.2916	138.39	. Q	. V	.	.	.
12.333	112.1272	121.32	. Q	. V	.	.	.
12.417	112.8859	110.17	. Q	. V	.	.	.
12.500	113.6143	105.77	. Q	. V	.	.	.
12.583	114.3366	104.87	.Q	. V	.	.	.



16.833	252.6732	323.44	.	Q	.	V	.
16.917	254.6027	280.16	.	Q	.	.V	.
17.000	256.3231	249.80	.	Q	.	.V	.
17.083	257.8917	227.75	.	Q	.	.V	.
17.167	259.3293	208.74	.	Q	.	.V	.
17.250	260.6298	188.83	.	Q	.	.V	.
17.333	261.7981	169.64	.	Q	.	.V	.
17.417	262.8649	154.89	.	Q	.	. V	.
17.500	263.8602	144.52	.	Q	.	. V	.
17.583	264.8019	136.73	.	Q	.	. V	.
17.667	265.7003	130.45	.	Q	.	. V	.
17.750	266.5610	124.97	.	Q	.	. V	.
17.833	267.3878	120.06	.	Q	.	. V	.
17.917	268.1843	115.65	.	Q	.	. V	.
18.000	268.9534	111.66	.	Q	.	. V	.
18.083	269.7060	109.29	.	Q	.	. V	.
18.167	270.4869	113.38	.	Q	.	. V	.
18.250	271.3521	125.63	.	Q	.	. V	.
18.333	272.3242	141.14	.	Q	.	. V	.
18.417	273.3629	150.82	.	Q	.	. V	.
18.500	274.4227	153.89	.	Q	.	. V	.
18.583	275.4807	153.61	.	Q	.	. V	.
18.667	276.5264	151.84	.	Q	.	. V	.
18.750	277.5581	149.80	.	Q	.	. V	.
18.833	278.5757	147.76	.	Q	.	. V	.
18.917	279.5789	145.67	.	Q	.	. V	.
19.000	280.5678	143.59	.	Q	.	. V	.
19.083	281.5428	141.57	.	Q	.	. V	.
19.167	282.5044	139.63	.	Q	.	. V	.
19.250	283.4533	137.78	.	Q	.	. V	.
19.333	284.3900	136.00	.	Q	.	. V	.
19.417	285.3148	134.30	.	Q	.	. V	.
19.500	286.2285	132.66	.	Q	.	. V	.
19.583	287.1312	131.08	.	Q	.	. V	.
19.667	288.0235	129.56	.	Q	.	. V	.
19.750	288.9057	128.09	.	Q	.	. V	.
19.833	289.7781	126.68	.	Q	.	. V	.
19.917	290.6411	125.31	.	Q	.	. V	.
20.000	291.4951	123.99	.	Q	.	. V	.
20.083	292.3402	122.72	.	Q	.	. V	.
20.167	293.1769	121.48	.	Q	.	. V	.
20.250	294.0053	120.29	.	Q	.	. V	.
20.333	294.8257	119.12	.	Q	.	. V	.
20.417	295.6383	118.00	.	Q	.	. V	.
20.500	296.4435	116.91	.	Q	.	. V	.
20.583	297.2413	115.85	.	Q	.	. V	.
20.667	298.0320	114.81	.	Q	.	. V	.
20.750	298.8159	113.81	.	Q	.	. V	.
20.833	299.5930	112.84	.	Q	.	. V	.
20.917	300.3635	111.89	.	Q	.	. V	.

21.000	301.1277	110.96	. Q	.	.	.	V .
21.083	301.8857	110.06	. Q	.	.	.	V .
21.167	302.6377	109.18	. Q	.	.	.	V .
21.250	303.3837	108.33	. Q	.	.	.	V .
21.333	304.1240	107.49	. Q	.	.	.	V .
21.417	304.8587	106.68	. Q	.	.	.	V .
21.500	305.5879	105.88	. Q	.	.	.	V .
21.583	306.3118	105.10	. Q	.	.	.	V .
21.667	307.0304	104.35	.Q	.	.	.	V .
21.750	307.7440	103.60	.Q	.	.	.	V .
21.833	308.4525	102.88	.Q	.	.	.	V .
21.917	309.1561	102.17	.Q	.	.	.	V .
22.000	309.8550	101.47	.Q	.	.	.	V .
22.083	310.5492	100.79	.Q	.	.	.	V .
22.167	311.2387	100.13	.Q	.	.	.	V .
22.250	311.9238	99.48	.Q	.	.	.	V .
22.333	312.6045	98.84	.Q	.	.	.	V .
22.417	313.2809	98.21	.Q	.	.	.	V .
22.500	313.9531	97.60	.Q	.	.	.	V .
22.583	314.6211	97.00	.Q	.	.	.	V .
22.667	315.2851	96.41	.Q	.	.	.	V .
22.750	315.9451	95.83	.Q	.	.	.	V .
22.833	316.6012	95.26	.Q	.	.	.	V .
22.917	317.2534	94.71	.Q	.	.	.	V .
23.000	317.9019	94.16	.Q	.	.	.	V .
23.083	318.5467	93.62	.Q	.	.	.	V .
23.167	319.1878	93.09	.Q	.	.	.	V.
23.250	319.8254	92.58	.Q	.	.	.	V.
23.333	320.4595	92.07	.Q	.	.	.	V.
23.417	321.0901	91.57	.Q	.	.	.	V.
23.500	321.7174	91.08	.Q	.	.	.	V.
23.583	322.3413	90.59	.Q	.	.	.	V.
23.667	322.9620	90.12	.Q	.	.	.	V.
23.750	323.5794	89.65	.Q	.	.	.	V.
23.833	324.1937	89.19	.Q	.	.	.	V.
23.917	324.8048	88.74	.Q	.	.	.	V.
24.000	325.4129	88.30	.Q	.	.	.	V.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.0
10%	155.0
20%	65.0
30%	40.0

40%	30.0
50%	20.0
60%	20.0
70%	15.0
80%	10.0
90%	10.0

==========

END OF FLOODSCx ROUTING ANALYSIS

PROPOSED UNMITIGATED 100-YEAR REGIONAL ANALYSIS TRIBUTARY TO RIVERSIDE CANAL POC #2 / NODE 200

LOSS RATE CALCULATIONS
PROJECT REGIONAL
100-YR ANALYSIS
NODE 200 (UNMITIGATED)

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

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

Problem Descriptions:
Grand Terrace
Proposed Canal
2022-03-08

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 4.75 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	0.80	10.00	32.(AMC II)	0.742	0.870
2	1.95	10.00	69.(AMC II)	0.272	0.923
3	168.79	50.00	32.(AMC II)	0.742	0.548
4	7.88	50.00	69.(AMC II)	0.272	0.816
5	0.52	50.00	75.(AMC II)	0.210	0.869
6	25.58	100.00	50.(AMC II)	0.495	0.390
7	0.97	100.00	79.(AMC II)	0.170	0.832
8	120.61	100.00	83.(AMC II)	0.133	0.902
9	36.67	60.00	32.(AMC II)	0.742	0.468
10	34.51	60.00	69.(AMC II)	0.272	0.789
11	52.37	10.00	32.(AMC II)	0.742	0.870
12	1.65	10.00	69.(AMC II)	0.272	0.923

TOTAL AREA (Acres) = 452.30

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.262

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.308

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

            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                         Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* GRAND TERRACE GATEWAY                                                 *
* REGIONAL- CANAL OUTLET-PROP 100YR                                     *
* CT 2022-03-08                                                         *
 ************************************************************************

  FILE NAME: CNLPR100.DAT
  TIME/DATE OF STUDY: 15:54 03/10/2022


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     452.300 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.250 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.262
         LOW LOSS FRACTION = 0.308
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
```

SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 1.20
SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 1.80
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 2.25
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 4.75

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.980
30-MINUTE FACTOR = 0.980
1-HOUR FACTOR = 0.980
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 33.333

==========

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.170	118.706
2	13.591	624.746
3	35.416	1193.805
4	62.732	1494.169
5	82.211	1065.530
6	91.877	528.733
7	96.496	252.663
8	98.279	97.498
9	98.906	34.326
10	99.441	29.221
11	99.776	18.362
12	99.944	9.181
13	100.000	3.060

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 50.1866
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 128.6196

==========

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

==========

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 225.0 450.0 675.0 900.0
0.083	0.0050	0.73	Q . . . .
0.167	0.0366	4.58	Q . . . .
0.250	0.1188	11.94	Q . . . .
0.333	0.2645	21.16	Q . . . .
0.417	0.4557	27.77	VQ . . . .
0.500	0.6698	31.09	VQ . . . .
0.583	0.8951	32.72	VQ . . . .
0.667	1.1251	33.40	VQ . . . .
0.750	1.3572	33.69	VQ . . . .
0.833	1.5910	33.95	VQ . . . .
0.917	1.8262	34.15	VQ . . . .
1.000	2.0624	34.29	VQ . . . .
1.083	2.2993	34.40	VQ . . . .
1.167	2.5368	34.48	VQ . . . .
1.250	2.7749	34.57	VQ . . . .
1.333	3.0136	34.66	VQ . . . .
1.417	3.2529	34.75	.Q . . . .
1.500	3.4928	34.84	.Q . . . .
1.583	3.7334	34.93	.Q . . . .
1.667	3.9746	35.02	.Q . . . .
1.750	4.2164	35.11	.Q . . . .
1.833	4.4589	35.21	.Q . . . .
1.917	4.7020	35.30	.Q . . . .
2.000	4.9458	35.39	.Q . . . .
2.083	5.1902	35.49	.Q . . . .
2.167	5.4353	35.59	.Q . . . .
2.250	5.6810	35.68	.Q . . . .
2.333	5.9274	35.78	.Q . . . .
2.417	6.1745	35.88	.Q . . . .
2.500	6.4223	35.98	.Q . . . .
2.583	6.6708	36.08	.QV . . . .
2.667	6.9200	36.18	.QV . . . .
2.750	7.1698	36.28	.QV . . . .
2.833	7.4204	36.38	.QV . . . .
2.917	7.6717	36.49	.QV . . . .

3.000	7.9237	36.59	.QV	.	.	.	.
3.083	8.1765	36.70	.QV	.	.	.	.
3.167	8.4299	36.81	.QV	.	.	.	.
3.250	8.6842	36.91	.QV	.	.	.	.
3.333	8.9391	37.02	.QV	.	.	.	.
3.417	9.1949	37.13	.QV	.	.	.	.
3.500	9.4514	37.24	.QV	.	.	.	.
3.583	9.7086	37.35	.Q V	.	.	.	.
3.667	9.9667	37.47	.Q V	.	.	.	.
3.750	10.2255	37.58	.Q V	.	.	.	.
3.833	10.4851	37.70	.Q V	.	.	.	.
3.917	10.7455	37.81	.Q V	.	.	.	.
4.000	11.0068	37.93	.Q V	.	.	.	.
4.083	11.2688	38.05	.Q V	.	.	.	.
4.167	11.5317	38.17	.Q V	.	.	.	.
4.250	11.7954	38.29	.Q V	.	.	.	.
4.333	12.0600	38.41	.Q V	.	.	.	.
4.417	12.3254	38.54	.Q V	.	.	.	.
4.500	12.5916	38.66	.Q V	.	.	.	.
4.583	12.8587	38.79	.Q V	.	.	.	.
4.667	13.1267	38.91	.Q V	.	.	.	.
4.750	13.3956	39.04	.Q V	.	.	.	.
4.833	13.6654	39.17	.Q V	.	.	.	.
4.917	13.9361	39.30	.Q V	.	.	.	.
5.000	14.2077	39.44	.Q V	.	.	.	.
5.083	14.4803	39.57	.Q V	.	.	.	.
5.167	14.7537	39.71	.Q V	.	.	.	.
5.250	15.0281	39.84	.Q V	.	.	.	.
5.333	15.3035	39.98	.Q V	.	.	.	.
5.417	15.5798	40.12	.Q V	.	.	.	.
5.500	15.8571	40.27	.Q V	.	.	.	.
5.583	16.1354	40.41	.Q V	.	.	.	.
5.667	16.4147	40.55	.Q V	.	.	.	.
5.750	16.6950	40.70	.Q V	.	.	.	.
5.833	16.9764	40.85	.Q V	.	.	.	.
5.917	17.2587	41.00	.Q V	.	.	.	.
6.000	17.5421	41.15	.Q V	.	.	.	.
6.083	17.8266	41.30	.Q V	.	.	.	.
6.167	18.1121	41.46	.Q V	.	.	.	.
6.250	18.3988	41.62	.Q V	.	.	.	.
6.333	18.6865	41.78	.Q V	.	.	.	.
6.417	18.9753	41.94	.Q V	.	.	.	.
6.500	19.2653	42.10	.Q V	.	.	.	.
6.583	19.5564	42.27	.Q V	.	.	.	.
6.667	19.8486	42.44	.Q V	.	.	.	.
6.750	20.1420	42.60	.Q V	.	.	.	.

6.833	20.4367	42.78	.Q	V	.	.	.
6.917	20.7324	42.95	.Q	V	.	.	.
7.000	21.0295	43.13	.Q	V	.	.	.
7.083	21.3277	43.30	.Q	V	.	.	.
7.167	21.6272	43.49	.Q	V	.	.	.
7.250	21.9279	43.67	.Q	V	.	.	.
7.333	22.2300	43.85	.Q	V	.	.	.
7.417	22.5333	44.04	.Q	V	.	.	.
7.500	22.8379	44.23	.Q	V	.	.	.
7.583	23.1439	44.43	.Q	V	.	.	.
7.667	23.4512	44.62	.Q	V	.	.	.
7.750	23.7599	44.82	.Q	V	.	.	.
7.833	24.0700	45.02	. Q	V	.	.	.
7.917	24.3815	45.23	. Q	V	.	.	.
8.000	24.6944	45.44	. Q	V	.	.	.
8.083	25.0088	45.65	. Q	V	.	.	.
8.167	25.3247	45.86	. Q	V	.	.	.
8.250	25.6420	46.08	. Q	V	.	.	.
8.333	25.9609	46.30	. Q	V	.	.	.
8.417	26.2813	46.52	. Q	V	.	.	.
8.500	26.6033	46.75	. Q	V	.	.	.
8.583	26.9268	46.98	. Q	V	.	.	.
8.667	27.2520	47.22	. Q	V	.	.	.
8.750	27.5788	47.45	. Q	V	.	.	.
8.833	27.9073	47.70	. Q	V	.	.	.
8.917	28.2375	47.94	. Q	V	.	.	.
9.000	28.5694	48.19	. Q	V	.	.	.
9.083	28.9031	48.45	. Q	V	.	.	.
9.167	29.2385	48.71	. Q	V	.	.	.
9.250	29.5757	48.97	. Q	V	.	.	.
9.333	29.9149	49.24	. Q	V	.	.	.
9.417	30.2558	49.51	. Q	V	.	.	.
9.500	30.5987	49.79	. Q	V	.	.	.
9.583	30.9435	50.07	. Q	V	.	.	.
9.667	31.2903	50.36	. Q	V	.	.	.
9.750	31.6392	50.65	. Q	V	.	.	.
9.833	31.9900	50.95	. Q	V	.	.	.
9.917	32.3430	51.25	. Q	V	.	.	.
10.000	32.6981	51.56	. Q	V	.	.	.
10.083	33.0554	51.88	. Q	V	.	.	.
10.167	33.4149	52.20	. Q	V	.	.	.
10.250	33.7766	52.53	. Q	V	.	.	.
10.333	34.1407	52.86	. Q	V	.	.	.
10.417	34.5071	53.20	. Q	V	.	.	.
10.500	34.8759	53.55	. Q	V	.	.	.
10.583	35.2472	53.91	. Q	V	.	.	.

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10.667     35.6209     54.27  . Q       .V        .         .         .
10.750     35.9973     54.64  . Q       .V        .         .         .
10.833     36.3762     55.02  . Q       .V        .         .         .
10.917     36.7579     55.41  . Q       .V        .         .         .
11.000     37.1422     55.81  . Q       .V        .         .         .
11.083     37.5294     56.21  . Q       .V        .         .         .
11.167     37.9194     56.63  . Q       .V        .         .         .
11.250     38.3124     57.06  . Q       .V        .         .         .
11.333     38.7083     57.50  . Q       . V       .         .         .
11.417     39.1074     57.94  . Q       . V       .         .         .
11.500     39.5096     58.40  . Q       . V       .         .         .
11.583     39.9150     58.87  . Q       . V       .         .         .
11.667     40.3238     59.35  . Q       . V       .         .         .
11.750     40.7360     59.85  . Q       . V       .         .         .
11.833     41.1516     60.36  . Q       . V       .         .         .
11.917     41.5709     60.88  . Q       . V       .         .         .
12.000     41.9939     61.42  . Q       .  V      .         .         .
12.083     42.4168     61.41  . Q       .  V      .         .         .
12.167     42.8237     59.08  . Q       .  V      .         .         .
12.250     43.1962     54.09  . Q       .  V      .         .         .
12.333     43.5249     47.73  . Q       .  V      .         .         .
12.417     43.8234     43.34  .Q        .  V      .         .         .
12.500     44.1090     41.47  .Q        .  V      .         .         .
12.583     44.3906     40.89  .Q        .  V      .         .         .
12.667     44.6734     41.06  .Q        .  V      .         .         .
12.750     44.9594     41.53  .Q        .  V      .         .         .
12.833     45.2491     42.06  .Q        .   V     .         .         .
12.917     45.5429     42.66  .Q        .   V     .         .         .
13.000     45.8414     43.34  .Q        .   V     .         .         .
13.083     46.1449     44.07  .Q        .   V     .         .         .
13.167     46.4539     44.86  .Q        .   V     .         .         .
13.250     46.7684     45.67  . Q       .   V     .         .         .
13.333     47.0889     46.53  . Q       .   V     .         .         .
13.417     47.4156     47.43  . Q       .   V     .         .         .
13.500     47.7487     48.37  . Q       .   V     .         .         .
13.583     48.0886     49.36  . Q       .   V     .         .         .
13.667     48.4358     50.40  . Q       .    V    .         .         .
13.750     48.7904     51.49  . Q       .    V    .         .         .
13.833     49.1531     52.66  . Q       .    V    .         .         .
13.917     49.5242     53.88  . Q       .    V    .         .         .
14.000     49.9042     55.19  . Q       .    V    .         .         .
14.083     50.2955     56.81  . Q       .    V    .         .         .
14.167     50.7060     59.60  . Q       .    V    .         .         .
14.250     51.1446     63.69  . Q       .    V    .         .         .
14.333     51.6168     68.57  .  Q      .     V   .         .         .
14.417     52.1174     72.68  .  Q      .     V   .         .         .
```

14.500	52.6399	75.87	. Q . V . . .
14.583	53.1814	78.62	. Q . V . . .
14.667	53.7411	81.27	. Q . V . . .
14.750	54.3193	83.96	. Q . V . . .
14.833	54.9179	86.91	. Q . V . . .
14.917	55.5383	90.08	. Q . V . . .
15.000	56.1829	93.60	. Q . V . . .
15.083	56.8539	97.43	. Q . V . . .
15.167	57.5548	101.77	. Q . V . . .
15.250	58.2888	106.58	. Q . V . . .
15.333	59.0612	112.14	. Q . V . . .
15.417	59.8832	119.36	. Q . V . . .
15.500	60.7899	131.64	. Q . V . . .
15.583	61.8204	149.63	. Q . V. . .
15.667	63.0054	172.07	. Q . V. . .
15.750	64.3333	192.81	. Q . V . .
15.833	65.7746	209.28	. Q. V . .
15.917	67.3298	225.81	. Q V . .
16.000	69.1027	257.42	.Q .V . .
16.083	71.5364	353.38	. Q . V . .
16.167	75.4850	573.33	. . V Q . .
16.250	80.8439	778.11	. . V . Q .
16.333	86.6464	842.52	. . V . Q .
16.417	91.1567	654.89	. . VQ. .
16.500	94.1315	431.94	. Q. V. .
16.583	96.1546	293.76	. Q . V. .
16.667	97.5492	202.49	. Q . V .
16.750	98.6027	152.97	. Q . V .
16.833	99.5059	131.15	. Q . V .
16.917	100.2876	113.51	. Q . .V .
17.000	100.9783	100.29	. Q . .V .
17.083	101.5999	90.25	. Q . .V .
17.167	102.1622	81.65	. Q . .V .
17.250	102.6717	73.98	. Q . .V .
17.333	103.1303	66.59	. Q . . V .
17.417	103.5491	60.81	. Q . . V .
17.500	103.9395	56.68	. Q . . V .
17.583	104.3081	53.51	. Q . . V .
17.667	104.6591	50.97	. Q . . V .
17.750	104.9953	48.81	. Q . . V .
17.833	105.3180	46.87	. Q . . V .
17.917	105.6288	45.12	. Q . . V .
18.000	105.9286	43.54	.Q . . V .
18.083	106.2223	42.65	.Q . . . V .
18.167	106.5269	44.23	.Q . . . V .
18.250	106.8611	48.53	. Q . . . V .

```
18.333    107.2350     54.29  . Q       .         .         .  V       .
18.417    107.6351     58.09  . Q       .         .         .  V       .
18.500    108.0444     59.44  . Q       .         .         .  V       .
18.583    108.4546     59.56  . Q       .         .         .  V       .
18.667    108.8610     59.00  . Q       .         .         .  V       .
18.750    109.2618     58.21  . Q       .         .         .  V       .
18.833    109.6574     57.43  . Q       .         .         .   V      .
18.917    110.0475     56.65  . Q       .         .         .   V      .
19.000    110.4323     55.87  . Q       .         .         .   V      .
19.083    110.8117     55.09  . Q       .         .         .   V      .
19.167    111.1859     54.33  . Q       .         .         .   V      .
19.250    111.5551     53.61  . Q       .         .         .   V      .
19.333    111.9196     52.92  . Q       .         .         .   V      .
19.417    112.2794     52.25  . Q       .         .         .   V      .
19.500    112.6349     51.61  . Q       .         .         .    V     .
19.583    112.9861     50.99  . Q       .         .         .    V     .
19.667    113.3332     50.40  . Q       .         .         .    V     .
19.750    113.6764     49.83  . Q       .         .         .    V     .
19.833    114.0158     49.28  . Q       .         .         .    V     .
19.917    114.3515     48.75  . Q       .         .         .    V     .
20.000    114.6836     48.23  . Q       .         .         .    V     .
20.083    115.0124     47.73  . Q       .         .         .    V     .
20.167    115.3378     47.25  . Q       .         .         .    V     .
20.250    115.6600     46.78  . Q       .         .         .    V     .
20.333    115.9791     46.33  . Q       .         .         .     V    .
20.417    116.2951     45.89  . Q       .         .         .     V    .
20.500    116.6083     45.47  . Q       .         .         .     V    .
20.583    116.9185     45.05  . Q       .         .         .     V    .
20.667    117.2261     44.65  .Q        .         .         .     V    .
20.750    117.5309     44.26  .Q        .         .         .     V    .
20.833    117.8331     43.88  .Q        .         .         .     V    .
20.917    118.1327     43.51  .Q        .         .         .     V    .
21.000    118.4299     43.15  .Q        .         .         .     V    .
21.083    118.7247     42.80  .Q        .         .         .     V    .
21.167    119.0171     42.46  .Q        .         .         .      V   .
21.250    119.3072     42.12  .Q        .         .         .      V   .
21.333    119.5950     41.80  .Q        .         .         .      V   .
21.417    119.8807     41.48  .Q        .         .         .      V   .
21.500    120.1642     41.17  .Q        .         .         .      V   .
21.583    120.4457     40.87  .Q        .         .         .      V   .
21.667    120.7251     40.57  .Q        .         .         .      V   .
21.750    121.0025     40.28  .Q        .         .         .      V   .
21.833    121.2780     40.00  .Q        .         .         .      V   .
21.917    121.5516     39.72  .Q        .         .         .      V   .
22.000    121.8233     39.45  .Q        .         .         .      V   .
22.083    122.0932     39.19  .Q        .         .         .      V   .
```

```
   22.167    122.3613     38.93  .Q        .         .         .       V .
   22.250    122.6276     38.67  .Q        .         .         .       V .
   22.333    122.8923     38.43  .Q        .         .         .       V .
   22.417    123.1553     38.18  .Q        .         .         .       V .
   22.500    123.4166     37.94  .Q        .         .         .       V .
   22.583    123.6763     37.71  .Q        .         .         .       V .
   22.667    123.9344     37.48  .Q        .         .         .       V .
   22.750    124.1910     37.25  .Q        .         .         .       V .
   22.833    124.4460     37.03  .Q        .         .         .       V .
   22.917    124.6996     36.82  .Q        .         .         .       V .
   23.000    124.9517     36.60  .Q        .         .         .       V .
   23.083    125.2024     36.40  .Q        .         .         .       V .
   23.167    125.4516     36.19  .Q        .         .         .        V.
   23.250    125.6994     35.99  .Q        .         .         .        V.
   23.333    125.9459     35.79  .Q        .         .         .        V.
   23.417    126.1911     35.60  .Q        .         .         .        V.
   23.500    126.4349     35.40  .Q        .         .         .        V.
   23.583    126.6774     35.22  .Q        .         .         .        V.
   23.667    126.9187     35.03  .Q        .         .         .        V.
   23.750    127.1587     34.85  .Q        .         .         .        V.
   23.833    127.3975     34.67  .Q        .         .         .        V.
   23.917    127.6350     34.49  .Q        .         .         .        V.
   24.000    127.8714     34.32  .Q        .         .         .        V.
   24.083    128.1016     33.42  .Q        .         .         .        V.
   24.167    128.3042     29.42  .Q        .         .         .        V.
   24.250    128.4553     21.94  Q         .         .         .        V.
   24.333    128.5423     12.65  Q         .         .         .        V.
   24.417    128.5839      6.03  Q         .         .         .        V.
   24.500    128.6029      2.76  Q         .         .         .        V.
   24.583    128.6111      1.19  Q         .         .         .        V.
   24.667    128.6151      0.58  Q         .         .         .        V.
   24.750    128.6177      0.37  Q         .         .         .        V.
   24.833    128.6190      0.19  Q         .         .         .        V.
   24.917    128.6195      0.08  Q         .         .         .        V.
   25.000    128.6196      0.02  Q         .         .         .         V
-------------------------------------------------------------------------
---
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated               Duration
        Peak Flow Rate                    (minutes)
    ======================                =========
              0%                           1500.0
             10%                            140.0
```

20%	65.0
30%	40.0
40%	30.0
50%	25.0
60%	20.0
70%	15.0
80%	10.0
90%	10.0

==========

END OF FLOODSCx ROUTING ANALYSIS

FHWA BOX CULVERT DISCHARGE

BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE

March 16, 2023
GRAND TERRACE GATEWAY
3'Hx4.5'W RCB
2023-03-16

==========

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	4.50
Culvert Rise (Height of Opening) (feet).....	3.00
FHWA Chart Number (8,9,10,11,12 or 13).....	10
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning`s Roughness Coefficient (n-value).....	0.0140
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	330.0
Culvert Slope (feet per foot).....	0.0380

==========

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
113.0	1.00	5.00	-5.71	1.36	2.70	1.36	18.52
192.0	1.00	9.95	1.95	1.99	3.00	1.99	21.45
248.0	1.00	15.02	9.63	2.41	3.00	2.41	22.88
293.0	1.00	20.03	17.22	2.73	3.00	2.73	23.81
332.0	1.00	25.05	24.82	3.00	3.00	3.00	24.59

==========

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PROPOSED MITIGATED 100-YEAR PROJECT ON-SITE ANALYSIS

LOSS RATE CALCULATIONS

PROJECT ON-SITE
100-YR ANALYSIS
NODE 101 (MITIGATED)

```
 ************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
 ************************************************************************
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                           Analysis prepared by:
```

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

  Problem Descriptions:
   Grand Terrace
   Local-100yr-Proposed
   01-14-2022
 ************************************************************************
 *** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
     AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

     TOTAL 24-HOUR DURATION RAINFALL DEPTH =     4.75 (inches)
```

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	13.40	20.00	32.(AMC II)	0.742	0.789
2	25.84	20.00	69.(AMC II)	0.272	0.896
3	17.83	10.00	32.(AMC II)	0.742	0.870
4	15.07	10.00	69.(AMC II)	0.272	0.923
5	1.42	100.00	50.(AMC II)	0.495	0.390
6	0.98	100.00	69.(AMC II)	0.272	0.681
7	10.32	100.00	79.(AMC II)	0.170	0.832
8	2.08	10.00	32.(AMC II)	0.742	0.870
9	0.10	10.00	56.(AMC II)	0.423	0.904
10	11.48	10.00	69.(AMC II)	0.272	0.923

```
     TOTAL AREA (Acres) =     98.52

     AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.084

     AREA-AVERAGED LOW LOSS FRACTION, Y = 0.132
 ************************************************************************
```

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

            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
         (c) Copyright 1989-2015 Advanced Engineering Software (aes)
             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* GRAND TERRACE GATEWAY                                                 *
* LOCAL PROPOSED BASIN ROUTING - 100 YR                                 *
* 2023-03-16                                                            *
 ************************************************************************

  FILE NAME: LOCPR100.DAT
  TIME/DATE OF STUDY: 15:39 03/16/2023


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

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      98.520 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.100 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.084
         LOW LOSS FRACTION = 0.132
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  2.25
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  4.75

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.996
          30-MINUTE FACTOR = 0.996
           1-HOUR FACTOR = 0.996
```

3-HOUR FACTOR = 0.999
6-HOUR FACTOR = 1.000
24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 83.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	12.091	144.062
2	66.357	646.568
3	94.973	340.956
4	99.026	48.287
5	99.610	6.962
6	99.903	3.481
7	100.000	1.160

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 4.5389
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 34.4331

==========

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

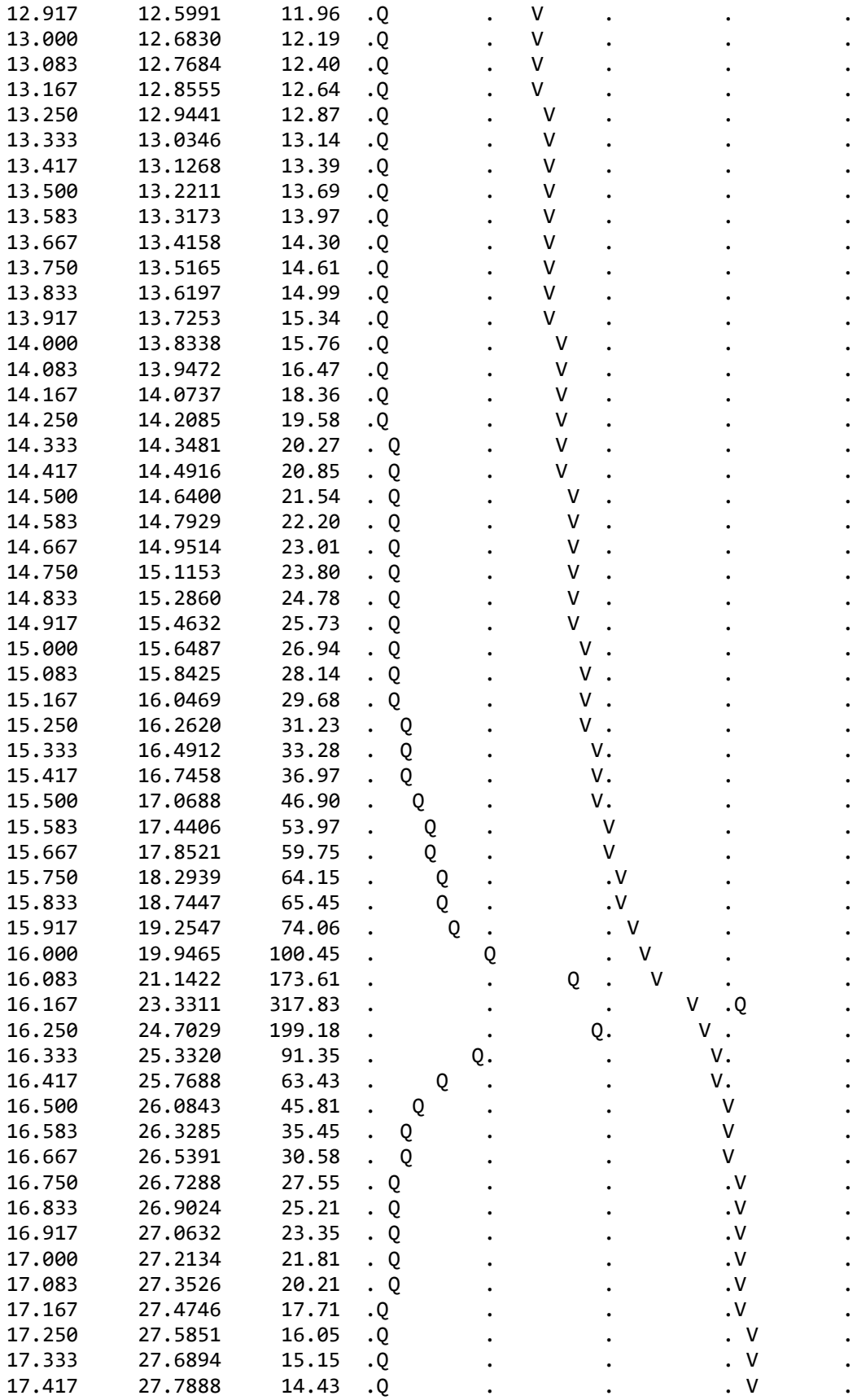
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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	100.0	200.0	300.0	400.0
0.083	0.0077	1.11	Q	.	.	.	.
0.167	0.0497	6.11	Q	.	.	.	.
0.250	0.1100	8.75	Q	.	.	.	.
0.333	0.1730	9.15	Q	.	.	.	.
0.417	0.2365	9.22	Q	.	.	.	.
0.500	0.3004	9.27	Q	.	.	.	.
0.583	0.3644	9.30	Q	.	.	.	.
0.667	0.4287	9.33	Q	.	.	.	.
0.750	0.4931	9.35	Q	.	.	.	.
0.833	0.5576	9.37	Q	.	.	.	.
0.917	0.6223	9.40	Q	.	.	.	.
1.000	0.6872	9.42	Q	.	.	.	.
1.083	0.7523	9.44	Q	.	.	.	.
1.167	0.8175	9.47	Q	.	.	.	.
1.250	0.8828	9.49	QV	.	.	.	.
1.333	0.9484	9.52	QV	.	.	.	.
1.417	1.0141	9.54	QV	.	.	.	.
1.500	1.0800	9.57	QV	.	.	.	.
1.583	1.1461	9.59	QV	.	.	.	.
1.667	1.2123	9.62	QV	.	.	.	.
1.750	1.2787	9.64	QV	.	.	.	.
1.833	1.3453	9.67	QV	.	.	.	.
1.917	1.4121	9.69	QV	.	.	.	.
2.000	1.4790	9.72	QV	.	.	.	.
2.083	1.5461	9.75	QV	.	.	.	.
2.167	1.6135	9.78	QV	.	.	.	.
2.250	1.6810	9.80	QV	.	.	.	.
2.333	1.7487	9.83	Q V	.	.	.	.
2.417	1.8165	9.85	Q V	.	.	.	.
2.500	1.8846	9.88	Q V	.	.	.	.
2.583	1.9529	9.91	Q V	.	.	.	.
2.667	2.0213	9.94	Q V	.	.	.	.
2.750	2.0900	9.97	Q V	.	.	.	.
2.833	2.1588	10.00	Q V	.	.	.	.
2.917	2.2278	10.02	.QV	.	.	.	.
3.000	2.2971	10.06	.QV	.	.	.	.
3.083	2.3665	10.08	.QV	.	.	.	.
3.167	2.4362	10.11	.QV	.	.	.	.
3.250	2.5061	10.14	.QV	.	.	.	.
3.333	2.5761	10.17	.QV	.	.	.	.
3.417	2.6464	10.20	.Q V	.	.	.	.
3.500	2.7169	10.24	.Q V	.	.	.	.
3.583	2.7876	10.27	.Q V	.	.	.	.
3.667	2.8585	10.30	.Q V	.	.	.	.

3.750	2.9297	10.33	.Q	V	.	.	.	.
3.833	3.0010	10.36	.Q	V	.	.	.	.
3.917	3.0726	10.39	.Q	V	.	.	.	.
4.000	3.1444	10.43	.Q	V	.	.	.	.
4.083	3.2165	10.46	.Q	V	.	.	.	.
4.167	3.2887	10.49	.Q	V	.	.	.	.
4.250	3.3612	10.53	.Q	V	.	.	.	.
4.333	3.4340	10.56	.Q	V	.	.	.	.
4.417	3.5069	10.59	.Q	V	.	.	.	.
4.500	3.5802	10.63	.Q	V	.	.	.	.
4.583	3.6536	10.66	.Q	V	.	.	.	.
4.667	3.7273	10.70	.Q	V	.	.	.	.
4.750	3.8013	10.74	.Q	V	.	.	.	.
4.833	3.8755	10.77	.Q	V	.	.	.	.
4.917	3.9499	10.81	.Q	V	.	.	.	.
5.000	4.0246	10.85	.Q	V	.	.	.	.
5.083	4.0996	10.88	.Q	V	.	.	.	.
5.167	4.1748	10.92	.Q	V	.	.	.	.
5.250	4.2503	10.96	.Q	V	.	.	.	.
5.333	4.3261	11.00	.Q	V	.	.	.	.
5.417	4.4021	11.04	.Q	V	.	.	.	.
5.500	4.4784	11.08	.Q	V	.	.	.	.
5.583	4.5549	11.12	.Q	V	.	.	.	.
5.667	4.6318	11.16	.Q	V	.	.	.	.
5.750	4.7089	11.20	.Q	V	.	.	.	.
5.833	4.7864	11.24	.Q	V	.	.	.	.
5.917	4.8641	11.28	.Q	V	.	.	.	.
6.000	4.9421	11.33	.Q	V	.	.	.	.
6.083	5.0204	11.37	.Q	V	.	.	.	.
6.167	5.0990	11.41	.Q	V	.	.	.	.
6.250	5.1779	11.46	.Q	V	.	.	.	.
6.333	5.2571	11.50	.Q	V	.	.	.	.
6.417	5.3366	11.55	.Q	V	.	.	.	.
6.500	5.4164	11.59	.Q	V	.	.	.	.
6.583	5.4966	11.64	.Q	V	.	.	.	.
6.667	5.5771	11.69	.Q	V	.	.	.	.
6.750	5.6579	11.73	.Q	V	.	.	.	.
6.833	5.7390	11.78	.Q	V	.	.	.	.
6.917	5.8205	11.83	.Q	V	.	.	.	.
7.000	5.9023	11.88	.Q	V	.	.	.	.
7.083	5.9844	11.93	.Q	V	.	.	.	.
7.167	6.0670	11.98	.Q	V	.	.	.	.
7.250	6.1498	12.03	.Q	V	.	.	.	.
7.333	6.2330	12.08	.Q	V	.	.	.	.
7.417	6.3166	12.13	.Q	V	.	.	.	.
7.500	6.4006	12.19	.Q	V	.	.	.	.
7.583	6.4849	12.24	.Q	V	.	.	.	.
7.667	6.5696	12.30	.Q	V	.	.	.	.
7.750	6.6547	12.35	.Q	V	.	.	.	.
7.833	6.7402	12.41	.Q	V	.	.	.	.
7.917	6.8261	12.47	.Q	V	.	.	.	.
8.000	6.9123	12.53	.Q	V	.	.	.	.
8.083	6.9990	12.59	.Q	V	.	.	.	.
8.167	7.0861	12.65	.Q	V	.	.	.	.
8.250	7.1737	12.71	.Q	V	.	.	.	.

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 8.333      7.2616     12.77  .Q      V .          .          .          .
 8.417      7.3500     12.83  .Q      V .          .          .          .
 8.500      7.4388     12.90  .Q      V .          .          .          .
 8.583      7.5281     12.96  .Q      V .          .          .          .
 8.667      7.6178     13.03  .Q      V .          .          .          .
 8.750      7.7080     13.09  .Q      V .          .          .          .
 8.833      7.7987     13.17  .Q       V.          .          .          .
 8.917      7.8898     13.23  .Q       V.          .          .          .
 9.000      7.9815     13.31  .Q       V.          .          .          .
 9.083      8.0736     13.37  .Q       V.          .          .          .
 9.167      8.1662     13.45  .Q       V.          .          .          .
 9.250      8.2593     13.52  .Q       V.          .          .          .
 9.333      8.3530     13.60  .Q       V.          .          .          .
 9.417      8.4472     13.67  .Q       V.          .          .          .
 9.500      8.5419     13.76  .Q       V.          .          .          .
 9.583      8.6372     13.83  .Q        V          .          .          .
 9.667      8.7331     13.92  .Q        V          .          .          .
 9.750      8.8295     14.00  .Q        V          .          .          .
 9.833      8.9265     14.09  .Q        V          .          .          .
 9.917      9.0240     14.17  .Q        V          .          .          .
10.000      9.1222     14.26  .Q        V          .          .          .
10.083      9.2210     14.34  .Q        V          .          .          .
10.167      9.3205     14.44  .Q        V          .          .          .
10.250      9.4206     14.53  .Q        V          .          .          .
10.333      9.5213     14.63  .Q        .V         .          .          .
10.417      9.6227     14.72  .Q        .V         .          .          .
10.500      9.7248     14.83  .Q        .V         .          .          .
10.583      9.8276     14.92  .Q        .V         .          .          .
10.667      9.9311     15.03  .Q        .V         .          .          .
10.750     10.0353     15.13  .Q        .V         .          .          .
10.833     10.1403     15.25  .Q        .V         .          .          .
10.917     10.2460     15.35  .Q        .V         .          .          .
11.000     10.3526     15.47  .Q        . V        .          .          .
11.083     10.4599     15.58  .Q        . V        .          .          .
11.167     10.5680     15.71  .Q        . V        .          .          .
11.250     10.6770     15.82  .Q        . V        .          .          .
11.333     10.7869     15.95  .Q        . V        .          .          .
11.417     10.8976     16.07  .Q        . V        .          .          .
11.500     11.0092     16.21  .Q        . V        .          .          .
11.583     11.1217     16.34  .Q        . V        .          .          .
11.667     11.2353     16.49  .Q        .  V       .          .          .
11.750     11.3498     16.62  .Q        .  V       .          .          .
11.833     11.4653     16.78  .Q        .  V       .          .          .
11.917     11.5818     16.92  .Q        .  V       .          .          .
12.000     11.6994     17.08  .Q        .  V       .          .          .
12.083     11.8123     16.38  .Q        .  V       .          .          .
12.167     11.9001     12.75  .Q        .  V       .          .          .
12.250     11.9751     10.90  .Q        .  V       .          .          .
12.333     12.0494     10.78  .Q        .  V       .          .          .
12.417     12.1243     10.89  .Q        .   V      .          .          .
12.500     12.2004     11.04  .Q        .   V      .          .          .
12.583     12.2775     11.20  .Q        .   V      .          .          .
12.667     12.3560     11.39  .Q        .   V      .          .          .
12.750     12.4356     11.57  .Q        .   V      .          .          .
12.833     12.5167     11.77  .Q        .   V      .          .          .
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17.500	27.8838	13.80	.Q	.	.	.	V	.
17.583	27.9750	13.24	.Q	.	.	.	V	.
17.667	28.0626	12.73	.Q	.	.	.	V	.
17.750	28.1471	12.27	.Q	.	.	.	V	.
17.833	28.2287	11.84	.Q	.	.	.	V	.
17.917	28.3076	11.45	.Q	.	.	.	V	.
18.000	28.3840	11.10	.Q	.	.	.	V	.
18.083	28.4639	11.61	.Q	.	.	.	V	.
18.167	28.5679	15.09	.Q	.	.	.	V	.
18.250	28.6834	16.78	.Q	.	.	.	V	.
18.333	28.7989	16.76	.Q	.	.	.	V	.
18.417	28.9125	16.51	.Q	.	.	.	V	.
18.500	29.0245	16.25	.Q	.	.	.	V	.
18.583	29.1346	16.00	.Q	.	.	.	V	.
18.667	29.2431	15.75	.Q	.	.	.	V	.
18.750	29.3499	15.51	.Q	.	.	.	V	.
18.833	29.4551	15.28	.Q	.	.	.	V	.
18.917	29.5589	15.07	.Q	.	.	.	V	.
19.000	29.6612	14.86	.Q	.	.	.	V	.
19.083	29.7622	14.66	.Q	.	.	.	V	.
19.167	29.8619	14.47	.Q	.	.	.	V	.
19.250	29.9603	14.29	.Q	.	.	.	V	.
19.333	30.0575	14.11	.Q	.	.	.	V	.
19.417	30.1535	13.95	.Q	.	.	.	V	.
19.500	30.2485	13.78	.Q	.	.	.	V	.
19.583	30.3423	13.63	.Q	.	.	.	V	.
19.667	30.4351	13.48	.Q	.	.	.	V	.
19.750	30.5269	13.33	.Q	.	.	.	V	.
19.833	30.6178	13.19	.Q	.	.	.	V	.
19.917	30.7076	13.05	.Q	.	.	.	V	.
20.000	30.7966	12.92	.Q	.	.	.	V	.
20.083	30.8847	12.79	.Q	.	.	.	V	.
20.167	30.9720	12.67	.Q	.	.	.	V	.
20.250	31.0584	12.55	.Q	.	.	.	V	.
20.333	31.1440	12.43	.Q	.	.	.	V	.
20.417	31.2289	12.32	.Q	.	.	.	V	.
20.500	31.3130	12.21	.Q	.	.	.	V	.
20.583	31.3963	12.10	.Q	.	.	.	V	.
20.667	31.4790	12.00	.Q	.	.	.	V	.
20.750	31.5609	11.90	.Q	.	.	.	V	.
20.833	31.6421	11.80	.Q	.	.	.	V	.
20.917	31.7227	11.70	.Q	.	.	.	V	.
21.000	31.8027	11.61	.Q	.	.	.	V	.
21.083	31.8820	11.52	.Q	.	.	.	V	.
21.167	31.9607	11.43	.Q	.	.	.	V	.
21.250	32.0388	11.34	.Q	.	.	.	V	.
21.333	32.1163	11.26	.Q	.	.	.	V	.
21.417	32.1933	11.17	.Q	.	.	.	V	.
21.500	32.2697	11.09	.Q	.	.	.	V	.
21.583	32.3455	11.01	.Q	.	.	.	V	.
21.667	32.4208	10.94	.Q	.	.	.	V	.
21.750	32.4956	10.86	.Q	.	.	.	V	.
21.833	32.5699	10.79	.Q	.	.	.	V	.
21.917	32.6437	10.71	.Q	.	.	.	V	.
22.000	32.7170	10.64	.Q	.	.	.	V	.

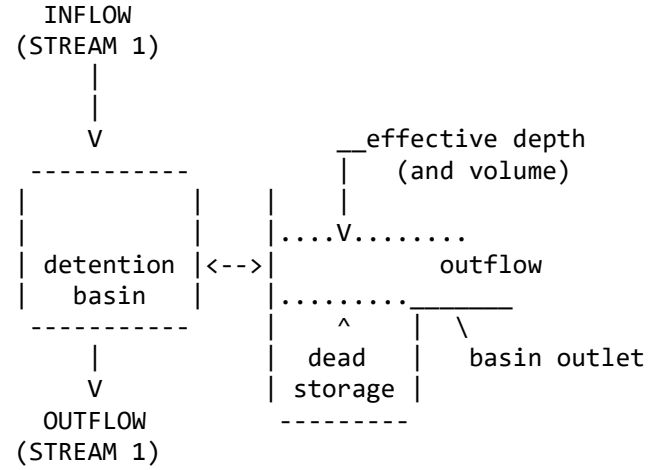
22.083	32.7898	10.57	.Q	.	.	.	V .
22.167	32.8622	10.51	.Q	.	.	.	V .
22.250	32.9341	10.44	.Q	.	.	.	V .
22.333	33.0055	10.37	.Q	.	.	.	V .
22.417	33.0765	10.31	.Q	.	.	.	V .
22.500	33.1471	10.25	.Q	.	.	.	V .
22.583	33.2172	10.18	.Q	.	.	.	V .
22.667	33.2869	10.12	.Q	.	.	.	V .
22.750	33.3562	10.06	.Q	.	.	.	V .
22.833	33.4252	10.01	.Q	.	.	.	V .
22.917	33.4937	9.95	Q	.	.	.	V .
23.000	33.5618	9.89	Q	.	.	.	V .
23.083	33.6296	9.84	Q	.	.	.	V.
23.167	33.6969	9.78	Q	.	.	.	V.
23.250	33.7640	9.73	Q	.	.	.	V.
23.333	33.8306	9.68	Q	.	.	.	V.
23.417	33.8969	9.63	Q	.	.	.	V.
23.500	33.9628	9.58	Q	.	.	.	V.
23.583	34.0285	9.53	Q	.	.	.	V.
23.667	34.0937	9.48	Q	.	.	.	V.
23.750	34.1587	9.43	Q	.	.	.	V.
23.833	34.2233	9.38	Q	.	.	.	V.
23.917	34.2876	9.33	Q	.	.	.	V.
24.000	34.3515	9.29	Q	.	.	.	V.
24.083	34.4075	8.13	Q	.	.	.	V.
24.167	34.4290	3.11	Q	.	.	.	V.
24.250	34.4322	0.46	Q	.	.	.	V.
24.333	34.4328	0.09	Q	.	.	.	V.
24.417	34.4330	0.04	Q	.	.	.	V.
24.500	34.4331	0.01	Q	.	.	.	V

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1470.0
10%	80.0
20%	40.0
30%	20.0
40%	15.0
50%	15.0
60%	10.0
70%	5.0
80%	5.0
90%	5.0

****
FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 3.1

>>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
==========



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

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	5.00	113.00	9.830
3	10.00	192.00	22.020
4	15.00	248.00	36.780
5	20.00	293.00	54.330
6	25.00	332.00	74.840

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(5-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
0.083	0.000	1.11	0.00	0.00	0.0	0.007
0.167	0.000	6.11	0.00	0.02	0.3	0.047
0.250	0.000	8.75	0.00	0.05	0.9	0.102
0.333	0.000	9.15	0.00	0.08	1.5	0.155
0.417	0.000	9.22	0.00	0.10	2.1	0.204
0.500	0.000	9.27	0.00	0.13	2.6	0.250

0.583	0.000	9.30	0.00	0.15	3.1	0.292
0.667	0.000	9.33	0.00	0.17	3.6	0.332
0.750	0.000	9.35	0.00	0.19	4.0	0.369
0.833	0.000	9.37	0.00	0.20	4.4	0.403
0.917	0.000	9.40	0.00	0.22	4.8	0.434
1.000	0.000	9.42	0.00	0.24	5.2	0.464
1.083	0.000	9.44	0.00	0.25	5.5	0.491
1.167	0.000	9.47	0.00	0.26	5.8	0.516
1.250	0.000	9.49	0.00	0.27	6.1	0.540
1.333	0.000	9.52	0.00	0.29	6.3	0.562
1.417	0.000	9.54	0.00	0.30	6.6	0.582
1.500	0.000	9.57	0.00	0.31	6.8	0.601
1.583	0.000	9.59	0.00	0.31	7.0	0.619
1.667	0.000	9.62	0.00	0.32	7.2	0.635
1.750	0.000	9.64	0.00	0.33	7.4	0.651
1.833	0.000	9.67	0.00	0.34	7.6	0.665
1.917	0.000	9.69	0.00	0.35	7.7	0.679
2.000	0.000	9.72	0.00	0.35	7.9	0.692
2.083	0.000	9.75	0.00	0.36	8.0	0.704
2.167	0.000	9.78	0.00	0.36	8.2	0.715
2.250	0.000	9.80	0.00	0.37	8.3	0.725
2.333	0.000	9.83	0.00	0.37	8.4	0.735
2.417	0.000	9.85	0.00	0.38	8.5	0.744
2.500	0.000	9.88	0.00	0.38	8.6	0.753
2.583	0.000	9.91	0.00	0.39	8.7	0.762
2.667	0.000	9.94	0.00	0.39	8.8	0.769
2.750	0.000	9.97	0.00	0.40	8.9	0.777
2.833	0.000	10.00	0.00	0.40	9.0	0.784
2.917	0.000	10.02	0.00	0.40	9.0	0.791
3.000	0.000	10.06	0.00	0.41	9.1	0.797
3.083	0.000	10.08	0.00	0.41	9.2	0.803
3.167	0.000	10.11	0.00	0.41	9.3	0.809
3.250	0.000	10.14	0.00	0.41	9.3	0.815
3.333	0.000	10.17	0.00	0.42	9.4	0.820
3.417	0.000	10.20	0.00	0.42	9.5	0.825
3.500	0.000	10.24	0.00	0.42	9.5	0.830
3.583	0.000	10.27	0.00	0.42	9.6	0.835
3.667	0.000	10.30	0.00	0.43	9.6	0.840
3.750	0.000	10.33	0.00	0.43	9.7	0.844
3.833	0.000	10.36	0.00	0.43	9.7	0.848
3.917	0.000	10.39	0.00	0.43	9.8	0.853
4.000	0.000	10.43	0.00	0.44	9.8	0.857
4.083	0.000	10.46	0.00	0.44	9.9	0.861
4.167	0.000	10.49	0.00	0.44	9.9	0.865
4.250	0.000	10.53	0.00	0.44	10.0	0.869
4.333	0.000	10.56	0.00	0.44	10.0	0.872
4.417	0.000	10.59	0.00	0.45	10.1	0.876
4.500	0.000	10.63	0.00	0.45	10.1	0.880
4.583	0.000	10.66	0.00	0.45	10.1	0.884
4.667	0.000	10.70	0.00	0.45	10.2	0.887
4.750	0.000	10.74	0.00	0.45	10.2	0.891
4.833	0.000	10.77	0.00	0.45	10.3	0.894
4.917	0.000	10.81	0.00	0.46	10.3	0.898
5.000	0.000	10.85	0.00	0.46	10.3	0.901
5.083	0.000	10.88	0.00	0.46	10.4	0.905

5.167	0.000	10.92	0.00	0.46	10.4	0.908
5.250	0.000	10.96	0.00	0.46	10.5	0.912
5.333	0.000	11.00	0.00	0.47	10.5	0.915
5.417	0.000	11.04	0.00	0.47	10.5	0.919
5.500	0.000	11.08	0.00	0.47	10.6	0.922
5.583	0.000	11.12	0.00	0.47	10.6	0.925
5.667	0.000	11.16	0.00	0.47	10.7	0.929
5.750	0.000	11.20	0.00	0.47	10.7	0.932
5.833	0.000	11.24	0.00	0.48	10.7	0.936
5.917	0.000	11.28	0.00	0.48	10.8	0.939
6.000	0.000	11.33	0.00	0.48	10.8	0.943
6.083	0.000	11.37	0.00	0.48	10.9	0.946
6.167	0.000	11.41	0.00	0.48	10.9	0.950
6.250	0.000	11.46	0.00	0.48	10.9	0.953
6.333	0.000	11.50	0.00	0.49	11.0	0.957
6.417	0.000	11.55	0.00	0.49	11.0	0.961
6.500	0.000	11.59	0.00	0.49	11.1	0.964
6.583	0.000	11.64	0.00	0.49	11.1	0.968
6.667	0.000	11.69	0.00	0.49	11.1	0.972
6.750	0.000	11.73	0.00	0.50	11.2	0.975
6.833	0.000	11.78	0.00	0.50	11.2	0.979
6.917	0.000	11.83	0.00	0.50	11.3	0.983
7.000	0.000	11.88	0.00	0.50	11.3	0.987
7.083	0.000	11.93	0.00	0.50	11.4	0.991
7.167	0.000	11.98	0.00	0.51	11.4	0.995
7.250	0.000	12.03	0.00	0.51	11.5	0.999
7.333	0.000	12.08	0.00	0.51	11.5	1.003
7.417	0.000	12.13	0.00	0.51	11.5	1.007
7.500	0.000	12.19	0.00	0.51	11.6	1.011
7.583	0.000	12.24	0.00	0.52	11.6	1.015
7.667	0.000	12.30	0.00	0.52	11.7	1.019
7.750	0.000	12.35	0.00	0.52	11.7	1.023
7.833	0.000	12.41	0.00	0.52	11.8	1.028
7.917	0.000	12.47	0.00	0.52	11.8	1.032
8.000	0.000	12.53	0.00	0.53	11.9	1.036
8.083	0.000	12.59	0.00	0.53	11.9	1.041
8.167	0.000	12.65	0.00	0.53	12.0	1.045
8.250	0.000	12.71	0.00	0.53	12.0	1.050
8.333	0.000	12.77	0.00	0.54	12.1	1.055
8.417	0.000	12.83	0.00	0.54	12.1	1.059
8.500	0.000	12.90	0.00	0.54	12.2	1.064
8.583	0.000	12.96	0.00	0.54	12.3	1.069
8.667	0.000	13.03	0.00	0.55	12.3	1.074
8.750	0.000	13.09	0.00	0.55	12.4	1.079
8.833	0.000	13.17	0.00	0.55	12.4	1.084
8.917	0.000	13.23	0.00	0.55	12.5	1.089
9.000	0.000	13.31	0.00	0.56	12.5	1.094
9.083	0.000	13.37	0.00	0.56	12.6	1.099
9.167	0.000	13.45	0.00	0.56	12.7	1.105
9.250	0.000	13.52	0.00	0.56	12.7	1.110
9.333	0.000	13.60	0.00	0.57	12.8	1.116
9.417	0.000	13.67	0.00	0.57	12.9	1.121
9.500	0.000	13.76	0.00	0.57	12.9	1.127
9.583	0.000	13.83	0.00	0.58	13.0	1.133
9.667	0.000	13.92	0.00	0.58	13.1	1.139

9.750	0.000	14.00	0.00	0.58	13.1	1.145
9.833	0.000	14.09	0.00	0.59	13.2	1.151
9.917	0.000	14.17	0.00	0.59	13.3	1.157
10.000	0.000	14.26	0.00	0.59	13.3	1.164
10.083	0.000	14.34	0.00	0.60	13.4	1.170
10.167	0.000	14.44	0.00	0.60	13.5	1.177
10.250	0.000	14.53	0.00	0.60	13.6	1.183
10.333	0.000	14.63	0.00	0.61	13.6	1.190
10.417	0.000	14.72	0.00	0.61	13.7	1.197
10.500	0.000	14.83	0.00	0.61	13.8	1.204
10.583	0.000	14.92	0.00	0.62	13.9	1.211
10.667	0.000	15.03	0.00	0.62	14.0	1.218
10.750	0.000	15.13	0.00	0.62	14.0	1.226
10.833	0.000	15.25	0.00	0.63	14.1	1.234
10.917	0.000	15.35	0.00	0.63	14.2	1.241
11.000	0.000	15.47	0.00	0.64	14.3	1.249
11.083	0.000	15.58	0.00	0.64	14.4	1.257
11.167	0.000	15.71	0.00	0.64	14.5	1.266
11.250	0.000	15.82	0.00	0.65	14.6	1.274
11.333	0.000	15.95	0.00	0.65	14.7	1.283
11.417	0.000	16.07	0.00	0.66	14.8	1.292
11.500	0.000	16.21	0.00	0.66	14.9	1.301
11.583	0.000	16.34	0.00	0.67	15.0	1.310
11.667	0.000	16.49	0.00	0.67	15.1	1.319
11.750	0.000	16.62	0.00	0.68	15.2	1.329
11.833	0.000	16.78	0.00	0.68	15.3	1.339
11.917	0.000	16.92	0.00	0.69	15.4	1.349
12.000	0.000	17.08	0.00	0.69	15.6	1.359
12.083	0.000	16.38	0.00	0.69	15.7	1.364
12.167	0.000	12.75	0.00	0.68	15.6	1.345
12.250	0.000	10.90	0.00	0.67	15.3	1.315
12.333	0.000	10.78	0.00	0.65	14.9	1.286
12.417	0.000	10.89	0.00	0.64	14.6	1.260
12.500	0.000	11.04	0.00	0.63	14.4	1.237
12.583	0.000	11.20	0.00	0.62	14.1	1.217
12.667	0.000	11.39	0.00	0.61	13.9	1.200
12.750	0.000	11.57	0.00	0.60	13.7	1.185
12.833	0.000	11.77	0.00	0.60	13.6	1.173
12.917	0.000	11.96	0.00	0.59	13.4	1.163
13.000	0.000	12.19	0.00	0.59	13.3	1.155
13.083	0.000	12.40	0.00	0.58	13.2	1.149
13.167	0.000	12.64	0.00	0.58	13.2	1.146
13.250	0.000	12.87	0.00	0.58	13.2	1.144
13.333	0.000	13.14	0.00	0.58	13.1	1.144
13.417	0.000	13.39	0.00	0.58	13.2	1.145
13.500	0.000	13.69	0.00	0.58	13.2	1.149
13.583	0.000	13.97	0.00	0.59	13.2	1.154
13.667	0.000	14.30	0.00	0.59	13.3	1.161
13.750	0.000	14.61	0.00	0.59	13.4	1.169
13.833	0.000	14.99	0.00	0.60	13.5	1.179
13.917	0.000	15.34	0.00	0.61	13.6	1.191
14.000	0.000	15.76	0.00	0.61	13.8	1.205
14.083	0.000	16.47	0.00	0.62	13.9	1.222
14.167	0.000	18.36	0.00	0.64	14.2	1.251
14.250	0.000	19.58	0.00	0.65	14.6	1.285

14.333	0.000	20.27	0.00	0.67	15.0	1.321
14.417	0.000	20.85	0.00	0.69	15.4	1.359
14.500	0.000	21.54	0.00	0.71	15.8	1.398
14.583	0.000	22.20	0.00	0.73	16.3	1.439
14.667	0.000	23.01	0.00	0.75	16.8	1.482
14.750	0.000	23.80	0.00	0.78	17.3	1.527
14.833	0.000	24.78	0.00	0.80	17.8	1.574
14.917	0.000	25.73	0.00	0.83	18.4	1.625
15.000	0.000	26.94	0.00	0.85	19.0	1.680
15.083	0.000	28.14	0.00	0.88	19.6	1.738
15.167	0.000	29.68	0.00	0.92	20.4	1.802
15.250	0.000	31.23	0.00	0.95	21.1	1.872
15.333	0.000	33.28	0.00	0.99	22.0	1.950
15.417	0.000	36.97	0.00	1.04	23.0	2.046
15.500	0.000	46.90	0.00	1.12	24.4	2.201
15.583	0.000	53.97	0.00	1.22	26.4	2.391
15.667	0.000	59.75	0.00	1.32	28.7	2.605
15.750	0.000	64.15	0.00	1.44	31.2	2.832
15.833	0.000	65.45	0.00	1.55	33.8	3.050
15.917	0.000	74.06	0.00	1.68	36.5	3.308
16.000	0.000	100.45	0.00	1.89	40.4	3.721
16.083	0.000	173.61	0.00	2.33	47.8	4.588
16.167	0.000	317.83	0.00	3.23	62.8	6.344
16.250	0.000	199.18	0.00	3.65	77.7	7.181
16.333	0.000	91.35	0.00	3.68	82.9	7.239
16.417	0.000	63.43	0.00	3.62	82.5	7.108
16.500	0.000	45.81	0.00	3.49	80.3	6.870
16.583	0.000	35.45	0.00	3.35	77.3	6.582
16.667	0.000	30.58	0.00	3.20	73.9	6.283
16.750	0.000	27.55	0.00	3.05	70.5	5.987
16.833	0.000	25.21	0.00	2.90	67.2	5.698
16.917	0.000	23.35	0.00	2.76	63.9	5.419
17.000	0.000	21.81	0.00	2.62	60.8	5.151
17.083	0.000	20.21	0.00	2.49	57.7	4.892
17.167	0.000	17.71	0.00	2.36	54.8	4.637
17.250	0.000	16.05	0.00	2.23	51.9	4.390
17.333	0.000	15.15	0.00	2.11	49.1	4.156
17.417	0.000	14.43	0.00	2.00	46.5	3.935
17.500	0.000	13.80	0.00	1.90	44.0	3.727
17.583	0.000	13.24	0.00	1.80	41.7	3.531
17.667	0.000	12.73	0.00	1.70	39.5	3.346
17.750	0.000	12.27	0.00	1.61	37.5	3.173
17.833	0.000	11.84	0.00	1.53	35.5	3.010
17.917	0.000	11.45	0.00	1.45	33.7	2.856
18.000	0.000	11.10	0.00	1.38	32.0	2.712
18.083	0.000	11.61	0.00	1.31	30.4	2.583
18.167	0.000	15.09	0.00	1.26	29.1	2.486
18.250	0.000	16.78	0.00	1.22	28.1	2.408
18.333	0.000	16.76	0.00	1.19	27.3	2.335
18.417	0.000	16.51	0.00	1.15	26.5	2.267
18.500	0.000	16.25	0.00	1.12	25.7	2.202
18.583	0.000	16.00	0.00	1.09	25.0	2.140
18.667	0.000	15.75	0.00	1.06	24.3	2.082
18.750	0.000	15.51	0.00	1.03	23.6	2.026
18.833	0.000	15.28	0.00	1.00	23.0	1.973

18.917	0.000	15.07	0.00	0.98	22.4	1.922
19.000	0.000	14.86	0.00	0.95	21.8	1.874
19.083	0.000	14.66	0.00	0.93	21.3	1.829
19.167	0.000	14.47	0.00	0.91	20.8	1.785
19.250	0.000	14.29	0.00	0.89	20.3	1.744
19.333	0.000	14.11	0.00	0.87	19.8	1.705
19.417	0.000	13.95	0.00	0.85	19.4	1.667
19.500	0.000	13.78	0.00	0.83	19.0	1.632
19.583	0.000	13.63	0.00	0.81	18.6	1.598
19.667	0.000	13.48	0.00	0.80	18.2	1.565
19.750	0.000	13.33	0.00	0.78	17.8	1.534
19.833	0.000	13.19	0.00	0.77	17.5	1.505
19.917	0.000	13.05	0.00	0.75	17.1	1.477
20.000	0.000	12.92	0.00	0.74	16.8	1.450
20.083	0.000	12.79	0.00	0.72	16.5	1.424
20.167	0.000	12.67	0.00	0.71	16.2	1.400
20.250	0.000	12.55	0.00	0.70	16.0	1.376
20.333	0.000	12.43	0.00	0.69	15.7	1.354
20.417	0.000	12.32	0.00	0.68	15.4	1.332
20.500	0.000	12.21	0.00	0.67	15.2	1.312
20.583	0.000	12.10	0.00	0.66	15.0	1.292
20.667	0.000	12.00	0.00	0.65	14.7	1.273
20.750	0.000	11.90	0.00	0.64	14.5	1.255
20.833	0.000	11.80	0.00	0.63	14.3	1.238
20.917	0.000	11.70	0.00	0.62	14.1	1.221
21.000	0.000	11.61	0.00	0.61	13.9	1.205
21.083	0.000	11.52	0.00	0.60	13.8	1.189
21.167	0.000	11.43	0.00	0.60	13.6	1.174
21.250	0.000	11.34	0.00	0.59	13.4	1.160
21.333	0.000	11.26	0.00	0.58	13.3	1.146
21.417	0.000	11.17	0.00	0.58	13.1	1.133
21.500	0.000	11.09	0.00	0.57	13.0	1.120
21.583	0.000	11.01	0.00	0.56	12.8	1.108
21.667	0.000	10.94	0.00	0.56	12.7	1.096
21.750	0.000	10.86	0.00	0.55	12.5	1.084
21.833	0.000	10.79	0.00	0.55	12.4	1.073
21.917	0.000	10.71	0.00	0.54	12.3	1.063
22.000	0.000	10.64	0.00	0.54	12.2	1.052
22.083	0.000	10.57	0.00	0.53	12.0	1.042
22.167	0.000	10.51	0.00	0.53	11.9	1.032
22.250	0.000	10.44	0.00	0.52	11.8	1.023
22.333	0.000	10.37	0.00	0.52	11.7	1.014
22.417	0.000	10.31	0.00	0.51	11.6	1.005
22.500	0.000	10.25	0.00	0.51	11.5	0.996
22.583	0.000	10.18	0.00	0.50	11.4	0.988
22.667	0.000	10.12	0.00	0.50	11.3	0.980
22.750	0.000	10.06	0.00	0.49	11.2	0.972
22.833	0.000	10.01	0.00	0.49	11.1	0.964
22.917	0.000	9.95	0.00	0.49	11.0	0.956
23.000	0.000	9.89	0.00	0.48	11.0	0.949
23.083	0.000	9.84	0.00	0.48	10.9	0.942
23.167	0.000	9.78	0.00	0.48	10.8	0.935
23.250	0.000	9.73	0.00	0.47	10.7	0.928
23.333	0.000	9.68	0.00	0.47	10.6	0.922
23.417	0.000	9.63	0.00	0.47	10.6	0.915

23.500	0.000	9.58	0.00	0.46	10.5	0.909
23.583	0.000	9.53	0.00	0.46	10.4	0.903
23.667	0.000	9.48	0.00	0.46	10.3	0.897
23.750	0.000	9.43	0.00	0.45	10.3	0.891
23.833	0.000	9.38	0.00	0.45	10.2	0.885
23.917	0.000	9.33	0.00	0.45	10.1	0.880

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 34.433 AF
BASIN STORAGE = 0.000 AF (WITH 0.000 AF INITIALLY FILLED)
OUTFLOW VOLUME = 34.433 AF
LOSS VOLUME = 0.000 AF

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FLOW PROCESS FROM NODE 101.00 TO NODE 101.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

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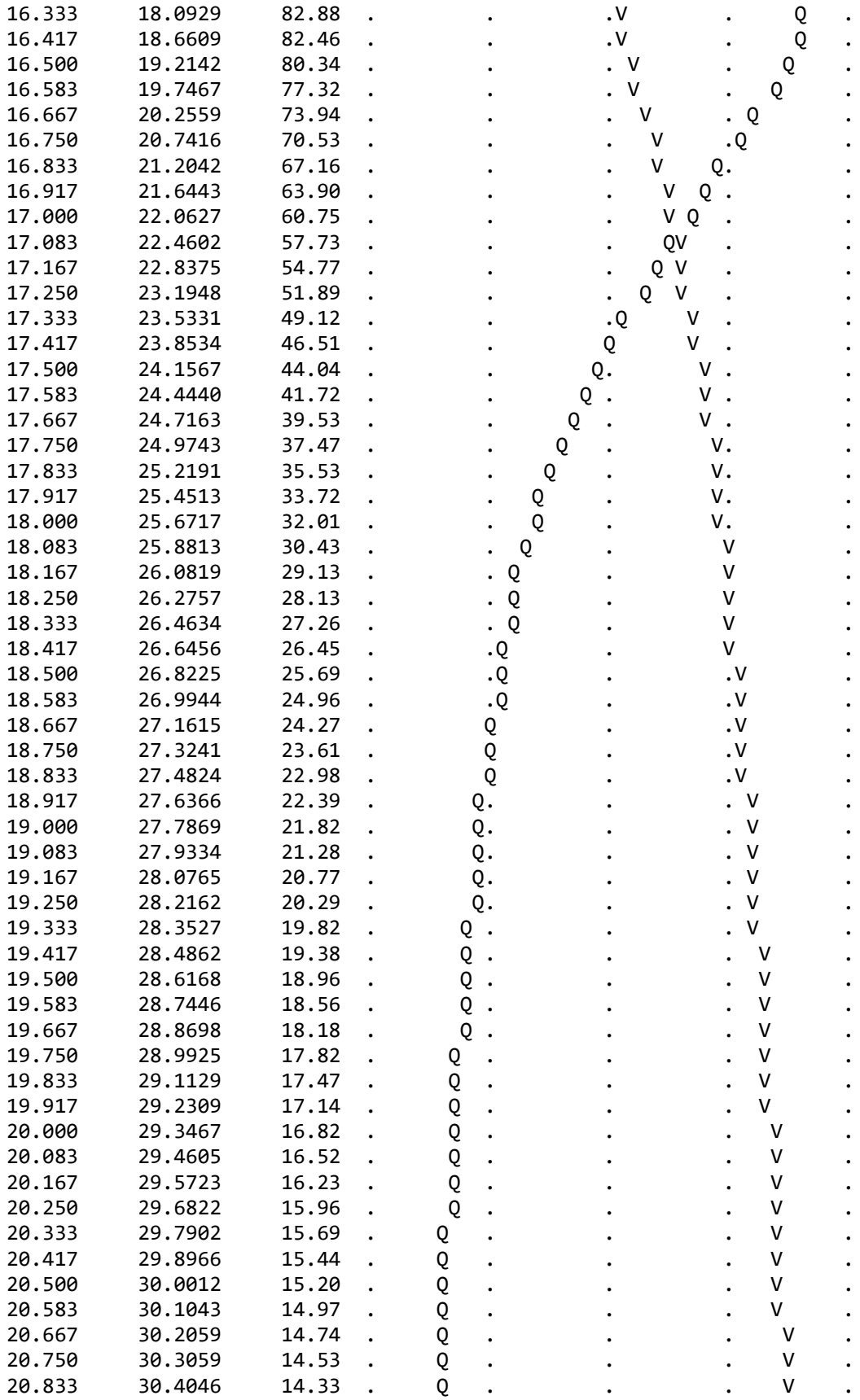
STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	22.5	45.0	67.5	90.0
0.083	0.0003	0.04	Q	.	.	.	.
0.167	0.0025	0.31	Q	.	.	.	.
0.250	0.0083	0.86	Q	.	.	.	.
0.333	0.0185	1.47	Q	.	.	.	.
0.417	0.0327	2.06	Q	.	.	.	.
0.500	0.0506	2.61	VQ	.	.	.	.
0.583	0.0721	3.12	VQ	.	.	.	.
0.667	0.0968	3.59	VQ	.	.	.	.
0.750	0.1245	4.03	VQ	.	.	.	.
0.833	0.1550	4.43	VQ	.	.	.	.
0.917	0.1882	4.81	V Q	.	.	.	.
1.000	0.2237	5.16	V Q	.	.	.	.
1.083	0.2615	5.48	V Q	.	.	.	.
1.167	0.3013	5.79	V Q	.	.	.	.
1.250	0.3431	6.07	V Q	.	.	.	.
1.333	0.3867	6.33	V Q	.	.	.	.
1.417	0.4320	6.57	V Q	.	.	.	.
1.500	0.4788	6.80	V Q	.	.	.	.
1.583	0.5271	7.01	V Q	.	.	.	.
1.667	0.5768	7.21	V Q	.	.	.	.
1.750	0.6277	7.39	V Q	.	.	.	.
1.833	0.6798	7.57	V Q	.	.	.	.
1.917	0.7331	7.73	V Q	.	.	.	.
2.000	0.7873	7.88	V Q	.	.	.	.
2.083	0.8425	8.02	V Q	.	.	.	.
2.167	0.8987	8.15	.V Q	.	.	.	.
2.250	0.9557	8.28	.V Q	.	.	.	.
2.333	1.0135	8.39	.V Q	.	.	.	.
2.417	1.0721	8.50	.V Q	.	.	.	.
2.500	1.1314	8.61	.V Q	.	.	.	.

2.583	1.1913	8.71	.V Q	.	.	.	.
2.667	1.2519	8.80	.V Q	.	.	.	.
2.750	1.3131	8.89	.V Q	.	.	.	.
2.833	1.3749	8.97	.V Q	.	.	.	.
2.917	1.4372	9.05	.V Q	.	.	.	.
3.000	1.5001	9.13	.V Q	.	.	.	.
3.083	1.5634	9.20	.V Q	.	.	.	.
3.167	1.6272	9.27	.V Q	.	.	.	.
3.250	1.6915	9.33	.V Q	.	.	.	.
3.333	1.7562	9.39	. V Q	.	.	.	.
3.417	1.8213	9.46	. V Q	.	.	.	.
3.500	1.8868	9.51	. V Q	.	.	.	.
3.583	1.9527	9.57	. V Q	.	.	.	.
3.667	2.0190	9.62	. V Q	.	.	.	.
3.750	2.0857	9.68	. V Q	.	.	.	.
3.833	2.1527	9.73	. V Q	.	.	.	.
3.917	2.2200	9.78	. V Q	.	.	.	.
4.000	2.2877	9.83	. V Q	.	.	.	.
4.083	2.3556	9.87	. V Q	.	.	.	.
4.167	2.4240	9.92	. V Q	.	.	.	.
4.250	2.4926	9.96	. V Q	.	.	.	.
4.333	2.5615	10.01	. V Q	.	.	.	.
4.417	2.6307	10.05	. VQ	.	.	.	.
4.500	2.7002	10.09	. VQ	.	.	.	.
4.583	2.7700	10.14	. VQ	.	.	.	.
4.667	2.8401	10.18	. VQ	.	.	.	.
4.750	2.9105	10.22	. VQ	.	.	.	.
4.833	2.9812	10.26	. VQ	.	.	.	.
4.917	3.0521	10.30	. VQ	.	.	.	.
5.000	3.1233	10.34	. VQ	.	.	.	.
5.083	3.1948	10.38	. VQ	.	.	.	.
5.167	3.2666	10.42	. VQ	.	.	.	.
5.250	3.3386	10.46	. VQ	.	.	.	.
5.333	3.4109	10.50	. VQ	.	.	.	.
5.417	3.4835	10.54	. Q	.	.	.	.
5.500	3.5564	10.58	. Q	.	.	.	.
5.583	3.6295	10.62	. Q	.	.	.	.
5.667	3.7029	10.66	. Q	.	.	.	.
5.750	3.7766	10.70	. Q	.	.	.	.
5.833	3.8505	10.74	. Q	.	.	.	.
5.917	3.9248	10.78	. Q	.	.	.	.
6.000	3.9993	10.82	. Q	.	.	.	.
6.083	4.0741	10.86	. Q	.	.	.	.
6.167	4.1491	10.90	. Q	.	.	.	.
6.250	4.2245	10.94	. Q	.	.	.	.
6.333	4.3001	10.98	. Q	.	.	.	.
6.417	4.3760	11.02	. QV	.	.	.	.
6.500	4.4522	11.06	. QV	.	.	.	.
6.583	4.5287	11.11	. QV	.	.	.	.
6.667	4.6054	11.15	. QV	.	.	.	.
6.750	4.6825	11.19	. QV	.	.	.	.
6.833	4.7599	11.23	. QV	.	.	.	.
6.917	4.8375	11.28	. Q	.	.	.	.
7.000	4.9155	11.32	. Q	.	.	.	.
7.083	4.9938	11.37	. Q	.	.	.	.

7.167	5.0724	11.41	.	Q	.	.	.	.
7.250	5.1513	11.46	.	Q	.	.	.	.
7.333	5.2305	11.50	.	QV	.	.	.	.
7.417	5.3100	11.55	.	QV	.	.	.	.
7.500	5.3899	11.59	.	QV	.	.	.	.
7.583	5.4701	11.64	.	QV	.	.	.	.
7.667	5.5506	11.69	.	QV	.	.	.	.
7.750	5.6314	11.74	.	QV	.	.	.	.
7.833	5.7126	11.79	.	QV	.	.	.	.
7.917	5.7941	11.84	.	QV	.	.	.	.
8.000	5.8760	11.89	.	QV	.	.	.	.
8.083	5.9582	11.94	.	QV	.	.	.	.
8.167	6.0408	11.99	.	Q V	.	.	.	.
8.250	6.1237	12.04	.	Q V	.	.	.	.
8.333	6.2070	12.10	.	Q V	.	.	.	.
8.417	6.2907	12.15	.	Q V	.	.	.	.
8.500	6.3748	12.20	.	Q V	.	.	.	.
8.583	6.4592	12.26	.	Q V	.	.	.	.
8.667	6.5440	12.32	.	Q V	.	.	.	.
8.750	6.6292	12.37	.	Q V	.	.	.	.
8.833	6.7148	12.43	.	Q V	.	.	.	.
8.917	6.8008	12.49	.	Q V	.	.	.	.
9.000	6.8873	12.55	.	Q V	.	.	.	.
9.083	6.9741	12.61	.	Q V	.	.	.	.
9.167	7.0614	12.67	.	Q V	.	.	.	.
9.250	7.1491	12.73	.	Q V	.	.	.	.
9.333	7.2372	12.80	.	Q V	.	.	.	.
9.417	7.3257	12.86	.	Q V	.	.	.	.
9.500	7.4147	12.92	.	Q V	.	.	.	.
9.583	7.5042	12.99	.	Q V	.	.	.	.
9.667	7.5941	13.06	.	Q V	.	.	.	.
9.750	7.6846	13.13	.	Q V	.	.	.	.
9.833	7.7754	13.20	.	Q V	.	.	.	.
9.917	7.8668	13.27	.	Q V	.	.	.	.
10.000	7.9587	13.34	.	Q V	.	.	.	.
10.083	8.0511	13.41	.	Q V	.	.	.	.
10.167	8.1439	13.49	.	Q V	.	.	.	.
10.250	8.2373	13.56	.	Q V	.	.	.	.
10.333	8.3313	13.64	.	Q V	.	.	.	.
10.417	8.4258	13.72	.	Q V	.	.	.	.
10.500	8.5208	13.80	.	Q V	.	.	.	.
10.583	8.6164	13.88	.	Q V	.	.	.	.
10.667	8.7126	13.96	.	Q V	.	.	.	.
10.750	8.8094	14.05	.	Q V	.	.	.	.
10.833	8.9067	14.14	.	Q V	.	.	.	.
10.917	9.0047	14.23	.	Q V	.	.	.	.
11.000	9.1033	14.32	.	Q V	.	.	.	.
11.083	9.2025	14.41	.	Q V	.	.	.	.
11.167	9.3024	14.50	.	Q V	.	.	.	.
11.250	9.4029	14.60	.	Q V	.	.	.	.
11.333	9.5041	14.70	.	Q .V	.	.	.	.
11.417	9.6060	14.80	.	Q .V	.	.	.	.
11.500	9.7086	14.90	.	Q .V	.	.	.	.
11.583	9.8120	15.00	.	Q .V	.	.	.	.
11.667	9.9160	15.11	.	Q .V	.	.	.	.

```
11.750     10.0209     15.22  .     Q   .V        .         .         .
11.833     10.1265     15.33  .     Q   .V        .         .         .
11.917     10.2329     15.45  .     Q   .V        .         .         .
12.000     10.3401     15.57  .     Q   . V       .         .         .
12.083     10.4479     15.66  .     Q   . V       .         .         .
12.167     10.5551     15.57  .     Q   . V       .         .         .
12.250     10.6604     15.29  .     Q   . V       .         .         .
12.333     10.7634     14.95  .     Q   . V       .         .         .
12.417     10.8642     14.63  .     Q   . V       .         .         .
12.500     10.9630     14.36  .     Q   . V       .         .         .
12.583     11.0602     14.11  .     Q   . V       .         .         .
12.667     11.1559     13.89  .     Q   . V       .         .         .
12.750     11.2503     13.71  .     Q   .  V      .         .         .
12.833     11.3437     13.56  .     Q   .  V      .         .         .
12.917     11.4361     13.43  .    Q    .  V      .         .         .
13.000     11.5279     13.32  .    Q    .  V      .         .         .
13.083     11.6191     13.25  .    Q    .  V      .         .         .
13.167     11.7100     13.19  .    Q    .  V      .         .         .
13.250     11.8006     13.16  .    Q    .  V      .         .         .
13.333     11.8911     13.15  .    Q    .  V      .         .         .
13.417     11.9817     13.15  .    Q    .  V      .         .         .
13.500     12.0725     13.18  .    Q    .   V     .         .         .
13.583     12.1636     13.23  .    Q    .   V     .         .         .
13.667     12.2552     13.30  .    Q    .   V     .         .         .
13.750     12.3475     13.39  .    Q    .   V     .         .         .
13.833     12.4404     13.50  .    Q    .   V     .         .         .
13.917     12.5342     13.62  .     Q   .   V     .         .         .
14.000     12.6291     13.77  .     Q   .   V     .         .         .
14.083     12.7251     13.95  .     Q   .   V     .         .         .
14.167     12.8230     14.21  .     Q   .   V     .         .         .
14.250     12.9234     14.57  .     Q   .    V    .         .         .
14.333     13.0266     14.98  .     Q   .    V    .         .         .
14.417     13.1327     15.41  .     Q   .    V    .         .         .
14.500     13.2418     15.85  .      Q  .    V    .         .         .
14.583     13.3541     16.31  .      Q  .    V    .         .         .
14.667     13.4697     16.79  .      Q  .    V    .         .         .
14.750     13.5888     17.29  .      Q  .    V    .         .         .
14.833     13.7116     17.82  .      Q  .    V    .         .         .
14.917     13.8382     18.39  .       Q .     V   .         .         .
15.000     13.9690     18.99  .       Q .     V   .         .         .
15.083     14.1043     19.65  .       Q .     V   .         .         .
15.167     14.2445     20.35  .        Q.     V   .         .         .
15.250     14.3899     21.12  .        Q.     V   .         .         .
15.333     14.5412     21.97  .        Q.     V   .         .         .
15.417     14.6994     22.97  .         Q      V  .         .         .
15.500     14.8676     24.41  .         Q      V  .         .         .
15.583     15.0494     26.40  .         .Q     V  .         .         .
15.667     15.2471     28.72  .         . Q    V  .         .         .
15.750     15.4623     31.25  .         .  Q   V  .         .         .
15.833     15.6951     33.80  .         .    Q  V .         .         .
15.917     15.9468     36.54  .         .     Q V .         .         .
16.000     16.2250     40.40  .         .      QV .         .         .
16.083     16.5540     47.76  .         .        V.Q       .         .
16.167     16.9867     62.84  .         .        V.      Q  .         .
16.250     17.5221     77.74  .         .         V         .   Q     .
```



20.917	30.5019	14.13	.	Q	.	.	.	V	.
21.000	30.5979	13.94	.	Q	.	.	.	V	.
21.083	30.6927	13.76	.	Q	.	.	.	V	.
21.167	30.7863	13.59	.	Q	.	.	.	V	.
21.250	30.8787	13.42	.	Q	.	.	.	V	.
21.333	30.9700	13.26	.	Q	.	.	.	V	.
21.417	31.0602	13.10	.	Q	.	.	.	V	.
21.500	31.1494	12.95	.	Q	.	.	.	V	.
21.583	31.2376	12.81	.	Q	.	.	.	V	.
21.667	31.3249	12.67	.	Q	.	.	.	V	.
21.750	31.4112	12.53	.	Q	.	.	.	V	.
21.833	31.4966	12.40	.	Q	.	.	.	V	.
21.917	31.5811	12.28	.	Q	.	.	.	V	.
22.000	31.6648	12.15	.	Q	.	.	.	V	.
22.083	31.7477	12.04	.	Q	.	.	.	V	.
22.167	31.8299	11.92	.	Q	.	.	.	V	.
22.250	31.9112	11.81	.	Q	.	.	.	V	.
22.333	31.9918	11.71	.	Q	.	.	.	V	.
22.417	32.0717	11.60	.	Q	.	.	.	V	.
22.500	32.1509	11.50	.	Q	.	.	.	V	.
22.583	32.2295	11.40	.	Q	.	.	.	V	.
22.667	32.3073	11.31	.	Q	.	.	.	V	.
22.750	32.3846	11.22	.	Q	.	.	.	V	.
22.833	32.4612	11.13	.	Q	.	.	.	V	.
22.917	32.5372	11.04	.	Q	.	.	.	V	.
23.000	32.6127	10.95	.	Q	.	.	.	V	.
23.083	32.6875	10.87	.	Q	.	.	.	V	.
23.167	32.7618	10.79	.	Q	.	.	.	V	.
23.250	32.8356	10.71	.	Q	.	.	.	V	.
23.333	32.9088	10.63	.	Q	.	.	.	V	.
23.417	32.9816	10.56	.	Q	.	.	.	V	.
23.500	33.0538	10.49	.	Q	.	.	.	V	.
23.583	33.1255	10.42	.	Q	.	.	.	V	.
23.667	33.1968	10.35	.	Q	.	.	.	V	.
23.750	33.2675	10.28	.	Q	.	.	.	V	.
23.833	33.3379	10.21	.	Q	.	.	.	V	.
23.917	33.4077	10.15	.	Q	.	.	.	V	.
24.000	33.4772	10.08	.	Q	.	.	.	V	.

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

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.0
10%	1325.0
20%	325.0
30%	185.0
40%	130.0
50%	95.0
60%	70.0
70%	55.0
80%	40.0

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             90%                                25.0
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  END OF FLOODSCx ROUTING ANALYSIS
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PROPOSED MITIGATED 100-YEAR REGIONAL ANALYSIS TRIBUTARY TO EX DBL 6X6 POC #1 / NODE 101

LOSS RATE CALCULATIONS

PROJECT REGIONAL
100-YR ANALYSIS
NODE 101 (MITIGATED)

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

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

Problem Descriptions:
Grand Terrace
Barton+Deberry-100yr-Prop
01-13-2022

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 4.75 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	30.16	20.00	32.(AMC II)	0.742	0.789
2	23.43	20.00	69.(AMC II)	0.272	0.896
3	57.55	10.00	32.(AMC II)	0.742	0.870
4	37.59	10.00	69.(AMC II)	0.272	0.923
5	121.44	50.00	32.(AMC II)	0.742	0.548
6	93.70	50.00	69.(AMC II)	0.272	0.816
7	0.84	50.00	75.(AMC II)	0.210	0.869
8	0.91	100.00	50.(AMC II)	0.495	0.390
9	23.00	100.00	69.(AMC II)	0.272	0.681
10	0.56	100.00	79.(AMC II)	0.170	0.832
11	74.01	100.00	83.(AMC II)	0.133	0.902
12	14.07	60.00	32.(AMC II)	0.742	0.468
13	1.07	60.00	69.(AMC II)	0.272	0.789
14	58.07	10.00	32.(AMC II)	0.742	0.870
15	41.55	10.00	69.(AMC II)	0.272	0.923

TOTAL AREA (Acres) = 577.95

AREA-AVERAGED LOSS RATE, $\bar{Fm}$ (in./hr.) = 0.169

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.216

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          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
=============================================================================
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                            Analysis prepared by:



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 Problem Descriptions:
  Grand Terrace
  VanBuren WS- Proposed 100 yr
  2022-03-08
=============================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     4.75 (inches)

    SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
         1         35.19       20.00       32.(AMC II)     0.742       0.789
         2         28.06       20.00       69.(AMC II)     0.272       0.896
         3         29.80       10.00       32.(AMC II)     0.742       0.870
         4         27.82       10.00       69.(AMC II)     0.272       0.923
         5        118.35       50.00       32.(AMC II)     0.742       0.548
         6         62.06       50.00       69.(AMC II)     0.272       0.816
         7          0.77       50.00       75.(AMC II)     0.210       0.869
         8          9.14      100.00       50.(AMC II)     0.495       0.390
         9          4.16      100.00       69.(AMC II)     0.272       0.681
        10         16.79      100.00       79.(AMC II)     0.170       0.832
        11         29.95      100.00       83.(AMC II)     0.133       0.902
        12         20.33       60.00       32.(AMC II)     0.742       0.468
        13          2.38       60.00       69.(AMC II)     0.272       0.789
        14         44.08       10.00       32.(AMC II)     0.742       0.870
        15          1.28       10.00       56.(AMC II)     0.423       0.904
        16         36.16       10.00       69.(AMC II)     0.272       0.923

    TOTAL AREA (Acres) =    466.32

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.190

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.244
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**************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
==========================================================================
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                            Analysis prepared by:




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 Problem Descriptions:
  Grand Terrace
  Proposed Canal
  2022-03-08
==========================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     4.75 (inches)

    SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
         1          0.80       10.00       32.(AMC II)     0.742       0.870
         2          1.95       10.00       69.(AMC II)     0.272       0.923
         3        168.79       50.00       32.(AMC II)     0.742       0.548
         4          7.88       50.00       69.(AMC II)     0.272       0.816
         5          0.52       50.00       75.(AMC II)     0.210       0.869
         6         25.58      100.00       50.(AMC II)     0.495       0.390
         7          0.97      100.00       79.(AMC II)     0.170       0.832
         8        120.61      100.00       83.(AMC II)     0.133       0.902
         9         36.67       60.00       32.(AMC II)     0.742       0.468
        10         34.51       60.00       69.(AMC II)     0.272       0.789
        11         52.37       10.00       32.(AMC II)     0.742       0.870
        12          1.65       10.00       69.(AMC II)     0.272       0.923

    TOTAL AREA (Acres) =    452.30

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.262

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.308
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             F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* GRAND TERRACE GATEWAY                                                 *
* REGIONAL PROPOSED MITIGATED CONDITION - 100 YR                        *
* 2023-03-15                                                            *
 ************************************************************************

  FILE NAME: REGPR100.DAT
  TIME/DATE OF STUDY: 13:30 03/15/2023


************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    303.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     466.320 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.240 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190
         LOW LOSS FRACTION = 0.244
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  2.25
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  4.75
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.979
30-MINUTE FACTOR = 0.979
1-HOUR FACTOR = 0.979
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 34.722

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.308	130.143
2	14.779	703.335
3	38.225	1322.270
4	66.233	1579.474
5	84.561	1033.643
6	93.250	490.001
7	97.213	223.544
8	98.477	71.232
9	99.128	36.719
10	99.651	29.519
11	99.913	14.759
12	100.000	4.920

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 40.7318
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 143.6061

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	250.0	500.0	750.0	1000.0
0.083	0.0060	0.88	Q	.	.	.	.
0.167	0.0446	5.61	Q	.	.	.	.
0.250	0.1446	14.51	Q	.	.	.	.
0.333	0.3179	25.16	VQ	.	.	.	.
0.417	0.5394	32.17	VQ	.	.	.	.
0.500	0.7842	35.54	VQ	.	.	.	.
0.583	1.0400	37.13	VQ	.	.	.	.
0.667	1.2996	37.70	VQ	.	.	.	.
0.750	1.5616	38.04	VQ	.	.	.	.
0.833	1.8256	38.33	VQ	.	.	.	.
0.917	2.0910	38.53	VQ	.	.	.	.
1.000	2.3572	38.66	VQ	.	.	.	.
1.083	2.6242	38.76	VQ	.	.	.	.
1.167	2.8917	38.85	VQ	.	.	.	.
1.250	3.1600	38.95	VQ	.	.	.	.
1.333	3.4290	39.05	VQ	.	.	.	.
1.417	3.6986	39.15	.Q	.	.	.	.
1.500	3.9690	39.25	.Q	.	.	.	.
1.583	4.2400	39.36	.Q	.	.	.	.
1.667	4.5118	39.46	.Q	.	.	.	.
1.750	4.7842	39.56	.Q	.	.	.	.
1.833	5.0574	39.67	.Q	.	.	.	.
1.917	5.3314	39.77	.Q	.	.	.	.
2.000	5.6060	39.88	.Q	.	.	.	.
2.083	5.8814	39.99	.Q	.	.	.	.
2.167	6.1575	40.10	.Q	.	.	.	.
2.250	6.4344	40.20	.Q	.	.	.	.
2.333	6.7121	40.32	.Q	.	.	.	.
2.417	6.9905	40.43	.Q	.	.	.	.
2.500	7.2697	40.54	.QV	.	.	.	.
2.583	7.5496	40.65	.QV	.	.	.	.
2.667	7.8304	40.77	.QV	.	.	.	.
2.750	8.1119	40.88	.QV	.	.	.	.
2.833	8.3943	41.00	.QV	.	.	.	.
2.917	8.6774	41.11	.QV	.	.	.	.
3.000	8.9614	41.23	.QV	.	.	.	.
3.083	9.2462	41.35	.QV	.	.	.	.
3.167	9.5318	41.47	.QV	.	.	.	.
3.250	9.8182	41.59	.QV	.	.	.	.
3.333	10.1055	41.72	.QV	.	.	.	.

```
3.417     10.3937     41.84  .QV       .         .         .         .
3.500     10.6827     41.96  .QV       .         .         .         .
3.583     10.9726     42.09  .Q V      .         .         .         .
3.667     11.2633     42.22  .Q V      .         .         .         .
3.750     11.5550     42.35  .Q V      .         .         .         .
3.833     11.8475     42.48  .Q V      .         .         .         .
3.917     12.1409     42.61  .Q V      .         .         .         .
4.000     12.4353     42.74  .Q V      .         .         .         .
4.083     12.7306     42.87  .Q V      .         .         .         .
4.167     13.0268     43.01  .Q V      .         .         .         .
4.250     13.3239     43.15  .Q V      .         .         .         .
4.333     13.6220     43.28  .Q V      .         .         .         .
4.417     13.9211     43.42  .Q V      .         .         .         .
4.500     14.2211     43.56  .Q V      .         .         .         .
4.583     14.5221     43.71  .Q  V     .         .         .         .
4.667     14.8241     43.85  .Q  V     .         .         .         .
4.750     15.1271     43.99  .Q  V     .         .         .         .
4.833     15.4311     44.14  .Q  V     .         .         .         .
4.917     15.7361     44.29  .Q  V     .         .         .         .
5.000     16.0422     44.44  .Q  V     .         .         .         .
5.083     16.3493     44.59  .Q  V     .         .         .         .
5.167     16.6574     44.74  .Q  V     .         .         .         .
5.250     16.9666     44.90  .Q  V     .         .         .         .
5.333     17.2769     45.06  .Q  V     .         .         .         .
5.417     17.5883     45.21  .Q  V     .         .         .         .
5.500     17.9008     45.37  .Q  V     .         .         .         .
5.583     18.2144     45.53  .Q   V    .         .         .         .
5.667     18.5291     45.70  .Q   V    .         .         .         .
5.750     18.8450     45.86  .Q   V    .         .         .         .
5.833     19.1620     46.03  .Q   V    .         .         .         .
5.917     19.4802     46.20  .Q   V    .         .         .         .
6.000     19.7996     46.37  .Q   V    .         .         .         .
6.083     20.1201     46.54  .Q   V    .         .         .         .
6.167     20.4419     46.72  .Q   V    .         .         .         .
6.250     20.7649     46.90  .Q   V    .         .         .         .
6.333     21.0891     47.08  .Q   V    .         .         .         .
6.417     21.4146     47.26  .Q   V    .         .         .         .
6.500     21.7414     47.45  .Q    V   .         .         .         .
6.583     22.0694     47.63  .Q    V   .         .         .         .
6.667     22.3987     47.82  .Q    V   .         .         .         .
6.750     22.7294     48.01  .Q    V   .         .         .         .
6.833     23.0614     48.21  .Q    V   .         .         .         .
6.917     23.3947     48.40  .Q    V   .         .         .         .
7.000     23.7294     48.60  .Q    V   .         .         .         .
7.083     24.0655     48.80  .Q    V   .         .         .         .
7.167     24.4031     49.01  .Q    V   .         .         .         .
7.250     24.7420     49.21  .Q    V   .         .         .         .
7.333     25.0823     49.42  .Q    V   .         .         .         .
7.417     25.4242     49.63  .Q     V  .         .         .         .
7.500     25.7675     49.85  .Q     V  .         .         .         .
7.583     26.1123     50.07  . Q    V  .         .         .         .
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 7.667     26.4587     50.29  . Q    V  .         .         .         .
 7.750     26.8066     50.51  . Q    V  .         .         .         .
 7.833     27.1560     50.74  . Q    V  .         .         .         .
 7.917     27.5071     50.97  . Q    V  .         .         .         .
 8.000     27.8597     51.21  . Q    V  .         .         .         .
 8.083     28.2140     51.44  . Q    V  .         .         .         .
 8.167     28.5700     51.69  . Q    V  .         .         .         .
 8.250     28.9277     51.93  . Q     V .         .         .         .
 8.333     29.2870     52.18  . Q     V .         .         .         .
 8.417     29.6482     52.43  . Q     V .         .         .         .
 8.500     30.0110     52.69  . Q     V .         .         .         .
 8.583     30.3757     52.95  . Q     V .         .         .         .
 8.667     30.7422     53.22  . Q     V .         .         .         .
 8.750     31.1105     53.48  . Q     V .         .         .         .
 8.833     31.4808     53.76  . Q     V .         .         .         .
 8.917     31.8529     54.03  . Q     V .         .         .         .
 9.000     32.2270     54.32  . Q     V .         .         .         .
 9.083     32.6031     54.60  . Q      V.         .         .         .
 9.167     32.9811     54.90  . Q      V.         .         .         .
 9.250     33.3613     55.19  . Q      V.         .         .         .
 9.333     33.7435     55.50  . Q      V.         .         .         .
 9.417     34.1278     55.80  . Q      V.         .         .         .
 9.500     34.5143     56.12  . Q      V.         .         .         .
 9.583     34.9029     56.43  . Q      V.         .         .         .
 9.667     35.2938     56.76  . Q      V.         .         .         .
 9.750     35.6870     57.09  . Q      V.         .         .         .
 9.833     36.0825     57.43  . Q       V         .         .         .
 9.917     36.4804     57.77  . Q       V         .         .         .
10.000     36.8807     58.12  . Q       V         .         .         .
10.083     37.2834     58.47  . Q       V         .         .         .
10.167     37.6886     58.84  . Q       V         .         .         .
10.250     38.0964     59.21  . Q       V         .         .         .
10.333     38.5068     59.59  . Q       V         .         .         .
10.417     38.9198     59.97  . Q       V         .         .         .
10.500     39.3356     60.37  . Q       V         .         .         .
10.583     39.7541     60.77  . Q       .V        .         .         .
10.667     40.1754     61.18  . Q       .V        .         .         .
10.750     40.5997     61.60  . Q       .V        .         .         .
10.833     41.0269     62.03  . Q       .V        .         .         .
10.917     41.4571     62.47  . Q       .V        .         .         .
11.000     41.8904     62.92  . Q       .V        .         .         .
11.083     42.3269     63.37  . Q       .V        .         .         .
11.167     42.7666     63.85  . Q       .V        .         .         .
11.250     43.2096     64.33  . Q       . V       .         .         .
11.333     43.6561     64.82  . Q       . V       .         .         .
11.417     44.1060     65.32  . Q       . V       .         .         .
11.500     44.5594     65.85  . Q       . V       .         .         .
11.583     45.0165     66.37  . Q       . V       .         .         .
11.667     45.4774     66.92  . Q       . V       .         .         .
11.750     45.9422     67.48  . Q       . V       .         .         .
11.833     46.4109     68.06  . Q       . V       .         .         .
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11.917     46.8836     68.64  . Q       .  V      .         .         .
12.000     47.3605     69.25  . Q       .  V      .         .         .
12.083     47.8372     69.21  . Q       .  V      .         .         .
12.167     48.2937     66.28  . Q       .  V      .         .         .
12.250     48.7083     60.21  . Q       .  V      .         .         .
12.333     49.0723     52.84  . Q       .  V      .         .         .
12.417     49.4045     48.24  .Q        .  V      .         .         .
12.500     49.7241     46.41  .Q        .  V      .         .         .
12.583     50.0405     45.94  .Q        .  V      .         .         .
12.667     50.3592     46.28  .Q        .   V     .         .         .
12.750     50.6816     46.81  .Q        .   V     .         .         .
12.833     51.0082     47.42  .Q        .   V     .         .         .
12.917     51.3396     48.12  .Q        .   V     .         .         .
13.000     51.6765     48.91  .Q        .   V     .         .         .
13.083     52.0191     49.76  .Q        .   V     .         .         .
13.167     52.3680     50.65  . Q       .   V     .         .         .
13.250     52.7231     51.57  . Q       .   V     .         .         .
13.333     53.0850     52.55  . Q       .   V     .         .         .
13.417     53.4538     53.55  . Q       .   V     .         .         .
13.500     53.8300     54.63  . Q       .   V     .         .         .
13.583     54.2139     55.74  . Q       .    V    .         .         .
13.667     54.6060     56.93  . Q       .    V    .         .         .
13.750     55.0066     58.16  . Q       .    V    .         .         .
13.833     55.4163     59.49  . Q       .    V    .         .         .
13.917     55.8355     60.87  . Q       .    V    .         .         .
14.000     56.2649     62.35  . Q       .    V    .         .         .
14.083     56.7072     64.21  . Q       .    V    .         .         .
14.167     57.1722     67.52  . Q       .    V    .         .         .
14.250     57.6706     72.37  . Q       .     V   .         .         .
14.333     58.2078     78.00  .  Q      .     V   .         .         .
14.417     58.7761     82.53  .  Q      .     V   .         .         .
14.500     59.3686     86.02  .  Q      .     V   .         .         .
14.583     59.9819     89.06  .  Q      .     V   .         .         .
14.667     60.6156     92.01  .  Q      .     V   .         .         .
14.750     61.2703     95.07  .  Q      .      V  .         .         .
14.833     61.9483     98.43  .  Q      .      V  .         .         .
14.917     62.6510    102.03  .   Q     .      V  .         .         .
15.000     63.3812    106.03  .   Q     .      V  .         .         .
15.083     64.1415    110.39  .   Q     .      V  .         .         .
15.167     64.9358    115.34  .   Q     .       V .         .         .
15.250     65.7680    120.84  .   Q     .       V .         .         .
15.333     66.6441    127.20  .    Q    .       V .         .         .
15.417     67.5773    135.50  .    Q    .       V .         .         .
15.500     68.6100    149.95  .    Q    .        V.         .         .
15.583     69.7884    171.10  .     Q   .        V.         .         .
15.667     71.1446    196.93  .      Q  .        V.         .         .
15.750     72.6596    219.98  .       Q .         V         .         .
15.833     74.2995    238.11  .        Q.         V         .         .
15.917     76.0668    256.61  .         Q         .V        .         .
16.000     78.0860    293.19  .         .Q        .V        .         .
16.083     80.8543    401.96  .         .     Q   . V       .         .
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16.167     85.3229    648.84  .         .         .  V Q    .         .
16.250     91.2879    866.13  .         .         .    V    .   Q     .
16.333     97.5446    908.47  .         .         .      V  .     Q   .
16.417    102.2131    677.87  .         .         .      QV .         .
16.500    105.2839    445.88  .         .      Q  .        V.         .
16.583    107.3812    304.53  .         . Q       .        V.         .
16.667    108.8317    210.61  .       Q .         .         V         .
16.750    109.9858    167.58  .     Q   .         .         V         .
16.833    110.9742    143.51  .    Q    .         .         V         .
16.917    111.8256    123.62  .   Q     .         .         .V        .
17.000    112.5803    109.58  .   Q     .         .         .V        .
17.083    113.2641     99.29  .  Q      .         .         .V        .
17.167    113.8894     90.79  .  Q      .         .         .V        .
17.250    114.4552     82.16  .  Q      .         .         .V        .
17.333    114.9642     73.91  . Q       .         .         . V       .
17.417    115.4303     67.67  . Q       .         .         . V       .
17.500    115.8656     63.21  . Q       .         .         . V       .
17.583    116.2774     59.79  . Q       .         .         . V       .
17.667    116.6702     57.04  . Q       .         .         . V       .
17.750    117.0465     54.64  . Q       .         .         . V       .
17.833    117.4079     52.48  . Q       .         .         . V       .
17.917    117.7561     50.55  . Q       .         .         . V       .
18.000    118.0922     48.80  .Q        .         .         . V       .
18.083    118.4218     47.87  .Q        .         .         . V       .
18.167    118.7659     49.96  .Q        .         .         .  V      .
18.250    119.1467     55.29  . Q       .         .         .  V      .
18.333    119.5735     61.97  . Q       .         .         .  V      .
18.417    120.0276     65.93  . Q       .         .         .  V      .
18.500    120.4903     67.18  . Q       .         .         .  V      .
18.583    120.9526     67.13  . Q       .         .         .  V      .
18.667    121.4097     66.37  . Q       .         .         .  V      .
18.750    121.8606     65.48  . Q       .         .         .  V      .
18.833    122.3056     64.61  . Q       .         .         .   V     .
18.917    122.7445     63.72  . Q       .         .         .   V     .
19.000    123.1771     62.82  . Q       .         .         .   V     .
19.083    123.6036     61.93  . Q       .         .         .   V     .
19.167    124.0244     61.09  . Q       .         .         .   V     .
19.250    124.4395     60.28  . Q       .         .         .   V     .
19.333    124.8493     59.50  . Q       .         .         .   V     .
19.417    125.2539     58.75  . Q       .         .         .   V     .
19.500    125.6536     58.04  . Q       .         .         .   V     .
19.583    126.0485     57.35  . Q       .         .         .    V    .
19.667    126.4389     56.68  . Q       .         .         .    V    .
19.750    126.8249     56.04  . Q       .         .         .    V    .
19.833    127.2066     55.42  . Q       .         .         .    V    .
19.917    127.5842     54.83  . Q       .         .         .    V    .
20.000    127.9578     54.25  . Q       .         .         .    V    .
20.083    128.3275     53.69  . Q       .         .         .    V    .
20.167    128.6936     53.15  . Q       .         .         .    V    .
20.250    129.0560     52.63  . Q       .         .         .    V    .
20.333    129.4149     52.12  . Q       .         .         .     V   .
```

20.417	129.7705	51.63	. Q	.	.	.	V .
20.500	130.1228	51.15	. Q	.	.	.	V .
20.583	130.4718	50.68	. Q	.	.	.	V .
20.667	130.8178	50.23	. Q	.	.	.	V .
20.750	131.1607	49.79	.Q	.	.	.	V .
20.833	131.5007	49.37	.Q	.	.	.	V .
20.917	131.8379	48.95	.Q	.	.	.	V .
21.000	132.1722	48.55	.Q	.	.	.	V .
21.083	132.5038	48.15	.Q	.	.	.	V .
21.167	132.8328	47.77	.Q	.	.	.	V .
21.250	133.1593	47.40	.Q	.	.	.	V .
21.333	133.4832	47.03	.Q	.	.	.	V .
21.417	133.8046	46.67	.Q	.	.	.	V .
21.500	134.1236	46.33	.Q	.	.	.	V .
21.583	134.4404	45.99	.Q	.	.	.	V .
21.667	134.7548	45.65	.Q	.	.	.	V .
21.750	135.0670	45.33	.Q	.	.	.	V .
21.833	135.3770	45.01	.Q	.	.	.	V .
21.917	135.6848	44.70	.Q	.	.	.	V .
22.000	135.9906	44.40	.Q	.	.	.	V .
22.083	136.2943	44.10	.Q	.	.	.	V .
22.167	136.5960	43.81	.Q	.	.	.	V .
22.250	136.8958	43.52	.Q	.	.	.	V .
22.333	137.1936	43.24	.Q	.	.	.	V .
22.417	137.4895	42.97	.Q	.	.	.	V .
22.500	137.7836	42.70	.Q	.	.	.	V .
22.583	138.0759	42.44	.Q	.	.	.	V .
22.667	138.3664	42.18	.Q	.	.	.	V .
22.750	138.6552	41.93	.Q	.	.	.	V .
22.833	138.9422	41.68	.Q	.	.	.	V .
22.917	139.2276	41.44	.Q	.	.	.	V .
23.000	139.5114	41.20	.Q	.	.	.	V .
23.083	139.7935	40.96	.Q	.	.	.	V .
23.167	140.0740	40.73	.Q	.	.	.	V.
23.250	140.3530	40.51	.Q	.	.	.	V.
23.333	140.6304	40.28	.Q	.	.	.	V.
23.417	140.9063	40.06	.Q	.	.	.	V.
23.500	141.1808	39.85	.Q	.	.	.	V.
23.583	141.4538	39.64	.Q	.	.	.	V.
23.667	141.7253	39.43	.Q	.	.	.	V.
23.750	141.9955	39.23	.Q	.	.	.	V.
23.833	142.2643	39.02	.Q	.	.	.	V.
23.917	142.5317	38.83	.Q	.	.	.	V.
24.000	142.7977	38.63	.Q	.	.	.	V.
24.083	143.0565	37.57	.Q	.	.	.	V.
24.167	143.2814	32.66	.Q	.	.	.	V.
24.250	143.4441	23.62	Q	.	.	.	V.
24.333	143.5329	12.90	Q	.	.	.	V.
24.417	143.5735	5.90	Q	.	.	.	V.
24.500	143.5913	2.58	Q	.	.	.	V.
24.583	143.5986	1.07	Q	.	.	.	V.

```
  24.667    143.6026      0.58  Q         .         .         .        V.
  24.750    143.6049      0.33  Q         .         .         .        V.
  24.833    143.6059      0.13  Q         .         .         .        V.
  24.917    143.6061      0.03  Q         .         .         .         V
-------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated               Duration
       Peak Flow Rate                    (minutes)
   ======================              =========
              0%                        1495.0
             10%                         150.0
             20%                          65.0
             30%                          40.0
             40%                          30.0
             50%                          20.0
             60%                          20.0
             70%                          20.0
             80%                          10.0
             90%                          10.0


*******************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    303.00 IS CODE =   1
-------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
===============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     452.300 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.250 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.262
         LOW LOSS FRACTION = 0.308
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  2.25
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  4.75

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
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5-MINUTE FACTOR = 0.980
30-MINUTE FACTOR = 0.980
1-HOUR FACTOR = 0.980
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 33.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.170	118.706
2	13.591	624.746
3	35.416	1193.805
4	62.732	1494.169
5	82.211	1065.530
6	91.877	528.733
7	96.496	252.663
8	98.279	97.498
9	98.906	34.326
10	99.441	29.221
11	99.776	18.362
12	99.944	9.181
13	100.000	3.060

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 50.1866
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 128.6196

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	225.0	450.0	675.0	900.0
0.083	0.0050	0.73	Q	.	.	.	.
0.167	0.0366	4.58	Q	.	.	.	.
0.250	0.1188	11.94	Q	.	.	.	.
0.333	0.2645	21.16	Q	.	.	.	.
0.417	0.4557	27.77	VQ	.	.	.	.
0.500	0.6698	31.09	VQ	.	.	.	.
0.583	0.8951	32.72	VQ	.	.	.	.
0.667	1.1251	33.40	VQ	.	.	.	.
0.750	1.3572	33.69	VQ	.	.	.	.
0.833	1.5910	33.95	VQ	.	.	.	.
0.917	1.8262	34.15	VQ	.	.	.	.
1.000	2.0624	34.29	VQ	.	.	.	.
1.083	2.2993	34.40	VQ	.	.	.	.
1.167	2.5368	34.48	VQ	.	.	.	.
1.250	2.7749	34.57	VQ	.	.	.	.
1.333	3.0136	34.66	VQ	.	.	.	.
1.417	3.2529	34.75	.Q	.	.	.	.
1.500	3.4928	34.84	.Q	.	.	.	.
1.583	3.7334	34.93	.Q	.	.	.	.
1.667	3.9746	35.02	.Q	.	.	.	.
1.750	4.2164	35.11	.Q	.	.	.	.
1.833	4.4589	35.21	.Q	.	.	.	.
1.917	4.7020	35.30	.Q	.	.	.	.
2.000	4.9458	35.39	.Q	.	.	.	.
2.083	5.1902	35.49	.Q	.	.	.	.
2.167	5.4353	35.59	.Q	.	.	.	.
2.250	5.6810	35.68	.Q	.	.	.	.
2.333	5.9274	35.78	.Q	.	.	.	.
2.417	6.1745	35.88	.Q	.	.	.	.
2.500	6.4223	35.98	.Q	.	.	.	.
2.583	6.6708	36.08	.QV	.	.	.	.
2.667	6.9200	36.18	.QV	.	.	.	.
2.750	7.1698	36.28	.QV	.	.	.	.
2.833	7.4204	36.38	.QV	.	.	.	.
2.917	7.6717	36.49	.QV	.	.	.	.
3.000	7.9237	36.59	.QV	.	.	.	.
3.083	8.1765	36.70	.QV	.	.	.	.
3.167	8.4299	36.81	.QV	.	.	.	.
3.250	8.6842	36.91	.QV	.	.	.	.
3.333	8.9391	37.02	.QV	.	.	.	.

3.417	9.1949	37.13	.QV	.	.	.	.
3.500	9.4514	37.24	.QV	.	.	.	.
3.583	9.7086	37.35	.Q V	.	.	.	.
3.667	9.9667	37.47	.Q V	.	.	.	.
3.750	10.2255	37.58	.Q V	.	.	.	.
3.833	10.4851	37.70	.Q V	.	.	.	.
3.917	10.7455	37.81	.Q V	.	.	.	.
4.000	11.0068	37.93	.Q V	.	.	.	.
4.083	11.2688	38.05	.Q V	.	.	.	.
4.167	11.5317	38.17	.Q V	.	.	.	.
4.250	11.7954	38.29	.Q V	.	.	.	.
4.333	12.0600	38.41	.Q V	.	.	.	.
4.417	12.3254	38.54	.Q V	.	.	.	.
4.500	12.5916	38.66	.Q V	.	.	.	.
4.583	12.8587	38.79	.Q V	.	.	.	.
4.667	13.1267	38.91	.Q V	.	.	.	.
4.750	13.3956	39.04	.Q V	.	.	.	.
4.833	13.6654	39.17	.Q V	.	.	.	.
4.917	13.9361	39.30	.Q V	.	.	.	.
5.000	14.2077	39.44	.Q V	.	.	.	.
5.083	14.4803	39.57	.Q V	.	.	.	.
5.167	14.7537	39.71	.Q V	.	.	.	.
5.250	15.0281	39.84	.Q V	.	.	.	.
5.333	15.3035	39.98	.Q V	.	.	.	.
5.417	15.5798	40.12	.Q V	.	.	.	.
5.500	15.8571	40.27	.Q V	.	.	.	.
5.583	16.1354	40.41	.Q V	.	.	.	.
5.667	16.4147	40.55	.Q V	.	.	.	.
5.750	16.6950	40.70	.Q V	.	.	.	.
5.833	16.9764	40.85	.Q V	.	.	.	.
5.917	17.2587	41.00	.Q V	.	.	.	.
6.000	17.5421	41.15	.Q V	.	.	.	.
6.083	17.8266	41.30	.Q V	.	.	.	.
6.167	18.1121	41.46	.Q V	.	.	.	.
6.250	18.3988	41.62	.Q V	.	.	.	.
6.333	18.6865	41.78	.Q V	.	.	.	.
6.417	18.9753	41.94	.Q V	.	.	.	.
6.500	19.2653	42.10	.Q V	.	.	.	.
6.583	19.5564	42.27	.Q V	.	.	.	.
6.667	19.8486	42.44	.Q V	.	.	.	.
6.750	20.1420	42.60	.Q V	.	.	.	.
6.833	20.4367	42.78	.Q V	.	.	.	.
6.917	20.7324	42.95	.Q V	.	.	.	.
7.000	21.0295	43.13	.Q V	.	.	.	.
7.083	21.3277	43.30	.Q V	.	.	.	.
7.167	21.6272	43.49	.Q V	.	.	.	.
7.250	21.9279	43.67	.Q V	.	.	.	.
7.333	22.2300	43.85	.Q V	.	.	.	.
7.417	22.5333	44.04	.Q V	.	.	.	.
7.500	22.8379	44.23	.Q V	.	.	.	.
7.583	23.1439	44.43	.Q V	.	.	.	.

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 7.667     23.4512     44.62  .Q     V  .         .         .         .
 7.750     23.7599     44.82  .Q     V  .         .         .         .
 7.833     24.0700     45.02  . Q    V  .         .         .         .
 7.917     24.3815     45.23  . Q    V  .         .         .         .
 8.000     24.6944     45.44  . Q    V  .         .         .         .
 8.083     25.0088     45.65  . Q    V  .         .         .         .
 8.167     25.3247     45.86  . Q    V  .         .         .         .
 8.250     25.6420     46.08  . Q    V  .         .         .         .
 8.333     25.9609     46.30  . Q     V .         .         .         .
 8.417     26.2813     46.52  . Q     V .         .         .         .
 8.500     26.6033     46.75  . Q     V .         .         .         .
 8.583     26.9268     46.98  . Q     V .         .         .         .
 8.667     27.2520     47.22  . Q     V .         .         .         .
 8.750     27.5788     47.45  . Q     V .         .         .         .
 8.833     27.9073     47.70  . Q     V .         .         .         .
 8.917     28.2375     47.94  . Q     V .         .         .         .
 9.000     28.5694     48.19  . Q     V .         .         .         .
 9.083     28.9031     48.45  . Q     V .         .         .         .
 9.167     29.2385     48.71  . Q      V.         .         .         .
 9.250     29.5757     48.97  . Q      V.         .         .         .
 9.333     29.9149     49.24  . Q      V.         .         .         .
 9.417     30.2558     49.51  . Q      V.         .         .         .
 9.500     30.5987     49.79  . Q      V.         .         .         .
 9.583     30.9435     50.07  . Q      V.         .         .         .
 9.667     31.2903     50.36  . Q      V.         .         .         .
 9.750     31.6392     50.65  . Q      V.         .         .         .
 9.833     31.9900     50.95  . Q      V.         .         .         .
 9.917     32.3430     51.25  . Q       V         .         .         .
10.000     32.6981     51.56  . Q       V         .         .         .
10.083     33.0554     51.88  . Q       V         .         .         .
10.167     33.4149     52.20  . Q       V         .         .         .
10.250     33.7766     52.53  . Q       V         .         .         .
10.333     34.1407     52.86  . Q       V         .         .         .
10.417     34.5071     53.20  . Q       V         .         .         .
10.500     34.8759     53.55  . Q       V         .         .         .
10.583     35.2472     53.91  . Q       V         .         .         .
10.667     35.6209     54.27  . Q       .V        .         .         .
10.750     35.9973     54.64  . Q       .V        .         .         .
10.833     36.3762     55.02  . Q       .V        .         .         .
10.917     36.7579     55.41  . Q       .V        .         .         .
11.000     37.1422     55.81  . Q       .V        .         .         .
11.083     37.5294     56.21  . Q       .V        .         .         .
11.167     37.9194     56.63  . Q       .V        .         .         .
11.250     38.3124     57.06  . Q       .V        .         .         .
11.333     38.7083     57.50  . Q       . V       .         .         .
11.417     39.1074     57.94  . Q       . V       .         .         .
11.500     39.5096     58.40  . Q       . V       .         .         .
11.583     39.9150     58.87  . Q       . V       .         .         .
11.667     40.3238     59.35  . Q       . V       .         .         .
11.750     40.7360     59.85  . Q       . V       .         .         .
11.833     41.1516     60.36  . Q       . V       .         .         .
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11.917     41.5709     60.88  . Q       . V       .         .         .
12.000     41.9939     61.42  . Q       .  V      .         .         .
12.083     42.4168     61.41  . Q       .  V      .         .         .
12.167     42.8237     59.08  . Q       .  V      .         .         .
12.250     43.1962     54.09  . Q       .  V      .         .         .
12.333     43.5249     47.73  . Q       .  V      .         .         .
12.417     43.8234     43.34  .Q        .  V      .         .         .
12.500     44.1090     41.47  .Q        .  V      .         .         .
12.583     44.3906     40.89  .Q        .  V      .         .         .
12.667     44.6734     41.06  .Q        .  V      .         .         .
12.750     44.9594     41.53  .Q        .  V      .         .         .
12.833     45.2491     42.06  .Q        .   V     .         .         .
12.917     45.5429     42.66  .Q        .   V     .         .         .
13.000     45.8414     43.34  .Q        .   V     .         .         .
13.083     46.1449     44.07  .Q        .   V     .         .         .
13.167     46.4539     44.86  .Q        .   V     .         .         .
13.250     46.7684     45.67  . Q       .   V     .         .         .
13.333     47.0889     46.53  . Q       .   V     .         .         .
13.417     47.4156     47.43  . Q       .   V     .         .         .
13.500     47.7487     48.37  . Q       .   V     .         .         .
13.583     48.0886     49.36  . Q       .   V     .         .         .
13.667     48.4358     50.40  . Q       .    V    .         .         .
13.750     48.7904     51.49  . Q       .    V    .         .         .
13.833     49.1531     52.66  . Q       .    V    .         .         .
13.917     49.5242     53.88  . Q       .    V    .         .         .
14.000     49.9042     55.19  . Q       .    V    .         .         .
14.083     50.2955     56.81  . Q       .    V    .         .         .
14.167     50.7060     59.60  . Q       .    V    .         .         .
14.250     51.1446     63.69  . Q       .    V    .         .         .
14.333     51.6168     68.57  .  Q      .     V   .         .         .
14.417     52.1174     72.68  .  Q      .     V   .         .         .
14.500     52.6399     75.87  .  Q      .     V   .         .         .
14.583     53.1814     78.62  .  Q      .     V   .         .         .
14.667     53.7411     81.27  .  Q      .     V   .         .         .
14.750     54.3193     83.96  .  Q      .     V   .         .         .
14.833     54.9179     86.91  .  Q      .      V  .         .         .
14.917     55.5383     90.08  .   Q     .      V  .         .         .
15.000     56.1829     93.60  .   Q     .      V  .         .         .
15.083     56.8539     97.43  .   Q     .      V  .         .         .
15.167     57.5548    101.77  .   Q     .      V  .         .         .
15.250     58.2888    106.58  .   Q     .       V .         .         .
15.333     59.0612    112.14  .   Q     .       V .         .         .
15.417     59.8832    119.36  .    Q    .       V .         .         .
15.500     60.7899    131.64  .    Q    .       V .         .         .
15.583     61.8204    149.63  .     Q   .        V.         .         .
15.667     63.0054    172.07  .      Q  .        V.         .         .
15.750     64.3333    192.81  .       Q .         V         .         .
15.833     65.7746    209.28  .        Q.         V         .         .
15.917     67.3298    225.81  .         Q         V         .         .
16.000     69.1027    257.42  .         .Q        .V        .         .
16.083     71.5364    353.38  .         .    Q    . V       .         .
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16.167     75.4850    573.33  .         .         .  V Q    .         .
16.250     80.8439    778.11  .         .         .    V    .   Q     .
16.333     86.6464    842.52  .         .         .     V   .      Q  .
16.417     91.1567    654.89  .         .         .       VQ.         .
16.500     94.1315    431.94  .         .       Q.        V.         .
16.583     96.1546    293.76  .         .  Q      .        V.         .
16.667     97.5492    202.49  .       Q .         .        V          .
16.750     98.6027    152.97  .     Q   .         .        V          .
16.833     99.5059    131.15  .    Q    .         .        V          .
16.917    100.2876    113.51  .    Q    .         .        .V         .
17.000    100.9783    100.29  .   Q     .         .        .V         .
17.083    101.5999     90.25  .   Q     .         .        .V         .
17.167    102.1622     81.65  .  Q      .         .        .V         .
17.250    102.6717     73.98  .  Q      .         .        .V         .
17.333    103.1303     66.59  . Q       .         .        . V        .
17.417    103.5491     60.81  . Q       .         .        . V        .
17.500    103.9395     56.68  . Q       .         .        . V        .
17.583    104.3081     53.51  . Q       .         .        . V        .
17.667    104.6591     50.97  . Q       .         .        . V        .
17.750    104.9953     48.81  . Q       .         .        . V        .
17.833    105.3180     46.87  . Q       .         .        . V        .
17.917    105.6288     45.12  . Q       .         .        . V        .
18.000    105.9286     43.54  .Q        .         .        . V        .
18.083    106.2223     42.65  .Q        .         .        .  V       .
18.167    106.5269     44.23  .Q        .         .        .  V       .
18.250    106.8611     48.53  . Q       .         .        .  V       .
18.333    107.2350     54.29  . Q       .         .        .  V       .
18.417    107.6351     58.09  . Q       .         .        .  V       .
18.500    108.0444     59.44  . Q       .         .        .  V       .
18.583    108.4546     59.56  . Q       .         .        .  V       .
18.667    108.8610     59.00  . Q       .         .        .  V       .
18.750    109.2618     58.21  . Q       .         .        .  V       .
18.833    109.6574     57.43  . Q       .         .        .   V      .
18.917    110.0475     56.65  . Q       .         .        .   V      .
19.000    110.4323     55.87  . Q       .         .        .   V      .
19.083    110.8117     55.09  . Q       .         .        .   V      .
19.167    111.1859     54.33  . Q       .         .        .   V      .
19.250    111.5551     53.61  . Q       .         .        .   V      .
19.333    111.9196     52.92  . Q       .         .        .   V      .
19.417    112.2794     52.25  . Q       .         .        .   V      .
19.500    112.6349     51.61  . Q       .         .        .    V     .
19.583    112.9861     50.99  . Q       .         .        .    V     .
19.667    113.3332     50.40  . Q       .         .        .    V     .
19.750    113.6764     49.83  . Q       .         .        .    V     .
19.833    114.0158     49.28  . Q       .         .        .    V     .
19.917    114.3515     48.75  . Q       .         .        .    V     .
20.000    114.6836     48.23  . Q       .         .        .    V     .
20.083    115.0124     47.73  . Q       .         .        .    V     .
20.167    115.3378     47.25  . Q       .         .        .    V     .
20.250    115.6600     46.78  . Q       .         .        .    V     .
20.333    115.9791     46.33  . Q       .         .        .     V    .
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20.417    116.2951     45.89  . Q       .         .         .     V   .
20.500    116.6083     45.47  . Q       .         .         .     V   .
20.583    116.9185     45.05  . Q       .         .         .     V   .
20.667    117.2261     44.65  .Q        .         .         .     V   .
20.750    117.5309     44.26  .Q        .         .         .     V   .
20.833    117.8331     43.88  .Q        .         .         .     V   .
20.917    118.1327     43.51  .Q        .         .         .     V   .
21.000    118.4299     43.15  .Q        .         .         .     V   .
21.083    118.7247     42.80  .Q        .         .         .     V   .
21.167    119.0171     42.46  .Q        .         .         .      V  .
21.250    119.3072     42.12  .Q        .         .         .      V  .
21.333    119.5950     41.80  .Q        .         .         .      V  .
21.417    119.8807     41.48  .Q        .         .         .      V  .
21.500    120.1642     41.17  .Q        .         .         .      V  .
21.583    120.4457     40.87  .Q        .         .         .      V  .
21.667    120.7251     40.57  .Q        .         .         .      V  .
21.750    121.0025     40.28  .Q        .         .         .      V  .
21.833    121.2780     40.00  .Q        .         .         .      V  .
21.917    121.5516     39.72  .Q        .         .         .      V  .
22.000    121.8233     39.45  .Q        .         .         .      V  .
22.083    122.0932     39.19  .Q        .         .         .      V  .
22.167    122.3613     38.93  .Q        .         .         .       V .
22.250    122.6276     38.67  .Q        .         .         .       V .
22.333    122.8923     38.43  .Q        .         .         .       V .
22.417    123.1553     38.18  .Q        .         .         .       V .
22.500    123.4166     37.94  .Q        .         .         .       V .
22.583    123.6763     37.71  .Q        .         .         .       V .
22.667    123.9344     37.48  .Q        .         .         .       V .
22.750    124.1910     37.25  .Q        .         .         .       V .
22.833    124.4460     37.03  .Q        .         .         .       V .
22.917    124.6996     36.82  .Q        .         .         .       V .
23.000    124.9517     36.60  .Q        .         .         .       V .
23.083    125.2024     36.40  .Q        .         .         .       V .
23.167    125.4516     36.19  .Q        .         .         .        V.
23.250    125.6994     35.99  .Q        .         .         .        V.
23.333    125.9459     35.79  .Q        .         .         .        V.
23.417    126.1911     35.60  .Q        .         .         .        V.
23.500    126.4349     35.40  .Q        .         .         .        V.
23.583    126.6774     35.22  .Q        .         .         .        V.
23.667    126.9187     35.03  .Q        .         .         .        V.
23.750    127.1587     34.85  .Q        .         .         .        V.
23.833    127.3975     34.67  .Q        .         .         .        V.
23.917    127.6350     34.49  .Q        .         .         .        V.
24.000    127.8714     34.32  .Q        .         .         .        V.
24.083    128.1016     33.42  .Q        .         .         .        V.
24.167    128.3042     29.42  .Q        .         .         .        V.
24.250    128.4553     21.94  Q         .         .         .        V.
24.333    128.5423     12.65  Q         .         .         .        V.
24.417    128.5839      6.03  Q         .         .         .        V.
24.500    128.6029      2.76  Q         .         .         .        V.
24.583    128.6111      1.19  Q         .         .         .        V.
```

```
  24.667    128.6151      0.58  Q         .         .         .        V.
  24.750    128.6177      0.37  Q         .         .         .        V.
  24.833    128.6190      0.19  Q         .         .         .        V.
  24.917    128.6195      0.08  Q         .         .         .        V.
  25.000    128.6196      0.02  Q         .         .         .         V
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated               Duration
       Peak Flow Rate                    (minutes)
   ======================                =========
             0%                           1500.0
            10%                            140.0
            20%                             65.0
            30%                             40.0
            40%                             30.0
            50%                             25.0
            60%                             20.0
            70%                             15.0
            80%                             10.0
            90%                             10.0


********************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 IS CODE =   7
--------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
================================================================================


********************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    101.00 IS CODE = 3.1
--------------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
================================================================================

                    INFLOW
                  (STREAM 1)
                       |
                       |
                       V                __effective depth
                   -----------          |   (and volume)
                  |           |    |    |
                  |           |    |....V........
                  | detention |<-->|           outflow
                  |   basin   |    |.........________
                   -----------     |    ^    |  \
                       |           |  dead   |   basin outlet
                       V           | storage |
```

OUTFLOW ---------
(STREAM 1)

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

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	5.00	113.00	9.830
3	10.00	192.00	22.020
4	15.00	248.00	36.780
5	20.00	293.00	54.330
6	25.00	332.00	74.840

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(5-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
0.083	0.000	1.61	0.00	0.01	0.1	0.011
0.167	0.000	10.18	0.00	0.04	0.5	0.077
0.250	0.000	26.45	0.00	0.13	1.9	0.247
0.333	0.000	46.32	0.00	0.27	4.5	0.535
0.417	0.000	59.94	0.00	0.45	8.2	0.891
0.500	0.000	66.63	0.00	0.64	12.4	1.265
0.583	0.000	69.85	0.00	0.83	16.6	1.631
0.667	0.000	71.10	0.00	1.01	20.7	1.978
0.750	0.000	71.73	0.00	1.17	24.6	2.302
0.833	0.000	72.29	0.00	1.33	28.2	2.606
0.917	0.000	72.68	0.00	1.47	31.6	2.889
1.000	0.000	72.95	0.00	1.60	34.7	3.152
1.083	0.000	73.15	0.00	1.73	37.6	3.397
1.167	0.000	73.34	0.00	1.84	40.4	3.624
1.250	0.000	73.52	0.00	1.95	42.9	3.835
1.333	0.000	73.71	0.00	2.05	45.2	4.031

1.417	0.000	73.90	0.00	2.14	47.4	4.214
1.500	0.000	74.09	0.00	2.23	49.4	4.384
1.583	0.000	74.29	0.00	2.31	51.3	4.542
1.667	0.000	74.48	0.00	2.39	53.1	4.690
1.750	0.000	74.68	0.00	2.46	54.7	4.827
1.833	0.000	74.87	0.00	2.52	56.2	4.956
1.917	0.000	75.07	0.00	2.58	57.7	5.076
2.000	0.000	75.27	0.00	2.64	59.0	5.188
2.083	0.000	75.48	0.00	2.69	60.2	5.293
2.167	0.000	75.68	0.00	2.74	61.4	5.391
2.250	0.000	75.89	0.00	2.79	62.5	5.483
2.333	0.000	76.10	0.00	2.83	63.5	5.570
2.417	0.000	76.30	0.00	2.87	64.5	5.651
2.500	0.000	76.52	0.00	2.91	65.4	5.728
2.583	0.000	76.73	0.00	2.95	66.3	5.800
2.667	0.000	76.94	0.00	2.98	67.1	5.868
2.750	0.000	77.16	0.00	3.02	67.8	5.932
2.833	0.000	77.38	0.00	3.05	68.5	5.993
2.917	0.000	77.60	0.00	3.08	69.2	6.051
3.000	0.000	77.82	0.00	3.11	69.9	6.105
3.083	0.000	78.05	0.00	3.13	70.5	6.158
3.167	0.000	78.28	0.00	3.16	71.1	6.207
3.250	0.000	78.51	0.00	3.18	71.6	6.255
3.333	0.000	78.74	0.00	3.20	72.2	6.300
3.417	0.000	78.97	0.00	3.23	72.7	6.343
3.500	0.000	79.21	0.00	3.25	73.2	6.385
3.583	0.000	79.44	0.00	3.27	73.6	6.425
3.667	0.000	79.69	0.00	3.29	74.1	6.464
3.750	0.000	79.93	0.00	3.31	74.5	6.501
3.833	0.000	80.17	0.00	3.33	74.9	6.537
3.917	0.000	80.42	0.00	3.34	75.3	6.572
4.000	0.000	80.67	0.00	3.36	75.7	6.606
4.083	0.000	80.92	0.00	3.38	76.1	6.639
4.167	0.000	81.18	0.00	3.39	76.5	6.671
4.250	0.000	81.44	0.00	3.41	76.9	6.703
4.333	0.000	81.70	0.00	3.42	77.2	6.733
4.417	0.000	81.96	0.00	3.44	77.6	6.764
4.500	0.000	82.23	0.00	3.46	77.9	6.793
4.583	0.000	82.49	0.00	3.47	78.3	6.822
4.667	0.000	82.76	0.00	3.48	78.6	6.851
4.750	0.000	83.04	0.00	3.50	78.9	6.879
4.833	0.000	83.31	0.00	3.51	79.2	6.907
4.917	0.000	83.59	0.00	3.53	79.6	6.935
5.000	0.000	83.88	0.00	3.54	79.9	6.963
5.083	0.000	84.16	0.00	3.56	80.2	6.990
5.167	0.000	84.45	0.00	3.57	80.5	7.017
5.250	0.000	84.74	0.00	3.58	80.8	7.044
5.333	0.000	85.04	0.00	3.60	81.1	7.071
5.417	0.000	85.34	0.00	3.61	81.4	7.098
5.500	0.000	85.64	0.00	3.62	81.7	7.125
5.583	0.000	85.94	0.00	3.64	82.1	7.152

5.667	0.000	86.25	0.00	3.65	82.4	7.178
5.750	0.000	86.56	0.00	3.66	82.7	7.205
5.833	0.000	86.88	0.00	3.68	83.0	7.232
5.917	0.000	87.20	0.00	3.69	83.3	7.259
6.000	0.000	87.52	0.00	3.71	83.6	7.286
6.083	0.000	87.85	0.00	3.72	83.9	7.313
6.167	0.000	88.18	0.00	3.73	84.2	7.340
6.250	0.000	88.52	0.00	3.75	84.5	7.368
6.333	0.000	88.86	0.00	3.76	84.9	7.395
6.417	0.000	89.20	0.00	3.78	85.2	7.423
6.500	0.000	89.55	0.00	3.79	85.5	7.451
6.583	0.000	89.90	0.00	3.80	85.8	7.479
6.667	0.000	90.26	0.00	3.82	86.1	7.507
6.750	0.000	90.61	0.00	3.83	86.5	7.536
6.833	0.000	90.98	0.00	3.85	86.8	7.565
6.917	0.000	91.35	0.00	3.86	87.1	7.594
7.000	0.000	91.73	0.00	3.88	87.5	7.623
7.083	0.000	92.10	0.00	3.89	87.8	7.653
7.167	0.000	92.49	0.00	3.91	88.1	7.683
7.250	0.000	92.88	0.00	3.92	88.5	7.713
7.333	0.000	93.28	0.00	3.94	88.8	7.744
7.417	0.000	93.68	0.00	3.95	89.2	7.774
7.500	0.000	94.08	0.00	3.97	89.6	7.806
7.583	0.000	94.49	0.00	3.99	89.9	7.837
7.667	0.000	94.91	0.00	4.00	90.3	7.869
7.750	0.000	95.33	0.00	4.02	90.6	7.902
7.833	0.000	95.77	0.00	4.04	91.0	7.934
7.917	0.000	96.20	0.00	4.05	91.4	7.967
8.000	0.000	96.65	0.00	4.07	91.8	8.001
8.083	0.000	97.09	0.00	4.09	92.2	8.035
8.167	0.000	97.55	0.00	4.10	92.6	8.069
8.250	0.000	98.01	0.00	4.12	93.0	8.104
8.333	0.000	98.48	0.00	4.14	93.4	8.139
8.417	0.000	98.96	0.00	4.16	93.8	8.175
8.500	0.000	99.44	0.00	4.18	94.2	8.211
8.583	0.000	99.93	0.00	4.20	94.6	8.248
8.667	0.000	100.43	0.00	4.21	95.0	8.285
8.750	0.000	100.94	0.00	4.23	95.5	8.323
8.833	0.000	101.46	0.00	4.25	95.9	8.361
8.917	0.000	101.98	0.00	4.27	96.3	8.400
9.000	0.000	102.51	0.00	4.29	96.8	8.439
9.083	0.000	103.05	0.00	4.31	97.2	8.479
9.167	0.000	103.60	0.00	4.33	97.7	8.520
9.250	0.000	104.16	0.00	4.35	98.2	8.561
9.333	0.000	104.73	0.00	4.38	98.7	8.603
9.417	0.000	105.31	0.00	4.40	99.1	8.646
9.500	0.000	105.90	0.00	4.42	99.6	8.689
9.583	0.000	106.50	0.00	4.44	100.1	8.733
9.667	0.000	107.12	0.00	4.46	100.6	8.777
9.750	0.000	107.74	0.00	4.49	101.2	8.823
9.833	0.000	108.38	0.00	4.51	101.7	8.869

9.917	0.000	109.02	0.00	4.53	102.2	8.915
10.000	0.000	109.68	0.00	4.56	102.8	8.963
10.083	0.000	110.35	0.00	4.58	103.3	9.012
10.167	0.000	111.04	0.00	4.61	103.9	9.061
10.250	0.000	111.73	0.00	4.63	104.4	9.111
10.333	0.000	112.45	0.00	4.66	105.0	9.162
10.417	0.000	113.17	0.00	4.69	105.6	9.214
10.500	0.000	113.92	0.00	4.71	106.2	9.267
10.583	0.000	114.68	0.00	4.74	106.8	9.321
10.667	0.000	115.46	0.00	4.77	107.5	9.376
10.750	0.000	116.24	0.00	4.80	108.1	9.432
10.833	0.000	117.06	0.00	4.83	108.8	9.489
10.917	0.000	117.88	0.00	4.86	109.4	9.548
11.000	0.000	118.73	0.00	4.89	110.1	9.607
11.083	0.000	119.59	0.00	4.92	110.8	9.668
11.167	0.000	120.48	0.00	4.95	111.5	9.730
11.250	0.000	121.38	0.00	4.98	112.2	9.793
11.333	0.000	122.32	0.00	5.01	112.9	9.858
11.417	0.000	123.26	0.00	5.04	113.4	9.926
11.500	0.000	124.25	0.00	5.07	113.9	9.997
11.583	0.000	125.24	0.00	5.10	114.3	10.073
11.667	0.000	126.28	0.00	5.13	114.8	10.151
11.750	0.000	127.32	0.00	5.17	115.3	10.234
11.833	0.000	128.41	0.00	5.20	115.9	10.320
11.917	0.000	129.52	0.00	5.24	116.5	10.410
12.000	0.000	130.67	0.00	5.28	117.1	10.504
12.083	0.000	130.62	0.00	5.31	117.7	10.593
12.167	0.000	125.36	0.00	5.33	118.1	10.643
12.250	0.000	114.30	0.00	5.32	118.2	10.616
12.333	0.000	100.57	0.00	5.27	117.7	10.498
12.417	0.000	91.58	0.00	5.20	116.8	10.325
12.500	0.000	87.88	0.00	5.12	115.6	10.134
12.583	0.000	86.83	0.00	5.05	114.4	9.944
12.667	0.000	87.34	0.00	4.97	113.0	9.767
12.750	0.000	88.34	0.00	4.89	111.4	9.609
12.833	0.000	89.48	0.00	4.82	109.7	9.470
12.917	0.000	90.78	0.00	4.76	108.2	9.350
13.000	0.000	92.26	0.00	4.70	106.9	9.249
13.083	0.000	93.83	0.00	4.66	105.8	9.166
13.167	0.000	95.51	0.00	4.63	105.0	9.101
13.250	0.000	97.24	0.00	4.60	104.3	9.052
13.333	0.000	99.08	0.00	4.59	103.9	9.019
13.417	0.000	100.98	0.00	4.58	103.6	9.001
13.500	0.000	103.00	0.00	4.58	103.5	8.998
13.583	0.000	105.10	0.00	4.58	103.5	9.009
13.667	0.000	107.33	0.00	4.60	103.7	9.034
13.750	0.000	109.66	0.00	4.61	104.1	9.073
13.833	0.000	112.15	0.00	4.64	104.6	9.125
13.917	0.000	114.75	0.00	4.67	105.3	9.190
14.000	0.000	117.54	0.00	4.71	106.1	9.269
14.083	0.000	121.02	0.00	4.76	107.1	9.365

14.167	0.000	127.12	0.00	4.83	108.4	9.494
14.250	0.000	136.06	0.00	4.92	110.2	9.672
14.333	0.000	146.57	0.00	5.03	112.3	9.908
14.417	0.000	155.21	0.00	5.15	114.4	10.189
14.500	0.000	161.89	0.00	5.28	116.3	10.502
14.583	0.000	167.68	0.00	5.41	118.5	10.841
14.667	0.000	173.28	0.00	5.56	120.7	11.203
14.750	0.000	179.03	0.00	5.72	123.1	11.588
14.833	0.000	185.35	0.00	5.89	125.7	11.999
14.917	0.000	192.11	0.00	6.07	128.5	12.437
15.000	0.000	199.63	0.00	6.26	131.4	12.907
15.083	0.000	207.82	0.00	6.47	134.6	13.411
15.167	0.000	217.11	0.00	6.69	138.0	13.956
15.250	0.000	227.42	0.00	6.93	141.7	14.547
15.333	0.000	239.35	0.00	7.20	145.7	15.192
15.417	0.000	254.86	0.00	7.50	150.1	15.914
15.500	0.000	281.60	0.00	7.85	155.2	16.784
15.583	0.000	320.73	0.00	8.30	161.6	17.880
15.667	0.000	369.00	0.00	8.87	169.6	19.253
15.750	0.000	412.79	0.00	9.52	179.3	20.861
15.833	0.000	447.38	0.00	10.21	189.4	22.638
15.917	0.000	482.42	0.00	10.87	198.1	24.596
16.000	0.000	550.61	0.00	11.68	206.3	26.968
16.083	0.000	755.34	0.00	12.93	217.8	30.670
16.167	0.000	1222.17	0.00	15.19	237.3	37.453
16.250	0.000	1644.24	0.00	17.90	261.9	46.973
16.333	0.000	1750.99	0.00	20.67	286.2	57.061
16.417	0.000	1332.75	0.00	22.39	304.9	64.140
16.500	0.000	877.82	0.00	23.34	315.3	68.014
16.583	0.000	598.30	0.00	23.80	320.8	69.925
16.667	0.000	413.10	0.00	23.95	323.2	70.543
16.750	0.000	320.55	0.00	23.95	323.8	70.521
16.833	0.000	274.66	0.00	23.87	323.5	70.185
16.917	0.000	237.13	0.00	23.72	322.6	69.596
17.000	0.000	209.87	0.00	23.53	321.3	68.829
17.083	0.000	189.53	0.00	23.32	319.7	67.932
17.167	0.000	172.44	0.00	23.07	317.9	66.930
17.250	0.000	156.14	0.00	22.80	315.9	65.830
17.333	0.000	140.50	0.00	22.51	313.7	64.637
17.417	0.000	128.48	0.00	22.21	311.4	63.377
17.500	0.000	119.89	0.00	21.89	309.0	62.075
17.583	0.000	113.30	0.00	21.56	306.5	60.745
17.667	0.000	108.01	0.00	21.23	303.9	59.396
17.750	0.000	103.45	0.00	20.90	301.3	58.033
17.833	0.000	99.35	0.00	20.57	298.7	56.659
17.917	0.000	95.66	0.00	20.23	296.1	55.279
18.000	0.000	92.34	0.00	19.88	293.3	53.895
18.083	0.000	90.52	0.00	19.48	290.1	52.520
18.167	0.000	94.19	0.00	19.11	286.7	51.194
18.250	0.000	103.82	0.00	18.75	283.4	49.958
18.333	0.000	116.26	0.00	18.43	280.3	48.828

18.417	0.000	124.02	0.00	18.13	277.5	47.770
18.500	0.000	126.62	0.00	17.84	274.9	46.749
18.583	0.000	126.69	0.00	17.55	272.3	45.747
18.667	0.000	125.37	0.00	17.27	269.7	44.753
18.750	0.000	123.69	0.00	16.99	267.2	43.764
18.833	0.000	122.05	0.00	16.71	264.6	42.782
18.917	0.000	120.37	0.00	16.43	262.1	41.806
19.000	0.000	118.68	0.00	16.16	259.6	40.835
19.083	0.000	117.02	0.00	15.88	257.2	39.870
19.167	0.000	115.42	0.00	15.61	254.7	38.911
19.250	0.000	113.89	0.00	15.34	252.2	37.958
19.333	0.000	112.42	0.00	15.07	249.8	37.012
19.417	0.000	111.00	0.00	14.76	247.0	36.075
19.500	0.000	109.65	0.00	14.45	243.6	35.153
19.583	0.000	108.34	0.00	14.14	240.1	34.246
19.667	0.000	107.08	0.00	13.84	236.7	33.353
19.750	0.000	105.87	0.00	13.54	233.3	32.475
19.833	0.000	104.70	0.00	13.25	230.0	31.612
19.917	0.000	103.57	0.00	12.96	226.8	30.763
20.000	0.000	102.48	0.00	12.68	223.6	29.929
20.083	0.000	101.42	0.00	12.40	220.5	29.110
20.167	0.000	100.40	0.00	12.13	217.4	28.304
20.250	0.000	99.41	0.00	11.86	214.3	27.512
20.333	0.000	98.45	0.00	11.60	211.4	26.735
20.417	0.000	97.52	0.00	11.34	208.4	25.971
20.500	0.000	96.61	0.00	11.08	205.6	25.221
20.583	0.000	95.74	0.00	10.83	202.7	24.484
20.667	0.000	94.88	0.00	10.59	200.0	23.760
20.750	0.000	94.05	0.00	10.35	197.3	23.049
20.833	0.000	93.25	0.00	10.11	194.6	22.351
20.917	0.000	92.46	0.00	9.86	191.5	21.669
21.000	0.000	91.70	0.00	9.59	187.6	21.009
21.083	0.000	90.95	0.00	9.32	183.4	20.372
21.167	0.000	90.23	0.00	9.07	179.3	19.759
21.250	0.000	89.52	0.00	8.83	175.4	19.167
21.333	0.000	88.83	0.00	8.60	171.7	18.596
21.417	0.000	88.15	0.00	8.37	168.0	18.046
21.500	0.000	87.50	0.00	8.15	164.5	17.516
21.583	0.000	86.85	0.00	7.94	161.2	17.004
21.667	0.000	86.22	0.00	7.74	157.9	16.510
21.750	0.000	85.61	0.00	7.54	154.8	16.034
21.833	0.000	85.01	0.00	7.36	151.7	15.575
21.917	0.000	84.42	0.00	7.17	148.8	15.132
22.000	0.000	83.85	0.00	7.00	146.0	14.704
22.083	0.000	83.29	0.00	6.83	143.2	14.291
22.167	0.000	82.74	0.00	6.67	140.6	13.892
22.250	0.000	82.20	0.00	6.51	138.1	13.507
22.333	0.000	81.67	0.00	6.36	135.6	13.136
22.417	0.000	81.15	0.00	6.21	133.3	12.777
22.500	0.000	80.65	0.00	6.07	131.0	12.430
22.583	0.000	80.15	0.00	5.93	128.8	12.095

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          22.667        0.000    79.66     0.00      5.80    126.6     11.772
          22.750        0.000    79.18     0.00      5.67    124.6     11.459
          22.833        0.000    78.72     0.00      5.54    122.6     11.157
          22.917        0.000    78.25     0.00      5.42    120.7     10.865
          23.000        0.000    77.80     0.00      5.31    118.8     10.583
          23.083        0.000    77.36     0.00      5.20    117.0     10.310
          23.167        0.000    76.92     0.00      5.09    115.3     10.046
          23.250        0.000    76.49     0.00      4.98    113.5      9.791
          23.333        0.000    76.07     0.00      4.86    111.2      9.550
          23.417        0.000    75.66     0.00      4.74    108.5      9.323
          23.500        0.000    75.25     0.00      4.63    106.0      9.112
          23.583        0.000    74.85     0.00      4.53    103.6      8.914
          23.667        0.000    74.46     0.00      4.44    101.4      8.728
          23.750        0.000    74.08     0.00      4.35     99.3      8.554
          23.833        0.000    73.70     0.00      4.27     97.4      8.391
          23.917        0.000    73.32     0.00      4.19     95.6      8.238
--------------------------------------------------------------------------------
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =    272.226 AF
    BASIN  STORAGE =      0.000 AF (WITH      0.000 AF INITIALLY FILLED)
    OUTFLOW VOLUME =    272.226 AF
    LOSS    VOLUME =      0.000 AF


********************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    100.00 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
================================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #3)

         WATERSHED AREA =     577.950 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.210 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.169
         LOW LOSS FRACTION = 0.216
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.41
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.85
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  2.25
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  4.75

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
```

5-MINUTE FACTOR = 0.974
30-MINUTE FACTOR = 0.974
1-HOUR FACTOR = 0.974
3-HOUR FACTOR = 0.996
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 39.683

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.872	200.764
2	19.165	1138.762
3	48.437	2045.999
4	76.826	1984.323
5	90.830	978.816
6	96.604	403.564
7	98.430	127.619
8	99.173	51.923
9	99.669	34.688
10	99.917	17.344
11	100.000	5.781

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 44.7420
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 183.6693

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	325.0	650.0	975.0	1300.0
0.083	0.0096	1.40	Q	.	.	.	.
0.167	0.0740	9.34	Q	.	.	.	.
0.250	0.2367	23.63	Q	.	.	.	.
0.333	0.4952	37.52	VQ	.	.	.	.
0.417	0.8012	44.43	VQ	.	.	.	.
0.500	1.1273	47.36	VQ	.	.	.	.
0.583	1.4604	48.36	VQ	.	.	.	.
0.667	1.7968	48.84	VQ	.	.	.	.
0.750	2.1356	49.20	VQ	.	.	.	.
0.833	2.4762	49.45	VQ	.	.	.	.
0.917	2.8178	49.61	VQ	.	.	.	.
1.000	3.1603	49.73	VQ	.	.	.	.
1.083	3.5037	49.86	VQ	.	.	.	.
1.167	3.8480	49.99	VQ	.	.	.	.
1.250	4.1931	50.11	VQ	.	.	.	.
1.333	4.5391	50.24	VQ	.	.	.	.
1.417	4.8860	50.37	.Q	.	.	.	.
1.500	5.2338	50.50	.Q	.	.	.	.
1.583	5.5825	50.63	.Q	.	.	.	.
1.667	5.9321	50.77	.Q	.	.	.	.
1.750	6.2827	50.90	.Q	.	.	.	.
1.833	6.6342	51.03	.Q	.	.	.	.
1.917	6.9866	51.17	.Q	.	.	.	.
2.000	7.3399	51.31	.Q	.	.	.	.
2.083	7.6942	51.45	.Q	.	.	.	.
2.167	8.0495	51.59	.Q	.	.	.	.
2.250	8.4057	51.73	.Q	.	.	.	.
2.333	8.7630	51.87	.Q	.	.	.	.
2.417	9.1212	52.01	.Q	.	.	.	.
2.500	9.4804	52.16	.QV	.	.	.	.
2.583	9.8406	52.30	.QV	.	.	.	.
2.667	10.2018	52.45	.QV	.	.	.	.
2.750	10.5640	52.60	.QV	.	.	.	.
2.833	10.9273	52.75	.QV	.	.	.	.
2.917	11.2916	52.90	.QV	.	.	.	.
3.000	11.6570	53.05	.QV	.	.	.	.
3.083	12.0234	53.20	.QV	.	.	.	.
3.167	12.3909	53.36	.QV	.	.	.	.
3.250	12.7594	53.51	.QV	.	.	.	.
3.333	13.1291	53.67	.QV	.	.	.	.

3.417	13.4998	53.83	.QV	.	.	.	.
3.500	13.8717	54.00	.Q V	.	.	.	.
3.583	14.2447	54.16	.Q V	.	.	.	.
3.667	14.6188	54.32	.Q V	.	.	.	.
3.750	14.9940	54.49	.Q V	.	.	.	.
3.833	15.3705	54.66	.Q V	.	.	.	.
3.917	15.7480	54.82	.Q V	.	.	.	.
4.000	16.1268	55.00	.Q V	.	.	.	.
4.083	16.5068	55.17	.Q V	.	.	.	.
4.167	16.8879	55.34	.Q V	.	.	.	.
4.250	17.2703	55.52	.Q V	.	.	.	.
4.333	17.6538	55.70	.Q V	.	.	.	.
4.417	18.0387	55.88	.Q V	.	.	.	.
4.500	18.4247	56.06	.Q V	.	.	.	.
4.583	18.8121	56.24	.Q V	.	.	.	.
4.667	19.2007	56.43	.Q V	.	.	.	.
4.750	19.5906	56.61	.Q V	.	.	.	.
4.833	19.9818	56.80	.Q V	.	.	.	.
4.917	20.3743	56.99	.Q V	.	.	.	.
5.000	20.7681	57.19	.Q V	.	.	.	.
5.083	21.1633	57.38	.Q V	.	.	.	.
5.167	21.5599	57.58	.Q V	.	.	.	.
5.250	21.9578	57.78	.Q V	.	.	.	.
5.333	22.3571	57.98	.Q V	.	.	.	.
5.417	22.7579	58.18	.Q V	.	.	.	.
5.500	23.1600	58.39	.Q V	.	.	.	.
5.583	23.5636	58.60	.Q V	.	.	.	.
5.667	23.9686	58.81	.Q V	.	.	.	.
5.750	24.3751	59.02	.Q V	.	.	.	.
5.833	24.7831	59.24	.Q V	.	.	.	.
5.917	25.1926	59.46	.Q V	.	.	.	.
6.000	25.6037	59.68	.Q V	.	.	.	.
6.083	26.0162	59.90	.Q V	.	.	.	.
6.167	26.4304	60.13	.Q V	.	.	.	.
6.250	26.8461	60.36	.Q V	.	.	.	.
6.333	27.2634	60.59	.Q V	.	.	.	.
6.417	27.6823	60.83	.Q V	.	.	.	.
6.500	28.1029	61.07	.Q V	.	.	.	.
6.583	28.5251	61.31	.Q V	.	.	.	.
6.667	28.9490	61.55	.Q V	.	.	.	.
6.750	29.3746	61.80	.Q V	.	.	.	.
6.833	29.8019	62.05	.Q V	.	.	.	.
6.917	30.2310	62.30	.Q V	.	.	.	.
7.000	30.6618	62.56	.Q V	.	.	.	.
7.083	31.0945	62.82	.Q V	.	.	.	.
7.167	31.5289	63.08	.Q V	.	.	.	.
7.250	31.9652	63.35	.Q V	.	.	.	.
7.333	32.4033	63.62	.Q V	.	.	.	.
7.417	32.8434	63.89	.Q V	.	.	.	.
7.500	33.2853	64.17	.Q V	.	.	.	.
7.583	33.7292	64.45	.Q V	.	.	.	.

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 7.667     34.1751     64.74  .Q     V  .         .         .         .
 7.750     34.6229     65.03  . Q    V  .         .         .         .
 7.833     35.0728     65.32  . Q    V  .         .         .         .
 7.917     35.5247     65.62  . Q    V  .         .         .         .
 8.000     35.9788     65.93  . Q    V  .         .         .         .
 8.083     36.4349     66.23  . Q    V  .         .         .         .
 8.167     36.8932     66.55  . Q     V .         .         .         .
 8.250     37.3537     66.86  . Q     V .         .         .         .
 8.333     37.8164     67.18  . Q     V .         .         .         .
 8.417     38.2813     67.51  . Q     V .         .         .         .
 8.500     38.7486     67.84  . Q     V .         .         .         .
 8.583     39.2181     68.18  . Q     V .         .         .         .
 8.667     39.6900     68.52  . Q     V .         .         .         .
 8.750     40.1643     68.87  . Q     V .         .         .         .
 8.833     40.6410     69.22  . Q     V .         .         .         .
 8.917     41.1202     69.58  . Q     V .         .         .         .
 9.000     41.6019     69.95  . Q      V.         .         .         .
 9.083     42.0862     70.31  . Q      V.         .         .         .
 9.167     42.5731     70.70  . Q      V.         .         .         .
 9.250     43.0626     71.08  . Q      V.         .         .         .
 9.333     43.5548     71.47  . Q      V.         .         .         .
 9.417     44.0497     71.86  . Q      V.         .         .         .
 9.500     44.5475     72.27  . Q      V.         .         .         .
 9.583     45.0480     72.68  . Q      V.         .         .         .
 9.667     45.5515     73.10  . Q      V.         .         .         .
 9.750     46.0579     73.53  . Q       V         .         .         .
 9.833     46.5673     73.97  . Q       V         .         .         .
 9.917     47.0797     74.41  . Q       V         .         .         .
10.000     47.5953     74.86  . Q       V         .         .         .
10.083     48.1141     75.32  . Q       V         .         .         .
10.167     48.6361     75.80  . Q       V         .         .         .
10.250     49.1614     76.27  . Q       V         .         .         .
10.333     49.6901     76.77  . Q       V         .         .         .
10.417     50.2221     77.26  . Q       V         .         .         .
10.500     50.7578     77.77  . Q       .V        .         .         .
10.583     51.2970     78.29  . Q       .V        .         .         .
10.667     51.8399     78.83  . Q       .V        .         .         .
10.750     52.3865     79.37  . Q       .V        .         .         .
10.833     52.9370     79.93  . Q       .V        .         .         .
10.917     53.4913     80.49  . Q       .V        .         .         .
11.000     54.0497     81.08  . Q       .V        .         .         .
11.083     54.6121     81.67  . Q       .V        .         .         .
11.167     55.1788     82.28  . Q       . V       .         .         .
11.250     55.7498     82.90  . Q       . V       .         .         .
11.333     56.3251     83.55  . Q       . V       .         .         .
11.417     56.9050     84.19  . Q       . V       .         .         .
11.500     57.4895     84.87  . Q       . V       .         .         .
11.583     58.0787     85.55  . Q       . V       .         .         .
11.667     58.6728     86.27  . Q       . V       .         .         .
11.750     59.2719     86.99  . Q       . V       .         .         .
11.833     59.8762     87.74  . Q       .  V      .         .         .
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11.917     60.4857     88.50  . Q       .  V      .         .         .
12.000     61.1006     89.29  . Q       .  V      .         .         .
12.083     61.7139     89.04  . Q       .  V      .         .         .
12.167     62.2916     83.89  . Q       .  V      .         .         .
12.250     62.8011     73.97  . Q       .  V      .         .         .
12.333     63.2445     64.39  .Q        .  V      .         .         .
12.417     63.6582     60.07  .Q        .  V      .         .         .
12.500     64.0632     58.81  .Q        .  V      .         .         .
12.583     64.4696     59.00  .Q        .   V     .         .         .
12.667     64.8803     59.65  .Q        .   V     .         .         .
12.750     65.2963     60.40  .Q        .   V     .         .         .
12.833     65.7184     61.29  .Q        .   V     .         .         .
12.917     66.1473     62.27  .Q        .   V     .         .         .
13.000     66.5835     63.34  .Q        .   V     .         .         .
13.083     67.0274     64.44  .Q        .   V     .         .         .
13.167     67.4792     65.61  . Q       .   V     .         .         .
13.250     67.9393     66.81  . Q       .   V     .         .         .
13.333     68.4083     68.09  . Q       .   V     .         .         .
13.417     68.8863     69.41  . Q       .    V    .         .         .
13.500     69.3740     70.82  . Q       .    V    .         .         .
13.583     69.8717     72.27  . Q       .    V    .         .         .
13.667     70.3802     73.83  . Q       .    V    .         .         .
13.750     70.8998     75.45  . Q       .    V    .         .         .
13.833     71.4314     77.19  . Q       .    V    .         .         .
13.917     71.9754     78.99  . Q       .    V    .         .         .
14.000     72.5329     80.95  . Q       .    V    .         .         .
14.083     73.1079     83.49  . Q       .    V    .         .         .
14.167     73.7181     88.60  . Q       .     V   .         .         .
14.250     74.3802     96.13  . Q       .     V   .         .         .
14.333     75.0950    103.79  .  Q      .     V   .         .         .
14.417     75.8464    109.10  .  Q      .     V   .         .         .
14.500     76.6265    113.27  .  Q      .     V   .         .         .
14.583     77.4318    116.93  .  Q      .     V   .         .         .
14.667     78.2635    120.76  .  Q      .      V  .         .         .
14.750     79.1229    124.79  .  Q      .      V  .         .         .
14.833     80.0129    129.22  .  Q      .      V  .         .         .
14.917     80.9355    133.97  .   Q     .      V  .         .         .
15.000     81.8948    139.29  .   Q     .      V  .         .         .
15.083     82.8941    145.10  .   Q     .       V .         .         .
15.167     83.9392    151.74  .   Q     .       V .         .         .
15.250     85.0349    159.10  .   Q     .       V .         .         .
15.333     86.1896    167.67  .    Q    .       V .         .         .
15.417     87.4228    179.05  .    Q    .        V.         .         .
15.500     88.8013    200.16  .     Q   .        V.         .         .
15.583     90.3917    230.92  .      Q  .        V.         .         .
15.667     92.2151    264.77  .       Q .         V         .         .
15.750     94.2296    292.50  .        Q.         V         .         .
15.833     96.3884    313.45  .        Q.         V         .         .
15.917     98.6976    335.30  .         Q         .V        .         .
16.000    101.3795    389.41  .         .Q        . V       .         .
16.083    105.1971    554.31  .         .      Q  . V       .         .
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16.167    111.6066    930.67  .         .         .   V   Q .         .
16.250    119.9598   1212.88  .         .         .     V   .       Q  .
16.333    127.6750   1120.25  .         .         .      V  .   Q      .
16.417    132.6774    726.35  .         .         . Q     V .          .
16.500    135.9011    468.08  .         .   Q     .        V.          .
16.583    138.0587    313.29  .        Q.         .         V          .
16.667    139.6868    236.40  .      Q  .         .         V          .
16.750    141.0379    196.18  .     Q   .         .         V          .
16.833    142.1931    167.73  .    Q    .         .         V          .
16.917    143.2133    148.13  .   Q     .         .         .V         .
17.000    144.1381    134.28  .   Q     .         .         .V         .
17.083    144.9928    124.11  .  Q      .         .         .V         .
17.167    145.7735    113.36  .  Q      .         .         .V         .
17.250    146.4740    101.70  .  Q      .         .         .V         .
17.333    147.1026     91.27  . Q       .         .         . V        .
17.417    147.6823     84.18  . Q       .         .         . V        .
17.500    148.2275     79.15  . Q       .         .         . V        .
17.583    148.7460     75.29  . Q       .         .         . V        .
17.667    149.2419     72.00  . Q       .         .         . V        .
17.750    149.7177     69.07  . Q       .         .         . V        .
17.833    150.1753     66.46  . Q       .         .         . V        .
17.917    150.6168     64.09  .Q        .         .         . V        .
18.000    151.0434     61.94  .Q        .         .         . V        .
18.083    151.4636     61.02  .Q        .         .         . V        .
18.167    151.9124     65.16  . Q       .         .         .  V       .
18.250    152.4232     74.16  . Q       .         .         .  V       .
18.333    152.9941     82.90  . Q       .         .         .  V       .
18.417    153.5892     86.41  . Q       .         .         .  V       .
18.500    154.1881     86.96  . Q       .         .         .  V       .
18.583    154.7813     86.14  . Q       .         .         .  V       .
18.667    155.3666     84.99  . Q       .         .         .  V       .
18.750    155.9439     83.82  . Q       .         .         .  V       .
18.833    156.5130     82.63  . Q       .         .         .   V      .
18.917    157.0739     81.44  . Q       .         .         .   V      .
19.000    157.6267     80.27  . Q       .         .         .   V      .
19.083    158.1719     79.16  . Q       .         .         .   V      .
19.167    158.7097     78.09  . Q       .         .         .   V      .
19.250    159.2404     77.06  . Q       .         .         .   V      .
19.333    159.7644     76.08  . Q       .         .         .   V      .
19.417    160.2819     75.14  . Q       .         .         .   V      .
19.500    160.7932     74.23  . Q       .         .         .    V     .
19.583    161.2984     73.36  . Q       .         .         .    V     .
19.667    161.7978     72.52  . Q       .         .         .    V     .
19.750    162.2917     71.71  . Q       .         .         .    V     .
19.833    162.7801     70.92  . Q       .         .         .    V     .
19.917    163.2633     70.16  . Q       .         .         .    V     .
20.000    163.7415     69.43  . Q       .         .         .    V     .
20.083    164.2148     68.73  . Q       .         .         .    V     .
20.167    164.6834     68.04  . Q       .         .         .    V     .
20.250    165.1475     67.38  . Q       .         .         .    V     .
20.333    165.6070     66.73  . Q       .         .         .     V    .
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20.417	166.0623	66.11	. Q	.	.	.	V .
20.500	166.5134	65.50	. Q	.	.	.	V .
20.583	166.9604	64.91	.Q	.	.	.	V .
20.667	167.4035	64.34	.Q	.	.	.	V .
20.750	167.8428	63.78	.Q	.	.	.	V .
20.833	168.2783	63.24	.Q	.	.	.	V .
20.917	168.7102	62.71	.Q	.	.	.	V .
21.000	169.1385	62.19	.Q	.	.	.	V .
21.083	169.5634	61.69	.Q	.	.	.	V .
21.167	169.9849	61.20	.Q	.	.	.	V .
21.250	170.4032	60.73	.Q	.	.	.	V .
21.333	170.8182	60.26	.Q	.	.	.	V .
21.417	171.2301	59.81	.Q	.	.	.	V .
21.500	171.6390	59.37	.Q	.	.	.	V .
21.583	172.0449	58.93	.Q	.	.	.	V .
21.667	172.4478	58.51	.Q	.	.	.	V .
21.750	172.8479	58.10	.Q	.	.	.	V .
21.833	173.2453	57.69	.Q	.	.	.	V .
21.917	173.6399	57.30	.Q	.	.	.	V .
22.000	174.0318	56.91	.Q	.	.	.	V .
22.083	174.4212	56.53	.Q	.	.	.	V .
22.167	174.8080	56.16	.Q	.	.	.	V .
22.250	175.1922	55.80	.Q	.	.	.	V .
22.333	175.5741	55.44	.Q	.	.	.	V .
22.417	175.9535	55.09	.Q	.	.	.	V .
22.500	176.3306	54.75	.Q	.	.	.	V .
22.583	176.7054	54.42	.Q	.	.	.	V .
22.667	177.0779	54.09	.Q	.	.	.	V .
22.750	177.4481	53.76	.Q	.	.	.	V .
22.833	177.8162	53.45	.Q	.	.	.	V .
22.917	178.1822	53.14	.Q	.	.	.	V .
23.000	178.5460	52.83	.Q	.	.	.	V .
23.083	178.9078	52.53	.Q	.	.	.	V .
23.167	179.2676	52.24	.Q	.	.	.	V.
23.250	179.6254	51.95	.Q	.	.	.	V.
23.333	179.9812	51.66	.Q	.	.	.	V.
23.417	180.3351	51.39	.Q	.	.	.	V.
23.500	180.6871	51.11	.Q	.	.	.	V.
23.583	181.0372	50.84	.Q	.	.	.	V.
23.667	181.3855	50.58	.Q	.	.	.	V.
23.750	181.7320	50.31	.Q	.	.	.	V.
23.833	182.0768	50.06	.Q	.	.	.	V.
23.917	182.4198	49.81	.Q	.	.	.	V.
24.000	182.7611	49.56	.Q	.	.	.	V.
24.083	183.0911	47.91	.Q	.	.	.	V.
24.167	183.3649	39.75	.Q	.	.	.	V.
24.250	183.5392	25.31	Q	.	.	.	V.
24.333	183.6175	11.37	Q	.	.	.	V.
24.417	183.6485	4.50	Q	.	.	.	V.
24.500	183.6600	1.67	Q	.	.	.	V.
24.583	183.6653	0.77	Q	.	.	.	V.

```
  24.667    183.6681      0.41  Q         .         .         .        V.
  24.750    183.6692      0.16  Q         .         .         .        V.
  24.833    183.6694      0.04  Q         .         .         .         V
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated                Duration
       Peak Flow Rate                     (minutes)
   ======================                 =========
              0%                           1490.0
             10%                            145.0
             20%                             60.0
             30%                             35.0
             40%                             25.0
             50%                             20.0
             60%                             15.0
             70%                             15.0
             80%                             10.0
             90%                             10.0


********************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 5.2
--------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
================================================================================

         THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
         TO ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE
         INTERVALS(Reference: the National Engineering Handbook,
         Hydrology, Chapter 17, page 17-52, August,1972,
         U.S. Department of Commerce).


         ASSUMED REGULAR CHANNEL INFORMATION:
           BASEWIDTH(FT) =   30.00     CHANNEL Z =  2.00
           UPSTREAM ELEVATION(FT) =     938.00
           DOWNSTREAM ELEVATION(FT) =     909.00
           CHANNEL LENGTH(FT) =    2185.72     MANNING'S FACTOR = 0.015
           CONSTANT LOSS RATE(CFS) =    0.00


         CHANNEL ROUTING COEFFICIENT ESTIMATED:
           MAXIMUM INFLOW(CFS) =  1212.88
           AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW =   997.54
           CHANNEL NORMAL VELOCITY FOR Q =   997.54 CFS =  15.82 FPS
           ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.903

         MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
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UNIT INTERVALS IS CSTAR = 0.989

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 3) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 3) (CFS)
0.083	1.40	0.81	0.81
0.167	9.34	5.98	5.98
0.250	23.63	17.56	17.56
0.333	37.52	31.59	31.59
0.417	44.43	41.45	41.45
0.500	47.36	46.09	46.09
0.583	48.36	47.92	47.92
0.667	48.84	48.63	48.63
0.750	49.20	49.05	49.05
0.833	49.45	49.34	49.34
0.917	49.61	49.54	49.54
1.000	49.73	49.68	49.68
1.083	49.86	49.81	49.81
1.167	49.99	49.93	49.93
1.250	50.11	50.06	50.06
1.333	50.24	50.19	50.19
1.417	50.37	50.32	50.32
1.500	50.50	50.45	50.45
1.583	50.63	50.58	50.58
1.667	50.77	50.71	50.71
1.750	50.90	50.84	50.84
1.833	51.03	50.98	50.98
1.917	51.17	51.11	51.11
2.000	51.31	51.25	51.25
2.083	51.45	51.39	51.39
2.167	51.59	51.53	51.53
2.250	51.73	51.67	51.67
2.333	51.87	51.81	51.81
2.417	52.01	51.95	51.95
2.500	52.16	52.09	52.09
2.583	52.30	52.24	52.24
2.667	52.45	52.39	52.39
2.750	52.60	52.53	52.53
2.833	52.75	52.68	52.68
2.917	52.90	52.83	52.83
3.000	53.05	52.99	52.99
3.083	53.20	53.14	53.14
3.167	53.36	53.29	53.29
3.250	53.51	53.45	53.45
3.333	53.67	53.61	53.61
3.417	53.83	53.76	53.76
3.500	54.00	53.93	53.93
3.583	54.16	54.09	54.09

3.667	54.32	54.25	54.25
3.750	54.49	54.42	54.42
3.833	54.66	54.58	54.58
3.917	54.82	54.75	54.75
4.000	55.00	54.92	54.92
4.083	55.17	55.09	55.09
4.167	55.34	55.27	55.27
4.250	55.52	55.44	55.44
4.333	55.70	55.62	55.62
4.417	55.88	55.80	55.80
4.500	56.06	55.98	55.98
4.583	56.24	56.16	56.16
4.667	56.43	56.35	56.35
4.750	56.61	56.53	56.53
4.833	56.80	56.72	56.72
4.917	56.99	56.91	56.91
5.000	57.19	57.10	57.10
5.083	57.38	57.30	57.30
5.167	57.58	57.50	57.50
5.250	57.78	57.69	57.69
5.333	57.98	57.90	57.90
5.417	58.18	58.10	58.10
5.500	58.39	58.30	58.30
5.583	58.60	58.51	58.51
5.667	58.81	58.72	58.72
5.750	59.02	58.93	58.93
5.833	59.24	59.15	59.15
5.917	59.46	59.37	59.37
6.000	59.68	59.59	59.59
6.083	59.90	59.81	59.81
6.167	60.13	60.04	60.04
6.250	60.36	60.26	60.26
6.333	60.59	60.49	60.49
6.417	60.83	60.73	60.73
6.500	61.07	60.96	60.96
6.583	61.31	61.20	61.20
6.667	61.55	61.45	61.45
6.750	61.80	61.69	61.69
6.833	62.05	61.94	61.94
6.917	62.30	62.19	62.19
7.000	62.56	62.45	62.45
7.083	62.82	62.71	62.71
7.167	63.08	62.97	62.97
7.250	63.35	63.23	63.23
7.333	63.62	63.50	63.50
7.417	63.89	63.78	63.78
7.500	64.17	64.05	64.05
7.583	64.45	64.33	64.33
7.667	64.74	64.62	64.62
7.750	65.03	64.91	64.91
7.833	65.32	65.20	65.20

7.917	65.62	65.49	65.49
8.000	65.93	65.80	65.80
8.083	66.23	66.10	66.10
8.167	66.55	66.41	66.41
8.250	66.86	66.73	66.73
8.333	67.18	67.05	67.05
8.417	67.51	67.37	67.37
8.500	67.84	67.70	67.70
8.583	68.18	68.03	68.03
8.667	68.52	68.37	68.37
8.750	68.87	68.72	68.72
8.833	69.22	69.07	69.07
8.917	69.58	69.43	69.43
9.000	69.95	69.79	69.79
9.083	70.31	70.16	70.16
9.167	70.70	70.53	70.53
9.250	71.08	70.91	70.91
9.333	71.47	71.30	71.30
9.417	71.86	71.70	71.70
9.500	72.27	72.10	72.10
9.583	72.68	72.51	72.51
9.667	73.10	72.92	72.92
9.750	73.53	73.35	73.35
9.833	73.97	73.78	73.78
9.917	74.41	74.22	74.22
10.000	74.86	74.67	74.67
10.083	75.32	75.13	75.13
10.167	75.80	75.59	75.59
10.250	76.27	76.07	76.07
10.333	76.77	76.55	76.55
10.417	77.26	77.05	77.05
10.500	77.77	77.56	77.56
10.583	78.29	78.07	78.07
10.667	78.83	78.60	78.60
10.750	79.37	79.14	79.14
10.833	79.93	79.69	79.69
10.917	80.49	80.25	80.25
11.000	81.08	80.83	80.83
11.083	81.67	81.42	81.42
11.167	82.28	82.02	82.02
11.250	82.90	82.64	82.64
11.333	83.55	83.27	83.27
11.417	84.19	83.92	83.92
11.500	84.87	84.58	84.58
11.583	85.55	85.26	85.26
11.667	86.27	85.96	85.96
11.750	86.99	86.68	86.68
11.833	87.74	87.42	87.42
11.917	88.50	88.17	88.17
12.000	89.29	88.95	88.95
12.083	89.04	89.14	89.14

12.167	83.89	86.07	86.07
12.250	73.97	78.18	78.18
12.333	64.39	68.48	68.48
12.417	60.07	61.94	61.94
12.500	58.81	59.36	59.36
12.583	59.00	58.93	58.93
12.667	59.65	59.37	59.37
12.750	60.40	60.08	60.08
12.833	61.29	60.91	60.91
12.917	62.27	61.85	61.85
13.000	63.34	62.89	62.89
13.083	64.44	63.97	63.97
13.167	65.61	65.11	65.11
13.250	66.81	66.30	66.30
13.333	68.09	67.54	67.54
13.417	69.41	68.84	68.84
13.500	70.82	70.21	70.21
13.583	72.27	71.65	71.65
13.667	73.83	73.16	73.16
13.750	75.45	74.76	74.76
13.833	77.19	76.44	76.44
13.917	78.99	78.22	78.22
14.000	80.95	80.11	80.11
14.083	83.49	82.41	82.41
14.167	88.60	86.43	86.43
14.250	96.13	92.93	92.93
14.333	103.79	100.52	100.52
14.417	109.10	106.82	106.82
14.500	113.27	111.49	111.49
14.583	116.93	115.37	115.37
14.667	120.76	119.13	119.13
14.750	124.79	123.07	123.07
14.833	129.22	127.33	127.33
14.917	133.97	131.94	131.94
15.000	139.29	137.02	137.02
15.083	145.10	142.62	142.62
15.167	151.74	148.91	148.91
15.250	159.10	155.96	155.96
15.333	167.67	164.02	164.02
15.417	179.05	174.21	174.21
15.500	200.16	191.19	191.19
15.583	230.92	217.83	217.83
15.667	264.77	250.33	250.33
15.750	292.50	280.63	280.63
15.833	313.45	304.48	304.48
15.917	335.30	325.97	325.97
16.000	389.41	366.46	366.46
16.083	554.31	484.43	484.43
16.167	930.67	770.97	770.97
16.250	1212.88	1091.96	1091.96
16.333	1120.25	1158.04	1158.04

16.417	726.35	893.10	893.10
16.500	468.08	578.96	578.96
16.583	313.29	379.86	379.86
16.667	236.40	269.60	269.60
16.750	196.18	213.53	213.53
16.833	167.73	179.93	179.93
16.917	148.13	156.54	156.54
17.000	134.28	140.22	140.22
17.083	124.11	128.47	128.47
17.167	113.36	117.95	117.95
17.250	101.70	106.68	106.68
17.333	91.27	95.73	95.73
17.417	84.18	87.22	87.22
17.500	79.15	81.31	81.31
17.583	75.29	76.95	76.95
17.667	72.00	73.41	73.41
17.750	69.07	70.33	70.33
17.833	66.46	67.58	67.58
17.917	64.09	65.10	65.10
18.000	61.94	62.86	62.86
18.083	61.02	61.42	61.42
18.167	65.16	63.42	63.42
18.250	74.16	70.34	70.34
18.333	82.90	79.17	79.17
18.417	86.41	84.89	84.89
18.500	86.96	86.71	86.71
18.583	86.14	86.48	86.48
18.667	84.99	85.48	85.48
18.750	83.82	84.32	84.32
18.833	82.63	83.14	83.14
18.917	81.44	81.95	81.95
19.000	80.27	80.77	80.77
19.083	79.16	79.63	79.63
19.167	78.09	78.54	78.54
19.250	77.06	77.50	77.50
19.333	76.08	76.50	76.50
19.417	75.14	75.54	75.54
19.500	74.23	74.62	74.62
19.583	73.36	73.73	73.73
19.667	72.52	72.88	72.88
19.750	71.71	72.05	72.05
19.833	70.92	71.26	71.26
19.917	70.16	70.49	70.49
20.000	69.43	69.75	69.75
20.083	68.73	69.03	69.03
20.167	68.04	68.33	68.33
20.250	67.38	67.66	67.66
20.333	66.73	67.01	67.01
20.417	66.11	66.37	66.37
20.500	65.50	65.76	65.76
20.583	64.91	65.16	65.16

20.667	64.34	64.58	64.58
20.750	63.78	64.02	64.02
20.833	63.24	63.47	63.47
20.917	62.71	62.93	62.93
21.000	62.19	62.41	62.41
21.083	61.69	61.91	61.91
21.167	61.20	61.41	61.41
21.250	60.73	60.93	60.93
21.333	60.26	60.46	60.46
21.417	59.81	60.00	60.00
21.500	59.37	59.56	59.56
21.583	58.93	59.12	59.12
21.667	58.51	58.69	58.69
21.750	58.10	58.27	58.27
21.833	57.69	57.87	57.87
21.917	57.30	57.47	57.47
22.000	56.91	57.08	57.08
22.083	56.53	56.69	56.69
22.167	56.16	56.32	56.32
22.250	55.80	55.95	55.95
22.333	55.44	55.59	55.59
22.417	55.09	55.24	55.24
22.500	54.75	54.90	54.90
22.583	54.42	54.56	54.56
22.667	54.09	54.23	54.23
22.750	53.76	53.90	53.90
22.833	53.45	53.58	53.58
22.917	53.14	53.27	53.27
23.000	52.83	52.96	52.96
23.083	52.53	52.66	52.66
23.167	52.24	52.36	52.36
23.250	51.95	52.07	52.07
23.333	51.66	51.79	51.79
23.417	51.39	51.50	51.50
23.500	51.11	51.23	51.23
23.583	50.84	50.96	50.96
23.667	50.58	50.69	50.69
23.750	50.31	50.43	50.43
23.833	50.06	50.17	50.17
23.917	49.81	49.91	49.91
24.000	49.56	49.66	49.66

==========

PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 183.669 AF

OUTFLOW VOLUME = 183.669 AF

LOSS VOLUME = 0.000 AF

****

FLOW PROCESS FROM NODE 101.00 TO NODE 101.00 IS CODE = 7

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

****

FLOW PROCESS FROM NODE 101.00 TO NODE 101.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)

(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	375.0	750.0	1125.0	1500.0
0.083	0.0060	0.87	Q	.	.	.	.
0.167	0.0507	6.49	Q	.	.	.	.
0.250	0.1844	19.42	Q	.	.	.	.
0.333	0.4329	36.08	Q	.	.	.	.
0.417	0.7748	49.64	VQ	.	.	.	.
0.500	1.1776	58.48	VQ	.	.	.	.
0.583	1.6223	64.57	VQ	.	.	.	.
0.667	2.1001	69.38	VQ	.	.	.	.
0.750	2.6073	73.65	VQ	.	.	.	.
0.833	3.1414	77.55	V Q	.	.	.	.
0.917	3.7001	81.12	V Q	.	.	.	.
1.000	4.2814	84.40	V Q	.	.	.	.
1.083	4.8837	87.45	V Q	.	.	.	.
1.167	5.5055	90.29	V Q	.	.	.	.
1.250	6.1455	92.93	V Q	.	.	.	.
1.333	6.8025	95.40	V Q	.	.	.	.
1.417	7.4754	97.71	V Q	.	.	.	.
1.500	8.1632	99.86	V Q	.	.	.	.
1.583	8.8649	101.88	V Q	.	.	.	.
1.667	9.5795	103.77	V Q	.	.	.	.
1.750	10.3064	105.54	V Q	.	.	.	.
1.833	11.0447	107.21	V Q	.	.	.	.
1.917	11.7938	108.77	.VQ	.	.	.	.
2.000	12.5531	110.24	.VQ	.	.	.	.
2.083	13.3218	111.63	.VQ	.	.	.	.
2.167	14.0996	112.93	.V Q	.	.	.	.
2.250	14.8859	114.17	.V Q	.	.	.	.
2.333	15.6802	115.34	.V Q	.	.	.	.
2.417	16.4822	116.44	.V Q	.	.	.	.
2.500	17.2914	117.50	.V Q	.	.	.	.
2.583	18.1074	118.50	.V Q	.	.	.	.
2.667	18.9301	119.45	.V Q	.	.	.	.
2.750	19.7590	120.36	.V Q	.	.	.	.
2.833	20.5939	121.23	.V Q	.	.	.	.
2.917	21.4345	122.06	.V Q	.	.	.	.
3.000	22.2806	122.86	.V Q	.	.	.	.

3.083	23.1320	123.62	. VQ	.	.	.	.
3.167	23.9885	124.36	. VQ	.	.	.	.
3.250	24.8499	125.08	. VQ	.	.	.	.
3.333	25.7160	125.77	. VQ	.	.	.	.
3.417	26.5868	126.43	. VQ	.	.	.	.
3.500	27.4620	127.08	. VQ	.	.	.	.
3.583	28.3416	127.72	. VQ	.	.	.	.
3.667	29.2254	128.33	. VQ	.	.	.	.
3.750	30.1134	128.93	. VQ	.	.	.	.
3.833	31.0054	129.52	. VQ	.	.	.	.
3.917	31.9014	130.10	. VQ	.	.	.	.
4.000	32.8013	130.66	. VQ	.	.	.	.
4.083	33.7051	131.22	. VQ	.	.	.	.
4.167	34.6126	131.77	. Q	.	.	.	.
4.250	35.5238	132.31	. Q	.	.	.	.
4.333	36.4387	132.85	. Q	.	.	.	.
4.417	37.3573	133.38	. Q	.	.	.	.
4.500	38.2795	133.90	. Q	.	.	.	.
4.583	39.2052	134.42	. Q	.	.	.	.
4.667	40.1345	134.94	. Q	.	.	.	.
4.750	41.0674	135.45	. Q	.	.	.	.
4.833	42.0038	135.96	. Q	.	.	.	.
4.917	42.9437	136.48	. Q	.	.	.	.
5.000	43.8871	136.99	. Q	.	.	.	.
5.083	44.8341	137.50	. Q	.	.	.	.
5.167	45.7845	138.01	. QV	.	.	.	.
5.250	46.7385	138.51	. QV	.	.	.	.
5.333	47.6960	139.03	. QV	.	.	.	.
5.417	48.6570	139.54	. QV	.	.	.	.
5.500	49.6215	140.05	. QV	.	.	.	.
5.583	50.5896	140.57	. QV	.	.	.	.
5.667	51.5613	141.09	. QV	.	.	.	.
5.750	52.5365	141.61	. QV	.	.	.	.
5.833	53.5154	142.13	. QV	.	.	.	.
5.917	54.4979	142.66	. QV	.	.	.	.
6.000	55.4840	143.19	. QV	.	.	.	.
6.083	56.4738	143.72	. QV	.	.	.	.
6.167	57.4673	144.26	. Q V	.	.	.	.
6.250	58.4646	144.80	. Q V	.	.	.	.
6.333	59.4656	145.35	. Q V	.	.	.	.
6.417	60.4704	145.90	. Q V	.	.	.	.
6.500	61.4790	146.46	. Q V	.	.	.	.
6.583	62.4916	147.02	. Q V	.	.	.	.
6.667	63.5080	147.58	. Q V	.	.	.	.
6.750	64.5284	148.16	. Q V	.	.	.	.
6.833	65.5527	148.74	. Q V	.	.	.	.
6.917	66.5811	149.32	. Q V	.	.	.	.
7.000	67.6135	149.91	. Q V	.	.	.	.
7.083	68.6501	150.51	. Q V	.	.	.	.
7.167	69.6908	151.11	. Q V	.	.	.	.
7.250	70.7358	151.72	. Q V	.	.	.	.

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 7.333     71.7850    152.34  .   Q V   .         .         .         .
 7.417     72.8385    152.97  .   Q V   .         .         .         .
 7.500     73.8964    153.60  .   Q V   .         .         .         .
 7.583     74.9586    154.24  .   Q V   .         .         .         .
 7.667     76.0254    154.89  .   Q V   .         .         .         .
 7.750     77.0967    155.55  .   Q V   .         .         .         .
 7.833     78.1726    156.22  .   Q V   .         .         .         .
 7.917     79.2531    156.89  .   Q V   .         .         .         .
 8.000     80.3383    157.58  .   Q  V  .         .         .         .
 8.083     81.4283    158.27  .   Q  V  .         .         .         .
 8.167     82.5232    158.97  .   Q  V  .         .         .         .
 8.250     83.6229    159.68  .   Q  V  .         .         .         .
 8.333     84.7276    160.41  .   Q  V  .         .         .         .
 8.417     85.8374    161.14  .   Q  V  .         .         .         .
 8.500     86.9523    161.88  .   Q  V  .         .         .         .
 8.583     88.0724    162.63  .   Q  V  .         .         .         .
 8.667     89.1977    163.40  .   Q  V  .         .         .         .
 8.750     90.3284    164.18  .   Q  V  .         .         .         .
 8.833     91.4645    164.96  .   Q   V .         .         .         .
 8.917     92.6061    165.76  .   Q   V .         .         .         .
 9.000     93.7533    166.58  .   Q   V .         .         .         .
 9.083     94.9062    167.40  .   Q   V .         .         .         .
 9.167     96.0649    168.24  .   Q   V .         .         .         .
 9.250     97.2295    169.09  .   Q   V .         .         .         .
 9.333     98.4000    169.96  .   Q   V .         .         .         .
 9.417     99.5765    170.84  .   Q   V .         .         .         .
 9.500    100.7592    171.73  .   Q   V .         .         .         .
 9.583    101.9482    172.64  .   Q   V .         .         .         .
 9.667    103.1436    173.56  .   Q    V.         .         .         .
 9.750    104.3454    174.51  .   Q    V.         .         .         .
 9.833    105.5538    175.46  .   Q    V.         .         .         .
 9.917    106.7689    176.44  .   Q    V.         .         .         .
10.000    107.9909    177.43  .   Q    V.         .         .         .
10.083    109.2198    178.44  .   Q    V.         .         .         .
10.167    110.4558    179.47  .   Q    V.         .         .         .
10.250    111.6991    180.52  .   Q    V.         .         .         .
10.333    112.9496    181.58  .   Q    V.         .         .         .
10.417    114.2077    182.67  .   Q     V         .         .         .
10.500    115.4734    183.78  .   Q     V         .         .         .
10.583    116.7469    184.91  .   Q     V         .         .         .
10.667    118.0284    186.07  .   Q     V         .         .         .
10.750    119.3179    187.24  .   Q     V         .         .         .
10.833    120.6157    188.44  .    Q    V         .         .         .
10.917    121.9220    189.67  .    Q    V         .         .         .
11.000    123.2369    190.92  .    Q    V         .         .         .
11.083    124.5606    192.20  .    Q    V         .         .         .
11.167    125.8933    193.51  .    Q    .V        .         .         .
11.250    127.2352    194.85  .    Q    .V        .         .         .
11.333    128.5861    196.15  .    Q    .V        .         .         .
11.417    129.9450    197.32  .    Q    .V        .         .         .
11.500    131.3117    198.44  .    Q    .V        .         .         .
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11.583    132.6863    199.59  .    Q    .V        .         .         .
11.667    134.0691    200.79  .    Q    .V        .         .         .
11.750    135.4605    202.03  .    Q    .V        .         .         .
11.833    136.8607    203.31  .    Q    . V       .         .         .
11.917    138.2701    204.64  .    Q    . V       .         .         .
12.000    139.6890    206.02  .    Q    . V       .         .         .
12.083    141.1132    206.80  .    Q    . V       .         .         .
12.167    142.5193    204.17  .    Q    . V       .         .         .
12.250    143.8717    196.37  .    Q    . V       .         .         .
12.333    145.1541    186.19  .   Q     . V       .         .         .
12.417    146.3848    178.70  .   Q     . V       .         .         .
12.500    147.5897    174.95  .   Q     . V       .         .         .
12.583    148.7831    173.28  .   Q     .  V      .         .         .
12.667    149.9703    172.38  .   Q     .  V      .         .         .
12.750    151.1510    171.44  .   Q     .  V      .         .         .
12.833    152.3257    170.57  .   Q     .  V      .         .         .
12.917    153.4967    170.03  .   Q     .  V      .         .         .
13.000    154.6661    169.79  .   Q     .  V      .         .         .
13.083    155.8356    169.82  .   Q     .  V      .         .         .
13.167    157.0072    170.11  .   Q     .  V      .         .         .
13.250    158.1824    170.64  .   Q     .  V      .         .         .
13.333    159.3629    171.41  .   Q     .  V      .         .         .
13.417    160.5504    172.42  .   Q     .   V     .         .         .
13.500    161.7464    173.67  .   Q     .   V     .         .         .
13.583    162.9527    175.15  .   Q     .   V     .         .         .
13.667    164.1708    176.87  .   Q     .   V     .         .         .
13.750    165.4025    178.83  .   Q     .   V     .         .         .
13.833    166.6493    181.04  .   Q     .   V     .         .         .
13.917    167.9130    183.49  .   Q     .   V     .         .         .
14.000    169.1954    186.21  .   Q     .   V     .         .         .
14.083    170.5006    189.51  .    Q    .   V     .         .         .
14.167    171.8423    194.82  .    Q    .    V    .         .         .
14.250    173.2410    203.09  .    Q    .    V    .         .         .
14.333    174.7070    212.87  .    Q    .    V    .         .         .
14.417    176.2307    221.24  .    Q    .    V    .         .         .
14.500    177.7997    227.83  .     Q   .    V    .         .         .
14.583    179.4101    233.82  .     Q   .    V    .         .         .
14.667    181.0620    239.85  .     Q   .    V    .         .         .
14.750    182.7577    246.22  .     Q   .     V   .         .         .
14.833    184.5005    253.06  .     Q   .     V   .         .         .
14.917    186.2940    260.42  .     Q   .     V   .         .         .
15.000    188.1428    268.44  .      Q  .     V   .         .         .
15.083    190.0518    277.20  .      Q  .     V   .         .         .
15.167    192.0276    286.88  .      Q  .     V   .         .         .
15.250    194.0773    297.61  .      Q  .      V  .         .         .
15.333    196.2101    309.68  .       Q .      V  .         .         .
15.417    198.4435    324.30  .       Q .      V  .         .         .
15.500    200.8295    346.44  .        Q.      V  .         .         .
15.583    203.4427    379.45  .         Q      V  .         .         .
15.667    206.3350    419.95  .         .Q      V .         .         .
15.750    209.5024    459.91  .         . Q     V .         .         .
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15.833    212.9039    493.89  .         .  Q    V .         .         .
15.917    216.5129    524.03  .         .  Q    V .         .         .
16.000    220.4573    572.73  .         .    Q   V.         .         .
16.083    225.2936    702.22  .         .       QV.         .         .
16.167    232.2374   1008.25  .         .         V     Q   .         .
16.250    241.5617   1353.89  .         .         .V        .     Q   .
16.333    251.5081   1444.21  .         .         . V       .       Q .
16.417    259.7589   1198.03  .         .         . V       .Q        .
16.500    265.9180    894.30  .         .         .  Q      .         .
16.583    270.7438    700.70  .         .       Q .  V      .         .
16.667    274.8267    592.84  .         .    Q    .   V     .         .
16.750    278.5273    537.34  .         .   Q     .   V     .         .
16.833    281.9943    503.40  .         .  Q      .   V     .         .
16.917    285.2941    479.13  .         . Q       .    V    .         .
17.000    288.4726    461.52  .         . Q       .    V    .         .
17.083    291.5592    448.19  .         .Q        .    V    .         .
17.167    294.5610    435.86  .         .Q        .    V    .         .
17.250    297.4714    422.59  .         .Q        .     V   .         .
17.333    300.2914    409.46  .         Q         .     V   .         .
17.417    303.0368    398.63  .         Q         .     V   .         .
17.500    305.7247    390.28  .         Q         .     V   .         .
17.583    308.3652    383.41  .         Q         .      V  .         .
17.667    310.9639    377.33  .         Q         .      V  .         .
17.750    313.5236    371.66  .        Q.         .      V  .         .
17.833    316.0464    366.31  .        Q.         .      V  .         .
17.917    318.5341    361.22  .        Q.         .      V  .         .
18.000    320.9873    356.21  .        Q.         .       V .         .
18.083    323.4084    351.54  .        Q.         .       V .         .
18.167    325.8194    350.08  .        Q.         .       V .         .
18.250    328.2554    353.72  .        Q.         .       V .         .
18.333    330.7314    359.51  .        Q.         .        V.         .
18.417    333.2274    362.42  .        Q.         .        V.         .
18.500    335.7176    361.58  .        Q.         .        V.         .
18.583    338.1884    358.76  .        Q.         .        V.         .
18.667    340.6347    355.20  .        Q.         .        V.         .
18.750    343.0555    351.50  .        Q.         .         V         .
18.833    345.4507    347.79  .        Q.         .         V         .
18.917    347.8205    344.09  .        Q.         .         V         .
19.000    350.1649    340.41  .        Q.         .         V         .
19.083    352.4844    336.79  .       Q .         .         V         .
19.167    354.7794    333.24  .       Q .         .         .V        .
19.250    357.0504    329.74  .       Q .         .         .V        .
19.333    359.2977    326.31  .       Q .         .         .V        .
19.417    361.5188    322.50  .       Q .         .         .V        .
19.500    363.7103    318.20  .       Q .         .         .V        .
19.583    365.8717    313.84  .       Q .         .         . V       .
19.667    368.0037    309.57  .       Q .         .         . V       .
19.750    370.1069    305.38  .       Q .         .         . V       .
19.833    372.1819    301.29  .       Q .         .         . V       .
19.917    374.2292    297.27  .      Q  .         .         . V       .
20.000    376.2495    293.34  .      Q  .         .         .  V      .
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  20.083    378.2431    289.48  .      Q  .         .         .  V      .
  20.167    380.2108    285.70  .      Q  .         .         .  V      .
  20.250    382.1529    282.00  .      Q  .         .         .  V      .
  20.333    384.0701    278.37  .      Q  .         .         .  V      .
  20.417    385.9627    274.81  .      Q  .         .         .  V      .
  20.500    387.8313    271.32  .      Q  .         .         .   V     .
  20.583    389.6764    267.91  .      Q  .         .         .   V     .
  20.667    391.4984    264.56  .      Q  .         .         .   V     .
  20.750    393.2978    261.27  .     Q   .         .         .   V     .
  20.833    395.0750    258.05  .     Q   .         .         .   V     .
  20.917    396.8272    254.43  .     Q   .         .         .   V     .
  21.000    398.5490    250.00  .     Q   .         .         .   V     .
  21.083    400.2383    245.29  .     Q   .         .         .    V    .
  21.167    401.8964    240.75  .     Q   .         .         .    V    .
  21.250    403.5242    236.36  .     Q   .         .         .    V    .
  21.333    405.1228    232.12  .     Q   .         .         .    V    .
  21.417    406.6933    228.03  .     Q   .         .         .    V    .
  21.500    408.2365    224.08  .    Q    .         .         .    V    .
  21.583    409.7535    220.27  .    Q    .         .         .    V    .
  21.667    411.2452    216.59  .    Q    .         .         .     V   .
  21.750    412.7123    213.03  .    Q    .         .         .     V   .
  21.833    414.1557    209.59  .    Q    .         .         .     V   .
  21.917    415.5762    206.26  .    Q    .         .         .     V   .
  22.000    416.9746    203.05  .    Q    .         .         .     V   .
  22.083    418.3517    199.94  .    Q    .         .         .     V   .
  22.167    419.7080    196.94  .    Q    .         .         .     V   .
  22.250    421.0443    194.03  .    Q    .         .         .     V   .
  22.333    422.3612    191.22  .    Q    .         .         .      V  .
  22.417    423.6595    188.50  .    Q    .         .         .      V  .
  22.500    424.9395    185.87  .   Q     .         .         .      V  .
  22.583    426.2021    183.33  .   Q     .         .         .      V  .
  22.667    427.4477    180.86  .   Q     .         .         .      V  .
  22.750    428.6769    178.47  .   Q     .         .         .      V  .
  22.833    429.8901    176.16  .   Q     .         .         .      V  .
  22.917    431.0880    173.92  .   Q     .         .         .      V  .
  23.000    432.2708    171.75  .   Q     .         .         .      V  .
  23.083    433.4393    169.65  .   Q     .         .         .       V .
  23.167    434.5937    167.62  .   Q     .         .         .       V .
  23.250    435.7338    165.55  .   Q     .         .         .       V .
  23.333    436.8560    162.95  .   Q     .         .         .       V .
  23.417    437.9579    159.98  .   Q     .         .         .       V .
  23.500    439.0404    157.19  .   Q     .         .         .       V .
  23.583    440.1049    154.56  .   Q     .         .         .       V .
  23.667    441.1524    152.09  .   Q     .         .         .       V .
  23.750    442.1838    149.76  .  Q      .         .         .       V .
  23.833    443.2001    147.57  .  Q      .         .         .       V .
  23.917    444.2021    145.49  .  Q      .         .         .       V .
  24.000    445.1906    143.53  .  Q      .         .         .        V.
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
```

an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.0
10%	1065.0
20%	295.0
30%	90.0
40%	40.0
50%	25.0
60%	25.0
70%	15.0
80%	15.0
90%	10.0

END OF FLOODSCx ROUTING ANALYSIS

PROPOSED MITIGATED 25-YEAR REGIONAL ANALYSIS TRIBUTARY TO EX DBL 6X6 POC #1 / NODE 101

LOSS RATE CALCULATIONS

PROJECT REGIONAL
25-YR ANALYSIS
NODE 101 (MITIGATED)

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 ************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
 ========================================================================
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                           Analysis prepared by:



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  Problem Descriptions:
   Grand Terrace
   Barton+Deberry WS-Prop-25year
   2022-03-10
 ========================================================================
 *** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
     AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

     TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.60 (inches)

     SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
        TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
          1         30.16       20.00            32.       0.975       0.748
          2         23.43       20.00            69.       0.566       0.804
          3         57.55       10.00            32.       0.975       0.842
          4         37.59       10.00            69.       0.566       0.870
          5        121.44       50.00            32.       0.975       0.468
          6         93.70       50.00            69.       0.566       0.608
          7          0.84       50.00            75.       0.470       0.658
          8          0.91      100.00            50.       0.820       0.061
          9         23.00      100.00            69.       0.566       0.282
         10          0.56      100.00            79.       0.398       0.457
         11         74.01      100.00            83.       0.326       0.540
         12         14.07       60.00            32.       0.975       0.374
         13          1.07       60.00            69.       0.566       0.543
         14         58.07       10.00            32.       0.975       0.842
         15         41.55       10.00            69.       0.566       0.870

     TOTAL AREA (Acres) =    577.95

     AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.271

     AREA-AVERAGED LOW LOSS FRACTION, Y = 0.352
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          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
=============================================================================
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                            Analysis prepared by:



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 Problem Descriptions:
  Grand Terrace
  Van Buren WS-Prop-25YR
  2022-03-10
=============================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.60 (inches)

    SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
         1         35.19       20.00            32.       0.975       0.748
         2         28.06       20.00            69.       0.566       0.804
         3         29.80       10.00            32.       0.975       0.842
         4         27.82       10.00            69.       0.566       0.870
         5        118.35       50.00            32.       0.975       0.468
         6         62.06       50.00            69.       0.566       0.608
         7          0.77       50.00            75.       0.470       0.658
         8          9.14      100.00            50.       0.820       0.061
         9          4.16      100.00            69.       0.566       0.282
        10         16.79      100.00            79.       0.398       0.457
        11         29.95      100.00            83.       0.326       0.540
        12         20.33       60.00            32.       0.975       0.374
        13          2.38       60.00            69.       0.566       0.543
        14         44.08       10.00            32.       0.975       0.842
        15          1.28       10.00            56.       0.748       0.853
        16         36.16       10.00            69.       0.566       0.870

    TOTAL AREA (Acres) =    466.32

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.290

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.366
=============================================================================
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 ************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
 ========================================================================
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                           Analysis prepared by:




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  Problem Descriptions:
   Grand Terrace
   Canal WS-Prop-25year
   2022-03-10
 ========================================================================
 *** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
     AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

     TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.60 (inches)

     SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
        TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
          1          0.80       10.00            32.       0.975       0.842
          2          1.95       10.00            69.       0.566       0.870
          3        168.79       50.00            32.       0.975       0.468
          4          7.88       50.00            69.       0.566       0.608
          5          0.52       50.00            75.       0.470       0.658
          6         25.58      100.00            50.       0.820       0.061
          7          0.97      100.00            79.       0.398       0.457
          8        120.61      100.00            83.       0.326       0.540
          9         36.67       60.00            32.       0.975       0.374
         10         34.51       60.00            69.       0.566       0.543
         11         52.37       10.00            32.       0.975       0.842
         12          1.65       10.00            69.       0.566       0.870

     TOTAL AREA (Acres) =    452.30

     AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.407

     AREA-AVERAGED LOW LOSS FRACTION, Y = 0.488
 ========================================================================
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             F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY ************************
* GRAND TERRACE GATEWAY                                                 *
* REGIONAL PROPOSED MITIGATED CONDITION - 25 YR                         *
* 2023-03-17                                                            *
 ************************************************************************

  FILE NAME: REGPR25.DAT
  TIME/DATE OF STUDY: 09:38 03/17/2023


*****************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    303.00 IS CODE =   1
-----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
=============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     466.320 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.240 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.290
         LOW LOSS FRACTION = 0.366
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.36
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.75
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.00
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.45
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  3.60
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.979
30-MINUTE FACTOR = 0.979
1-HOUR FACTOR = 0.979
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 34.722

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.308	130.143
2	14.779	703.335
3	38.225	1322.270
4	66.233	1579.474
5	84.561	1033.643
6	93.250	490.001
7	97.213	223.544
8	98.477	71.232
9	99.128	36.719
10	99.651	29.519
11	99.913	14.759
12	100.000	4.920

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 46.0639
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 93.6526

==========

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

==========

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	200.0	400.0	600.0	800.0
0.083	0.0036	0.52	Q	.	.	.	.
0.167	0.0263	3.31	Q	.	.	.	.
0.250	0.0853	8.56	Q	.	.	.	.
0.333	0.1875	14.84	Q	.	.	.	.
0.417	0.3182	18.98	Q	.	.	.	.
0.500	0.4626	20.97	VQ	.	.	.	.
0.583	0.6135	21.91	VQ	.	.	.	.
0.667	0.7667	22.25	VQ	.	.	.	.
0.750	0.9213	22.45	VQ	.	.	.	.
0.833	1.0772	22.63	VQ	.	.	.	.
0.917	1.2339	22.75	VQ	.	.	.	.
1.000	1.3912	22.83	VQ	.	.	.	.
1.083	1.5488	22.90	VQ	.	.	.	.
1.167	1.7070	22.96	VQ	.	.	.	.
1.250	1.8655	23.02	VQ	.	.	.	.
1.333	2.0245	23.09	VQ	.	.	.	.
1.417	2.1839	23.15	VQ	.	.	.	.
1.500	2.3438	23.22	.Q	.	.	.	.
1.583	2.5041	23.28	.Q	.	.	.	.
1.667	2.6649	23.35	.Q	.	.	.	.
1.750	2.8262	23.41	.Q	.	.	.	.
1.833	2.9879	23.48	.Q	.	.	.	.
1.917	3.1501	23.55	.Q	.	.	.	.
2.000	3.3127	23.62	.Q	.	.	.	.
2.083	3.4758	23.69	.Q	.	.	.	.
2.167	3.6394	23.76	.Q	.	.	.	.
2.250	3.8035	23.82	.Q	.	.	.	.
2.333	3.9681	23.90	.Q	.	.	.	.
2.417	4.1332	23.97	.Q	.	.	.	.
2.500	4.2987	24.04	.Q	.	.	.	.
2.583	4.4648	24.11	.Q	.	.	.	.
2.667	4.6313	24.19	.Q	.	.	.	.
2.750	4.7984	24.26	.QV	.	.	.	.
2.833	4.9660	24.33	.QV	.	.	.	.
2.917	5.1341	24.41	.QV	.	.	.	.
3.000	5.3028	24.49	.QV	.	.	.	.
3.083	5.4719	24.56	.QV	.	.	.	.
3.167	5.6416	24.64	.QV	.	.	.	.
3.250	5.8119	24.72	.QV	.	.	.	.
3.333	5.9826	24.80	.QV	.	.	.	.

3.417	6.1540	24.88	.QV	.	.	.	.
3.500	6.3259	24.96	.QV	.	.	.	.
3.583	6.4983	25.04	.QV	.	.	.	.
3.667	6.6713	25.12	.QV	.	.	.	.
3.750	6.8449	25.20	.QV	.	.	.	.
3.833	7.0191	25.29	.QV	.	.	.	.
3.917	7.1938	25.37	.Q V	.	.	.	.
4.000	7.3692	25.46	.Q V	.	.	.	.
4.083	7.5451	25.55	.Q V	.	.	.	.
4.167	7.7216	25.63	.Q V	.	.	.	.
4.250	7.8988	25.72	.Q V	.	.	.	.
4.333	8.0765	25.81	.Q V	.	.	.	.
4.417	8.2549	25.90	.Q V	.	.	.	.
4.500	8.4339	25.99	.Q V	.	.	.	.
4.583	8.6136	26.08	.Q V	.	.	.	.
4.667	8.7938	26.18	.Q V	.	.	.	.
4.750	8.9748	26.27	.Q V	.	.	.	.
4.833	9.1563	26.37	.Q V	.	.	.	.
4.917	9.3386	26.46	.Q V	.	.	.	.
5.000	9.5215	26.56	.Q V	.	.	.	.
5.083	9.7051	26.66	.Q V	.	.	.	.
5.167	9.8893	26.76	.Q V	.	.	.	.
5.250	10.0743	26.86	.Q V	.	.	.	.
5.333	10.2600	26.96	.Q V	.	.	.	.
5.417	10.4463	27.06	.Q V	.	.	.	.
5.500	10.6334	27.17	.Q V	.	.	.	.
5.583	10.8212	27.27	.Q V	.	.	.	.
5.667	11.0098	27.38	.Q V	.	.	.	.
5.750	11.1991	27.48	.Q V	.	.	.	.
5.833	11.3891	27.59	.Q V	.	.	.	.
5.917	11.5799	27.70	.Q V	.	.	.	.
6.000	11.7714	27.81	.Q V	.	.	.	.
6.083	11.9638	27.93	.Q V	.	.	.	.
6.167	12.1569	28.04	.Q V	.	.	.	.
6.250	12.3508	28.16	.Q V	.	.	.	.
6.333	12.5455	28.27	.Q V	.	.	.	.
6.417	12.7411	28.39	.Q V	.	.	.	.
6.500	12.9374	28.51	.Q V	.	.	.	.
6.583	13.1346	28.63	.Q V	.	.	.	.
6.667	13.3327	28.76	.Q V	.	.	.	.
6.750	13.5316	28.88	.Q V	.	.	.	.
6.833	13.7314	29.01	.Q V	.	.	.	.
6.917	13.9321	29.14	.Q V	.	.	.	.
7.000	14.1336	29.27	.Q V	.	.	.	.
7.083	14.3361	29.40	.Q V	.	.	.	.
7.167	14.5395	29.53	.Q V	.	.	.	.
7.250	14.7438	29.67	.Q V	.	.	.	.
7.333	14.9490	29.80	.Q V	.	.	.	.
7.417	15.1552	29.94	.Q V	.	.	.	.
7.500	15.3624	30.08	.Q V	.	.	.	.
7.583	15.5706	30.23	.Q V	.	.	.	.

```
 7.667     15.7798     30.37  .Q    V   .         .         .         .
 7.750     15.9900     30.52  .Q    V   .         .         .         .
 7.833     16.2012     30.67  .Q    V   .         .         .         .
 7.917     16.4134     30.82  .Q     V  .         .         .         .
 8.000     16.6267     30.97  .Q     V  .         .         .         .
 8.083     16.8411     31.13  .Q     V  .         .         .         .
 8.167     17.0566     31.29  .Q     V  .         .         .         .
 8.250     17.2732     31.45  .Q     V  .         .         .         .
 8.333     17.4909     31.61  .Q     V  .         .         .         .
 8.417     17.7098     31.78  .Q     V  .         .         .         .
 8.500     17.9298     31.95  .Q     V  .         .         .         .
 8.583     18.1510     32.12  .Q     V  .         .         .         .
 8.667     18.3734     32.29  .Q     V  .         .         .         .
 8.750     18.5970     32.47  .Q     V  .         .         .         .
 8.833     18.8219     32.65  .Q      V .         .         .         .
 8.917     19.0480     32.83  .Q      V .         .         .         .
 9.000     19.2754     33.02  .Q      V .         .         .         .
 9.083     19.5041     33.21  .Q      V .         .         .         .
 9.167     19.7342     33.40  .Q      V .         .         .         .
 9.250     19.9655     33.60  .Q      V .         .         .         .
 9.333     20.1983     33.80  .Q      V .         .         .         .
 9.417     20.4325     34.00  .Q      V .         .         .         .
 9.500     20.6680     34.21  .Q      V .         .         .         .
 9.583     20.9051     34.42  .Q      V .         .         .         .
 9.667     21.1436     34.63  .Q       V.         .         .         .
 9.750     21.3836     34.85  .Q       V.         .         .         .
 9.833     21.6252     35.07  .Q       V.         .         .         .
 9.917     21.8683     35.30  .Q       V.         .         .         .
10.000     22.1130     35.53  .Q       V.         .         .         .
10.083     22.3593     35.77  .Q       V.         .         .         .
10.167     22.6074     36.01  .Q       V.         .         .         .
10.250     22.8571     36.26  .Q       V.         .         .         .
10.333     23.1085     36.51  .Q       V.         .         .         .
10.417     23.3617     36.76  .Q       V.         .         .         .
10.500     23.6167     37.03  .Q        V         .         .         .
10.583     23.8735     37.29  .Q        V         .         .         .
10.667     24.1323     37.57  .Q        V         .         .         .
10.750     24.3929     37.85  .Q        V         .         .         .
10.833     24.6556     38.13  .Q        V         .         .         .
10.917     24.9202     38.43  .Q        V         .         .         .
11.000     25.1869     38.73  .Q        V         .         .         .
11.083     25.4557     39.03  .Q        V         .         .         .
11.167     25.7267     39.35  .Q        V         .         .         .
11.250     25.9999     39.67  .Q        .V        .         .         .
11.333     26.2754     40.00  .Q        .V        .         .         .
11.417     26.5532     40.34  . Q       .V        .         .         .
11.500     26.8334     40.68  . Q       .V        .         .         .
11.583     27.1160     41.04  . Q       .V        .         .         .
11.667     27.4012     41.41  . Q       .V        .         .         .
11.750     27.6889     41.78  . Q       .V        .         .         .
11.833     27.9793     42.17  . Q       .V        .         .         .
```

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11.917     28.2724     42.56  . Q       . V       .         .         .
12.000     28.5684     42.97  . Q       . V       .         .         .
12.083     28.8646     43.01  . Q       . V       .         .         .
12.167     29.1495     41.37  . Q       . V       .         .         .
12.250     29.4105     37.90  .Q        . V       .         .         .
12.333     29.6424     33.68  .Q        . V       .         .         .
12.417     29.8563     31.06  .Q        . V       .         .         .
12.500     30.0633     30.05  .Q        . V       .         .         .
12.583     30.2688     29.84  .Q        . V       .         .         .
12.667     30.4761     30.09  .Q        .  V      .         .         .
12.750     30.6858     30.46  .Q        .  V      .         .         .
12.833     30.8984     30.87  .Q        .  V      .         .         .
12.917     31.1142     31.34  .Q        .  V      .         .         .
13.000     31.3337     31.87  .Q        .  V      .         .         .
13.083     31.5570     32.42  .Q        .  V      .         .         .
13.167     31.7843     33.01  .Q        .  V      .         .         .
13.250     32.0159     33.62  .Q        .  V      .         .         .
13.333     32.2519     34.27  .Q        .  V      .         .         .
13.417     32.4925     34.93  .Q        .  V      .         .         .
13.500     32.7380     35.65  .Q        .  V      .         .         .
13.583     32.9885     36.38  .Q        .   V     .         .         .
13.667     33.2445     37.17  .Q        .   V     .         .         .
13.750     33.5062     37.99  .Q        .   V     .         .         .
13.833     33.7738     38.87  .Q        .   V     .         .         .
13.917     34.0478     39.78  .Q        .   V     .         .         .
14.000     34.3286     40.77  . Q       .   V     .         .         .
14.083     34.6174     41.93  . Q       .   V     .         .         .
14.167     34.9188     43.77  . Q       .   V     .         .         .
14.250     35.2379     46.32  . Q       .    V    .         .         .
14.333     35.5771     49.25  . Q       .    V    .         .         .
14.417     35.9333     51.72  . Q       .    V    .         .         .
14.500     36.3036     53.78  . Q       .    V    .         .         .
14.583     36.6870     55.66  . Q       .    V    .         .         .
14.667     37.0834     57.56  . Q       .    V    .         .         .
14.750     37.4935     59.55  . Q       .     V   .         .         .
14.833     37.9188     61.76  .  Q      .     V   .         .         .
14.917     38.3604     64.12  .  Q      .     V   .         .         .
15.000     38.8202     66.76  .  Q      .     V   .         .         .
15.083     39.2999     69.65  .  Q      .     V   .         .         .
15.167     39.8022     72.93  .  Q      .     V   .         .         .
15.250     40.3296     76.59  .  Q      .      V  .         .         .
15.333     40.8863     80.83  .   Q     .      V  .         .         .
15.417     41.4791     86.07  .   Q     .      V  .         .         .
15.500     42.1268     94.05  .   Q     .      V  .         .         .
15.583     42.8504    105.06  .    Q    .       V .         .         .
15.667     43.6676    118.67  .    Q    .       V .         .         .
15.750     44.5814    132.67  .     Q   .        V.         .         .
15.833     45.6034    148.40  .      Q  .        V.         .         .
15.917     46.7702    169.41  .       Q .        V.         .         .
16.000     48.1994    207.53  .         Q        V         .         .
16.083     50.2954    304.33  .         .    Q    .V        .         .
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16.167     53.8687    518.84  .         .         .  V Q    .         .
16.250     58.7380    707.03  .         .         .    V    .    Q    .
16.333     63.8364    740.29  .         .         .      V  .      Q  .
16.417     67.5164    534.34  .         .         .     Q V .         .
16.500     69.7944    330.76  .         .     Q   .        V.         .
16.583     71.2610    212.95  .         Q         .         V         .
16.667     72.2252    140.00  .     Q   .         .         V         .
16.750     72.9807    109.71  .    Q    .         .         .V        .
16.833     73.6254     93.60  .   Q     .         .         .V        .
16.917     74.1729     79.50  .  Q      .         .         .V        .
17.000     74.6510     69.42  .  Q      .         .         .V        .
17.083     75.0802     62.32  .  Q      .         .         . V       .
17.167     75.4735     57.10  . Q       .         .         . V       .
17.250     75.8323     52.10  . Q       .         .         . V       .
17.333     76.1591     47.45  . Q       .         .         . V       .
17.417     76.4610     43.84  . Q       .         .         . V       .
17.500     76.7444     41.14  . Q       .         .         . V       .
17.583     77.0129     38.98  .Q        .         .         . V       .
17.667     77.2691     37.20  .Q        .         .         .  V      .
17.750     77.5144     35.63  .Q        .         .         .  V      .
17.833     77.7501     34.22  .Q        .         .         .  V      .
17.917     77.9770     32.94  .Q        .         .         .  V      .
18.000     78.1959     31.79  .Q        .         .         .  V      .
18.083     78.4102     31.12  .Q        .         .         .  V      .
18.167     78.6321     32.22  .Q        .         .         .  V      .
18.250     78.8745     35.19  .Q        .         .         .  V      .
18.333     79.1428     38.96  .Q        .         .         .  V      .
18.417     79.4262     41.14  . Q       .         .         .  V      .
18.500     79.7138     41.76  . Q       .         .         .   V     .
18.583     80.0004     41.62  . Q       .         .         .   V     .
18.667     80.2833     41.07  . Q       .         .         .   V     .
18.750     80.5620     40.46  . Q       .         .         .   V     .
18.833     80.8365     39.87  .Q        .         .         .   V     .
18.917     81.1069     39.26  .Q        .         .         .   V     .
19.000     81.3732     38.66  .Q        .         .         .   V     .
19.083     81.6354     38.07  .Q        .         .         .   V     .
19.167     81.8937     37.51  .Q        .         .         .   V     .
19.250     82.1483     36.97  .Q        .         .         .    V    .
19.333     82.3993     36.45  .Q        .         .         .    V    .
19.417     82.6469     35.95  .Q        .         .         .    V    .
19.500     82.8913     35.48  .Q        .         .         .    V    .
19.583     83.1325     35.02  .Q        .         .         .    V    .
19.667     83.3707     34.58  .Q        .         .         .    V    .
19.750     83.6059     34.16  .Q        .         .         .    V    .
19.833     83.8383     33.75  .Q        .         .         .    V    .
19.917     84.0680     33.35  .Q        .         .         .    V    .
20.000     84.2951     32.97  .Q        .         .         .     V   .
20.083     84.5197     32.61  .Q        .         .         .     V   .
20.167     84.7418     32.25  .Q        .         .         .     V   .
20.250     84.9615     31.91  .Q        .         .         .     V   .
20.333     85.1790     31.57  .Q        .         .         .     V   .
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20.417	85.3942	31.25	.Q	.	.	.	V .
20.500	85.6072	30.93	.Q	.	.	.	V .
20.583	85.8182	30.63	.Q	.	.	.	V .
20.667	86.0271	30.33	.Q	.	.	.	V .
20.750	86.2340	30.05	.Q	.	.	.	V .
20.833	86.4391	29.77	.Q	.	.	.	V .
20.917	86.6422	29.50	.Q	.	.	.	V .
21.000	86.8435	29.23	.Q	.	.	.	V .
21.083	87.0431	28.98	.Q	.	.	.	V .
21.167	87.2409	28.73	.Q	.	.	.	V .
21.250	87.4371	28.48	.Q	.	.	.	V .
21.333	87.6316	28.24	.Q	.	.	.	V .
21.417	87.8245	28.01	.Q	.	.	.	V .
21.500	88.0158	27.78	.Q	.	.	.	V .
21.583	88.2057	27.56	.Q	.	.	.	V .
21.667	88.3940	27.35	.Q	.	.	.	V .
21.750	88.5809	27.14	.Q	.	.	.	V .
21.833	88.7664	26.93	.Q	.	.	.	V .
21.917	88.9505	26.73	.Q	.	.	.	V .
22.000	89.1332	26.53	.Q	.	.	.	V .
22.083	89.3146	26.34	.Q	.	.	.	V .
22.167	89.4947	26.15	.Q	.	.	.	V .
22.250	89.6735	25.97	.Q	.	.	.	V .
22.333	89.8511	25.79	.Q	.	.	.	V .
22.417	90.0275	25.61	.Q	.	.	.	V .
22.500	90.2026	25.43	.Q	.	.	.	V .
22.583	90.3766	25.27	.Q	.	.	.	V .
22.667	90.5495	25.10	.Q	.	.	.	V .
22.750	90.7212	24.94	.Q	.	.	.	V .
22.833	90.8919	24.78	.Q	.	.	.	V .
22.917	91.0614	24.62	.Q	.	.	.	V .
23.000	91.2299	24.46	.Q	.	.	.	V .
23.083	91.3973	24.31	.Q	.	.	.	V.
23.167	91.5638	24.16	.Q	.	.	.	V.
23.250	91.7292	24.02	.Q	.	.	.	V.
23.333	91.8936	23.88	.Q	.	.	.	V.
23.417	92.0571	23.74	.Q	.	.	.	V.
23.500	92.2196	23.60	.Q	.	.	.	V.
23.583	92.3812	23.46	.Q	.	.	.	V.
23.667	92.5418	23.33	.Q	.	.	.	V.
23.750	92.7016	23.20	.Q	.	.	.	V.
23.833	92.8604	23.07	.Q	.	.	.	V.
23.917	93.0184	22.94	.Q	.	.	.	V.
24.000	93.1756	22.82	.Q	.	.	.	V.
24.083	93.3283	22.18	.Q	.	.	.	V.
24.167	93.4611	19.28	Q	.	.	.	V.
24.250	93.5571	13.94	Q	.	.	.	V.
24.333	93.6095	7.61	Q	.	.	.	V.
24.417	93.6334	3.48	Q	.	.	.	V.
24.500	93.6439	1.52	Q	.	.	.	V.
24.583	93.6483	0.63	Q	.	.	.	V.

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  24.667     93.6506      0.34  Q         .         .         .        V.
  24.750     93.6520      0.20  Q         .         .         .        V.
  24.833     93.6525      0.08  Q         .         .         .        V.
  24.917     93.6527      0.02  Q         .         .         .         V
-------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated               Duration
       Peak Flow Rate                    (minutes)
   ======================              =========
              0%                        1495.0
             10%                         105.0
             20%                          50.0
             30%                          30.0
             40%                          30.0
             50%                          20.0
             60%                          20.0
             70%                          20.0
             80%                          10.0
             90%                          10.0


*******************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    303.00 IS CODE =   1
-------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
===============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     452.300 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.250 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.407
         LOW LOSS FRACTION = 0.488
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.36
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.75
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.00
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.45
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.80
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  3.60

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
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5-MINUTE FACTOR = 0.980
30-MINUTE FACTOR = 0.980
1-HOUR FACTOR = 0.980
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 33.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.170	118.706
2	13.591	624.746
3	35.416	1193.805
4	62.732	1494.169
5	82.211	1065.530
6	91.877	528.733
7	96.496	252.663
8	98.279	97.498
9	98.906	34.326
10	99.441	29.221
11	99.776	18.362
12	99.944	9.181
13	100.000	3.060

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 59.8156
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 75.7120

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	175.0	350.0	525.0	700.0
0.083	0.0026	0.38	Q	.	.	.	.
0.167	0.0190	2.38	Q	.	.	.	.
0.250	0.0618	6.21	Q	.	.	.	.
0.333	0.1376	11.01	Q	.	.	.	.
0.417	0.2371	14.45	Q	.	.	.	.
0.500	0.3485	16.18	Q	.	.	.	.
0.583	0.4658	17.03	Q	.	.	.	.
0.667	0.5856	17.39	Q	.	.	.	.
0.750	0.7064	17.54	VQ	.	.	.	.
0.833	0.8282	17.69	VQ	.	.	.	.
0.917	0.9507	17.79	VQ	.	.	.	.
1.000	1.0738	17.87	VQ	.	.	.	.
1.083	1.1973	17.93	VQ	.	.	.	.
1.167	1.3211	17.98	VQ	.	.	.	.
1.250	1.4452	18.03	VQ	.	.	.	.
1.333	1.5697	18.08	VQ	.	.	.	.
1.417	1.6946	18.13	VQ	.	.	.	.
1.500	1.8198	18.18	VQ	.	.	.	.
1.583	1.9453	18.23	.Q	.	.	.	.
1.667	2.0712	18.28	.Q	.	.	.	.
1.750	2.1975	18.33	.Q	.	.	.	.
1.833	2.3241	18.39	.Q	.	.	.	.
1.917	2.4511	18.44	.Q	.	.	.	.
2.000	2.5784	18.49	.Q	.	.	.	.
2.083	2.7061	18.55	.Q	.	.	.	.
2.167	2.8342	18.60	.Q	.	.	.	.
2.250	2.9627	18.65	.Q	.	.	.	.
2.333	3.0916	18.71	.Q	.	.	.	.
2.417	3.2208	18.77	.Q	.	.	.	.
2.500	3.3504	18.82	.Q	.	.	.	.
2.583	3.4805	18.88	.Q	.	.	.	.
2.667	3.6109	18.94	.Q	.	.	.	.
2.750	3.7417	18.99	.Q	.	.	.	.
2.833	3.8729	19.05	.QV	.	.	.	.
2.917	4.0045	19.11	.QV	.	.	.	.
3.000	4.1366	19.17	.QV	.	.	.	.
3.083	4.2690	19.23	.QV	.	.	.	.
3.167	4.4019	19.29	.QV	.	.	.	.
3.250	4.5352	19.35	.QV	.	.	.	.
3.333	4.6689	19.42	.QV	.	.	.	.

3.417	4.8031	19.48	.QV	.	.	.	.
3.500	4.9377	19.54	.QV	.	.	.	.
3.583	5.0727	19.61	.QV	.	.	.	.
3.667	5.2081	19.67	.QV	.	.	.	.
3.750	5.3441	19.73	.QV	.	.	.	.
3.833	5.4804	19.80	.QV	.	.	.	.
3.917	5.6172	19.87	.QV	.	.	.	.
4.000	5.7545	19.93	.Q V	.	.	.	.
4.083	5.8923	20.00	.Q V	.	.	.	.
4.167	6.0305	20.07	.Q V	.	.	.	.
4.250	6.1692	20.14	.Q V	.	.	.	.
4.333	6.3084	20.21	.Q V	.	.	.	.
4.417	6.4480	20.28	.Q V	.	.	.	.
4.500	6.5882	20.35	.Q V	.	.	.	.
4.583	6.7288	20.42	.Q V	.	.	.	.
4.667	6.8700	20.49	.Q V	.	.	.	.
4.750	7.0116	20.57	.Q V	.	.	.	.
4.833	7.1538	20.64	.Q V	.	.	.	.
4.917	7.2965	20.72	.Q V	.	.	.	.
5.000	7.4397	20.79	.Q V	.	.	.	.
5.083	7.5834	20.87	.Q V	.	.	.	.
5.167	7.7277	20.95	.Q V	.	.	.	.
5.250	7.8725	21.03	.Q V	.	.	.	.
5.333	8.0178	21.11	.Q V	.	.	.	.
5.417	8.1637	21.19	.Q V	.	.	.	.
5.500	8.3102	21.27	.Q V	.	.	.	.
5.583	8.4573	21.35	.Q V	.	.	.	.
5.667	8.6049	21.43	.Q V	.	.	.	.
5.750	8.7531	21.52	.Q V	.	.	.	.
5.833	8.9018	21.60	.Q V	.	.	.	.
5.917	9.0512	21.69	.Q V	.	.	.	.
6.000	9.2012	21.78	.Q V	.	.	.	.
6.083	9.3517	21.86	.Q V	.	.	.	.
6.167	9.5029	21.95	.Q V	.	.	.	.
6.250	9.6547	22.04	.Q V	.	.	.	.
6.333	9.8072	22.14	.Q V	.	.	.	.
6.417	9.9603	22.23	.Q V	.	.	.	.
6.500	10.1140	22.32	.Q V	.	.	.	.
6.583	10.2684	22.42	.Q V	.	.	.	.
6.667	10.4234	22.51	.Q V	.	.	.	.
6.750	10.5792	22.61	.Q V	.	.	.	.
6.833	10.7356	22.71	.Q V	.	.	.	.
6.917	10.8927	22.81	.Q V	.	.	.	.
7.000	11.0505	22.91	.Q V	.	.	.	.
7.083	11.2090	23.01	.Q V	.	.	.	.
7.167	11.3682	23.12	.Q V	.	.	.	.
7.250	11.5281	23.22	.Q V	.	.	.	.
7.333	11.6888	23.33	.Q V	.	.	.	.
7.417	11.8502	23.44	.Q V	.	.	.	.
7.500	12.0124	23.55	.Q V	.	.	.	.
7.583	12.1754	23.66	.Q V	.	.	.	.

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 7.667     12.3391     23.78  .Q    V   .         .         .         .
 7.750     12.5037     23.89  .Q    V   .         .         .         .
 7.833     12.6690     24.01  .Q    V   .         .         .         .
 7.917     12.8352     24.13  .Q    V   .         .         .         .
 8.000     13.0021     24.25  .Q    V   .         .         .         .
 8.083     13.1700     24.37  .Q    V   .         .         .         .
 8.167     13.3386     24.49  .Q     V  .         .         .         .
 8.250     13.5082     24.62  .Q     V  .         .         .         .
 8.333     13.6786     24.75  .Q     V  .         .         .         .
 8.417     13.8499     24.87  .Q     V  .         .         .         .
 8.500     14.0222     25.01  .Q     V  .         .         .         .
 8.583     14.1953     25.14  .Q     V  .         .         .         .
 8.667     14.3694     25.28  .Q     V  .         .         .         .
 8.750     14.5444     25.42  .Q     V  .         .         .         .
 8.833     14.7204     25.56  .Q     V  .         .         .         .
 8.917     14.8974     25.70  .Q     V  .         .         .         .
 9.000     15.0754     25.85  .Q     V  .         .         .         .
 9.083     15.2545     25.99  .Q      V .         .         .         .
 9.167     15.4345     26.14  .Q      V .         .         .         .
 9.250     15.6156     26.30  .Q      V .         .         .         .
 9.333     15.7978     26.45  .Q      V .         .         .         .
 9.417     15.9811     26.61  .Q      V .         .         .         .
 9.500     16.1655     26.77  .Q      V .         .         .         .
 9.583     16.3510     26.94  .Q      V .         .         .         .
 9.667     16.5377     27.11  .Q      V .         .         .         .
 9.750     16.7255     27.28  .Q      V .         .         .         .
 9.833     16.9146     27.45  .Q      V .         .         .         .
 9.917     17.1049     27.63  .Q       V.         .         .         .
10.000     17.2964     27.81  .Q       V.         .         .         .
10.083     17.4892     27.99  .Q       V.         .         .         .
10.167     17.6833     28.18  .Q       V.         .         .         .
10.250     17.8787     28.37  .Q       V.         .         .         .
10.333     18.0755     28.57  .Q       V.         .         .         .
10.417     18.2737     28.77  .Q       V.         .         .         .
10.500     18.4732     28.98  .Q       V.         .         .         .
10.583     18.6742     29.19  .Q       V.         .         .         .
10.667     18.8767     29.40  .Q       V.         .         .         .
10.750     19.0807     29.62  .Q        V         .         .         .
10.833     19.2862     29.84  .Q        V         .         .         .
10.917     19.4933     30.07  .Q        V         .         .         .
11.000     19.7020     30.30  .Q        V         .         .         .
11.083     19.9124     30.54  .Q        V         .         .         .
11.167     20.1244     30.79  .Q        V         .         .         .
11.250     20.3382     31.04  .Q        V         .         .         .
11.333     20.5537     31.30  .Q        V         .         .         .
11.417     20.7711     31.56  .Q        V         .         .         .
11.500     20.9903     31.83  .Q        .V        .         .         .
11.583     21.2115     32.11  .Q        .V        .         .         .
11.667     21.4346     32.40  .Q        .V        .         .         .
11.750     21.6597     32.69  .Q        .V        .         .         .
11.833     21.8869     32.99  .Q        .V        .         .         .
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11.917     22.1163     33.30  .Q        .V        .         .         .
12.000     22.3478     33.62  .Q        .V        .         .         .
12.083     22.5797     33.66  .Q        .V        .         .         .
12.167     22.8036     32.51  .Q        . V       .         .         .
12.250     23.0102     30.01  .Q        . V       .         .         .
12.333     23.1947     26.79  .Q        . V       .         .         .
12.417     23.3641     24.59  .Q        . V       .         .         .
12.500     23.5271     23.67  .Q        . V       .         .         .
12.583     23.6884     23.42  .Q        . V       .         .         .
12.667     23.8505     23.55  .Q        . V       .         .         .
12.750     24.0147     23.83  .Q        . V       .         .         .
12.833     24.1810     24.15  .Q        . V       .         .         .
12.917     24.3498     24.51  .Q        . V       .         .         .
13.000     24.5214     24.91  .Q        . V       .         .         .
13.083     24.6959     25.34  .Q        .  V      .         .         .
13.167     24.8735     25.80  .Q        .  V      .         .         .
13.250     25.0545     26.27  .Q        .  V      .         .         .
13.333     25.2388     26.77  .Q        .  V      .         .         .
13.417     25.4268     27.29  .Q        .  V      .         .         .
13.500     25.6186     27.85  .Q        .  V      .         .         .
13.583     25.8143     28.42  .Q        .  V      .         .         .
13.667     26.0143     29.03  .Q        .  V      .         .         .
13.750     26.2186     29.67  .Q        .  V      .         .         .
13.833     26.4277     30.35  .Q        .  V      .         .         .
13.917     26.6416     31.07  .Q        .   V     .         .         .
14.000     26.8609     31.83  .Q        .   V     .         .         .
14.083     27.0863     32.73  .Q        .   V     .         .         .
14.167     27.3212     34.11  .Q        .   V     .         .         .
14.250     27.5693     36.02  . Q       .   V     .         .         .
14.333     27.8327     38.26  . Q       .   V     .         .         .
14.417     28.1098     40.22  . Q       .   V     .         .         .
14.500     28.3981     41.86  . Q       .    V    .         .         .
14.583     28.6966     43.35  . Q       .    V    .         .         .
14.667     29.0055     44.85  . Q       .    V    .         .         .
14.750     29.3250     46.39  . Q       .    V    .         .         .
14.833     29.6562     48.10  . Q       .    V    .         .         .
14.917     30.0001     49.93  . Q       .    V    .         .         .
15.000     30.3581     51.98  . Q       .     V   .         .         .
15.083     30.7314     54.21  .  Q      .     V   .         .         .
15.167     31.1223     56.75  .  Q      .     V   .         .         .
15.250     31.5326     59.58  .  Q      .     V   .         .         .
15.333     31.9654     62.85  .  Q      .     V   .         .         .
15.417     32.4260     66.87  .  Q      .      V  .         .         .
15.500     32.9281     72.91  .   Q     .      V  .         .         .
15.583     33.4876     81.23  .   Q     .      V  .         .         .
15.667     34.1189     91.67  .    Q    .       V .         .         .
15.750     34.8258    102.63  .    Q    .       V .         .         .
15.833     35.6164    114.80  .     Q   .       V .         .         .
15.917     36.5193    131.10  .      Q  .        V.         .         .
16.000     37.6320    161.57  .        Q.        V.         .         .
16.083     39.3173    244.70  .         .  Q      V         .         .
```

16.167	42.3011	433.25	. . . V Q . .
16.250	46.4964	609.16	. . . V . Q .
16.333	51.0624	662.98	. . . V . Q .
16.417	54.4905	497.76	. . . Q . .
16.500	56.5968	305.84	. . Q . V. .
16.583	57.9277	193.25	. .Q . V .
16.667	58.7835	124.26	. Q . . .V .
16.750	59.4020	89.80	. Q . . .V .
16.833	59.9305	76.74	. Q . . .V .
16.917	60.3815	65.48	. Q . . .V .
17.000	60.7727	56.80	. Q . . . V .
17.083	61.1194	50.34	. Q . . . V .
17.167	61.4314	45.30	. Q . . . V .
17.250	61.7161	41.34	. Q . . . V .
17.333	61.9754	37.65	. Q . . . V .
17.417	62.2145	34.72	.Q . . . V .
17.500	62.4385	32.52	.Q . . . V .
17.583	62.6504	30.77	.Q . . . V .
17.667	62.8524	29.33	.Q . . . V .
17.750	63.0458	28.08	.Q . . . V .
17.833	63.2314	26.95	.Q . . . V .
17.917	63.4101	25.94	.Q . . . V .
18.000	63.5824	25.02	.Q . . . V .
18.083	63.7509	24.47	.Q . . . V .
18.167	63.9243	25.18	.Q . . . V .
18.250	64.1123	27.29	.Q . . . V .
18.333	64.3200	30.15	.Q . . . V .
18.417	64.5404	32.01	.Q . . . V .
18.500	64.7650	32.61	.Q . . . V .
18.583	64.9895	32.59	.Q . . . V .
18.667	65.2114	32.23	.Q . . . V .
18.750	65.4300	31.74	.Q . . . V .
18.833	65.6454	31.27	.Q . . . V .
18.917	65.8576	30.81	.Q . . . V .
19.000	66.0665	30.34	.Q . . . V .
19.083	66.2723	29.88	.Q . . . V .
19.167	66.4750	29.44	.Q . . . V .
19.250	66.6749	29.01	.Q . . . V .
19.333	66.8718	28.60	.Q . . . V .
19.417	67.0662	28.21	.Q . . . V .
19.500	67.2579	27.84	.Q . . . V .
19.583	67.4471	27.48	.Q . . . V .
19.667	67.6340	27.13	.Q . . . V .
19.750	67.8186	26.80	.Q . . . V .
19.833	68.0009	26.48	.Q . . . V .
19.917	68.1811	26.17	.Q . . . V .
20.000	68.3593	25.87	.Q . . . V .
20.083	68.5354	25.58	.Q . . . V .
20.167	68.7097	25.30	.Q . . . V .
20.250	68.8820	25.03	.Q . . . V .
20.333	69.0526	24.76	.Q . . . V .

20.417	69.2214	24.51	.Q	.	.	.	V .
20.500	69.3885	24.26	.Q	.	.	.	V .
20.583	69.5539	24.02	.Q	.	.	.	V .
20.667	69.7178	23.79	.Q	.	.	.	V .
20.750	69.8801	23.57	.Q	.	.	.	V .
20.833	70.0409	23.35	.Q	.	.	.	V .
20.917	70.2002	23.13	.Q	.	.	.	V .
21.000	70.3581	22.92	.Q	.	.	.	V .
21.083	70.5146	22.72	.Q	.	.	.	V .
21.167	70.6697	22.53	.Q	.	.	.	V .
21.250	70.8235	22.33	.Q	.	.	.	V .
21.333	70.9760	22.15	.Q	.	.	.	V .
21.417	71.1273	21.96	.Q	.	.	.	V .
21.500	71.2774	21.79	.Q	.	.	.	V .
21.583	71.4262	21.61	.Q	.	.	.	V .
21.667	71.5739	21.44	.Q	.	.	.	V .
21.750	71.7204	21.28	.Q	.	.	.	V .
21.833	71.8658	21.12	.Q	.	.	.	V .
21.917	72.0102	20.96	.Q	.	.	.	V .
22.000	72.1534	20.80	.Q	.	.	.	V .
22.083	72.2957	20.65	.Q	.	.	.	V .
22.167	72.4369	20.50	.Q	.	.	.	V .
22.250	72.5771	20.36	.Q	.	.	.	V .
22.333	72.7163	20.22	.Q	.	.	.	V .
22.417	72.8546	20.08	.Q	.	.	.	V .
22.500	72.9919	19.94	.Q	.	.	.	V .
22.583	73.1283	19.81	.Q	.	.	.	V .
22.667	73.2638	19.68	.Q	.	.	.	V .
22.750	73.3985	19.55	.Q	.	.	.	V .
22.833	73.5322	19.42	.Q	.	.	.	V .
22.917	73.6652	19.30	.Q	.	.	.	V .
23.000	73.7972	19.18	.Q	.	.	.	V .
23.083	73.9285	19.06	.Q	.	.	.	V.
23.167	74.0590	18.94	.Q	.	.	.	V.
23.250	74.1886	18.83	.Q	.	.	.	V.
23.333	74.3175	18.72	.Q	.	.	.	V.
23.417	74.4457	18.61	.Q	.	.	.	V.
23.500	74.5731	18.50	.Q	.	.	.	V.
23.583	74.6997	18.39	.Q	.	.	.	V.
23.667	74.8257	18.29	.Q	.	.	.	V.
23.750	74.9509	18.18	.Q	.	.	.	V.
23.833	75.0754	18.08	.Q	.	.	.	V.
23.917	75.1993	17.98	.Q	.	.	.	V.
24.000	75.3224	17.88	.Q	.	.	.	V.
24.083	75.4423	17.41	Q	.	.	.	V.
24.167	75.5478	15.32	Q	.	.	.	V.
24.250	75.6265	11.42	Q	.	.	.	V.
24.333	75.6718	6.58	Q	.	.	.	V.
24.417	75.6935	3.14	Q	.	.	.	V.
24.500	75.7033	1.43	Q	.	.	.	V.
24.583	75.7076	0.62	Q	.	.	.	V.

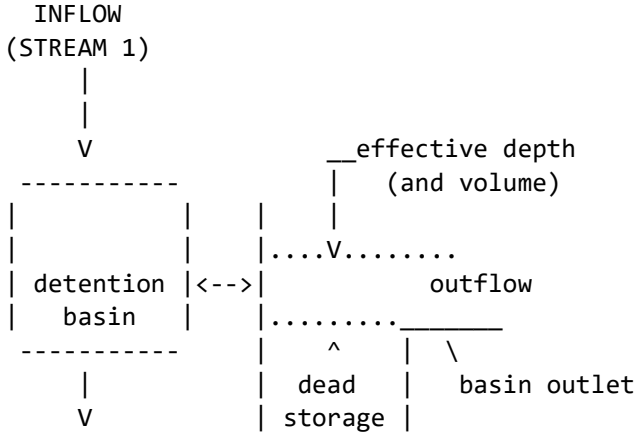
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  24.667     75.7097      0.30  Q         .         .         .        V.
  24.750     75.7110      0.19  Q         .         .         .        V.
  24.833     75.7117      0.10  Q         .         .         .        V.
  24.917     75.7120      0.04  Q         .         .         .        V.
  25.000     75.7120      0.01  Q         .         .         .         V
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated               Duration
       Peak Flow Rate                    (minutes)
   ======================                =========
             0%                           1500.0
            10%                             90.0
            20%                             40.0
            30%                             30.0
            40%                             25.0
            50%                             20.0
            60%                             20.0
            70%                             15.0
            80%                             10.0
            90%                             10.0


********************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 IS CODE =   7
--------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
================================================================================


********************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    101.00 IS CODE = 3.1
--------------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
================================================================================

                    INFLOW
                  (STREAM 1)
                       |
                       |
                       V                __effective depth
                   -----------          |   (and volume)
                  |           |    |    |
                  |           |    |....V........
                  | detention |<-->|           outflow
                  |   basin   |    |.........._______
                   -----------     |    ^    |  \
                       |           |  dead   |   basin outlet
                       V           | storage |
```



OUTFLOW ---------
(STREAM 1)

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

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	5.00	113.00	9.830
3	10.00	192.00	22.020
4	15.00	248.00	36.780
5	20.00	293.00	54.330
6	25.00	332.00	74.840

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(5-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
0.083	0.000	0.90	0.00	0.00	0.0	0.006
0.167	0.000	5.69	0.00	0.02	0.3	0.043
0.250	0.000	14.77	0.00	0.07	1.0	0.138
0.333	0.000	25.85	0.00	0.15	2.5	0.298
0.417	0.000	33.42	0.00	0.25	4.6	0.497
0.500	0.000	37.15	0.00	0.36	6.9	0.705
0.583	0.000	38.94	0.00	0.46	9.3	0.910
0.667	0.000	39.64	0.00	0.56	11.6	1.103
0.750	0.000	40.00	0.00	0.65	13.7	1.284
0.833	0.000	40.32	0.00	0.74	15.7	1.453
0.917	0.000	40.54	0.00	0.82	17.6	1.611
1.000	0.000	40.70	0.00	0.89	19.4	1.758
1.083	0.000	40.82	0.00	0.96	21.0	1.895
1.167	0.000	40.94	0.00	1.03	22.5	2.022
1.250	0.000	41.05	0.00	1.09	23.9	2.140
1.333	0.000	41.16	0.00	1.14	25.2	2.249

1.417	0.000	41.28	0.00	1.20	26.4	2.351
1.500	0.000	41.39	0.00	1.24	27.6	2.447
1.583	0.000	41.51	0.00	1.29	28.6	2.535
1.667	0.000	41.63	0.00	1.33	29.6	2.618
1.750	0.000	41.75	0.00	1.37	30.5	2.695
1.833	0.000	41.87	0.00	1.41	31.4	2.767
1.917	0.000	41.99	0.00	1.44	32.2	2.835
2.000	0.000	42.11	0.00	1.47	32.9	2.898
2.083	0.000	42.23	0.00	1.50	33.7	2.957
2.167	0.000	42.36	0.00	1.53	34.3	3.012
2.250	0.000	42.48	0.00	1.56	34.9	3.064
2.333	0.000	42.61	0.00	1.58	35.5	3.113
2.417	0.000	42.73	0.00	1.61	36.1	3.159
2.500	0.000	42.86	0.00	1.63	36.6	3.203
2.583	0.000	42.99	0.00	1.65	37.0	3.243
2.667	0.000	43.12	0.00	1.67	37.5	3.282
2.750	0.000	43.25	0.00	1.69	37.9	3.319
2.833	0.000	43.39	0.00	1.71	38.3	3.353
2.917	0.000	43.52	0.00	1.72	38.7	3.386
3.000	0.000	43.66	0.00	1.74	39.1	3.418
3.083	0.000	43.79	0.00	1.75	39.5	3.448
3.167	0.000	43.93	0.00	1.77	39.8	3.476
3.250	0.000	44.07	0.00	1.78	40.1	3.503
3.333	0.000	44.21	0.00	1.80	40.4	3.529
3.417	0.000	44.36	0.00	1.81	40.7	3.555
3.500	0.000	44.50	0.00	1.82	41.0	3.579
3.583	0.000	44.64	0.00	1.83	41.3	3.602
3.667	0.000	44.79	0.00	1.84	41.5	3.624
3.750	0.000	44.94	0.00	1.85	41.8	3.646
3.833	0.000	45.09	0.00	1.87	42.0	3.667
3.917	0.000	45.24	0.00	1.88	42.3	3.687
4.000	0.000	45.39	0.00	1.89	42.5	3.707
4.083	0.000	45.55	0.00	1.90	42.7	3.727
4.167	0.000	45.70	0.00	1.91	42.9	3.746
4.250	0.000	45.86	0.00	1.91	43.2	3.764
4.333	0.000	46.02	0.00	1.92	43.4	3.782
4.417	0.000	46.18	0.00	1.93	43.6	3.800
4.500	0.000	46.34	0.00	1.94	43.8	3.818
4.583	0.000	46.50	0.00	1.95	44.0	3.835
4.667	0.000	46.67	0.00	1.96	44.2	3.852
4.750	0.000	46.84	0.00	1.97	44.4	3.869
4.833	0.000	47.01	0.00	1.98	44.6	3.886
4.917	0.000	47.18	0.00	1.99	44.8	3.903
5.000	0.000	47.35	0.00	1.99	45.0	3.919
5.083	0.000	47.53	0.00	2.00	45.1	3.936
5.167	0.000	47.70	0.00	2.01	45.3	3.952
5.250	0.000	47.88	0.00	2.02	45.5	3.968
5.333	0.000	48.06	0.00	2.03	45.7	3.984
5.417	0.000	48.25	0.00	2.03	45.9	4.001
5.500	0.000	48.43	0.00	2.04	46.1	4.017
5.583	0.000	48.62	0.00	2.05	46.3	4.033

5.667	0.000	48.81	0.00	2.06	46.5	4.049
5.750	0.000	49.00	0.00	2.07	46.6	4.065
5.833	0.000	49.19	0.00	2.08	46.8	4.082
5.917	0.000	49.39	0.00	2.08	47.0	4.098
6.000	0.000	49.59	0.00	2.09	47.2	4.115
6.083	0.000	49.79	0.00	2.10	47.4	4.131
6.167	0.000	50.00	0.00	2.11	47.6	4.148
6.250	0.000	50.20	0.00	2.12	47.8	4.164
6.333	0.000	50.41	0.00	2.13	48.0	4.181
6.417	0.000	50.62	0.00	2.14	48.2	4.198
6.500	0.000	50.83	0.00	2.14	48.4	4.215
6.583	0.000	51.05	0.00	2.15	48.6	4.232
6.667	0.000	51.27	0.00	2.16	48.8	4.250
6.750	0.000	51.49	0.00	2.17	49.0	4.267
6.833	0.000	51.72	0.00	2.18	49.2	4.285
6.917	0.000	51.95	0.00	2.19	49.4	4.303
7.000	0.000	52.18	0.00	2.20	49.6	4.321
7.083	0.000	52.41	0.00	2.21	49.8	4.339
7.167	0.000	52.65	0.00	2.22	50.0	4.357
7.250	0.000	52.89	0.00	2.23	50.2	4.376
7.333	0.000	53.14	0.00	2.24	50.4	4.395
7.417	0.000	53.38	0.00	2.24	50.6	4.414
7.500	0.000	53.63	0.00	2.25	50.8	4.433
7.583	0.000	53.89	0.00	2.26	51.1	4.452
7.667	0.000	54.15	0.00	2.27	51.3	4.472
7.750	0.000	54.41	0.00	2.28	51.5	4.492
7.833	0.000	54.68	0.00	2.29	51.8	4.512
7.917	0.000	54.94	0.00	2.31	52.0	4.532
8.000	0.000	55.22	0.00	2.32	52.2	4.553
8.083	0.000	55.50	0.00	2.33	52.5	4.574
8.167	0.000	55.78	0.00	2.34	52.7	4.595
8.250	0.000	56.07	0.00	2.35	52.9	4.617
8.333	0.000	56.36	0.00	2.36	53.2	4.638
8.417	0.000	56.65	0.00	2.37	53.4	4.660
8.500	0.000	56.96	0.00	2.38	53.7	4.683
8.583	0.000	57.26	0.00	2.39	54.0	4.706
8.667	0.000	57.57	0.00	2.41	54.2	4.729
8.750	0.000	57.88	0.00	2.42	54.5	4.752
8.833	0.000	58.21	0.00	2.43	54.8	4.776
8.917	0.000	58.53	0.00	2.44	55.0	4.800
9.000	0.000	58.87	0.00	2.45	55.3	4.824
9.083	0.000	59.20	0.00	2.47	55.6	4.849
9.167	0.000	59.55	0.00	2.48	55.9	4.874
9.250	0.000	59.89	0.00	2.49	56.2	4.900
9.333	0.000	60.25	0.00	2.51	56.5	4.926
9.417	0.000	60.61	0.00	2.52	56.8	4.952
9.500	0.000	60.98	0.00	2.53	57.1	4.979
9.583	0.000	61.35	0.00	2.55	57.4	5.006
9.667	0.000	61.74	0.00	2.56	57.7	5.034
9.750	0.000	62.13	0.00	2.57	58.0	5.062
9.833	0.000	62.53	0.00	2.59	58.4	5.091

9.917	0.000	62.93	0.00	2.60	58.7	5.120
10.000	0.000	63.34	0.00	2.62	59.0	5.150
10.083	0.000	63.76	0.00	2.63	59.4	5.180
10.167	0.000	64.20	0.00	2.65	59.7	5.211
10.250	0.000	64.63	0.00	2.67	60.1	5.242
10.333	0.000	65.08	0.00	2.68	60.4	5.274
10.417	0.000	65.53	0.00	2.70	60.8	5.307
10.500	0.000	66.00	0.00	2.72	61.2	5.340
10.583	0.000	66.48	0.00	2.73	61.6	5.374
10.667	0.000	66.97	0.00	2.75	62.0	5.408
10.750	0.000	67.46	0.00	2.77	62.4	5.443
10.833	0.000	67.98	0.00	2.79	62.8	5.479
10.917	0.000	68.49	0.00	2.81	63.2	5.515
11.000	0.000	69.03	0.00	2.82	63.6	5.553
11.083	0.000	69.57	0.00	2.84	64.0	5.591
11.167	0.000	70.14	0.00	2.86	64.5	5.630
11.250	0.000	70.71	0.00	2.88	64.9	5.669
11.333	0.000	71.30	0.00	2.90	65.4	5.710
11.417	0.000	71.90	0.00	2.93	65.9	5.751
11.500	0.000	72.52	0.00	2.95	66.4	5.794
11.583	0.000	73.15	0.00	2.97	66.9	5.837
11.667	0.000	73.80	0.00	2.99	67.4	5.882
11.750	0.000	74.47	0.00	3.01	67.9	5.927
11.833	0.000	75.16	0.00	3.04	68.4	5.974
11.917	0.000	75.86	0.00	3.06	68.9	6.021
12.000	0.000	76.59	0.00	3.09	69.5	6.070
12.083	0.000	76.67	0.00	3.11	70.0	6.116
12.167	0.000	73.88	0.00	3.12	70.4	6.139
12.250	0.000	67.91	0.00	3.11	70.5	6.122
12.333	0.000	60.47	0.00	3.08	70.0	6.056
12.417	0.000	55.65	0.00	3.03	69.1	5.964
12.500	0.000	53.73	0.00	2.98	68.0	5.865
12.583	0.000	53.25	0.00	2.94	66.9	5.771
12.667	0.000	53.64	0.00	2.89	65.9	5.687
12.750	0.000	54.29	0.00	2.86	65.0	5.614
12.833	0.000	55.02	0.00	2.82	64.2	5.551
12.917	0.000	55.85	0.00	2.80	63.5	5.498
13.000	0.000	56.77	0.00	2.77	63.0	5.455
13.083	0.000	57.76	0.00	2.76	62.5	5.423
13.167	0.000	58.81	0.00	2.75	62.2	5.399
13.250	0.000	59.89	0.00	2.74	62.0	5.385
13.333	0.000	61.04	0.00	2.74	61.9	5.379
13.417	0.000	62.23	0.00	2.74	61.9	5.382
13.500	0.000	63.49	0.00	2.74	61.9	5.393
13.583	0.000	64.80	0.00	2.75	62.1	5.411
13.667	0.000	66.20	0.00	2.77	62.4	5.438
13.750	0.000	67.66	0.00	2.78	62.7	5.472
13.833	0.000	69.22	0.00	2.80	63.1	5.514
13.917	0.000	70.85	0.00	2.83	63.7	5.563
14.000	0.000	72.60	0.00	2.86	64.3	5.620
14.083	0.000	74.66	0.00	2.89	65.0	5.687

14.167	0.000	77.89	0.00	2.93	65.9	5.770
14.250	0.000	82.34	0.00	2.99	66.9	5.876
14.333	0.000	87.51	0.00	3.06	68.3	6.008
14.417	0.000	91.94	0.00	3.13	69.9	6.160
14.500	0.000	95.63	0.00	3.22	71.8	6.324
14.583	0.000	99.01	0.00	3.31	73.7	6.499
14.667	0.000	102.40	0.00	3.40	75.8	6.682
14.750	0.000	105.94	0.00	3.50	77.9	6.875
14.833	0.000	109.85	0.00	3.60	80.2	7.079
14.917	0.000	114.05	0.00	3.71	82.6	7.296
15.000	0.000	118.74	0.00	3.83	85.2	7.527
15.083	0.000	123.86	0.00	3.95	87.9	7.774
15.167	0.000	129.69	0.00	4.09	90.9	8.041
15.250	0.000	136.16	0.00	4.24	94.1	8.331
15.333	0.000	143.68	0.00	4.40	97.6	8.648
15.417	0.000	152.94	0.00	4.58	101.5	9.003
15.500	0.000	166.97	0.00	4.79	105.9	9.423
15.583	0.000	186.29	0.00	5.05	111.0	9.942
15.667	0.000	210.34	0.00	5.31	115.8	10.593
15.750	0.000	235.30	0.00	5.64	120.5	11.383
15.833	0.000	263.21	0.00	6.02	126.1	12.327
15.917	0.000	300.52	0.00	6.50	132.9	13.482
16.000	0.000	369.09	0.00	7.14	141.7	15.047
16.083	0.000	549.03	0.00	8.25	155.6	17.757
16.167	0.000	952.09	0.00	10.36	180.2	23.073
16.250	0.000	1316.19	0.00	12.94	210.4	30.688
16.333	0.000	1403.27	0.00	15.55	238.9	38.707
16.417	0.000	1032.10	0.00	17.06	259.8	44.027
16.500	0.000	636.60	0.00	17.78	269.8	46.553
16.583	0.000	406.20	0.00	18.04	274.2	47.462
16.667	0.000	264.25	0.00	18.02	275.3	47.385
16.750	0.000	199.51	0.00	17.87	274.5	46.869
16.833	0.000	170.35	0.00	17.67	273.0	46.162
16.917	0.000	144.98	0.00	17.43	270.9	45.295
17.000	0.000	126.22	0.00	17.15	268.6	44.314
17.083	0.000	112.65	0.00	16.85	266.0	43.258
17.167	0.000	102.40	0.00	16.53	263.2	42.151
17.250	0.000	93.44	0.00	16.20	260.3	41.002
17.333	0.000	85.11	0.00	15.86	257.3	39.816
17.417	0.000	78.56	0.00	15.52	254.2	38.606
17.500	0.000	73.66	0.00	15.17	251.1	37.384
17.583	0.000	69.76	0.00	14.79	247.6	36.159
17.667	0.000	66.53	0.00	14.38	243.3	34.941
17.750	0.000	63.71	0.00	13.97	238.7	33.736
17.833	0.000	61.17	0.00	13.57	234.2	32.544
17.917	0.000	58.88	0.00	13.17	229.7	31.368
18.000	0.000	56.81	0.00	12.77	225.3	30.208
18.083	0.000	55.59	0.00	12.39	220.9	29.069
18.167	0.000	57.40	0.00	12.02	216.7	27.972
18.250	0.000	62.49	0.00	11.67	212.6	26.938
18.333	0.000	69.11	0.00	11.34	208.8	25.976

18.417	0.000	73.15	0.00	11.03	205.3	25.066
18.500	0.000	74.37	0.00	10.73	201.9	24.188
18.583	0.000	74.21	0.00	10.44	198.6	23.331
18.667	0.000	73.30	0.00	10.16	195.4	22.490
18.750	0.000	72.21	0.00	9.86	191.7	21.667
18.833	0.000	71.14	0.00	9.53	187.1	20.868
18.917	0.000	70.07	0.00	9.21	182.0	20.097
19.000	0.000	69.00	0.00	8.91	177.1	19.353
19.083	0.000	67.95	0.00	8.61	172.4	18.633
19.167	0.000	66.94	0.00	8.33	167.8	17.939
19.250	0.000	65.98	0.00	8.05	163.4	17.268
19.333	0.000	65.05	0.00	7.79	159.1	16.620
19.417	0.000	64.17	0.00	7.53	155.0	15.995
19.500	0.000	63.32	0.00	7.28	151.0	15.391
19.583	0.000	62.50	0.00	7.04	147.1	14.808
19.667	0.000	61.71	0.00	6.81	143.4	14.245
19.750	0.000	60.96	0.00	6.59	139.9	13.702
19.833	0.000	60.23	0.00	6.37	136.4	13.177
19.917	0.000	59.52	0.00	6.17	133.1	12.671
20.000	0.000	58.84	0.00	5.96	129.8	12.182
20.083	0.000	58.18	0.00	5.77	126.7	11.710
20.167	0.000	57.55	0.00	5.58	123.7	11.254
20.250	0.000	56.93	0.00	5.40	120.8	10.814
20.333	0.000	56.34	0.00	5.23	118.0	10.390
20.417	0.000	55.76	0.00	5.06	115.3	9.980
20.500	0.000	55.20	0.00	4.88	112.1	9.588
20.583	0.000	54.65	0.00	4.69	108.1	9.220
20.667	0.000	54.13	0.00	4.51	104.0	8.876
20.750	0.000	53.61	0.00	4.35	100.2	8.555
20.833	0.000	53.11	0.00	4.20	96.6	8.256
20.917	0.000	52.63	0.00	4.06	93.3	7.976
21.000	0.000	52.16	0.00	3.92	90.2	7.714
21.083	0.000	51.70	0.00	3.80	87.3	7.469
21.167	0.000	51.25	0.00	3.68	84.5	7.240
21.250	0.000	50.81	0.00	3.57	82.0	7.025
21.333	0.000	50.39	0.00	3.47	79.6	6.824
21.417	0.000	49.97	0.00	3.37	77.4	6.635
21.500	0.000	49.57	0.00	3.28	75.3	6.458
21.583	0.000	49.18	0.00	3.20	73.3	6.292
21.667	0.000	48.79	0.00	3.12	71.4	6.136
21.750	0.000	48.41	0.00	3.05	69.7	5.990
21.833	0.000	48.05	0.00	2.98	68.1	5.852
21.917	0.000	47.69	0.00	2.91	66.5	5.722
22.000	0.000	47.33	0.00	2.85	65.1	5.600
22.083	0.000	46.99	0.00	2.79	63.7	5.485
22.167	0.000	46.65	0.00	2.73	62.4	5.376
22.250	0.000	46.32	0.00	2.68	61.2	5.274
22.333	0.000	46.00	0.00	2.63	60.1	5.177
22.417	0.000	45.69	0.00	2.59	59.0	5.085
22.500	0.000	45.38	0.00	2.54	58.0	4.998
22.583	0.000	45.07	0.00	2.50	57.0	4.916

22.667	0.000	44.78	0.00	2.46	56.1	4.839
22.750	0.000	44.48	0.00	2.42	55.2	4.765
22.833	0.000	44.20	0.00	2.39	54.4	4.695
22.917	0.000	43.92	0.00	2.35	53.6	4.628
23.000	0.000	43.64	0.00	2.32	52.8	4.565
23.083	0.000	43.37	0.00	2.29	52.1	4.505
23.167	0.000	43.11	0.00	2.26	51.5	4.447
23.250	0.000	42.85	0.00	2.23	50.8	4.392
23.333	0.000	42.59	0.00	2.21	50.2	4.340
23.417	0.000	42.34	0.00	2.18	49.6	4.290
23.500	0.000	42.09	0.00	2.16	49.0	4.242
23.583	0.000	41.85	0.00	2.13	48.5	4.196
23.667	0.000	41.61	0.00	2.11	48.0	4.152
23.750	0.000	41.38	0.00	2.09	47.5	4.110
23.833	0.000	41.15	0.00	2.07	47.0	4.070
23.917	0.000	40.92	0.00	2.05	46.6	4.031

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 169.365 AF
BASIN STORAGE = 0.000 AF (WITH 0.000 AF INITIALLY FILLED)
OUTFLOW VOLUME = 169.365 AF
LOSS VOLUME = 0.000 AF

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FLOW PROCESS FROM NODE 302.00 TO NODE 100.00 IS CODE = 1

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

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(UNIT-HYDROGRAPH ADDED TO STREAM #3)

WATERSHED AREA = 577.950 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
*USER ENTERED "LAG" TIME = 0.210 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY(DEVELOPED) S-GRAPH SELECTED
MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) = 0.271
LOW LOSS FRACTION = 0.352
HYDROGRAPH MODEL #1 SPECIFIED

SPECIFIED PEAK 5-MINUTES RAINFALL(INCH)= 0.36
SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)= 0.75
SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 1.00
SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 1.45
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 1.80
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 3.60

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:

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            5-MINUTE FACTOR = 0.974
           30-MINUTE FACTOR = 0.974
            1-HOUR FACTOR = 0.974
            3-HOUR FACTOR = 0.996
            6-HOUR FACTOR = 0.998
           24-HOUR FACTOR = 0.999

          UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
          UNIT INTERVAL PERCENTAGE OF LAG-TIME =  39.683


================================================================================
                      UNIT HYDROGRAPH DETERMINATION

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    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
--------------------------------------------------------------------------------
        1                 2.872               200.764
        2                19.165              1138.762
        3                48.437              2045.999
        4                76.826              1984.323
        5                90.830               978.816
        6                96.604               403.564
        7                98.430               127.619
        8                99.173                51.923
        9                99.669                34.688
       10                99.917                17.344
       11               100.000                 5.781


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    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      54.8202
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     118.3024
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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	250.0	500.0	750.0	1000.0
0.083	0.0056	0.81	Q	.	.	.	.
0.167	0.0430	5.43	Q	.	.	.	.
0.250	0.1376	13.74	Q	.	.	.	.
0.333	0.2878	21.81	Q	.	.	.	.
0.417	0.4657	25.83	VQ	.	.	.	.
0.500	0.6554	27.54	VQ	.	.	.	.
0.583	0.8490	28.12	VQ	.	.	.	.
0.667	1.0447	28.41	VQ	.	.	.	.
0.750	1.2419	28.63	VQ	.	.	.	.
0.833	1.4400	28.77	VQ	.	.	.	.
0.917	1.6389	28.87	VQ	.	.	.	.
1.000	1.8383	28.95	VQ	.	.	.	.
1.083	2.0382	29.03	VQ	.	.	.	.
1.167	2.2387	29.11	VQ	.	.	.	.
1.250	2.4398	29.19	VQ	.	.	.	.
1.333	2.6414	29.27	VQ	.	.	.	.
1.417	2.8436	29.36	VQ	.	.	.	.
1.500	3.0463	29.44	.Q	.	.	.	.
1.583	3.2496	29.52	.Q	.	.	.	.
1.667	3.4535	29.61	.Q	.	.	.	.
1.750	3.6580	29.69	.Q	.	.	.	.
1.833	3.8631	29.78	.Q	.	.	.	.
1.917	4.0687	29.86	.Q	.	.	.	.
2.000	4.2750	29.95	.Q	.	.	.	.
2.083	4.4818	30.04	.Q	.	.	.	.
2.167	4.6893	30.12	.Q	.	.	.	.
2.250	4.8974	30.21	.Q	.	.	.	.
2.333	5.1061	30.30	.Q	.	.	.	.
2.417	5.3154	30.39	.Q	.	.	.	.
2.500	5.5254	30.49	.Q	.	.	.	.
2.583	5.7360	30.58	.Q	.	.	.	.
2.667	5.9472	30.67	.QV	.	.	.	.
2.750	6.1591	30.77	.QV	.	.	.	.
2.833	6.3716	30.86	.QV	.	.	.	.
2.917	6.5848	30.96	.QV	.	.	.	.
3.000	6.7987	31.05	.QV	.	.	.	.
3.083	7.0132	31.15	.QV	.	.	.	.
3.167	7.2285	31.25	.QV	.	.	.	.
3.250	7.4444	31.35	.QV	.	.	.	.
3.333	7.6610	31.45	.QV	.	.	.	.

3.417	7.8783	31.55	.QV	.	.	.	.
3.500	8.0963	31.65	.QV	.	.	.	.
3.583	8.3150	31.76	.QV	.	.	.	.
3.667	8.5344	31.86	.QV	.	.	.	.
3.750	8.7546	31.97	.QV	.	.	.	.
3.833	8.9755	32.07	.Q V	.	.	.	.
3.917	9.1971	32.18	.Q V	.	.	.	.
4.000	9.4195	32.29	.Q V	.	.	.	.
4.083	9.6426	32.40	.Q V	.	.	.	.
4.167	9.8665	32.51	.Q V	.	.	.	.
4.250	10.0912	32.62	.Q V	.	.	.	.
4.333	10.3167	32.74	.Q V	.	.	.	.
4.417	10.5429	32.85	.Q V	.	.	.	.
4.500	10.7700	32.97	.Q V	.	.	.	.
4.583	10.9978	33.08	.Q V	.	.	.	.
4.667	11.2265	33.20	.Q V	.	.	.	.
4.750	11.4560	33.32	.Q V	.	.	.	.
4.833	11.6863	33.44	.Q V	.	.	.	.
4.917	11.9175	33.56	.Q V	.	.	.	.
5.000	12.1495	33.69	.Q V	.	.	.	.
5.083	12.3824	33.81	.Q V	.	.	.	.
5.167	12.6161	33.94	.Q V	.	.	.	.
5.250	12.8507	34.07	.Q V	.	.	.	.
5.333	13.0863	34.20	.Q V	.	.	.	.
5.417	13.3227	34.33	.Q V	.	.	.	.
5.500	13.5600	34.46	.Q V	.	.	.	.
5.583	13.7982	34.59	.Q V	.	.	.	.
5.667	14.0374	34.73	.Q V	.	.	.	.
5.750	14.2775	34.86	.Q V	.	.	.	.
5.833	14.5186	35.00	.Q V	.	.	.	.
5.917	14.7606	35.14	.Q V	.	.	.	.
6.000	15.0036	35.29	.Q V	.	.	.	.
6.083	15.2476	35.43	.Q V	.	.	.	.
6.167	15.4927	35.57	.Q V	.	.	.	.
6.250	15.7387	35.72	.Q V	.	.	.	.
6.333	15.9857	35.87	.Q V	.	.	.	.
6.417	16.2338	36.02	.Q V	.	.	.	.
6.500	16.4829	36.17	.Q V	.	.	.	.
6.583	16.7331	36.33	.Q V	.	.	.	.
6.667	16.9844	36.49	.Q V	.	.	.	.
6.750	17.2368	36.64	.Q V	.	.	.	.
6.833	17.4903	36.81	.Q V	.	.	.	.
6.917	17.7448	36.97	.Q V	.	.	.	.
7.000	18.0006	37.13	.Q V	.	.	.	.
7.083	18.2575	37.30	.Q V	.	.	.	.
7.167	18.5156	37.47	.Q V	.	.	.	.
7.250	18.7748	37.64	.Q V	.	.	.	.
7.333	19.0352	37.82	.Q V	.	.	.	.
7.417	19.2969	37.99	.Q V	.	.	.	.
7.500	19.5598	38.17	.Q V	.	.	.	.
7.583	19.8240	38.36	.Q V	.	.	.	.

```
 7.667     20.0894     38.54  .Q    V   .         .         .         .
 7.750     20.3561     38.73  .Q    V   .         .         .         .
 7.833     20.6242     38.92  .Q    V   .         .         .         .
 7.917     20.8935     39.11  .Q     V  .         .         .         .
 8.000     21.1642     39.31  .Q     V  .         .         .         .
 8.083     21.4363     39.50  .Q     V  .         .         .         .
 8.167     21.7098     39.71  .Q     V  .         .         .         .
 8.250     21.9847     39.91  .Q     V  .         .         .         .
 8.333     22.2610     40.12  .Q     V  .         .         .         .
 8.417     22.5387     40.33  .Q     V  .         .         .         .
 8.500     22.8180     40.55  .Q     V  .         .         .         .
 8.583     23.0987     40.76  .Q     V  .         .         .         .
 8.667     23.3810     40.99  .Q     V  .         .         .         .
 8.750     23.6649     41.21  .Q      V .         .         .         .
 8.833     23.9503     41.44  .Q      V .         .         .         .
 8.917     24.2373     41.67  .Q      V .         .         .         .
 9.000     24.5260     41.91  .Q      V .         .         .         .
 9.083     24.8163     42.15  .Q      V .         .         .         .
 9.167     25.1083     42.40  .Q      V .         .         .         .
 9.250     25.4020     42.65  .Q      V .         .         .         .
 9.333     25.6975     42.91  .Q      V .         .         .         .
 9.417     25.9948     43.16  .Q      V .         .         .         .
 9.500     26.2939     43.43  .Q      V .         .         .         .
 9.583     26.5948     43.69  .Q      V .         .         .         .
 9.667     26.8976     43.97  .Q       V.         .         .         .
 9.750     27.2024     44.25  .Q       V.         .         .         .
 9.833     27.5091     44.53  .Q       V.         .         .         .
 9.917     27.8178     44.82  .Q       V.         .         .         .
10.000     28.1285     45.12  .Q       V.         .         .         .
10.083     28.4413     45.42  .Q       V.         .         .         .
10.167     28.7563     45.73  .Q       V.         .         .         .
10.250     29.0733     46.04  .Q       V.         .         .         .
10.333     29.3927     46.36  .Q       V.         .         .         .
10.417     29.7142     46.69  .Q        V         .         .         .
10.500     30.0381     47.03  .Q        V         .         .         .
10.583     30.3643     47.36  .Q        V         .         .         .
10.667     30.6929     47.72  .Q        V         .         .         .
10.750     31.0240     48.07  .Q        V         .         .         .
10.833     31.3576     48.44  .Q        V         .         .         .
10.917     31.6937     48.81  .Q        V         .         .         .
11.000     32.0326     49.20  .Q        V         .         .         .
11.083     32.3740     49.58  .Q        V         .         .         .
11.167     32.7183     49.99  .Q        .V        .         .         .
11.250     33.0654     50.40  . Q       .V        .         .         .
11.333     33.4154     50.82  . Q       .V        .         .         .
11.417     33.7684     51.25  . Q       .V        .         .         .
11.500     34.1244     51.70  . Q       .V        .         .         .
11.583     34.4836     52.15  . Q       .V        .         .         .
11.667     34.8460     52.62  . Q       .V        .         .         .
11.750     35.2117     53.10  . Q       .V        .         .         .
11.833     35.5808     53.60  . Q       . V       .         .         .
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11.917     35.9534     54.10  . Q       . V       .         .         .
12.000     36.3296     54.63  . Q       . V       .         .         .
12.083     36.7053     54.55  . Q       . V       .         .         .
12.167     37.0613     51.69  . Q       . V       .         .         .
12.250     37.3787     46.09  .Q        . V       .         .         .
12.333     37.6588     40.68  .Q        . V       .         .         .
12.417     37.9224     38.28  .Q        . V       .         .         .
12.500     38.1815     37.62  .Q        . V       .         .         .
12.583     38.4419     37.80  .Q        . V       .         .         .
12.667     38.7053     38.24  .Q        .  V      .         .         .
12.750     38.9721     38.75  .Q        .  V      .         .         .
12.833     39.2430     39.34  .Q        .  V      .         .         .
12.917     39.5183     39.98  .Q        .  V      .         .         .
13.000     39.7985     40.68  .Q        .  V      .         .         .
13.083     40.0836     41.39  .Q        .  V      .         .         .
13.167     40.3739     42.15  .Q        .  V      .         .         .
13.250     40.6696     42.94  .Q        .  V      .         .         .
13.333     40.9710     43.77  .Q        .  V      .         .         .
13.417     41.2784     44.63  .Q        .  V      .         .         .
13.500     41.5921     45.55  .Q        .   V     .         .         .
13.583     41.9123     46.50  .Q        .   V     .         .         .
13.667     42.2396     47.52  .Q        .   V     .         .         .
13.750     42.5741     48.57  .Q        .   V     .         .         .
13.833     42.9165     49.71  .Q        .   V     .         .         .
13.917     43.2670     50.89  . Q       .   V     .         .         .
14.000     43.6263     52.17  . Q       .   V     .         .         .
14.083     43.9963     53.73  . Q       .   V     .         .         .
14.167     44.3853     56.48  . Q       .    V    .         .         .
14.250     44.8010     60.36  . Q       .    V    .         .         .
14.333     45.2441     64.33  . Q       .    V    .         .         .
14.417     45.7075     67.29  . Q       .    V    .         .         .
14.500     46.1881     69.78  . Q       .    V    .         .         .
14.583     46.6846     72.09  . Q       .    V    .         .         .
14.667     47.1980     74.54  . Q       .    V    .         .         .
14.750     47.7292     77.14  .  Q      .     V   .         .         .
14.833     48.2803     80.01  .  Q      .     V   .         .         .
14.917     48.8526     83.10  .  Q      .     V   .         .         .
15.000     49.4489     86.58  .  Q      .     V   .         .         .
15.083     50.0713     90.37  .  Q      .     V   .         .         .
15.167     50.7236     94.72  .  Q      .      V  .         .         .
15.250     51.4093     99.56  .  Q      .      V  .         .         .
15.333     52.1338    105.20  .   Q     .      V  .         .         .
15.417     52.9067    112.22  .   Q     .      V  .         .         .
15.500     53.7563    123.37  .   Q     .       V .         .         .
15.583     54.7115    138.69  .    Q    .       V .         .         .
15.667     55.7883    156.35  .     Q   .       V .         .         .
15.750     56.9860    173.91  .     Q   .        V.         .         .
15.833     58.3258    194.54  .      Q  .        V.         .         .
15.917     59.8635    223.28  .       Q .         V         .         .
16.000     61.7847    278.95  .         .Q        V         .         .
16.083     64.7066    424.26  .         .     Q   .V        .         .
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16.167     69.8878    752.32  .         .         .  V      Q         .
16.250     76.7550    997.11  .         .         .    V    .        Q.
16.333     83.0223    910.01  .         .         .       V .     Q   .
16.417     86.8656    558.05  .         .         . Q      V.         .
16.500     89.1530    332.13  .         .  Q      .         V         .
16.583     90.5806    207.29  .       Q .         .         V         .
16.667     91.6318    152.64  .     Q   .         .         V         .
16.750     92.4995    125.98  .    Q    .         .         .V        .
16.833     93.2325    106.44  .   Q     .         .         .V        .
16.917     93.8711     92.72  .  Q      .         .         .V        .
17.000     94.4444     83.24  .  Q      .         .         .V        .
17.083     94.9730     76.76  .  Q      .         .         . V       .
17.167     95.4578     70.39  . Q       .         .         . V       .
17.250     95.8976     63.86  . Q       .         .         . V       .
17.333     96.2976     58.07  . Q       .         .         . V       .
17.417     96.6691     53.95  . Q       .         .         . V       .
17.500     97.0195     50.87  . Q       .         .         . V       .
17.583     97.3529     48.42  .Q        .         .         . V       .
17.667     97.6718     46.30  .Q        .         .         .  V      .
17.750     97.9776     44.40  .Q        .         .         .  V      .
17.833     98.2717     42.70  .Q        .         .         .  V      .
17.917     98.5552     41.17  .Q        .         .         .  V      .
18.000     98.8291     39.76  .Q        .         .         .  V      .
18.083     99.0982     39.08  .Q        .         .         .  V      .
18.167     99.3826     41.30  .Q        .         .         .  V      .
18.250     99.7016     46.31  .Q        .         .         .  V      .
18.333    100.0539     51.16  . Q       .         .         .  V      .
18.417    100.4190     53.02  . Q       .         .         .  V      .
18.500    100.7853     53.19  . Q       .         .         .   V     .
18.583    101.1475     52.59  . Q       .         .         .   V     .
18.667    101.5043     51.80  . Q       .         .         .   V     .
18.750    101.8557     51.02  . Q       .         .         .   V     .
18.833    102.2015     50.22  . Q       .         .         .   V     .
18.917    102.5420     49.44  .Q        .         .         .   V     .
19.000    102.8772     48.67  .Q        .         .         .   V     .
19.083    103.2073     47.93  .Q        .         .         .   V     .
19.167    103.5326     47.23  .Q        .         .         .    V    .
19.250    103.8533     46.56  .Q        .         .         .    V    .
19.333    104.1695     45.92  .Q        .         .         .    V    .
19.417    104.4815     45.30  .Q        .         .         .    V    .
19.500    104.7894     44.71  .Q        .         .         .    V    .
19.583    105.0933     44.14  .Q        .         .         .    V    .
19.667    105.3935     43.59  .Q        .         .         .    V    .
19.750    105.6901     43.06  .Q        .         .         .    V    .
19.833    105.9831     42.55  .Q        .         .         .    V    .
19.917    106.2728     42.06  .Q        .         .         .    V    .
20.000    106.5592     41.58  .Q        .         .         .     V   .
20.083    106.8424     41.12  .Q        .         .         .     V   .
20.167    107.1225     40.68  .Q        .         .         .     V   .
20.250    107.3997     40.25  .Q        .         .         .     V   .
20.333    107.6740     39.83  .Q        .         .         .     V   .
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20.417    107.9455     39.42  .Q        .         .         .     V   .
20.500    108.2143     39.03  .Q        .         .         .     V   .
20.583    108.4805     38.65  .Q        .         .         .     V   .
20.667    108.7441     38.28  .Q        .         .         .     V   .
20.750    109.0053     37.92  .Q        .         .         .     V   .
20.833    109.2641     37.57  .Q        .         .         .     V   .
20.917    109.5205     37.23  .Q        .         .         .      V  .
21.000    109.7746     36.90  .Q        .         .         .      V  .
21.083    110.0265     36.58  .Q        .         .         .      V  .
21.167    110.2763     36.26  .Q        .         .         .      V  .
21.250    110.5239     35.96  .Q        .         .         .      V  .
21.333    110.7695     35.66  .Q        .         .         .      V  .
21.417    111.0131     35.37  .Q        .         .         .      V  .
21.500    111.2547     35.08  .Q        .         .         .      V  .
21.583    111.4944     34.81  .Q        .         .         .      V  .
21.667    111.7323     34.54  .Q        .         .         .      V  .
21.750    111.9683     34.27  .Q        .         .         .      V  .
21.833    112.2026     34.01  .Q        .         .         .      V  .
21.917    112.4351     33.76  .Q        .         .         .       V .
22.000    112.6659     33.51  .Q        .         .         .       V .
22.083    112.8950     33.27  .Q        .         .         .       V .
22.167    113.1225     33.03  .Q        .         .         .       V .
22.250    113.3484     32.80  .Q        .         .         .       V .
22.333    113.5728     32.58  .Q        .         .         .       V .
22.417    113.7956     32.35  .Q        .         .         .       V .
22.500    114.0169     32.14  .Q        .         .         .       V .
22.583    114.2367     31.92  .Q        .         .         .       V .
22.667    114.4551     31.71  .Q        .         .         .       V .
22.750    114.6721     31.51  .Q        .         .         .       V .
22.833    114.8877     31.31  .Q        .         .         .       V .
22.917    115.1020     31.11  .Q        .         .         .       V .
23.000    115.3149     30.91  .Q        .         .         .       V .
23.083    115.5265     30.72  .Q        .         .         .        V.
23.167    115.7368     30.54  .Q        .         .         .        V.
23.250    115.9459     30.35  .Q        .         .         .        V.
23.333    116.1537     30.17  .Q        .         .         .        V.
23.417    116.3603     30.00  .Q        .         .         .        V.
23.500    116.5657     29.82  .Q        .         .         .        V.
23.583    116.7699     29.65  .Q        .         .         .        V.
23.667    116.9730     29.49  .Q        .         .         .        V.
23.750    117.1749     29.32  .Q        .         .         .        V.
23.833    117.3757     29.16  .Q        .         .         .        V.
23.917    117.5754     29.00  .Q        .         .         .        V.
24.000    117.7741     28.84  .Q        .         .         .        V.
24.083    117.9660     27.87  .Q        .         .         .        V.
24.167    118.1253     23.12  Q         .         .         .        V.
24.250    118.2266     14.72  Q         .         .         .        V.
24.333    118.2721      6.61  Q         .         .         .        V.
24.417    118.2902      2.62  Q         .         .         .        V.
24.500    118.2968      0.97  Q         .         .         .        V.
24.583    118.2999      0.45  Q         .         .         .        V.
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  24.667    118.3016      0.24  Q         .         .         .        V.
  24.750    118.3022      0.09  Q         .         .         .        V.
  24.833    118.3024      0.02  Q         .         .         .        V.
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated                Duration
       Peak Flow Rate                     (minutes)
   ======================                 =========
              0%                           1490.0
             10%                             95.0
             20%                             45.0
             30%                             30.0
             40%                             25.0
             50%                             20.0
             60%                             15.0
             70%                             15.0
             80%                             10.0
             90%                             10.0


********************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 5.2
--------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
================================================================================

         THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
         TO ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE
         INTERVALS(Reference: the National Engineering Handbook,
         Hydrology, Chapter 17, page 17-52, August,1972,
         U.S. Department of Commerce).


         ASSUMED REGULAR CHANNEL INFORMATION:
           BASEWIDTH(FT) =   30.00     CHANNEL Z =  2.00
           UPSTREAM ELEVATION(FT) =     938.00
           DOWNSTREAM ELEVATION(FT) =     909.00
           CHANNEL LENGTH(FT) =    2185.72     MANNING'S FACTOR = 0.015
           CONSTANT LOSS RATE(CFS) =    0.00


         CHANNEL ROUTING COEFFICIENT ESTIMATED:
           MAXIMUM INFLOW(CFS) =   997.11
           AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW =   804.37
           CHANNEL NORMAL VELOCITY FOR Q =   804.37 CFS =  14.73 FPS
           ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.897

         MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
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UNIT INTERVALS IS CSTAR = 0.985

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 3) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 3) (CFS)
0.083	0.81	0.45	0.45
0.167	5.43	3.34	3.34
0.250	13.74	9.95	9.95
0.333	21.81	18.10	18.10
0.417	25.83	23.96	23.96
0.500	27.54	26.74	26.74
0.583	28.12	27.85	27.85
0.667	28.41	28.28	28.28
0.750	28.63	28.53	28.53
0.833	28.77	28.71	28.71
0.917	28.87	28.83	28.83
1.000	28.95	28.92	28.92
1.083	29.03	29.00	29.00
1.167	29.11	29.08	29.08
1.250	29.19	29.16	29.16
1.333	29.27	29.24	29.24
1.417	29.36	29.32	29.32
1.500	29.44	29.40	29.40
1.583	29.52	29.48	29.48
1.667	29.61	29.57	29.57
1.750	29.69	29.65	29.65
1.833	29.78	29.74	29.74
1.917	29.86	29.82	29.82
2.000	29.95	29.91	29.91
2.083	30.04	30.00	30.00
2.167	30.12	30.08	30.08
2.250	30.21	30.17	30.17
2.333	30.30	30.26	30.26
2.417	30.39	30.35	30.35
2.500	30.49	30.44	30.44
2.583	30.58	30.54	30.54
2.667	30.67	30.63	30.63
2.750	30.77	30.72	30.72
2.833	30.86	30.82	30.82
2.917	30.96	30.91	30.91
3.000	31.05	31.01	31.01
3.083	31.15	31.11	31.11
3.167	31.25	31.20	31.20
3.250	31.35	31.30	31.30
3.333	31.45	31.40	31.40
3.417	31.55	31.51	31.51
3.500	31.65	31.61	31.61
3.583	31.76	31.71	31.71

3.667	31.86	31.81	31.81
3.750	31.97	31.92	31.92
3.833	32.07	32.03	32.03
3.917	32.18	32.13	32.13
4.000	32.29	32.24	32.24
4.083	32.40	32.35	32.35
4.167	32.51	32.46	32.46
4.250	32.62	32.57	32.57
4.333	32.74	32.68	32.68
4.417	32.85	32.80	32.80
4.500	32.97	32.91	32.91
4.583	33.08	33.03	33.03
4.667	33.20	33.15	33.15
4.750	33.32	33.27	33.27
4.833	33.44	33.39	33.39
4.917	33.56	33.51	33.51
5.000	33.69	33.63	33.63
5.083	33.81	33.76	33.76
5.167	33.94	33.88	33.88
5.250	34.07	34.01	34.01
5.333	34.20	34.14	34.14
5.417	34.33	34.27	34.27
5.500	34.46	34.40	34.40
5.583	34.59	34.53	34.53
5.667	34.73	34.67	34.67
5.750	34.86	34.80	34.80
5.833	35.00	34.94	34.94
5.917	35.14	35.08	35.08
6.000	35.29	35.22	35.22
6.083	35.43	35.36	35.36
6.167	35.57	35.51	35.51
6.250	35.72	35.65	35.65
6.333	35.87	35.80	35.80
6.417	36.02	35.95	35.95
6.500	36.17	36.10	36.10
6.583	36.33	36.26	36.26
6.667	36.49	36.41	36.41
6.750	36.64	36.57	36.57
6.833	36.81	36.73	36.73
6.917	36.97	36.89	36.89
7.000	37.13	37.06	37.06
7.083	37.30	37.22	37.22
7.167	37.47	37.39	37.39
7.250	37.64	37.56	37.56
7.333	37.82	37.74	37.74
7.417	37.99	37.91	37.91
7.500	38.17	38.09	38.09
7.583	38.36	38.27	38.27
7.667	38.54	38.46	38.46
7.750	38.73	38.64	38.64
7.833	38.92	38.83	38.83

7.917	39.11	39.02	39.02
8.000	39.31	39.22	39.22
8.083	39.50	39.41	39.41
8.167	39.71	39.62	39.62
8.250	39.91	39.82	39.82
8.333	40.12	40.03	40.03
8.417	40.33	40.24	40.24
8.500	40.55	40.45	40.45
8.583	40.76	40.67	40.67
8.667	40.99	40.89	40.89
8.750	41.21	41.11	41.11
8.833	41.44	41.34	41.34
8.917	41.67	41.57	41.57
9.000	41.91	41.80	41.80
9.083	42.15	42.04	42.04
9.167	42.40	42.29	42.29
9.250	42.65	42.53	42.53
9.333	42.91	42.79	42.79
9.417	43.16	43.04	43.04
9.500	43.43	43.31	43.31
9.583	43.69	43.57	43.57
9.667	43.97	43.84	43.84
9.750	44.25	44.12	44.12
9.833	44.53	44.40	44.40
9.917	44.82	44.69	44.69
10.000	45.12	44.98	44.98
10.083	45.42	45.28	45.28
10.167	45.73	45.59	45.59
10.250	46.04	45.90	45.90
10.333	46.36	46.22	46.22
10.417	46.69	46.54	46.54
10.500	47.03	46.87	46.87
10.583	47.36	47.21	47.21
10.667	47.72	47.56	47.56
10.750	48.07	47.91	47.91
10.833	48.44	48.27	48.27
10.917	48.81	48.64	48.64
11.000	49.20	49.02	49.02
11.083	49.58	49.41	49.41
11.167	49.99	49.80	49.80
11.250	50.40	50.21	50.21
11.333	50.82	50.63	50.63
11.417	51.25	51.05	51.05
11.500	51.70	51.49	51.49
11.583	52.15	51.94	51.94
11.667	52.62	52.40	52.40
11.750	53.10	52.88	52.88
11.833	53.60	53.37	53.37
11.917	54.10	53.87	53.87
12.000	54.63	54.38	54.38
12.083	54.55	54.58	54.58

12.167	51.69	52.98	52.98
12.250	46.09	48.64	48.64
12.333	40.68	43.16	43.16
12.417	38.28	39.40	39.40
12.500	37.62	37.93	37.93
12.583	37.80	37.73	37.73
12.667	38.24	38.04	38.04
12.750	38.75	38.52	38.52
12.833	39.34	39.07	39.07
12.917	39.98	39.68	39.68
13.000	40.68	40.36	40.36
13.083	41.39	41.06	41.06
13.167	42.15	41.80	41.80
13.250	42.94	42.58	42.58
13.333	43.77	43.39	43.39
13.417	44.63	44.24	44.24
13.500	45.55	45.13	45.13
13.583	46.50	46.06	46.06
13.667	47.52	47.05	47.05
13.750	48.57	48.09	48.09
13.833	49.71	49.19	49.19
13.917	50.89	50.35	50.35
14.000	52.17	51.58	51.58
14.083	53.73	53.02	53.02
14.167	56.48	55.23	55.23
14.250	60.36	58.59	58.59
14.333	64.33	62.51	62.51
14.417	67.29	65.92	65.92
14.500	69.78	68.63	68.63
14.583	72.09	71.03	71.03
14.667	74.54	73.42	73.42
14.750	77.14	75.95	75.95
14.833	80.01	78.70	78.70
14.917	83.10	81.69	81.69
15.000	86.58	84.98	84.98
15.083	90.37	88.63	88.63
15.167	94.72	92.73	92.73
15.250	99.56	97.34	97.34
15.333	105.20	102.62	102.62
15.417	112.22	109.01	109.01
15.500	123.37	118.28	118.28
15.583	138.69	131.69	131.69
15.667	156.35	148.26	148.26
15.750	173.91	165.85	165.85
15.833	194.54	185.09	185.09
15.917	223.28	210.14	210.14
16.000	278.95	253.58	253.58
16.083	424.26	358.20	358.20
16.167	752.32	603.04	603.04
16.250	997.11	884.17	884.17
16.333	910.01	947.63	947.63

16.417	558.05	717.70	717.70
16.500	332.13	436.70	436.70
16.583	207.29	265.33	265.33
16.667	152.64	178.24	178.24
16.750	125.98	138.43	138.43
16.833	106.44	115.46	115.46
16.917	92.72	99.06	99.06
17.000	83.24	87.63	87.63
17.083	76.76	79.76	79.76
17.167	70.39	73.31	73.31
17.250	63.86	66.85	66.85
17.333	58.07	60.73	60.73
17.417	53.95	55.86	55.86
17.500	50.87	52.29	52.29
17.583	48.42	49.55	49.55
17.667	46.30	47.27	47.27
17.750	44.40	45.27	45.27
17.833	42.70	43.48	43.48
17.917	41.17	41.87	41.87
18.000	39.76	40.41	40.41
18.083	39.08	39.40	39.40
18.167	41.30	40.30	40.30
18.250	46.31	44.03	44.03
18.333	51.16	48.93	48.93
18.417	53.02	52.14	52.14
18.500	53.19	53.10	53.10
18.583	52.59	52.86	52.86
18.667	51.80	52.16	52.16
18.750	51.02	51.38	51.38
18.833	50.22	50.59	50.59
18.917	49.44	49.80	49.80
19.000	48.67	49.02	49.02
19.083	47.93	48.27	48.27
19.167	47.23	47.55	47.55
19.250	46.56	46.87	46.87
19.333	45.92	46.21	46.21
19.417	45.30	45.58	45.58
19.500	44.71	44.98	44.98
19.583	44.14	44.40	44.40
19.667	43.59	43.84	43.84
19.750	43.06	43.30	43.30
19.833	42.55	42.78	42.78
19.917	42.06	42.28	42.28
20.000	41.58	41.80	41.80
20.083	41.12	41.33	41.33
20.167	40.68	40.88	40.88
20.250	40.25	40.44	40.44
20.333	39.83	40.02	40.02
20.417	39.42	39.61	39.61
20.500	39.03	39.21	39.21
20.583	38.65	38.83	38.83

20.667	38.28	38.45	38.45
20.750	37.92	38.09	38.09
20.833	37.57	37.73	37.73
20.917	37.23	37.39	37.39
21.000	36.90	37.05	37.05
21.083	36.58	36.73	36.73
21.167	36.26	36.41	36.41
21.250	35.96	36.10	36.10
21.333	35.66	35.80	35.80
21.417	35.37	35.50	35.50
21.500	35.08	35.21	35.21
21.583	34.81	34.93	34.93
21.667	34.54	34.66	34.66
21.750	34.27	34.39	34.39
21.833	34.01	34.13	34.13
21.917	33.76	33.88	33.88
22.000	33.51	33.63	33.63
22.083	33.27	33.38	33.38
22.167	33.03	33.14	33.14
22.250	32.80	32.91	32.91
22.333	32.58	32.68	32.68
22.417	32.35	32.46	32.46
22.500	32.14	32.24	32.24
22.583	31.92	32.02	32.02
22.667	31.71	31.81	31.81
22.750	31.51	31.60	31.60
22.833	31.31	31.40	31.40
22.917	31.11	31.20	31.20
23.000	30.91	31.00	31.00
23.083	30.72	30.81	30.81
23.167	30.54	30.62	30.62
23.250	30.35	30.44	30.44
23.333	30.17	30.26	30.26
23.417	30.00	30.08	30.08
23.500	29.82	29.90	29.90
23.583	29.65	29.73	29.73
23.667	29.49	29.56	29.56
23.750	29.32	29.40	29.40
23.833	29.16	29.23	29.23
23.917	29.00	29.07	29.07
24.000	28.84	28.91	28.91

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PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 118.302 AF

OUTFLOW VOLUME = 118.302 AF

LOSS VOLUME = 0.000 AF

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FLOW PROCESS FROM NODE 101.00 TO NODE 101.00 IS CODE = 7

>>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
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****
FLOW PROCESS FROM NODE 101.00 TO NODE 101.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
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STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	300.0	600.0	900.0	1200.0
0.083	0.0033	0.48	Q	.	.	.	.
0.167	0.0282	3.62	Q	.	.	.	.
0.250	0.1039	10.99	Q	.	.	.	.
0.333	0.2459	20.61	Q	.	.	.	.
0.417	0.4424	28.53	Q	.	.	.	.
0.500	0.6741	33.65	VQ	.	.	.	.
0.583	0.9298	37.13	VQ	.	.	.	.
0.667	1.2042	39.84	VQ	.	.	.	.
0.750	1.4952	42.25	VQ	.	.	.	.
0.833	1.8012	44.44	VQ	.	.	.	.
0.917	2.1211	46.44	VQ	.	.	.	.
1.000	2.4536	48.28	VQ	.	.	.	.
1.083	2.7979	49.99	VQ	.	.	.	.
1.167	3.1532	51.59	VQ	.	.	.	.
1.250	3.5187	53.07	VQ	.	.	.	.
1.333	3.8938	54.46	VQ	.	.	.	.
1.417	4.2778	55.76	VQ	.	.	.	.
1.500	4.6702	56.98	VQ	.	.	.	.
1.583	5.0705	58.12	VQ	.	.	.	.
1.667	5.4781	59.19	VQ	.	.	.	.
1.750	5.8926	60.19	V Q	.	.	.	.
1.833	6.3136	61.13	V Q	.	.	.	.
1.917	6.7408	62.02	V Q	.	.	.	.
2.000	7.1737	62.86	V Q	.	.	.	.
2.083	7.6120	63.65	.VQ	.	.	.	.
2.167	8.0555	64.39	.VQ	.	.	.	.
2.250	8.5038	65.10	.VQ	.	.	.	.
2.333	8.9568	65.77	.VQ	.	.	.	.
2.417	9.4141	66.40	.VQ	.	.	.	.
2.500	9.8756	67.01	.VQ	.	.	.	.
2.583	10.3411	67.59	.VQ	.	.	.	.
2.667	10.8103	68.14	.VQ	.	.	.	.
2.750	11.2832	68.66	.VQ	.	.	.	.
2.833	11.7596	69.17	.VQ	.	.	.	.
2.917	12.2393	69.65	.VQ	.	.	.	.
3.000	12.7222	70.12	.VQ	.	.	.	.

3.083	13.2081	70.57	.VQ	.	.	.	.
3.167	13.6971	71.00	.VQ	.	.	.	.
3.250	14.1890	71.42	.VQ	.	.	.	.
3.333	14.6837	71.83	. Q	.	.	.	.
3.417	15.1811	72.22	. Q	.	.	.	.
3.500	15.6811	72.61	. Q	.	.	.	.
3.583	16.1837	72.98	. Q	.	.	.	.
3.667	16.6889	73.35	. Q	.	.	.	.
3.750	17.1965	73.71	. Q	.	.	.	.
3.833	17.7065	74.06	. Q	.	.	.	.
3.917	18.2190	74.40	. Q	.	.	.	.
4.000	18.7337	74.74	. Q	.	.	.	.
4.083	19.2508	75.08	. Q	.	.	.	.
4.167	19.7702	75.41	. Q	.	.	.	.
4.250	20.2918	75.74	. Q	.	.	.	.
4.333	20.8156	76.06	. Q	.	.	.	.
4.417	21.3417	76.38	. Q	.	.	.	.
4.500	21.8699	76.70	. QV	.	.	.	.
4.583	22.4003	77.02	. QV	.	.	.	.
4.667	22.9330	77.33	. QV	.	.	.	.
4.750	23.4677	77.65	. QV	.	.	.	.
4.833	24.0047	77.96	. QV	.	.	.	.
4.917	24.5438	78.28	. QV	.	.	.	.
5.000	25.0850	78.59	. QV	.	.	.	.
5.083	25.6284	78.90	. QV	.	.	.	.
5.167	26.1740	79.22	. QV	.	.	.	.
5.250	26.7217	79.53	. QV	.	.	.	.
5.333	27.2716	79.85	. QV	.	.	.	.
5.417	27.8237	80.16	. QV	.	.	.	.
5.500	28.3780	80.48	. QV	.	.	.	.
5.583	28.9344	80.80	. Q V	.	.	.	.
5.667	29.4931	81.12	. Q V	.	.	.	.
5.750	30.0540	81.44	. Q V	.	.	.	.
5.833	30.6171	81.77	. Q V	.	.	.	.
5.917	31.1825	82.09	. Q V	.	.	.	.
6.000	31.7502	82.42	. Q V	.	.	.	.
6.083	32.3201	82.76	. Q V	.	.	.	.
6.167	32.8924	83.09	. Q V	.	.	.	.
6.250	33.4670	83.43	. Q V	.	.	.	.
6.333	34.0439	83.77	. Q V	.	.	.	.
6.417	34.6232	84.11	. Q V	.	.	.	.
6.500	35.2049	84.46	. Q V	.	.	.	.
6.583	35.7890	84.81	. Q V	.	.	.	.
6.667	36.3755	85.17	. Q V	.	.	.	.
6.750	36.9645	85.52	. Q V	.	.	.	.
6.833	37.5560	85.89	. Q V	.	.	.	.
6.917	38.1500	86.25	. Q V	.	.	.	.
7.000	38.7466	86.62	. Q V	.	.	.	.
7.083	39.3458	87.00	. Q V	.	.	.	.
7.167	39.9475	87.38	. Q V	.	.	.	.
7.250	40.5519	87.76	. Q V	.	.	.	.

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 7.333     41.1590     88.15  . Q  V    .         .         .         .
 7.417     41.7688     88.54  . Q  V    .         .         .         .
 7.500     42.3813     88.94  . Q  V    .         .         .         .
 7.583     42.9966     89.34  . Q  V    .         .         .         .
 7.667     43.6147     89.75  . Q   V   .         .         .         .
 7.750     44.2356     90.16  .  Q  V   .         .         .         .
 7.833     44.8595     90.58  .  Q  V   .         .         .         .
 7.917     45.4862     91.01  .  Q  V   .         .         .         .
 8.000     46.1160     91.44  .  Q  V   .         .         .         .
 8.083     46.7487     91.87  .  Q  V   .         .         .         .
 8.167     47.3845     92.32  .  Q  V   .         .         .         .
 8.250     48.0233     92.76  .  Q  V   .         .         .         .
 8.333     48.6653     93.22  .  Q  V   .         .         .         .
 8.417     49.3105     93.68  .  Q  V   .         .         .         .
 8.500     49.9590     94.15  .  Q  V   .         .         .         .
 8.583     50.6107     94.63  .  Q   V  .         .         .         .
 8.667     51.2657     95.11  .  Q   V  .         .         .         .
 8.750     51.9241     95.60  .  Q   V  .         .         .         .
 8.833     52.5860     96.10  .  Q   V  .         .         .         .
 8.917     53.2513     96.61  .  Q   V  .         .         .         .
 9.000     53.9202     97.12  .  Q   V  .         .         .         .
 9.083     54.5926     97.64  .  Q   V  .         .         .         .
 9.167     55.2687     98.17  .  Q   V  .         .         .         .
 9.250     55.9486     98.71  .  Q   V  .         .         .         .
 9.333     56.6322     99.26  .  Q   V  .         .         .         .
 9.417     57.3197     99.82  .  Q   V  .         .         .         .
 9.500     58.0111    100.39  .  Q    V .         .         .         .
 9.583     58.7064    100.97  .  Q    V .         .         .         .
 9.667     59.4058    101.55  .  Q    V .         .         .         .
 9.750     60.1093    102.15  .  Q    V .         .         .         .
 9.833     60.8171    102.76  .  Q    V .         .         .         .
 9.917     61.5291    103.38  .  Q    V .         .         .         .
10.000     62.2454    104.01  .  Q    V .         .         .         .
10.083     62.9662    104.66  .  Q    V .         .         .         .
10.167     63.6915    105.31  .  Q    V .         .         .         .
10.250     64.4213    105.98  .  Q    V .         .         .         .
10.333     65.1559    106.66  .  Q     V.         .         .         .
10.417     65.8953    107.36  .  Q     V.         .         .         .
10.500     66.6395    108.06  .  Q     V.         .         .         .
10.583     67.3888    108.79  .  Q     V.         .         .         .
10.667     68.1431    109.53  .  Q     V.         .         .         .
10.750     68.9026    110.28  .  Q     V.         .         .         .
10.833     69.6673    111.05  .  Q     V.         .         .         .
10.917     70.4375    111.83  .  Q     V.         .         .         .
11.000     71.2133    112.64  .  Q     V.         .         .         .
11.083     71.9946    113.46  .  Q      V         .         .         .
11.167     72.7818    114.30  .  Q      V         .         .         .
11.250     73.5749    115.15  .  Q      V         .         .         .
11.333     74.3740    116.03  .  Q      V         .         .         .
11.417     75.1793    116.93  .  Q      V         .         .         .
11.500     75.9909    117.85  .  Q      V         .         .         .
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11.583     76.8091    118.79  .  Q      V         .         .         .
11.667     77.6339    119.76  .  Q      V         .         .         .
11.750     78.4655    120.75  .   Q     V         .         .         .
11.833     79.3041    121.77  .   Q     .V        .         .         .
11.917     80.1499    122.81  .   Q     .V        .         .         .
12.000     81.0031    123.88  .   Q     .V        .         .         .
12.083     81.8614    124.62  .   Q     .V        .         .         .
12.167     82.7114    123.42  .   Q     .V        .         .         .
12.250     83.5317    119.11  .  Q      .V        .         .         .
12.333     84.3110    113.16  .  Q      .V        .         .         .
12.417     85.0582    108.49  .  Q      .V        .         .         .
12.500     85.7877    105.92  .  Q      .V        .         .         .
12.583     86.5081    104.61  .  Q      . V       .         .         .
12.667     87.2237    103.90  .  Q      . V       .         .         .
12.750     87.9364    103.47  .  Q      . V       .         .         .
12.833     88.6474    103.24  .  Q      . V       .         .         .
12.917     89.3580    103.19  .  Q      . V       .         .         .
13.000     90.0696    103.31  .  Q      . V       .         .         .
13.083     90.7830    103.59  .  Q      . V       .         .         .
13.167     91.4993    104.01  .  Q      . V       .         .         .
13.250     92.2194    104.56  .  Q      . V       .         .         .
13.333     92.9443    105.26  .  Q      . V       .         .         .
13.417     93.6749    106.09  .  Q      .  V      .         .         .
13.500     94.4122    107.06  .  Q      .  V      .         .         .
13.583     95.1571    108.16  .  Q      .  V      .         .         .
13.667     95.9106    109.41  .  Q      .  V      .         .         .
13.750     96.6736    110.79  .  Q      .  V      .         .         .
13.833     97.4473    112.33  .  Q      .  V      .         .         .
13.917     98.2325    114.02  .  Q      .  V      .         .         .
14.000     99.0304    115.86  .  Q      .  V      .         .         .
14.083     99.8432    118.01  .  Q      .  V      .         .         .
14.167    100.6771    121.08  .   Q     .  V      .         .         .
14.250    101.5416    125.53  .   Q     .   V     .         .         .
14.333    102.4425    130.82  .   Q     .   V     .         .         .
14.417    103.3782    135.86  .   Q     .   V     .         .         .
14.500    104.3451    140.39  .   Q     .   V     .         .         .
14.583    105.3418    144.73  .   Q     .   V     .         .         .
14.667    106.3692    149.18  .   Q     .   V     .         .         .
14.750    107.4289    153.87  .    Q    .   V     .         .         .
14.833    108.5233    158.90  .    Q    .    V    .         .         .
14.917    109.6549    164.31  .    Q    .    V    .         .         .
15.000    110.8269    170.18  .    Q    .    V    .         .         .
15.083    112.0430    176.58  .    Q    .    V    .         .         .
15.167    113.3077    183.63  .     Q   .    V    .         .         .
15.250    114.6262    191.44  .     Q   .    V    .         .         .
15.333    116.0050    200.21  .     Q   .     V   .         .         .
15.417    117.4545    210.46  .      Q  .     V   .         .         .
15.500    118.9985    224.19  .      Q  .     V   .         .         .
15.583    120.6701    242.71  .       Q .     V   .         .         .
15.667    122.4889    264.09  .       Q .      V  .         .         .
15.750    124.4610    286.35  .        Q.      V  .         .         .
```

```
15.833    126.6044    311.22  .         Q      V  .         .         .
15.917    128.9671    343.07  .         .Q     V  .         .         .
16.000    131.6897    395.32  .         .  Q    V .         .         .
16.083    135.2282    513.79  .         .      QV .         .         .
16.167    140.6223    783.22  .         .        V.     Q   .         .
16.250    148.1609   1094.61  .         .         V         .     Q   .
16.333    156.3327   1186.54  .         .         .V        .        Q.
16.417    163.0645    977.46  .         .         . V       . Q       .
16.500    167.9304    706.52  .         .         .  Q      .         .
16.583    171.6463    539.55  .         .      Q  .  V      .         .
16.667    174.7697    453.53  .         .    Q    .   V     .         .
16.750    177.6138    412.96  .         .  Q      .   V     .         .
16.833    180.2889    388.43  .         . Q       .    V    .         .
16.917    182.8371    370.00  .         . Q       .    V    .         .
17.000    185.2903    356.20  .         .Q        .    V    .         .
17.083    187.6713    345.72  .         .Q        .     V   .         .
17.167    189.9888    336.50  .         .Q        .     V   .         .
17.250    192.2420    327.15  .         Q         .     V   .         .
17.333    194.4323    318.04  .         Q         .      V  .         .
17.417    196.5679    310.09  .         Q         .      V  .         .
17.500    198.6575    303.41  .         Q         .      V  .         .
17.583    200.7040    297.15  .        Q.         .      V  .         .
17.667    202.7054    290.61  .        Q.         .       V .         .
17.750    204.6614    284.01  .        Q.         .       V .         .
17.833    206.5738    277.67  .        Q.         .       V .         .
17.917    208.4441    271.57  .        Q.         .       V .         .
18.000    210.2738    265.67  .       Q .         .        V.         .
18.083    212.0665    260.30  .       Q .         .        V.         .
18.167    213.8362    256.97  .       Q .         .        V.         .
18.250    215.6038    256.65  .       Q .         .        V.         .
18.333    217.3790    257.76  .       Q .         .         V         .
18.417    219.1519    257.43  .       Q .         .         V         .
18.500    220.9081    254.99  .       Q .         .         V         .
18.583    222.6399    251.46  .       Q .         .         V         .
18.667    224.3447    247.54  .       Q .         .         .V        .
18.750    226.0192    243.13  .       Q .         .         .V        .
18.833    227.6563    237.71  .      Q  .         .         .V        .
18.917    229.2530    231.84  .      Q  .         .         .V        .
19.000    230.8105    226.15  .      Q  .         .         . V       .
19.083    232.3301    220.65  .      Q  .         .         . V       .
19.167    233.8133    215.36  .      Q  .         .         . V       .
19.250    235.2613    210.25  .      Q  .         .         . V       .
19.333    236.6753    205.32  .     Q   .         .         . V       .
19.417    238.0566    200.56  .     Q   .         .         .  V      .
19.500    239.4063    195.98  .     Q   .         .         .  V      .
19.583    240.7255    191.55  .     Q   .         .         .  V      .
19.667    242.0153    187.28  .     Q   .         .         .  V      .
19.750    243.2767    183.16  .     Q   .         .         .  V      .
19.833    244.5107    179.18  .    Q    .         .         .  V      .
19.917    245.7182    175.33  .    Q    .         .         .   V     .
20.000    246.9002    171.63  .    Q    .         .         .   V     .
```

```
  20.083    248.0575    168.05  .    Q    .         .         .   V     .
  20.167    249.1911    164.59  .    Q    .         .         .   V     .
  20.250    250.3016    161.25  .    Q    .         .         .   V     .
  20.333    251.3899    158.02  .    Q    .         .         .   V     .
  20.417    252.4568    154.91  .    Q    .         .         .    V    .
  20.500    253.4988    151.30  .    Q    .         .         .    V    .
  20.583    254.5107    146.93  .   Q     .         .         .    V    .
  20.667    255.4918    142.46  .   Q     .         .         .    V    .
  20.750    256.4442    138.28  .   Q     .         .         .    V    .
  20.833    257.3695    134.36  .   Q     .         .         .    V    .
  20.917    258.2695    130.68  .   Q     .         .         .    V    .
  21.000    259.1457    127.23  .   Q     .         .         .     V   .
  21.083    259.9997    123.99  .   Q     .         .         .     V   .
  21.167    260.8326    120.95  .   Q     .         .         .     V   .
  21.250    261.6459    118.09  .  Q      .         .         .     V   .
  21.333    262.4406    115.39  .  Q      .         .         .     V   .
  21.417    263.2179    112.86  .  Q      .         .         .     V   .
  21.500    263.9788    110.47  .  Q      .         .         .     V   .
  21.583    264.7241    108.22  .  Q      .         .         .     V   .
  21.667    265.4548    106.10  .  Q      .         .         .     V   .
  21.750    266.1716    104.09  .  Q      .         .         .      V  .
  21.833    266.8754    102.19  .  Q      .         .         .      V  .
  21.917    267.5669    100.40  .  Q      .         .         .      V  .
  22.000    268.2466     98.70  .  Q      .         .         .      V  .
  22.083    268.9153     97.09  .  Q      .         .         .      V  .
  22.167    269.5735     95.57  .  Q      .         .         .      V  .
  22.250    270.2217     94.12  .  Q      .         .         .      V  .
  22.333    270.8604     92.74  .  Q      .         .         .      V  .
  22.417    271.4901     91.44  .  Q      .         .         .      V  .
  22.500    272.1113     90.19  .  Q      .         .         .      V  .
  22.583    272.7243     89.01  . Q       .         .         .      V  .
  22.667    273.3295     87.88  . Q       .         .         .       V .
  22.750    273.9273     86.80  . Q       .         .         .       V .
  22.833    274.5180     85.77  . Q       .         .         .       V .
  22.917    275.1019     84.78  . Q       .         .         .       V .
  23.000    275.6794     83.84  . Q       .         .         .       V .
  23.083    276.2506     82.94  . Q       .         .         .       V .
  23.167    276.8158     82.08  . Q       .         .         .       V .
  23.250    277.3754     81.25  . Q       .         .         .       V .
  23.333    277.9294     80.45  . Q       .         .         .       V .
  23.417    278.4782     79.68  . Q       .         .         .       V .
  23.500    279.0219     78.94  . Q       .         .         .       V .
  23.583    279.5607     78.23  . Q       .         .         .       V .
  23.667    280.0948     77.55  . Q       .         .         .       V .
  23.750    280.6243     76.89  . Q       .         .         .        V.
  23.833    281.1494     76.25  . Q       .         .         .        V.
  23.917    281.6703     75.63  . Q       .         .         .        V.
  24.000    282.1871     75.04  . Q       .         .         .        V.
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
```

an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.0
10%	470.0
20%	200.0
30%	65.0
40%	35.0
50%	25.0
60%	20.0
70%	15.0
80%	15.0
90%	10.0

END OF FLOODSCx ROUTING ANALYSIS

PROPOSED MITIGATED 10-YEAR REGIONAL ANALYSIS TRIBUTARY TO EX DBL 6X6 POC #1 / NODE 101

LOSS RATE CALCULATIONS

PROJECT REGIONAL
10-YR ANALYSIS
NODE 101 (MITIGATED)

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 **************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
 ==========================================================================
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                           Analysis prepared by:



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

  Problem Descriptions:
   Grand Terrace
   Barton+Deberry-Prop-10YR
   2022-03-10
 ==========================================================================
 *** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
     AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

     TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.00 (inches)

     SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
        TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
          1         30.16       20.00            32.       0.975       0.738
          2         23.43       20.00            69.       0.566       0.783
          3         57.55       10.00            32.       0.975       0.830
          4         37.59       10.00            69.       0.566       0.853
          5        121.44       50.00            32.       0.975       0.461
          6         93.70       50.00            69.       0.566       0.573
          7          0.84       50.00            75.       0.470       0.622
          8          0.91      100.00            50.       0.820       0.030
          9         23.00      100.00            69.       0.566       0.223
         10          0.56      100.00            79.       0.398       0.396
         11         74.01      100.00            83.       0.326       0.482
         12         14.07       60.00            32.       0.975       0.369
         13          1.07       60.00            69.       0.566       0.503
         14         58.07       10.00            32.       0.975       0.830
         15         41.55       10.00            69.       0.566       0.853

     TOTAL AREA (Acres) =    577.95

     AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.271

     AREA-AVERAGED LOW LOSS FRACTION, Y = 0.375
 ==========================================================================
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****
NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS

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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

****

Problem Descriptions:
Grand Terrace
Van Buren WS-Prop-10YR
2022-03-10

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 3.00 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	35.19	20.00	32.	0.975	0.738
2	28.06	20.00	69.	0.566	0.783
3	29.80	10.00	32.	0.975	0.830
4	27.82	10.00	69.	0.566	0.853
5	118.35	50.00	32.	0.975	0.461
6	62.06	50.00	69.	0.566	0.573
7	0.77	50.00	75.	0.470	0.622
8	9.14	100.00	50.	0.820	0.030
9	4.16	100.00	69.	0.566	0.223
10	16.79	100.00	79.	0.398	0.396
11	29.95	100.00	83.	0.326	0.482
12	20.33	60.00	32.	0.975	0.369
13	2.38	60.00	69.	0.566	0.503
14	44.08	10.00	32.	0.975	0.830
15	1.28	10.00	56.	0.748	0.838
16	36.16	10.00	69.	0.566	0.853

TOTAL AREA (Acres) = 466.32

AREA-AVERAGED LOSS RATE, $\bar{F}m$ (in./hr.) = 0.290

AREA-AVERAGED LOW LOSS FRACTION, $\bar{Y}$ = 0.385

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




 ************************************************************************
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  Problem Descriptions:
   Grand Terrace
   Canal WS-Prop-10YR
   2022-03-10
 ========================================================================
 *** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
     AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

     TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.00 (inches)

     SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
        TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
          1          0.80       10.00            32.       0.975       0.830
          2          1.95       10.00            69.       0.566       0.853
          3        168.79       50.00            32.       0.975       0.461
          4          7.88       50.00            69.       0.566       0.573
          5          0.52       50.00            75.       0.470       0.622
          6         25.58      100.00            50.       0.820       0.030
          7          0.97      100.00            79.       0.398       0.396
          8        120.61      100.00            83.       0.326       0.482
          9         36.67       60.00            32.       0.975       0.369
         10         34.51       60.00            69.       0.566       0.503
         11         52.37       10.00            32.       0.975       0.830
         12          1.65       10.00            69.       0.566       0.853

     TOTAL AREA (Acres) =    452.30

     AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.407

     AREA-AVERAGED LOW LOSS FRACTION, Y = 0.513
 ========================================================================
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             F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* GRAND TERRACE GATEWAY                                                 *
* REGIONAL PROPOSED MITIGATED CONDITION - 10 YR                         *
* 2023-03-17                                                            *
 ************************************************************************

  FILE NAME: REGPR10.DAT
  TIME/DATE OF STUDY: 09:22 03/17/2023


************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    303.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     466.320 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.240 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.290
         LOW LOSS FRACTION = 0.385
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.30
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.63
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.85
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.57
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  3.00
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.979
30-MINUTE FACTOR = 0.979
1-HOUR FACTOR = 0.979
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 34.722

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.308	130.143
2	14.779	703.335
3	38.225	1322.270
4	66.233	1579.474
5	84.561	1033.643
6	93.250	490.001
7	97.213	223.544
8	98.477	71.232
9	99.128	36.719
10	99.651	29.519
11	99.913	14.759
12	100.000	4.920

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 40.7316
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 75.7000

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	175.0	350.0	525.0	700.0
0.083	0.0027	0.39	Q	.	.	.	.
0.167	0.0199	2.50	Q	.	.	.	.
0.250	0.0644	6.46	Q	.	.	.	.
0.333	0.1416	11.21	Q	.	.	.	.
0.417	0.2403	14.33	Q	.	.	.	.
0.500	0.3494	15.84	Q	.	.	.	.
0.583	0.4634	16.56	Q	.	.	.	.
0.667	0.5793	16.82	Q	.	.	.	.
0.750	0.6962	16.97	Q	.	.	.	.
0.833	0.8140	17.11	Q	.	.	.	.
0.917	0.9325	17.20	Q	.	.	.	.
1.000	1.0514	17.27	Q	.	.	.	.
1.083	1.1707	17.32	Q	.	.	.	.
1.167	1.2903	17.37	Q	.	.	.	.
1.250	1.4103	17.42	Q	.	.	.	.
1.333	1.5306	17.47	Q	.	.	.	.
1.417	1.6513	17.52	VQ	.	.	.	.
1.500	1.7723	17.58	VQ	.	.	.	.
1.583	1.8938	17.63	.Q	.	.	.	.
1.667	2.0155	17.68	.Q	.	.	.	.
1.750	2.1377	17.74	.Q	.	.	.	.
1.833	2.2602	17.79	.Q	.	.	.	.
1.917	2.3831	17.85	.Q	.	.	.	.
2.000	2.5064	17.90	.Q	.	.	.	.
2.083	2.6301	17.96	.Q	.	.	.	.
2.167	2.7541	18.01	.Q	.	.	.	.
2.250	2.8786	18.07	.Q	.	.	.	.
2.333	3.0034	18.13	.Q	.	.	.	.
2.417	3.1286	18.18	.Q	.	.	.	.
2.500	3.2543	18.24	.Q	.	.	.	.
2.583	3.3803	18.30	.Q	.	.	.	.
2.667	3.5068	18.36	.Q	.	.	.	.
2.750	3.6336	18.42	.Q	.	.	.	.
2.833	3.7609	18.48	.Q	.	.	.	.
2.917	3.8886	18.54	.QV	.	.	.	.
3.000	4.0167	18.60	.QV	.	.	.	.
3.083	4.1453	18.67	.QV	.	.	.	.
3.167	4.2743	18.73	.QV	.	.	.	.
3.250	4.4037	18.79	.QV	.	.	.	.
3.333	4.5335	18.86	.QV	.	.	.	.

3.417	4.6639	18.92	.QV	.	.	.	.
3.500	4.7946	18.99	.QV	.	.	.	.
3.583	4.9258	19.05	.QV	.	.	.	.
3.667	5.0575	19.12	.QV	.	.	.	.
3.750	5.1896	19.19	.QV	.	.	.	.
3.833	5.3223	19.26	.QV	.	.	.	.
3.917	5.4553	19.32	.QV	.	.	.	.
4.000	5.5889	19.39	.QV	.	.	.	.
4.083	5.7229	19.46	.Q V	.	.	.	.
4.167	5.8575	19.53	.Q V	.	.	.	.
4.250	5.9925	19.61	.Q V	.	.	.	.
4.333	6.1280	19.68	.Q V	.	.	.	.
4.417	6.2641	19.75	.Q V	.	.	.	.
4.500	6.4006	19.83	.Q V	.	.	.	.
4.583	6.5376	19.90	.Q V	.	.	.	.
4.667	6.6752	19.98	.Q V	.	.	.	.
4.750	6.8133	20.05	.Q V	.	.	.	.
4.833	6.9520	20.13	.Q V	.	.	.	.
4.917	7.0911	20.21	.Q V	.	.	.	.
5.000	7.2309	20.29	.Q V	.	.	.	.
5.083	7.3711	20.37	.Q V	.	.	.	.
5.167	7.5119	20.45	.Q V	.	.	.	.
5.250	7.6533	20.53	.Q V	.	.	.	.
5.333	7.7953	20.61	.Q V	.	.	.	.
5.417	7.9378	20.70	.Q V	.	.	.	.
5.500	8.0809	20.78	.Q V	.	.	.	.
5.583	8.2246	20.87	.Q V	.	.	.	.
5.667	8.3689	20.95	.Q V	.	.	.	.
5.750	8.5139	21.04	.Q V	.	.	.	.
5.833	8.6594	21.13	.Q V	.	.	.	.
5.917	8.8055	21.22	.Q V	.	.	.	.
6.000	8.9523	21.31	.Q V	.	.	.	.
6.083	9.0997	21.40	.Q V	.	.	.	.
6.167	9.2477	21.50	.Q V	.	.	.	.
6.250	9.3964	21.59	.Q V	.	.	.	.
6.333	9.5458	21.69	.Q V	.	.	.	.
6.417	9.6958	21.78	.Q V	.	.	.	.
6.500	9.8465	21.88	.Q V	.	.	.	.
6.583	9.9979	21.98	.Q V	.	.	.	.
6.667	10.1500	22.08	.Q V	.	.	.	.
6.750	10.3027	22.18	.Q V	.	.	.	.
6.833	10.4562	22.29	.Q V	.	.	.	.
6.917	10.6105	22.39	.Q V	.	.	.	.
7.000	10.7654	22.50	.Q V	.	.	.	.
7.083	10.9211	22.61	.Q V	.	.	.	.
7.167	11.0776	22.72	.Q V	.	.	.	.
7.250	11.2348	22.83	.Q V	.	.	.	.
7.333	11.3927	22.94	.Q V	.	.	.	.
7.417	11.5515	23.05	.Q V	.	.	.	.
7.500	11.7111	23.17	.Q V	.	.	.	.
7.583	11.8715	23.29	.Q V	.	.	.	.

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 7.667     12.0327     23.41  .Q    V   .         .         .         .
 7.750     12.1947     23.53  .Q    V   .         .         .         .
 7.833     12.3576     23.65  .Q    V   .         .         .         .
 7.917     12.5213     23.77  .Q    V   .         .         .         .
 8.000     12.6859     23.90  .Q    V   .         .         .         .
 8.083     12.8514     24.03  .Q    V   .         .         .         .
 8.167     13.0178     24.16  .Q    V   .         .         .         .
 8.250     13.1850     24.29  .Q    V   .         .         .         .
 8.333     13.3533     24.43  .Q     V  .         .         .         .
 8.417     13.5224     24.56  .Q     V  .         .         .         .
 8.500     13.6926     24.70  .Q     V  .         .         .         .
 8.583     13.8636     24.84  .Q     V  .         .         .         .
 8.667     14.0357     24.99  .Q     V  .         .         .         .
 8.750     14.2088     25.13  .Q     V  .         .         .         .
 8.833     14.3829     25.28  .Q     V  .         .         .         .
 8.917     14.5581     25.43  .Q     V  .         .         .         .
 9.000     14.7343     25.59  .Q     V  .         .         .         .
 9.083     14.9116     25.74  .Q     V  .         .         .         .
 9.167     15.0900     25.90  .Q     V  .         .         .         .
 9.250     15.2695     26.06  .Q      V .         .         .         .
 9.333     15.4501     26.23  .Q      V .         .         .         .
 9.417     15.6319     26.40  .Q      V .         .         .         .
 9.500     15.8149     26.57  .Q      V .         .         .         .
 9.583     15.9991     26.74  .Q      V .         .         .         .
 9.667     16.1845     26.92  .Q      V .         .         .         .
 9.750     16.3711     27.10  .Q      V .         .         .         .
 9.833     16.5591     27.29  .Q      V .         .         .         .
 9.917     16.7483     27.47  .Q      V .         .         .         .
10.000     16.9388     27.67  .Q      V .         .         .         .
10.083     17.1307     27.86  .Q       V.         .         .         .
10.167     17.3240     28.06  .Q       V.         .         .         .
10.250     17.5187     28.27  .Q       V.         .         .         .
10.333     17.7148     28.48  .Q       V.         .         .         .
10.417     17.9124     28.69  .Q       V.         .         .         .
10.500     18.1115     28.91  .Q       V.         .         .         .
10.583     18.3121     29.13  .Q       V.         .         .         .
10.667     18.5144     29.36  .Q       V.         .         .         .
10.750     18.7182     29.59  .Q       V.         .         .         .
10.833     18.9236     29.83  .Q       V.         .         .         .
10.917     19.1307     30.07  .Q        V         .         .         .
11.000     19.3396     30.33  .Q        V         .         .         .
11.083     19.5502     30.58  .Q        V         .         .         .
11.167     19.7626     30.84  .Q        V         .         .         .
11.250     19.9769     31.11  .Q        V         .         .         .
11.333     20.1931     31.39  .Q        V         .         .         .
11.417     20.4112     31.67  .Q        V         .         .         .
11.500     20.6313     31.96  .Q        V         .         .         .
11.583     20.8535     32.26  .Q        .V        .         .         .
11.667     21.0778     32.57  .Q        .V        .         .         .
11.750     21.3042     32.88  .Q        .V        .         .         .
11.833     21.5329     33.21  .Q        .V        .         .         .
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11.917     21.7639     33.54  .Q        .V        .         .         .
12.000     21.9972     33.88  .Q        .V        .         .         .
12.083     22.2321     34.10  .Q        .V        .         .         .
12.167     22.4644     33.73  .Q        .V        .         .         .
12.250     22.6898     32.73  .Q        .V        .         .         .
12.333     22.9066     31.47  .Q        . V       .         .         .
12.417     23.1186     30.78  .Q        . V       .         .         .
12.500     23.3298     30.68  .Q        . V       .         .         .
12.583     23.5423     30.85  .Q        . V       .         .         .
12.667     23.7573     31.21  .Q        . V       .         .         .
12.750     23.9750     31.61  .Q        . V       .         .         .
12.833     24.1956     32.04  .Q        . V       .         .         .
12.917     24.4195     32.50  .Q        . V       .         .         .
13.000     24.6467     32.99  .Q        .  V      .         .         .
13.083     24.8774     33.51  .Q        .  V      .         .         .
13.167     25.1119     34.05  .Q        .  V      .         .         .
13.250     25.3502     34.60  .Q        .  V      .         .         .
13.333     25.5926     35.20  . Q       .  V      .         .         .
13.417     25.8392     35.81  . Q       .  V      .         .         .
13.500     26.0903     36.45  . Q       .  V      .         .         .
13.583     26.3459     37.12  . Q       .  V      .         .         .
13.667     26.6065     37.84  . Q       .   V     .         .         .
13.750     26.8722     38.58  . Q       .   V     .         .         .
13.833     27.1433     39.37  . Q       .   V     .         .         .
13.917     27.4201     40.19  . Q       .   V     .         .         .
14.000     27.7030     41.07  . Q       .   V     .         .         .
14.083     27.9911     41.84  . Q       .   V     .         .         .
14.167     28.2802     41.97  . Q       .   V     .         .         .
14.250     28.5652     41.38  . Q       .    V    .         .         .
14.333     28.8444     40.55  . Q       .    V    .         .         .
14.417     29.1228     40.42  . Q       .    V    .         .         .
14.500     29.4055     41.05  . Q       .    V    .         .         .
14.583     29.6952     42.07  . Q       .    V    .         .         .
14.667     29.9942     43.41  . Q       .    V    .         .         .
14.750     30.3034     44.89  . Q       .     V   .         .         .
14.833     30.6240     46.55  . Q       .     V   .         .         .
14.917     30.9572     48.37  . Q       .     V   .         .         .
15.000     31.3045     50.43  . Q       .     V   .         .         .
15.083     31.6674     52.70  .  Q      .     V   .         .         .
15.167     32.0482     55.28  .  Q      .     V   .         .         .
15.250     32.4487     58.16  .  Q      .      V  .         .         .
15.333     32.8723     61.51  .  Q      .      V  .         .         .
15.417     33.3262     65.90  .  Q      .      V  .         .         .
15.500     33.8328     73.56  .   Q     .      V  .         .         .
15.583     34.4170     84.83  .   Q     .       V .         .         .
15.667     35.0972     98.76  .    Q    .       V .         .         .
15.750     35.8685    112.01  .     Q   .       V .         .         .
15.833     36.7314    125.29  .      Q  .        V.         .         .
15.917     37.7069    141.63  .       Q .        V.         .         .
16.000     38.8795    170.27  .        Q.         V         .         .
16.083     40.5775    246.55  .         .   Q     .V        .         .
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16.167     43.4735    420.50  .         .         . V Q     .         .
16.250     47.4348    575.18  .         .         .    V    . Q       .
16.333     51.5987    604.60  .         .         .      V  .   Q     .
16.417     54.6128    437.64  .         .         .    Q  V .         .
16.500     56.4848    271.82  .         .    Q    .        V.         .
16.583     57.6861    174.42  .        Q.         .         V         .
16.667     58.4608    112.50  .     Q   .         .         V         .
16.750     59.0554     86.33  .   Q     .         .         .V        .
16.833     59.5554     72.59  .   Q     .         .         .V        .
16.917     59.9748     60.90  .  Q      .         .         .V        .
17.000     60.3381     52.75  .  Q      .         .         .V        .
17.083     60.6641     47.33  . Q       .         .         . V       .
17.167     60.9713     44.61  . Q       .         .         . V       .
17.250     61.2695     43.30  . Q       .         .         . V       .
17.333     61.5640     42.75  . Q       .         .         . V       .
17.417     61.8523     41.86  . Q       .         .         . V       .
17.500     62.1315     40.54  . Q       .         .         . V       .
17.583     62.4008     39.11  . Q       .         .         . V       .
17.667     62.6602     37.66  . Q       .         .         .  V      .
17.750     62.9103     36.32  . Q       .         .         .  V      .
17.833     63.1521     35.10  . Q       .         .         .  V      .
17.917     63.3860     33.97  .Q        .         .         .  V      .
18.000     63.6127     32.92  .Q        .         .         .  V      .
18.083     63.8337     32.08  .Q        .         .         .  V      .
18.167     64.0535     31.91  .Q        .         .         .  V      .
18.250     64.2770     32.45  .Q        .         .         .  V      .
18.333     64.5063     33.30  .Q        .         .         .   V     .
18.417     64.7378     33.62  .Q        .         .         .   V     .
18.500     64.9679     33.42  .Q        .         .         .   V     .
18.583     65.1950     32.98  .Q        .         .         .   V     .
18.667     65.4183     32.41  .Q        .         .         .   V     .
18.750     65.6376     31.85  .Q        .         .         .   V     .
18.833     65.8533     31.31  .Q        .         .         .   V     .
18.917     66.0653     30.78  .Q        .         .         .   V     .
19.000     66.2737     30.27  .Q        .         .         .    V    .
19.083     66.4788     29.78  .Q        .         .         .    V    .
19.167     66.6807     29.31  .Q        .         .         .    V    .
19.250     66.8794     28.86  .Q        .         .         .    V    .
19.333     67.0752     28.43  .Q        .         .         .    V    .
19.417     67.2682     28.02  .Q        .         .         .    V    .
19.500     67.4584     27.62  .Q        .         .         .    V    .
19.583     67.6461     27.24  .Q        .         .         .    V    .
19.667     67.8312     26.88  .Q        .         .         .    V    .
19.750     68.0139     26.53  .Q        .         .         .    V    .
19.833     68.1942     26.19  .Q        .         .         .     V   .
19.917     68.3724     25.86  .Q        .         .         .     V   .
20.000     68.5483     25.55  .Q        .         .         .     V   .
20.083     68.7222     25.24  .Q        .         .         .     V   .
20.167     68.8940     24.95  .Q        .         .         .     V   .
20.250     69.0639     24.67  .Q        .         .         .     V   .
20.333     69.2319     24.39  .Q        .         .         .     V   .
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20.417     69.3981     24.13  .Q        .         .         .     V   .
20.500     69.5625     23.87  .Q        .         .         .     V   .
20.583     69.7251     23.62  .Q        .         .         .     V   .
20.667     69.8861     23.38  .Q        .         .         .     V   .
20.750     70.0455     23.14  .Q        .         .         .      V  .
20.833     70.2032     22.91  .Q        .         .         .      V  .
20.917     70.3595     22.69  .Q        .         .         .      V  .
21.000     70.5143     22.47  .Q        .         .         .      V  .
21.083     70.6676     22.26  .Q        .         .         .      V  .
21.167     70.8195     22.06  .Q        .         .         .      V  .
21.250     70.9700     21.86  .Q        .         .         .      V  .
21.333     71.1192     21.66  .Q        .         .         .      V  .
21.417     71.2670     21.47  .Q        .         .         .      V  .
21.500     71.4136     21.29  .Q        .         .         .      V  .
21.583     71.5590     21.11  .Q        .         .         .      V  .
21.667     71.7031     20.93  .Q        .         .         .      V  .
21.750     71.8461     20.76  .Q        .         .         .      V  .
21.833     71.9879     20.59  .Q        .         .         .       V .
21.917     72.1286     20.43  .Q        .         .         .       V .
22.000     72.2681     20.27  .Q        .         .         .       V .
22.083     72.4066     20.11  .Q        .         .         .       V .
22.167     72.5441     19.95  .Q        .         .         .       V .
22.250     72.6805     19.81  .Q        .         .         .       V .
22.333     72.8158     19.66  .Q        .         .         .       V .
22.417     72.9502     19.51  .Q        .         .         .       V .
22.500     73.0837     19.37  .Q        .         .         .       V .
22.583     73.2162     19.24  .Q        .         .         .       V .
22.667     73.3477     19.10  .Q        .         .         .       V .
22.750     73.4783     18.97  .Q        .         .         .       V .
22.833     73.6081     18.84  .Q        .         .         .       V .
22.917     73.7370     18.71  .Q        .         .         .       V .
23.000     73.8650     18.59  .Q        .         .         .        V.
23.083     73.9921     18.46  .Q        .         .         .        V.
23.167     74.1185     18.34  .Q        .         .         .        V.
23.250     74.2440     18.23  .Q        .         .         .        V.
23.333     74.3687     18.11  .Q        .         .         .        V.
23.417     74.4927     18.00  .Q        .         .         .        V.
23.500     74.6158     17.89  .Q        .         .         .        V.
23.583     74.7383     17.78  .Q        .         .         .        V.
23.667     74.8599     17.67  .Q        .         .         .        V.
23.750     74.9809     17.56  .Q        .         .         .        V.
23.833     75.1011     17.46  Q         .         .         .        V.
23.917     75.2206     17.36  Q         .         .         .        V.
24.000     75.3395     17.25  Q         .         .         .        V.
24.083     75.4550     16.77  Q         .         .         .        V.
24.167     75.5553     14.57  Q         .         .         .        V.
24.250     75.6278     10.53  Q         .         .         .        V.
24.333     75.6674      5.75  Q         .         .         .        V.
24.417     75.6856      2.63  Q         .         .         .        V.
24.500     75.6935      1.15  Q         .         .         .        V.
24.583     75.6968      0.48  Q         .         .         .        V.
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  24.667     75.6985      0.26  Q         .         .         .        V.
  24.750     75.6996      0.15  Q         .         .         .        V.
  24.833     75.7000      0.06  Q         .         .         .        V.
  24.917     75.7001      0.01  Q         .         .         .         V
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated                Duration
       Peak Flow Rate                     (minutes)
   ======================                 =========
              0%                           1495.0
             10%                            100.0
             20%                             50.0
             30%                             30.0
             40%                             30.0
             50%                             20.0
             60%                             20.0
             70%                             15.0
             80%                             10.0
             90%                             10.0


********************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    303.00 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
================================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     452.300 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.250 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.407
         LOW LOSS FRACTION = 0.513
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.30
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.63
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.85
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.57
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  3.00

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
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5-MINUTE FACTOR = 0.980
30-MINUTE FACTOR = 0.980
1-HOUR FACTOR = 0.980
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 33.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.170	118.706
2	13.591	624.746
3	35.416	1193.805
4	62.732	1494.169
5	82.211	1065.530
6	91.877	528.733
7	96.496	252.663
8	98.279	97.498
9	98.906	34.326
10	99.441	29.221
11	99.776	18.362
12	99.944	9.181
13	100.000	3.060

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 52.8317
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 60.1095

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
0.083	0.0019	0.28	Q	.	.	.	.
0.167	0.0141	1.76	Q	.	.	.	.
0.250	0.0458	4.60	Q	.	.	.	.
0.333	0.1019	8.15	Q	.	.	.	.
0.417	0.1756	10.70	Q	.	.	.	.
0.500	0.2582	11.99	Q	.	.	.	.
0.583	0.3451	12.62	Q	.	.	.	.
0.667	0.4338	12.89	Q	.	.	.	.
0.750	0.5234	13.00	Q	.	.	.	.
0.833	0.6137	13.11	Q	.	.	.	.
0.917	0.7045	13.19	Q	.	.	.	.
1.000	0.7958	13.25	Q	.	.	.	.
1.083	0.8874	13.30	Q	.	.	.	.
1.167	0.9792	13.34	Q	.	.	.	.
1.250	1.0713	13.37	Q	.	.	.	.
1.333	1.1637	13.41	Q	.	.	.	.
1.417	1.2564	13.45	Q	.	.	.	.
1.500	1.3493	13.49	Q	.	.	.	.
1.583	1.4425	13.54	Q	.	.	.	.
1.667	1.5360	13.58	QV	.	.	.	.
1.750	1.6298	13.62	QV	.	.	.	.
1.833	1.7239	13.66	QV	.	.	.	.
1.917	1.8182	13.70	QV	.	.	.	.
2.000	1.9129	13.74	QV	.	.	.	.
2.083	2.0078	13.79	QV	.	.	.	.
2.167	2.1031	13.83	QV	.	.	.	.
2.250	2.1986	13.87	QV	.	.	.	.
2.333	2.2945	13.92	QV	.	.	.	.
2.417	2.3906	13.96	QV	.	.	.	.
2.500	2.4871	14.01	QV	.	.	.	.
2.583	2.5838	14.05	QV	.	.	.	.
2.667	2.6809	14.10	QV	.	.	.	.
2.750	2.7783	14.14	QV	.	.	.	.
2.833	2.8760	14.19	QV	.	.	.	.
2.917	2.9741	14.24	QV	.	.	.	.
3.000	3.0724	14.28	Q V	.	.	.	.
3.083	3.1711	14.33	Q V	.	.	.	.
3.167	3.2702	14.38	Q V	.	.	.	.
3.250	3.3695	14.43	Q V	.	.	.	.
3.333	3.4692	14.48	Q V	.	.	.	.

3.417	3.5693	14.53	Q	V	.	.	.	.
3.500	3.6697	14.58	Q	V	.	.	.	.
3.583	3.7704	14.63	Q	V	.	.	.	.
3.667	3.8715	14.68	Q	V	.	.	.	.
3.750	3.9729	14.73	Q	V	.	.	.	.
3.833	4.0747	14.78	Q	V	.	.	.	.
3.917	4.1769	14.83	Q	V	.	.	.	.
4.000	4.2794	14.89	Q	V	.	.	.	.
4.083	4.3823	14.94	Q	V	.	.	.	.
4.167	4.4856	15.00	Q	V	.	.	.	.
4.250	4.5893	15.05	.Q	V	.	.	.	.
4.333	4.6933	15.11	.Q	V	.	.	.	.
4.417	4.7978	15.16	.Q	V	.	.	.	.
4.500	4.9026	15.22	.Q	V	.	.	.	.
4.583	5.0078	15.28	.Q	V	.	.	.	.
4.667	5.1134	15.34	.Q	V	.	.	.	.
4.750	5.2194	15.39	.Q	V	.	.	.	.
4.833	5.3259	15.45	.Q	V	.	.	.	.
4.917	5.4327	15.51	.Q	V	.	.	.	.
5.000	5.5400	15.57	.Q	V	.	.	.	.
5.083	5.6476	15.63	.Q	V	.	.	.	.
5.167	5.7558	15.70	.Q	V	.	.	.	.
5.250	5.8643	15.76	.Q	V	.	.	.	.
5.333	5.9733	15.82	.Q	V	.	.	.	.
5.417	6.0827	15.89	.Q	V	.	.	.	.
5.500	6.1926	15.95	.Q	V	.	.	.	.
5.583	6.3029	16.02	.Q	V	.	.	.	.
5.667	6.4137	16.09	.Q	V	.	.	.	.
5.750	6.5249	16.15	.Q	V	.	.	.	.
5.833	6.6366	16.22	.Q	V	.	.	.	.
5.917	6.7488	16.29	.Q	V	.	.	.	.
6.000	6.8615	16.36	.Q	V	.	.	.	.
6.083	6.9746	16.43	.Q	V	.	.	.	.
6.167	7.0882	16.50	.Q	V	.	.	.	.
6.250	7.2024	16.57	.Q	V	.	.	.	.
6.333	7.3170	16.65	.Q	V	.	.	.	.
6.417	7.4322	16.72	.Q	V	.	.	.	.
6.500	7.5479	16.80	.Q	V	.	.	.	.
6.583	7.6641	16.87	.Q	V	.	.	.	.
6.667	7.7808	16.95	.Q	V	.	.	.	.
6.750	7.8981	17.03	.Q	V	.	.	.	.
6.833	8.0159	17.11	.Q	V	.	.	.	.
6.917	8.1343	17.19	.Q	V	.	.	.	.
7.000	8.2532	17.27	.Q	V	.	.	.	.
7.083	8.3728	17.35	.Q	V	.	.	.	.
7.167	8.4928	17.44	.Q	V	.	.	.	.
7.250	8.6135	17.52	.Q	V	.	.	.	.
7.333	8.7348	17.61	.Q	V	.	.	.	.
7.417	8.8566	17.69	.Q	V	.	.	.	.
7.500	8.9791	17.78	.Q	V	.	.	.	.
7.583	9.1022	17.87	.Q	V	.	.	.	.

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 7.667     9.2260    17.97  .Q    V   .         .         .         .
 7.750     9.3503    18.06  .Q    V   .         .         .         .
 7.833     9.4753    18.15  .Q    V   .         .         .         .
 7.917     9.6010    18.25  .Q    V   .         .         .         .
 8.000     9.7273    18.34  .Q    V   .         .         .         .
 8.083     9.8544    18.44  .Q    V   .         .         .         .
 8.167     9.9821    18.54  .Q    V   .         .         .         .
 8.250    10.1105    18.64  .Q    V   .         .         .         .
 8.333    10.2396    18.75  .Q    V   .         .         .         .
 8.417    10.3694    18.85  .Q    V   .         .         .         .
 8.500    10.5000    18.96  .Q    V   .         .         .         .
 8.583    10.6313    19.07  .Q     V  .         .         .         .
 8.667    10.7634    19.18  .Q     V  .         .         .         .
 8.750    10.8962    19.29  .Q     V  .         .         .         .
 8.833    11.0299    19.40  .Q     V  .         .         .         .
 8.917    11.1643    19.52  .Q     V  .         .         .         .
 9.000    11.2995    19.64  .Q     V  .         .         .         .
 9.083    11.4356    19.76  .Q     V  .         .         .         .
 9.167    11.5725    19.88  .Q     V  .         .         .         .
 9.250    11.7103    20.00  .Q     V  .         .         .         .
 9.333    11.8489    20.13  .Q     V  .         .         .         .
 9.417    11.9884    20.26  .Q     V  .         .         .         .
 9.500    12.1289    20.39  .Q      V .         .         .         .
 9.583    12.2702    20.52  .Q      V .         .         .         .
 9.667    12.4125    20.66  .Q      V .         .         .         .
 9.750    12.5557    20.80  .Q      V .         .         .         .
 9.833    12.6999    20.94  .Q      V .         .         .         .
 9.917    12.8451    21.08  .Q      V .         .         .         .
10.000    12.9914    21.23  .Q      V .         .         .         .
10.083    13.1386    21.38  .Q      V .         .         .         .
10.167    13.2869    21.54  .Q      V .         .         .         .
10.250    13.4363    21.69  .Q      V .         .         .         .
10.333    13.5868    21.85  .Q       V.         .         .         .
10.417    13.7385    22.02  .Q       V.         .         .         .
10.500    13.8912    22.18  .Q       V.         .         .         .
10.583    14.0452    22.35  .Q       V.         .         .         .
10.667    14.2003    22.53  .Q       V.         .         .         .
10.750    14.3567    22.71  .Q       V.         .         .         .
10.833    14.5144    22.89  .Q       V.         .         .         .
10.917    14.6733    23.08  .Q       V.         .         .         .
11.000    14.8335    23.27  .Q       V.         .         .         .
11.083    14.9951    23.46  .Q       V.         .         .         .
11.167    15.1581    23.66  .Q        V         .         .         .
11.250    15.3225    23.87  .Q        V         .         .         .
11.333    15.4883    24.08  .Q        V         .         .         .
11.417    15.6557    24.30  .Q        V         .         .         .
11.500    15.8245    24.52  .Q        V         .         .         .
11.583    15.9950    24.75  .Q        V         .         .         .
11.667    16.1671    24.98  .Q        V         .         .         .
11.750    16.3408    25.22  .Q        V         .         .         .
11.833    16.5162    25.47  .Q        V         .         .         .
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11.917     16.6934     25.73  .Q        .V        .         .         .
12.000     16.8724     25.99  .Q        .V        .         .         .
12.083     17.0526     26.16  .Q        .V        .         .         .
12.167     17.2311     25.93  .Q        .V        .         .         .
12.250     17.4049     25.23  .Q        .V        .         .         .
12.333     17.5722     24.29  .Q        .V        .         .         .
12.417     17.7355     23.71  .Q        .V        .         .         .
12.500     17.8979     23.58  .Q        .V        .         .         .
12.583     18.0610     23.69  .Q        . V       .         .         .
12.667     18.2258     23.93  .Q        . V       .         .         .
12.750     18.3928     24.24  .Q        . V       .         .         .
12.833     18.5620     24.57  .Q        . V       .         .         .
12.917     18.7336     24.92  .Q        . V       .         .         .
13.000     18.9078     25.29  .Q        . V       .         .         .
13.083     19.0847     25.68  .Q        . V       .         .         .
13.167     19.2644     26.09  .Q        . V       .         .         .
13.250     19.4470     26.52  .Q        . V       .         .         .
13.333     19.6328     26.97  .Q        .  V      .         .         .
13.417     19.8218     27.44  .Q        .  V      .         .         .
13.500     20.0141     27.93  .Q        .  V      .         .         .
13.583     20.2100     28.44  .Q        .  V      .         .         .
13.667     20.4097     28.99  .Q        .  V      .         .         .
13.750     20.6132     29.55  .Q        .  V      .         .         .
13.833     20.8209     30.16  . Q       .  V      .         .         .
13.917     21.0329     30.79  . Q       .  V      .         .         .
14.000     21.2496     31.46  . Q       .   V     .         .         .
14.083     21.4703     32.05  . Q       .   V     .         .         .
14.167     21.6920     32.19  . Q       .   V     .         .         .
14.250     21.9112     31.82  . Q       .   V     .         .         .
14.333     22.1260     31.19  . Q       .   V     .         .         .
14.417     22.3396     31.02  . Q       .   V     .         .         .
14.500     22.5562     31.44  . Q       .    V    .         .         .
14.583     22.7778     32.18  . Q       .    V    .         .         .
14.667     23.0063     33.17  . Q       .    V    .         .         .
14.750     23.2425     34.30  . Q       .    V    .         .         .
14.833     23.4874     35.56  . Q       .    V    .         .         .
14.917     23.7418     36.94  . Q       .    V    .         .         .
15.000     24.0070     38.50  . Q       .    V    .         .         .
15.083     24.2839     40.21  . Q       .     V   .         .         .
15.167     24.5743     42.17  . Q       .     V   .         .         .
15.250     24.8798     44.35  . Q       .     V   .         .         .
15.333     25.2026     46.88  .  Q      .     V   .         .         .
15.417     25.5482     50.18  .  Q      .      V  .         .         .
15.500     25.9325     55.81  .  Q      .      V  .         .         .
15.583     26.3740     64.10  .   Q     .      V  .         .         .
15.667     26.8875     74.56  .   Q     .      V  .         .         .
15.750     27.4716     84.81  .    Q    .       V .         .         .
15.833     28.1259     95.00  .     Q   .       V .         .         .
15.917     28.8655    107.38  .      Q  .        V.         .         .
16.000     29.7555    129.23  .       Q .        V.         .         .
16.083     31.0847    193.00  .         . Q       V         .         .
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16.167	33.4535	343.96	. . . Q . .
16.250	36.8152	488.12	. . . V . Q .
16.333	40.5028	535.44	. . . V . Q .
16.417	43.2825	403.61	. . . Q V . .
16.500	44.9937	248.46	. . Q . V. .
16.583	46.0710	156.43	. Q . V .
16.667	46.7514	98.80	. Q . . .V .
16.750	47.2313	69.67	. Q . . .V .
16.833	47.6354	58.67	. Q . . .V .
16.917	47.9759	49.45	. Q . . .V .
17.000	48.2686	42.50	. Q . . . V .
17.083	48.5274	37.58	. Q . . . V .
17.167	48.7658	34.62	. Q . . . V .
17.250	48.9960	33.43	. Q . . . V .
17.333	49.2227	32.92	. Q . . . V .
17.417	49.4448	32.25	. Q . . . V .
17.500	49.6601	31.27	. Q . . . V .
17.583	49.8679	30.18	. Q . . . V .
17.667	50.0681	29.07	.Q . . . V .
17.750	50.2612	28.03	.Q . . . V .
17.833	50.4476	27.07	.Q . . . V .
17.917	50.6281	26.20	.Q . . . V .
18.000	50.8029	25.39	.Q . . . V .
18.083	50.9733	24.73	.Q . . . V .
18.167	51.1423	24.55	.Q . . . V .
18.250	51.3137	24.88	.Q . . . V .
18.333	51.4893	25.50	.Q . . . V .
18.417	51.6669	25.79	.Q . . . V .
18.500	51.8437	25.68	.Q . . . V .
18.583	52.0184	25.36	.Q . . . V .
18.667	52.1903	24.95	.Q . . . V .
18.750	52.3591	24.51	.Q . . . V .
18.833	52.5250	24.10	.Q . . . V .
18.917	52.6882	23.69	.Q . . . V .
19.000	52.8487	23.30	.Q . . . V .
19.083	53.0065	22.92	.Q . . . V .
19.167	53.1619	22.56	.Q . . . V .
19.250	53.3149	22.21	.Q . . . V .
19.333	53.4656	21.88	.Q . . . V .
19.417	53.6141	21.56	.Q . . . V .
19.500	53.7604	21.26	.Q . . . V .
19.583	53.9048	20.96	.Q . . . V .
19.667	54.0473	20.68	.Q . . . V .
19.750	54.1878	20.41	.Q . . . V .
19.833	54.3266	20.15	.Q . . . V .
19.917	54.4636	19.90	.Q . . . V .
20.000	54.5990	19.66	.Q . . . V .
20.083	54.7327	19.42	.Q . . . V .
20.167	54.8649	19.19	.Q . . . V .
20.250	54.9956	18.97	.Q . . . V .
20.333	55.1248	18.76	.Q . . . V .

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20.417     55.2526     18.56  .Q        .         .         .     V   .
20.500     55.3791     18.36  .Q        .         .         .     V   .
20.583     55.5042     18.17  .Q        .         .         .     V   .
20.667     55.6280     17.98  .Q        .         .         .      V  .
20.750     55.7506     17.80  .Q        .         .         .      V  .
20.833     55.8719     17.62  .Q        .         .         .      V  .
20.917     55.9921     17.45  .Q        .         .         .      V  .
21.000     56.1111     17.28  .Q        .         .         .      V  .
21.083     56.2290     17.12  .Q        .         .         .      V  .
21.167     56.3458     16.96  .Q        .         .         .      V  .
21.250     56.4616     16.81  .Q        .         .         .      V  .
21.333     56.5763     16.66  .Q        .         .         .      V  .
21.417     56.6900     16.51  .Q        .         .         .      V  .
21.500     56.8027     16.37  .Q        .         .         .      V  .
21.583     56.9145     16.23  .Q        .         .         .      V  .
21.667     57.0253     16.09  .Q        .         .         .      V  .
21.750     57.1352     15.96  .Q        .         .         .       V .
21.833     57.2443     15.83  .Q        .         .         .       V .
21.917     57.3524     15.70  .Q        .         .         .       V .
22.000     57.4597     15.58  .Q        .         .         .       V .
22.083     57.5662     15.46  .Q        .         .         .       V .
22.167     57.6719     15.34  .Q        .         .         .       V .
22.250     57.7767     15.23  .Q        .         .         .       V .
22.333     57.8808     15.11  .Q        .         .         .       V .
22.417     57.9841     15.00  .Q        .         .         .       V .
22.500     58.0867     14.89  Q         .         .         .       V .
22.583     58.1886     14.79  Q         .         .         .       V .
22.667     58.2897     14.68  Q         .         .         .       V .
22.750     58.3901     14.58  Q         .         .         .       V .
22.833     58.4898     14.48  Q         .         .         .       V .
22.917     58.5889     14.38  Q         .         .         .       V .
23.000     58.6873     14.29  Q         .         .         .        V.
23.083     58.7851     14.19  Q         .         .         .        V.
23.167     58.8822     14.10  Q         .         .         .        V.
23.250     58.9787     14.01  Q         .         .         .        V.
23.333     59.0745     13.92  Q         .         .         .        V.
23.417     59.1698     13.83  Q         .         .         .        V.
23.500     59.2645     13.75  Q         .         .         .        V.
23.583     59.3586     13.66  Q         .         .         .        V.
23.667     59.4521     13.58  Q         .         .         .        V.
23.750     59.5451     13.50  Q         .         .         .        V.
23.833     59.6375     13.42  Q         .         .         .        V.
23.917     59.7294     13.34  Q         .         .         .        V.
24.000     59.8207     13.26  Q         .         .         .        V.
24.083     59.9096     12.91  Q         .         .         .        V.
24.167     59.9878     11.35  Q         .         .         .        V.
24.250     60.0461      8.46  Q         .         .         .        V.
24.333     60.0797      4.88  Q         .         .         .        V.
24.417     60.0957      2.33  Q         .         .         .        V.
24.500     60.1030      1.06  Q         .         .         .        V.
24.583     60.1062      0.46  Q         .         .         .        V.
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  24.667     60.1077      0.23  Q         .         .         .        V.
  24.750     60.1087      0.14  Q         .         .         .        V.
  24.833     60.1092      0.07  Q         .         .         .        V.
  24.917     60.1094      0.03  Q         .         .         .        V.
  25.000     60.1095      0.01  Q         .         .         .        V.
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated               Duration
       Peak Flow Rate                    (minutes)
   ======================                =========
             0%                           1500.0
            10%                             85.0
            20%                             45.0
            30%                             30.0
            40%                             25.0
            50%                             20.0
            60%                             20.0
            70%                             15.0
            80%                             10.0
            90%                             10.0


********************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 IS CODE =   7
--------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
================================================================================


********************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    101.00 IS CODE = 3.1
--------------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
================================================================================

                    INFLOW
                  (STREAM 1)
                       |
                       |
                       V                __effective depth
                   -----------          |   (and volume)
                  |           |    |    |
                  |           |    |....V........
                  | detention |<-->|           outflow
                  |   basin   |    |.........._______
                   -----------     |    ^    |  \
                       |           |  dead   |   basin outlet
                       V           | storage |
```

OUTFLOW ---------
(STREAM 1)

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

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	5.00	113.00	9.830
3	10.00	192.00	22.020
4	15.00	248.00	36.780
5	20.00	293.00	54.330
6	25.00	332.00	74.840

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(5-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
0.083	0.000	0.67	0.00	0.00	0.0	0.004
0.167	0.000	4.26	0.00	0.02	0.2	0.032
0.250	0.000	11.06	0.00	0.05	0.8	0.103
0.333	0.000	19.36	0.00	0.11	1.9	0.224
0.417	0.000	25.04	0.00	0.19	3.4	0.372
0.500	0.000	27.83	0.00	0.27	5.2	0.528
0.583	0.000	29.17	0.00	0.35	7.0	0.681
0.667	0.000	29.70	0.00	0.42	8.7	0.826
0.750	0.000	29.98	0.00	0.49	10.3	0.962
0.833	0.000	30.22	0.00	0.55	11.8	1.089
0.917	0.000	30.39	0.00	0.61	13.2	1.207
1.000	0.000	30.52	0.00	0.67	14.5	1.318
1.083	0.000	30.62	0.00	0.72	15.7	1.420
1.167	0.000	30.71	0.00	0.77	16.9	1.515
1.250	0.000	30.80	0.00	0.82	17.9	1.604
1.333	0.000	30.89	0.00	0.86	18.9	1.686

1.417	0.000	30.98	0.00	0.90	19.8	1.763
1.500	0.000	31.07	0.00	0.93	20.7	1.835
1.583	0.000	31.16	0.00	0.97	21.5	1.902
1.667	0.000	31.26	0.00	1.00	22.2	1.964
1.750	0.000	31.35	0.00	1.03	22.9	2.022
1.833	0.000	31.45	0.00	1.06	23.6	2.076
1.917	0.000	31.55	0.00	1.08	24.2	2.127
2.000	0.000	31.64	0.00	1.11	24.7	2.175
2.083	0.000	31.74	0.00	1.13	25.3	2.219
2.167	0.000	31.84	0.00	1.15	25.8	2.261
2.250	0.000	31.94	0.00	1.17	26.2	2.301
2.333	0.000	32.04	0.00	1.19	26.7	2.338
2.417	0.000	32.14	0.00	1.21	27.1	2.373
2.500	0.000	32.25	0.00	1.22	27.5	2.406
2.583	0.000	32.35	0.00	1.24	27.8	2.437
2.667	0.000	32.46	0.00	1.25	28.2	2.466
2.750	0.000	32.56	0.00	1.27	28.5	2.494
2.833	0.000	32.67	0.00	1.28	28.8	2.521
2.917	0.000	32.78	0.00	1.29	29.1	2.546
3.000	0.000	32.89	0.00	1.31	29.4	2.570
3.083	0.000	33.00	0.00	1.32	29.7	2.593
3.167	0.000	33.11	0.00	1.33	29.9	2.615
3.250	0.000	33.22	0.00	1.34	30.2	2.636
3.333	0.000	33.33	0.00	1.35	30.4	2.656
3.417	0.000	33.45	0.00	1.36	30.6	2.675
3.500	0.000	33.56	0.00	1.37	30.9	2.694
3.583	0.000	33.68	0.00	1.38	31.1	2.712
3.667	0.000	33.80	0.00	1.39	31.3	2.729
3.750	0.000	33.92	0.00	1.40	31.5	2.746
3.833	0.000	34.04	0.00	1.41	31.7	2.762
3.917	0.000	34.16	0.00	1.41	31.8	2.778
4.000	0.000	34.28	0.00	1.42	32.0	2.794
4.083	0.000	34.40	0.00	1.43	32.2	2.809
4.167	0.000	34.53	0.00	1.44	32.4	2.824
4.250	0.000	34.66	0.00	1.44	32.5	2.838
4.333	0.000	34.79	0.00	1.45	32.7	2.853
4.417	0.000	34.91	0.00	1.46	32.9	2.867
4.500	0.000	35.05	0.00	1.47	33.0	2.881
4.583	0.000	35.18	0.00	1.47	33.2	2.894
4.667	0.000	35.31	0.00	1.48	33.3	2.908
4.750	0.000	35.45	0.00	1.49	33.5	2.921
4.833	0.000	35.58	0.00	1.49	33.7	2.934
4.917	0.000	35.72	0.00	1.50	33.8	2.948
5.000	0.000	35.86	0.00	1.51	34.0	2.961
5.083	0.000	36.00	0.00	1.51	34.1	2.974
5.167	0.000	36.15	0.00	1.52	34.3	2.987
5.250	0.000	36.29	0.00	1.53	34.4	3.000
5.333	0.000	36.44	0.00	1.53	34.6	3.013
5.417	0.000	36.58	0.00	1.54	34.7	3.026
5.500	0.000	36.73	0.00	1.55	34.9	3.038
5.583	0.000	36.88	0.00	1.55	35.0	3.051

5.667	0.000	37.04	0.00	1.56	35.2	3.064
5.750	0.000	37.19	0.00	1.57	35.3	3.077
5.833	0.000	37.35	0.00	1.57	35.5	3.091
5.917	0.000	37.51	0.00	1.58	35.6	3.104
6.000	0.000	37.67	0.00	1.59	35.8	3.117
6.083	0.000	37.83	0.00	1.59	35.9	3.130
6.167	0.000	38.00	0.00	1.60	36.1	3.143
6.250	0.000	38.16	0.00	1.61	36.2	3.157
6.333	0.000	38.33	0.00	1.61	36.4	3.170
6.417	0.000	38.50	0.00	1.62	36.5	3.184
6.500	0.000	38.68	0.00	1.63	36.7	3.198
6.583	0.000	38.85	0.00	1.63	36.8	3.212
6.667	0.000	39.03	0.00	1.64	37.0	3.226
6.750	0.000	39.21	0.00	1.65	37.2	3.240
6.833	0.000	39.40	0.00	1.66	37.3	3.254
6.917	0.000	39.58	0.00	1.66	37.5	3.268
7.000	0.000	39.77	0.00	1.67	37.7	3.283
7.083	0.000	39.96	0.00	1.68	37.8	3.298
7.167	0.000	40.15	0.00	1.68	38.0	3.313
7.250	0.000	40.35	0.00	1.69	38.2	3.328
7.333	0.000	40.55	0.00	1.70	38.3	3.343
7.417	0.000	40.75	0.00	1.71	38.5	3.358
7.500	0.000	40.95	0.00	1.72	38.7	3.374
7.583	0.000	41.16	0.00	1.72	38.9	3.390
7.667	0.000	41.37	0.00	1.73	39.1	3.405
7.750	0.000	41.58	0.00	1.74	39.2	3.422
7.833	0.000	41.80	0.00	1.75	39.4	3.438
7.917	0.000	42.02	0.00	1.76	39.6	3.455
8.000	0.000	42.25	0.00	1.77	39.8	3.471
8.083	0.000	42.47	0.00	1.77	40.0	3.488
8.167	0.000	42.70	0.00	1.78	40.2	3.506
8.250	0.000	42.94	0.00	1.79	40.4	3.523
8.333	0.000	43.17	0.00	1.80	40.6	3.541
8.417	0.000	43.41	0.00	1.81	40.8	3.559
8.500	0.000	43.66	0.00	1.82	41.0	3.577
8.583	0.000	43.91	0.00	1.83	41.2	3.595
8.667	0.000	44.17	0.00	1.84	41.4	3.614
8.750	0.000	44.42	0.00	1.85	41.7	3.633
8.833	0.000	44.69	0.00	1.86	41.9	3.653
8.917	0.000	44.95	0.00	1.87	42.1	3.672
9.000	0.000	45.22	0.00	1.88	42.3	3.692
9.083	0.000	45.50	0.00	1.89	42.6	3.712
9.167	0.000	45.78	0.00	1.90	42.8	3.733
9.250	0.000	46.07	0.00	1.91	43.0	3.754
9.333	0.000	46.36	0.00	1.92	43.3	3.775
9.417	0.000	46.65	0.00	1.93	43.5	3.797
9.500	0.000	46.96	0.00	1.94	43.8	3.819
9.583	0.000	47.26	0.00	1.95	44.0	3.841
9.667	0.000	47.58	0.00	1.97	44.3	3.864
9.750	0.000	47.90	0.00	1.98	44.5	3.887
9.833	0.000	48.23	0.00	1.99	44.8	3.910

9.917	0.000	48.56	0.00	2.00	45.1	3.934
10.000	0.000	48.90	0.00	2.01	45.4	3.959
10.083	0.000	49.24	0.00	2.03	45.6	3.983
10.167	0.000	49.60	0.00	2.04	45.9	4.009
10.250	0.000	49.96	0.00	2.05	46.2	4.034
10.333	0.000	50.33	0.00	2.07	46.5	4.060
10.417	0.000	50.71	0.00	2.08	46.8	4.087
10.500	0.000	51.09	0.00	2.09	47.1	4.114
10.583	0.000	51.48	0.00	2.11	47.5	4.142
10.667	0.000	51.89	0.00	2.12	47.8	4.170
10.750	0.000	52.30	0.00	2.14	48.1	4.199
10.833	0.000	52.72	0.00	2.15	48.4	4.229
10.917	0.000	53.15	0.00	2.17	48.8	4.259
11.000	0.000	53.59	0.00	2.18	49.1	4.290
11.083	0.000	54.04	0.00	2.20	49.5	4.321
11.167	0.000	54.51	0.00	2.21	49.9	4.353
11.250	0.000	54.98	0.00	2.23	50.2	4.386
11.333	0.000	55.47	0.00	2.25	50.6	4.419
11.417	0.000	55.97	0.00	2.27	51.0	4.453
11.500	0.000	56.48	0.00	2.28	51.4	4.488
11.583	0.000	57.01	0.00	2.30	51.8	4.524
11.667	0.000	57.55	0.00	2.32	52.2	4.561
11.750	0.000	58.10	0.00	2.34	52.6	4.599
11.833	0.000	58.68	0.00	2.36	53.1	4.637
11.917	0.000	59.26	0.00	2.38	53.5	4.677
12.000	0.000	59.87	0.00	2.40	54.0	4.717
12.083	0.000	60.26	0.00	2.42	54.5	4.757
12.167	0.000	59.66	0.00	2.44	54.9	4.790
12.250	0.000	57.96	0.00	2.45	55.2	4.809
12.333	0.000	55.76	0.00	2.45	55.3	4.812
12.417	0.000	54.49	0.00	2.45	55.3	4.807
12.500	0.000	54.26	0.00	2.44	55.2	4.800
12.583	0.000	54.54	0.00	2.44	55.2	4.796
12.667	0.000	55.14	0.00	2.44	55.1	4.796
12.750	0.000	55.85	0.00	2.44	55.2	4.801
12.833	0.000	56.61	0.00	2.45	55.2	4.810
12.917	0.000	57.42	0.00	2.45	55.4	4.824
13.000	0.000	58.28	0.00	2.46	55.6	4.843
13.083	0.000	59.19	0.00	2.48	55.8	4.866
13.167	0.000	60.14	0.00	2.49	56.1	4.894
13.250	0.000	61.13	0.00	2.51	56.4	4.926
13.333	0.000	62.17	0.00	2.52	56.8	4.963
13.417	0.000	63.24	0.00	2.55	57.3	5.004
13.500	0.000	64.39	0.00	2.57	57.8	5.050
13.583	0.000	65.57	0.00	2.59	58.3	5.099
13.667	0.000	66.82	0.00	2.62	58.9	5.154
13.750	0.000	68.13	0.00	2.65	59.6	5.213
13.833	0.000	69.52	0.00	2.68	60.3	5.276
13.917	0.000	70.98	0.00	2.72	61.0	5.345
14.000	0.000	72.53	0.00	2.76	61.9	5.418
14.083	0.000	73.89	0.00	2.80	62.7	5.495

14.167	0.000	74.16	0.00	2.83	63.6	5.568
14.250	0.000	73.20	0.00	2.86	64.4	5.629
14.333	0.000	71.74	0.00	2.89	65.0	5.675
14.417	0.000	71.44	0.00	2.91	65.5	5.716
14.500	0.000	72.49	0.00	2.93	66.0	5.761
14.583	0.000	74.25	0.00	2.96	66.5	5.814
14.667	0.000	76.58	0.00	2.99	67.2	5.879
14.750	0.000	79.19	0.00	3.03	68.0	5.956
14.833	0.000	82.12	0.00	3.08	69.0	6.046
14.917	0.000	85.31	0.00	3.13	70.1	6.151
15.000	0.000	88.93	0.00	3.19	71.4	6.272
15.083	0.000	92.91	0.00	3.26	72.9	6.410
15.167	0.000	97.45	0.00	3.34	74.6	6.567
15.250	0.000	102.51	0.00	3.43	76.5	6.746
15.333	0.000	108.39	0.00	3.54	78.7	6.950
15.417	0.000	116.07	0.00	3.66	81.3	7.190
15.500	0.000	129.37	0.00	3.81	84.4	7.500
15.583	0.000	148.93	0.00	4.03	88.6	7.915
15.667	0.000	173.32	0.00	4.30	94.1	8.460
15.750	0.000	196.82	0.00	4.64	101.0	9.120
15.833	0.000	220.29	0.00	5.02	109.1	9.886
15.917	0.000	249.01	0.00	5.40	116.3	10.800
16.000	0.000	299.50	0.00	5.90	123.2	12.014
16.083	0.000	439.55	0.00	6.76	134.0	14.118
16.167	0.000	764.45	0.00	8.48	154.4	18.320
16.250	0.000	1063.29	0.00	10.80	184.5	24.372
16.333	0.000	1140.04	0.00	12.96	213.0	30.757
16.417	0.000	841.26	0.00	14.38	233.1	34.945
16.500	0.000	520.29	0.00	15.02	244.6	36.844
16.583	0.000	330.84	0.00	15.18	248.9	37.408
16.667	0.000	211.29	0.00	15.10	249.3	37.147
16.750	0.000	156.01	0.00	14.91	248.0	36.513
16.833	0.000	131.27	0.00	14.64	245.5	35.727
16.917	0.000	110.35	0.00	14.34	242.3	34.818
17.000	0.000	95.25	0.00	14.00	238.7	33.830
17.083	0.000	84.91	0.00	13.65	234.8	32.797
17.167	0.000	79.22	0.00	13.30	230.9	31.753
17.250	0.000	76.73	0.00	12.95	227.0	30.718
17.333	0.000	75.67	0.00	12.60	223.1	29.703
17.417	0.000	74.11	0.00	12.26	219.3	28.703
17.500	0.000	71.81	0.00	11.93	215.5	27.714
17.583	0.000	69.28	0.00	11.60	211.7	26.733
17.667	0.000	66.73	0.00	11.27	208.0	25.760
17.750	0.000	64.35	0.00	10.94	204.4	24.795
17.833	0.000	62.17	0.00	10.62	200.7	23.841
17.917	0.000	60.17	0.00	10.30	197.1	22.898
18.000	0.000	58.31	0.00	9.98	193.5	21.967
18.083	0.000	56.82	0.00	9.61	188.7	21.059
18.167	0.000	56.46	0.00	9.25	182.9	20.187
18.250	0.000	57.33	0.00	8.91	177.4	19.360
18.333	0.000	58.79	0.00	8.59	172.2	18.579

18.417	0.000	59.41	0.00	8.28	167.3	17.836
18.500	0.000	59.09	0.00	7.99	162.6	17.123
18.583	0.000	58.34	0.00	7.71	158.0	16.437
18.667	0.000	57.37	0.00	7.44	153.7	15.773
18.750	0.000	56.36	0.00	7.17	149.4	15.132
18.833	0.000	55.41	0.00	6.92	145.4	14.513
18.917	0.000	54.47	0.00	6.68	141.4	13.914
19.000	0.000	53.57	0.00	6.44	137.6	13.335
19.083	0.000	52.70	0.00	6.21	133.9	12.776
19.167	0.000	51.87	0.00	5.99	130.3	12.236
19.250	0.000	51.07	0.00	5.77	126.9	11.714
19.333	0.000	50.31	0.00	5.57	123.6	11.209
19.417	0.000	49.58	0.00	5.37	120.4	10.722
19.500	0.000	48.88	0.00	5.17	117.3	10.251
19.583	0.000	48.21	0.00	4.98	114.2	9.796
19.667	0.000	47.56	0.00	4.76	110.1	9.365
19.750	0.000	46.94	0.00	4.56	105.3	8.963
19.833	0.000	46.34	0.00	4.37	100.9	8.588
19.917	0.000	45.76	0.00	4.19	96.7	8.237
20.000	0.000	45.20	0.00	4.02	92.8	7.909
20.083	0.000	44.67	0.00	3.87	89.2	7.602
20.167	0.000	44.15	0.00	3.72	85.7	7.316
20.250	0.000	43.64	0.00	3.58	82.6	7.048
20.333	0.000	43.16	0.00	3.46	79.6	6.797
20.417	0.000	42.68	0.00	3.34	76.8	6.562
20.500	0.000	42.23	0.00	3.23	74.2	6.342
20.583	0.000	41.78	0.00	3.12	71.7	6.136
20.667	0.000	41.35	0.00	3.02	69.4	5.943
20.750	0.000	40.94	0.00	2.93	67.3	5.761
20.833	0.000	40.53	0.00	2.84	65.3	5.591
20.917	0.000	40.14	0.00	2.76	63.4	5.431
21.000	0.000	39.75	0.00	2.69	61.6	5.281
21.083	0.000	39.38	0.00	2.61	59.9	5.140
21.167	0.000	39.02	0.00	2.55	58.3	5.007
21.250	0.000	38.66	0.00	2.48	56.8	4.882
21.333	0.000	38.32	0.00	2.42	55.4	4.764
21.417	0.000	37.98	0.00	2.37	54.1	4.653
21.500	0.000	37.65	0.00	2.31	52.9	4.548
21.583	0.000	37.33	0.00	2.26	51.7	4.449
21.667	0.000	37.02	0.00	2.22	50.6	4.355
21.750	0.000	36.72	0.00	2.17	49.6	4.267
21.833	0.000	36.42	0.00	2.13	48.6	4.183
21.917	0.000	36.13	0.00	2.09	47.6	4.104
22.000	0.000	35.85	0.00	2.05	46.7	4.029
22.083	0.000	35.57	0.00	2.01	45.9	3.958
22.167	0.000	35.30	0.00	1.98	45.1	3.890
22.250	0.000	35.03	0.00	1.95	44.3	3.826
22.333	0.000	34.77	0.00	1.92	43.6	3.765
22.417	0.000	34.52	0.00	1.89	42.9	3.707
22.500	0.000	34.27	0.00	1.86	42.3	3.652
22.583	0.000	34.02	0.00	1.83	41.7	3.599

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          22.667        0.000    33.78     0.00      1.81     41.1      3.549
          22.750        0.000    33.55     0.00      1.78     40.5      3.501
          22.833        0.000    33.32     0.00      1.76     40.0      3.455
          22.917        0.000    33.10     0.00      1.73     39.5      3.411
          23.000        0.000    32.87     0.00      1.71     39.0      3.369
          23.083        0.000    32.66     0.00      1.69     38.5      3.329
          23.167        0.000    32.45     0.00      1.67     38.0      3.290
          23.250        0.000    32.24     0.00      1.65     37.6      3.253
          23.333        0.000    32.03     0.00      1.64     37.2      3.218
          23.417        0.000    31.83     0.00      1.62     36.8      3.183
          23.500        0.000    31.63     0.00      1.60     36.4      3.151
          23.583        0.000    31.44     0.00      1.59     36.0      3.119
          23.667        0.000    31.25     0.00      1.57     35.7      3.088
          23.750        0.000    31.06     0.00      1.56     35.3      3.059
          23.833        0.000    30.88     0.00      1.54     35.0      3.031
          23.917        0.000    30.70     0.00      1.53     34.7      3.003
--------------------------------------------------------------------------------
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =    135.810 AF
    BASIN  STORAGE =      0.000 AF (WITH      0.000 AF INITIALLY FILLED)
    OUTFLOW VOLUME =    135.810 AF
    LOSS    VOLUME =      0.000 AF


********************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    100.00 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
================================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #3)

         WATERSHED AREA =     577.950 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.210 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.271
         LOW LOSS FRACTION = 0.375
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.30
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.63
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.85
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.20
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.57
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  3.00

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
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            5-MINUTE FACTOR = 0.974
           30-MINUTE FACTOR = 0.974
            1-HOUR FACTOR = 0.974
            3-HOUR FACTOR = 0.996
            6-HOUR FACTOR = 0.998
           24-HOUR FACTOR = 0.999

          UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
          UNIT INTERVAL PERCENTAGE OF LAG-TIME =  39.683


================================================================================
                      UNIT HYDROGRAPH DETERMINATION

--------------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
--------------------------------------------------------------------------------
        1                 2.872               200.764
        2                19.165              1138.762
        3                48.437              2045.999
        4                76.826              1984.323
        5                90.830               978.816
        6                96.604               403.564
        7                98.430               127.619
        8                99.173                51.923
        9                99.669                34.688
       10                99.917                17.344
       11               100.000                 5.781


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    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      49.0633
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      95.2073
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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	225.0	450.0	675.0	900.0
0.083	0.0042	0.61	Q	.	.	.	.
0.167	0.0323	4.08	Q	.	.	.	.
0.250	0.1033	10.32	Q	.	.	.	.
0.333	0.2162	16.38	Q	.	.	.	.
0.417	0.3498	19.40	Q	.	.	.	.
0.500	0.4923	20.69	Q	.	.	.	.
0.583	0.6378	21.13	Q	.	.	.	.
0.667	0.7848	21.35	Q	.	.	.	.
0.750	0.9330	21.52	Q	.	.	.	.
0.833	1.0820	21.63	Q	.	.	.	.
0.917	1.2315	21.71	Q	.	.	.	.
1.000	1.3815	21.77	Q	.	.	.	.
1.083	1.5319	21.84	Q	.	.	.	.
1.167	1.6827	21.90	Q	.	.	.	.
1.250	1.8340	21.97	Q	.	.	.	.
1.333	1.9857	22.03	Q	.	.	.	.
1.417	2.1379	22.10	Q	.	.	.	.
1.500	2.2906	22.16	Q	.	.	.	.
1.583	2.4437	22.23	QV	.	.	.	.
1.667	2.5972	22.30	QV	.	.	.	.
1.750	2.7513	22.37	QV	.	.	.	.
1.833	2.9058	22.43	QV	.	.	.	.
1.917	3.0607	22.50	.Q	.	.	.	.
2.000	3.2162	22.57	.Q	.	.	.	.
2.083	3.3721	22.64	.Q	.	.	.	.
2.167	3.5286	22.71	.Q	.	.	.	.
2.250	3.6855	22.79	.Q	.	.	.	.
2.333	3.8429	22.86	.Q	.	.	.	.
2.417	4.0009	22.93	.Q	.	.	.	.
2.500	4.1593	23.00	.Q	.	.	.	.
2.583	4.3182	23.08	.Q	.	.	.	.
2.667	4.4777	23.15	.Q	.	.	.	.
2.750	4.6377	23.23	.Q	.	.	.	.
2.833	4.7982	23.31	.QV	.	.	.	.
2.917	4.9592	23.38	.QV	.	.	.	.
3.000	5.1208	23.46	.QV	.	.	.	.
3.083	5.2830	23.54	.QV	.	.	.	.
3.167	5.4456	23.62	.QV	.	.	.	.
3.250	5.6088	23.70	.QV	.	.	.	.
3.333	5.7726	23.78	.QV	.	.	.	.

3.417	5.9370	23.86	.QV	.	.	.	.
3.500	6.1019	23.95	.QV	.	.	.	.
3.583	6.2674	24.03	.QV	.	.	.	.
3.667	6.4334	24.11	.QV	.	.	.	.
3.750	6.6001	24.20	.QV	.	.	.	.
3.833	6.7673	24.28	.QV	.	.	.	.
3.917	6.9352	24.37	.QV	.	.	.	.
4.000	7.1036	24.46	.QV	.	.	.	.
4.083	7.2727	24.55	.Q V	.	.	.	.
4.167	7.4424	24.64	.Q V	.	.	.	.
4.250	7.6127	24.73	.Q V	.	.	.	.
4.333	7.7836	24.82	.Q V	.	.	.	.
4.417	7.9552	24.91	.Q V	.	.	.	.
4.500	8.1274	25.01	.Q V	.	.	.	.
4.583	8.3003	25.10	.Q V	.	.	.	.
4.667	8.4738	25.20	.Q V	.	.	.	.
4.750	8.6480	25.29	.Q V	.	.	.	.
4.833	8.8228	25.39	.Q V	.	.	.	.
4.917	8.9984	25.49	.Q V	.	.	.	.
5.000	9.1746	25.59	.Q V	.	.	.	.
5.083	9.3516	25.69	.Q V	.	.	.	.
5.167	9.5292	25.79	.Q V	.	.	.	.
5.250	9.7075	25.90	.Q V	.	.	.	.
5.333	9.8866	26.00	.Q V	.	.	.	.
5.417	10.0664	26.11	.Q V	.	.	.	.
5.500	10.2469	26.21	.Q V	.	.	.	.
5.583	10.4282	26.32	.Q V	.	.	.	.
5.667	10.6103	26.43	.Q V	.	.	.	.
5.750	10.7931	26.54	.Q V	.	.	.	.
5.833	10.9766	26.66	.Q V	.	.	.	.
5.917	11.1610	26.77	.Q V	.	.	.	.
6.000	11.3462	26.88	.Q V	.	.	.	.
6.083	11.5321	27.00	.Q V	.	.	.	.
6.167	11.7189	27.12	.Q V	.	.	.	.
6.250	11.9065	27.24	.Q V	.	.	.	.
6.333	12.0949	27.36	.Q V	.	.	.	.
6.417	12.2842	27.48	.Q V	.	.	.	.
6.500	12.4743	27.61	.Q V	.	.	.	.
6.583	12.6653	27.73	.Q V	.	.	.	.
6.667	12.8572	27.86	.Q V	.	.	.	.
6.750	13.0499	27.99	.Q V	.	.	.	.
6.833	13.2436	28.12	.Q V	.	.	.	.
6.917	13.4382	28.25	.Q V	.	.	.	.
7.000	13.6337	28.39	.Q V	.	.	.	.
7.083	13.8301	28.52	.Q V	.	.	.	.
7.167	14.0275	28.66	.Q V	.	.	.	.
7.250	14.2259	28.80	.Q V	.	.	.	.
7.333	14.4253	28.95	.Q V	.	.	.	.
7.417	14.6256	29.09	.Q V	.	.	.	.
7.500	14.8270	29.24	.Q V	.	.	.	.
7.583	15.0293	29.38	.Q V	.	.	.	.

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 7.667     15.2327     29.54  .Q    V   .         .         .         .
 7.750     15.4372     29.69  .Q    V   .         .         .         .
 7.833     15.6427     29.84  .Q    V   .         .         .         .
 7.917     15.8494     30.00  .Q    V   .         .         .         .
 8.000     16.0571     30.16  .Q    V   .         .         .         .
 8.083     16.2659     30.32  .Q    V   .         .         .         .
 8.167     16.4759     30.49  .Q    V   .         .         .         .
 8.250     16.6871     30.66  .Q     V  .         .         .         .
 8.333     16.8994     30.83  .Q     V  .         .         .         .
 8.417     17.1129     31.00  .Q     V  .         .         .         .
 8.500     17.3276     31.18  .Q     V  .         .         .         .
 8.583     17.5436     31.36  .Q     V  .         .         .         .
 8.667     17.7608     31.54  .Q     V  .         .         .         .
 8.750     17.9792     31.72  .Q     V  .         .         .         .
 8.833     18.1990     31.91  .Q     V  .         .         .         .
 8.917     18.4201     32.10  .Q     V  .         .         .         .
 9.000     18.6426     32.30  .Q     V  .         .         .         .
 9.083     18.8664     32.50  .Q     V  .         .         .         .
 9.167     19.0916     32.70  .Q      V .         .         .         .
 9.250     19.3182     32.90  .Q      V .         .         .         .
 9.333     19.5462     33.11  .Q      V .         .         .         .
 9.417     19.7757     33.33  .Q      V .         .         .         .
 9.500     20.0068     33.54  .Q      V .         .         .         .
 9.583     20.2393     33.76  .Q      V .         .         .         .
 9.667     20.4734     33.99  .Q      V .         .         .         .
 9.750     20.7091     34.22  .Q      V .         .         .         .
 9.833     20.9464     34.46  .Q      V .         .         .         .
 9.917     21.1853     34.69  .Q      V .         .         .         .
10.000     21.4259     34.94  .Q       V.         .         .         .
10.083     21.6682     35.19  .Q       V.         .         .         .
10.167     21.9123     35.44  .Q       V.         .         .         .
10.250     22.1582     35.70  .Q       V.         .         .         .
10.333     22.4059     35.97  .Q       V.         .         .         .
10.417     22.6554     36.23  .Q       V.         .         .         .
10.500     22.9069     36.51  .Q       V.         .         .         .
10.583     23.1603     36.79  .Q       V.         .         .         .
10.667     23.4157     37.09  .Q       V.         .         .         .
10.750     23.6732     37.38  .Q       V.         .         .         .
10.833     23.9327     37.69  .Q        V         .         .         .
10.917     24.1944     37.99  .Q        V         .         .         .
11.000     24.4582     38.31  .Q        V         .         .         .
11.083     24.7243     38.64  .Q        V         .         .         .
11.167     24.9927     38.97  .Q        V         .         .         .
11.250     25.2635     39.31  .Q        V         .         .         .
11.333     25.5366     39.66  .Q        V         .         .         .
11.417     25.8122     40.02  .Q        V         .         .         .
11.500     26.0904     40.39  .Q        V         .         .         .
11.583     26.3712     40.77  .Q        .V        .         .         .
11.667     26.6547     41.16  .Q        .V        .         .         .
11.750     26.9409     41.56  .Q        .V        .         .         .
11.833     27.2300     41.98  .Q        .V        .         .         .
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11.917     27.5220     42.39  .Q        .V        .         .         .
12.000     27.8170     42.84  .Q        .V        .         .         .
12.083     28.1136     43.07  .Q        .V        .         .         .
12.167     28.4052     42.34  .Q        .V        .         .         .
12.250     28.6853     40.66  .Q        . V       .         .         .
12.333     28.9544     39.07  .Q        . V       .         .         .
12.417     29.2197     38.53  .Q        . V       .         .         .
12.500     29.4857     38.62  .Q        . V       .         .         .
12.583     29.7544     39.01  .Q        . V       .         .         .
12.667     30.0264     39.50  .Q        . V       .         .         .
12.750     30.3020     40.02  .Q        . V       .         .         .
12.833     30.5816     40.60  .Q        . V       .         .         .
12.917     30.8653     41.19  .Q        . V       .         .         .
13.000     31.1534     41.83  .Q        .  V      .         .         .
13.083     31.4460     42.49  .Q        .  V      .         .         .
13.167     31.7434     43.18  .Q        .  V      .         .         .
13.250     32.0457     43.89  .Q        .  V      .         .         .
13.333     32.3532     44.65  .Q        .  V      .         .         .
13.417     32.6661     45.43  . Q       .  V      .         .         .
13.500     32.9847     46.26  . Q       .  V      .         .         .
13.583     33.3092     47.12  . Q       .  V      .         .         .
13.667     33.6400     48.03  . Q       .   V     .         .         .
13.750     33.9774     48.98  . Q       .   V     .         .         .
13.833     34.3217     50.00  . Q       .   V     .         .         .
13.917     34.6734     51.06  . Q       .   V     .         .         .
14.000     35.0328     52.19  . Q       .   V     .         .         .
14.083     35.3988     53.14  . Q       .   V     .         .         .
14.167     35.7644     53.09  . Q       .    V    .         .         .
14.250     36.1227     52.01  . Q       .    V    .         .         .
14.333     36.4746     51.10  . Q       .    V    .         .         .
14.417     36.8287     51.42  . Q       .    V    .         .         .
14.500     37.1905     52.54  . Q       .    V    .         .         .
14.583     37.5629     54.07  . Q       .    V    .         .         .
14.667     37.9476     55.87  . Q       .    V    .         .         .
14.750     38.3458     57.81  . Q       .     V   .         .         .
14.833     38.7591     60.02  . Q       .     V   .         .         .
14.917     39.1889     62.41  . Q       .     V   .         .         .
15.000     39.6374     65.12  . Q       .     V   .         .         .
15.083     40.1063     68.09  .  Q      .     V   .         .         .
15.167     40.5987     71.49  .  Q      .      V  .         .         .
15.250     41.1172     75.28  .  Q      .      V  .         .         .
15.333     41.6662     79.72  .  Q      .      V  .         .         .
15.417     42.2560     85.63  .  Q      .      V  .         .         .
15.500     42.9212     96.60  .   Q     .       V .         .         .
15.583     43.6971    112.66  .    Q    .       V .         .         .
15.667     44.5966    130.61  .    Q    .       V .         .         .
15.750     45.6062    146.60  .     Q   .        V.         .         .
15.833     46.7311    163.34  .      Q  .        V.         .         .
15.917     48.0058    185.08  .       Q .         V         .         .
16.000     49.5705    227.19  .         Q         V         .         .
16.083     51.9318    342.87  .         .    Q    .V        .         .
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16.167     56.1391    610.90  .         .         .  V   Q  .         .
16.250     61.7377    812.92  .         .         .    V    .     Q   .
16.333     66.8577    743.43  .         .         .       V .  Q      .
16.417     70.0034    456.76  .         .         Q        V.         .
16.500     71.8808    272.59  .         . Q       .         V         .
16.583     73.0389    168.17  .      Q  .         .         V         .
16.667     73.8704    120.72  .    Q    .         .         .V        .
16.750     74.5430     97.67  .   Q     .         .         .V        .
16.833     75.1031     81.33  .  Q      .         .         .V        .
16.917     75.5867     70.22  .  Q      .         .         .V        .
17.000     76.0182     62.65  . Q       .         .         .V        .
17.083     76.4172     57.94  . Q       .         .         . V       .
17.167     76.7979     55.28  . Q       .         .         . V       .
17.250     77.1720     54.32  . Q       .         .         . V       .
17.333     77.5421     53.74  . Q       .         .         . V       .
17.417     77.9024     52.31  . Q       .         .         . V       .
17.500     78.2501     50.49  . Q       .         .         . V       .
17.583     78.5847     48.58  . Q       .         .         .  V      .
17.667     78.9070     46.80  . Q       .         .         .  V      .
17.750     79.2180     45.17  . Q       .         .         .  V      .
17.833     79.5187     43.66  .Q        .         .         .  V      .
17.917     79.8099     42.28  .Q        .         .         .  V      .
18.000     80.0922     40.99  .Q        .         .         .  V      .
18.083     80.3678     40.02  .Q        .         .         .  V      .
18.167     80.6441     40.12  .Q        .         .         .  V      .
18.250     80.9281     41.23  .Q        .         .         .   V     .
18.333     81.2197     42.34  .Q        .         .         .   V     .
18.417     81.5120     42.44  .Q        .         .         .   V     .
18.500     81.8012     41.99  .Q        .         .         .   V     .
18.583     82.0856     41.30  .Q        .         .         .   V     .
18.667     82.3650     40.57  .Q        .         .         .   V     .
18.750     82.6395     39.86  .Q        .         .         .   V     .
18.833     82.9093     39.18  .Q        .         .         .   V     .
18.917     83.1745     38.51  .Q        .         .         .   V     .
19.000     83.4354     37.87  .Q        .         .         .    V    .
19.083     83.6920     37.27  .Q        .         .         .    V    .
19.167     83.9447     36.68  .Q        .         .         .    V    .
19.250     84.1935     36.13  .Q        .         .         .    V    .
19.333     84.4387     35.60  .Q        .         .         .    V    .
19.417     84.6803     35.09  .Q        .         .         .    V    .
19.500     84.9186     34.60  .Q        .         .         .    V    .
19.583     85.1536     34.13  .Q        .         .         .    V    .
19.667     85.3856     33.68  .Q        .         .         .    V    .
19.750     85.6145     33.24  .Q        .         .         .    V    .
19.833     85.8405     32.82  .Q        .         .         .     V   .
19.917     86.0638     32.42  .Q        .         .         .     V   .
20.000     86.2843     32.03  .Q        .         .         .     V   .
20.083     86.5023     31.65  .Q        .         .         .     V   .
20.167     86.7178     31.28  .Q        .         .         .     V   .
20.250     86.9308     30.93  .Q        .         .         .     V   .
20.333     87.1415     30.59  .Q        .         .         .     V   .
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20.417	87.3498	30.26	.Q	.	.	.	V .
20.500	87.5560	29.94	.Q	.	.	.	V .
20.583	87.7601	29.63	.Q	.	.	.	V .
20.667	87.9620	29.32	.Q	.	.	.	V .
20.750	88.1619	29.03	.Q	.	.	.	V .
20.833	88.3599	28.74	.Q	.	.	.	V .
20.917	88.5560	28.47	.Q	.	.	.	V .
21.000	88.7502	28.20	.Q	.	.	.	V .
21.083	88.9425	27.94	.Q	.	.	.	V .
21.167	89.1332	27.68	.Q	.	.	.	V .
21.250	89.3221	27.43	.Q	.	.	.	V .
21.333	89.5093	27.19	.Q	.	.	.	V .
21.417	89.6950	26.95	.Q	.	.	.	V .
21.500	89.8790	26.72	.Q	.	.	.	V .
21.583	90.0615	26.50	.Q	.	.	.	V .
21.667	90.2424	26.28	.Q	.	.	.	V .
21.750	90.4219	26.06	.Q	.	.	.	V .
21.833	90.6000	25.85	.Q	.	.	.	V .
21.917	90.7766	25.65	.Q	.	.	.	V .
22.000	90.9519	25.45	.Q	.	.	.	V .
22.083	91.1258	25.25	.Q	.	.	.	V .
22.167	91.2984	25.06	.Q	.	.	.	V .
22.250	91.4697	24.87	.Q	.	.	.	V .
22.333	91.6397	24.69	.Q	.	.	.	V .
22.417	91.8085	24.51	.Q	.	.	.	V .
22.500	91.9761	24.33	.Q	.	.	.	V .
22.583	92.1425	24.16	.Q	.	.	.	V .
22.667	92.3077	23.99	.Q	.	.	.	V .
22.750	92.4718	23.83	.Q	.	.	.	V .
22.833	92.6348	23.67	.Q	.	.	.	V .
22.917	92.7967	23.51	.Q	.	.	.	V .
23.000	92.9575	23.35	.Q	.	.	.	V.
23.083	93.1173	23.20	.Q	.	.	.	V.
23.167	93.2760	23.05	.Q	.	.	.	V.
23.250	93.4337	22.90	.Q	.	.	.	V.
23.333	93.5904	22.75	.Q	.	.	.	V.
23.417	93.7461	22.61	.Q	.	.	.	V.
23.500	93.9009	22.47	Q	.	.	.	V.
23.583	94.0547	22.34	Q	.	.	.	V.
23.667	94.2076	22.20	Q	.	.	.	V.
23.750	94.3596	22.07	Q	.	.	.	V.
23.833	94.5107	21.94	Q	.	.	.	V.
23.917	94.6609	21.81	Q	.	.	.	V.
24.000	94.8103	21.68	Q	.	.	.	V.
24.083	94.9546	20.95	Q	.	.	.	V.
24.167	95.0742	17.37	Q	.	.	.	V.
24.250	95.1504	11.06	Q	.	.	.	V.
24.333	95.1846	4.97	Q	.	.	.	V.
24.417	95.1981	1.97	Q	.	.	.	V.
24.500	95.2031	0.73	Q	.	.	.	V.
24.583	95.2054	0.34	Q	.	.	.	V.

```
  24.667     95.2067      0.18  Q         .         .         .        V.
  24.750     95.2071      0.07  Q         .         .         .        V.
  24.833     95.2073      0.02  Q         .         .         .         V
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated                Duration
       Peak Flow Rate                     (minutes)
   ======================                 =========
              0%                           1490.0
             10%                             90.0
             20%                             50.0
             30%                             30.0
             40%                             25.0
             50%                             20.0
             60%                             15.0
             70%                             15.0
             80%                             10.0
             90%                             10.0


********************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 5.2
--------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
================================================================================

         THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
         TO ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE
         INTERVALS(Reference: the National Engineering Handbook,
         Hydrology, Chapter 17, page 17-52, August,1972,
         U.S. Department of Commerce).


         ASSUMED REGULAR CHANNEL INFORMATION:
           BASEWIDTH(FT) =   30.00     CHANNEL Z =  2.00
           UPSTREAM ELEVATION(FT) =     938.00
           DOWNSTREAM ELEVATION(FT) =     909.00
           CHANNEL LENGTH(FT) =    2185.72     MANNING'S FACTOR = 0.015
           CONSTANT LOSS RATE(CFS) =    0.00


         CHANNEL ROUTING COEFFICIENT ESTIMATED:
           MAXIMUM INFLOW(CFS) =   812.92
           AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW =   656.00
           CHANNEL NORMAL VELOCITY FOR Q =   656.00 CFS =  13.68 FPS
           ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.889

         MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
```

UNIT INTERVALS IS CSTAR = 0.978

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 3) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 3) (CFS)
0.083	0.61	0.31	0.31
0.167	4.08	2.39	2.39
0.250	10.32	7.25	7.25
0.333	16.38	13.37	13.37
0.417	19.40	17.87	17.87
0.500	20.69	20.03	20.03
0.583	21.13	20.90	20.90
0.667	21.35	21.24	21.24
0.750	21.52	21.43	21.43
0.833	21.63	21.57	21.57
0.917	21.71	21.67	21.67
1.000	21.77	21.74	21.74
1.083	21.84	21.81	21.81
1.167	21.90	21.87	21.87
1.250	21.97	21.93	21.93
1.333	22.03	22.00	22.00
1.417	22.10	22.06	22.06
1.500	22.16	22.13	22.13
1.583	22.23	22.20	22.20
1.667	22.30	22.26	22.26
1.750	22.37	22.33	22.33
1.833	22.43	22.40	22.40
1.917	22.50	22.47	22.47
2.000	22.57	22.54	22.54
2.083	22.64	22.61	22.61
2.167	22.71	22.68	22.68
2.250	22.79	22.75	22.75
2.333	22.86	22.82	22.82
2.417	22.93	22.89	22.89
2.500	23.00	22.97	22.97
2.583	23.08	23.04	23.04
2.667	23.15	23.12	23.12
2.750	23.23	23.19	23.19
2.833	23.31	23.27	23.27
2.917	23.38	23.35	23.35
3.000	23.46	23.42	23.42
3.083	23.54	23.50	23.50
3.167	23.62	23.58	23.58
3.250	23.70	23.66	23.66
3.333	23.78	23.74	23.74
3.417	23.86	23.82	23.82
3.500	23.95	23.90	23.90
3.583	24.03	23.99	23.99

3.667	24.11	24.07	24.07
3.750	24.20	24.16	24.16
3.833	24.28	24.24	24.24
3.917	24.37	24.33	24.33
4.000	24.46	24.42	24.42
4.083	24.55	24.50	24.50
4.167	24.64	24.59	24.59
4.250	24.73	24.68	24.68
4.333	24.82	24.77	24.77
4.417	24.91	24.87	24.87
4.500	25.01	24.96	24.96
4.583	25.10	25.05	25.05
4.667	25.20	25.15	25.15
4.750	25.29	25.24	25.24
4.833	25.39	25.34	25.34
4.917	25.49	25.44	25.44
5.000	25.59	25.54	25.54
5.083	25.69	25.64	25.64
5.167	25.79	25.74	25.74
5.250	25.90	25.84	25.84
5.333	26.00	25.95	25.95
5.417	26.11	26.05	26.05
5.500	26.21	26.16	26.16
5.583	26.32	26.27	26.27
5.667	26.43	26.38	26.38
5.750	26.54	26.49	26.49
5.833	26.66	26.60	26.60
5.917	26.77	26.71	26.71
6.000	26.88	26.83	26.83
6.083	27.00	26.94	26.94
6.167	27.12	27.06	27.06
6.250	27.24	27.18	27.18
6.333	27.36	27.30	27.30
6.417	27.48	27.42	27.42
6.500	27.61	27.55	27.55
6.583	27.73	27.67	27.67
6.667	27.86	27.80	27.80
6.750	27.99	27.93	27.93
6.833	28.12	28.06	28.06
6.917	28.25	28.19	28.19
7.000	28.39	28.32	28.32
7.083	28.52	28.46	28.46
7.167	28.66	28.59	28.59
7.250	28.80	28.73	28.73
7.333	28.95	28.87	28.87
7.417	29.09	29.02	29.02
7.500	29.24	29.16	29.16
7.583	29.38	29.31	29.31
7.667	29.54	29.46	29.46
7.750	29.69	29.61	29.61
7.833	29.84	29.77	29.77

7.917	30.00	29.92	29.92
8.000	30.16	30.08	30.08
8.083	30.32	30.24	30.24
8.167	30.49	30.41	30.41
8.250	30.66	30.57	30.57
8.333	30.83	30.74	30.74
8.417	31.00	30.92	30.92
8.500	31.18	31.09	31.09
8.583	31.36	31.27	31.27
8.667	31.54	31.45	31.45
8.750	31.72	31.63	31.63
8.833	31.91	31.82	31.82
8.917	32.10	32.01	32.01
9.000	32.30	32.20	32.20
9.083	32.50	32.40	32.40
9.167	32.70	32.60	32.60
9.250	32.90	32.80	32.80
9.333	33.11	33.01	33.01
9.417	33.33	33.22	33.22
9.500	33.54	33.44	33.44
9.583	33.76	33.65	33.65
9.667	33.99	33.88	33.88
9.750	34.22	34.11	34.11
9.833	34.46	34.34	34.34
9.917	34.69	34.58	34.58
10.000	34.94	34.82	34.82
10.083	35.19	35.06	35.06
10.167	35.44	35.31	35.31
10.250	35.70	35.57	35.57
10.333	35.97	35.83	35.83
10.417	36.23	36.10	36.10
10.500	36.51	36.38	36.38
10.583	36.79	36.66	36.66
10.667	37.09	36.94	36.94
10.750	37.38	37.23	37.23
10.833	37.69	37.53	37.53
10.917	37.99	37.84	37.84
11.000	38.31	38.15	38.15
11.083	38.64	38.48	38.48
11.167	38.97	38.80	38.80
11.250	39.31	39.14	39.14
11.333	39.66	39.49	39.49
11.417	40.02	39.84	39.84
11.500	40.39	40.21	40.21
11.583	40.77	40.58	40.58
11.667	41.16	40.97	40.97
11.750	41.56	41.36	41.36
11.833	41.98	41.77	41.77
11.917	42.39	42.19	42.19
12.000	42.84	42.62	42.62
12.083	43.07	42.95	42.95

12.167	42.34	42.69	42.69
12.250	40.66	41.49	41.49
12.333	39.07	39.86	39.86
12.417	38.53	38.81	38.81
12.500	38.62	38.58	38.58
12.583	39.01	38.82	38.82
12.667	39.50	39.26	39.26
12.750	40.02	39.76	39.76
12.833	40.60	40.31	40.31
12.917	41.19	40.90	40.90
13.000	41.83	41.52	41.52
13.083	42.49	42.16	42.16
13.167	43.18	42.84	42.84
13.250	43.89	43.54	43.54
13.333	44.65	44.28	44.28
13.417	45.43	45.04	45.04
13.500	46.26	45.85	45.85
13.583	47.12	46.69	46.69
13.667	48.03	47.58	47.58
13.750	48.98	48.51	48.51
13.833	50.00	49.50	49.50
13.917	51.06	50.53	50.53
14.000	52.19	51.63	51.63
14.083	53.14	52.67	52.67
14.167	53.09	53.10	53.10
14.250	52.01	52.53	52.53
14.333	51.10	51.56	51.56
14.417	51.42	51.27	51.27
14.500	52.54	51.99	51.99
14.583	54.07	53.31	53.31
14.667	55.87	54.98	54.98
14.750	57.81	56.85	56.85
14.833	60.02	58.93	58.93
14.917	62.41	61.22	61.22
15.000	65.12	63.78	63.78
15.083	68.09	66.62	66.62
15.167	71.49	69.81	69.81
15.250	75.28	73.41	73.41
15.333	79.72	77.53	77.53
15.417	85.63	82.72	82.72
15.500	96.60	91.21	91.21
15.583	112.66	104.75	104.75
15.667	130.61	121.73	121.73
15.750	146.60	138.65	138.65
15.833	163.34	155.04	155.04
15.917	185.08	174.35	174.35
16.000	227.19	206.53	206.53
16.083	342.87	286.29	286.29
16.167	610.90	479.62	479.62
16.250	812.92	712.06	712.06
16.333	743.43	774.96	774.96

16.417	456.76	596.53	596.53
16.500	272.59	364.97	364.97
16.583	168.17	220.83	220.83
16.667	120.72	144.88	144.88
16.750	97.67	109.38	109.38
16.833	81.33	89.51	89.51
16.917	70.22	75.78	75.78
17.000	62.65	66.44	66.44
17.083	57.94	60.31	60.31
17.167	55.28	56.62	56.62
17.250	54.32	54.81	54.81
17.333	53.74	54.03	54.03
17.417	52.31	53.01	53.01
17.500	50.49	51.39	51.39
17.583	48.58	49.53	49.53
17.667	46.80	47.68	47.68
17.750	45.17	45.98	45.98
17.833	43.66	44.41	44.41
17.917	42.28	42.96	42.96
18.000	40.99	41.63	41.63
18.083	40.02	40.51	40.51
18.167	40.12	40.08	40.08
18.250	41.23	40.69	40.69
18.333	42.34	41.79	41.79
18.417	42.44	42.38	42.38
18.500	41.99	42.21	42.21
18.583	41.30	41.64	41.64
18.667	40.57	40.93	40.93
18.750	39.86	40.21	40.21
18.833	39.18	39.52	39.52
18.917	38.51	38.84	38.84
19.000	37.87	38.19	38.19
19.083	37.27	37.57	37.57
19.167	36.68	36.97	36.97
19.250	36.13	36.41	36.41
19.333	35.60	35.86	35.86
19.417	35.09	35.34	35.34
19.500	34.60	34.84	34.84
19.583	34.13	34.36	34.36
19.667	33.68	33.90	33.90
19.750	33.24	33.46	33.46
19.833	32.82	33.03	33.03
19.917	32.42	32.62	32.62
20.000	32.03	32.22	32.22
20.083	31.65	31.84	31.84
20.167	31.28	31.46	31.46
20.250	30.93	31.11	31.11
20.333	30.59	30.76	30.76
20.417	30.26	30.42	30.42
20.500	29.94	30.10	30.10
20.583	29.63	29.78	29.78

20.667	29.32	29.47	29.47
20.750	29.03	29.18	29.18
20.833	28.74	28.89	28.89
20.917	28.47	28.60	28.60
21.000	28.20	28.33	28.33
21.083	27.94	28.07	28.07
21.167	27.68	27.81	27.81
21.250	27.43	27.55	27.55
21.333	27.19	27.31	27.31
21.417	26.95	27.07	27.07
21.500	26.72	26.84	26.84
21.583	26.50	26.61	26.61
21.667	26.28	26.39	26.39
21.750	26.06	26.17	26.17
21.833	25.85	25.96	25.96
21.917	25.65	25.75	25.75
22.000	25.45	25.55	25.55
22.083	25.25	25.35	25.35
22.167	25.06	25.16	25.16
22.250	24.87	24.97	24.97
22.333	24.69	24.78	24.78
22.417	24.51	24.60	24.60
22.500	24.33	24.42	24.42
22.583	24.16	24.25	24.25
22.667	23.99	24.08	24.08
22.750	23.83	23.91	23.91
22.833	23.67	23.75	23.75
22.917	23.51	23.58	23.58
23.000	23.35	23.43	23.43
23.083	23.20	23.27	23.27
23.167	23.05	23.12	23.12
23.250	22.90	22.97	22.97
23.333	22.75	22.83	22.83
23.417	22.61	22.68	22.68
23.500	22.47	22.54	22.54
23.583	22.34	22.40	22.40
23.667	22.20	22.27	22.27
23.750	22.07	22.13	22.13
23.833	21.94	22.00	22.00
23.917	21.81	21.87	21.87
24.000	21.68	21.75	21.75

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PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 95.207 AF

OUTFLOW VOLUME = 95.207 AF

LOSS VOLUME = 0.000 AF

****

FLOW PROCESS FROM NODE 101.00 TO NODE 101.00 IS CODE = 7

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

****
FLOW PROCESS FROM NODE 101.00 TO NODE 101.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
==========

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	250.0	500.0	750.0	1000.0
0.083	0.0023	0.34	Q	.	.	.	.
0.167	0.0203	2.60	Q	.	.	.	.
0.250	0.0756	8.03	Q	.	.	.	.
0.333	0.1806	15.25	Q	.	.	.	.
0.417	0.3273	21.30	Q	.	.	.	.
0.500	0.5009	25.21	VQ	.	.	.	.
0.583	0.6927	27.86	VQ	.	.	.	.
0.667	0.8987	29.91	VQ	.	.	.	.
0.750	1.1171	31.71	VQ	.	.	.	.
0.833	1.3469	33.36	VQ	.	.	.	.
0.917	1.5870	34.87	VQ	.	.	.	.
1.000	1.8367	36.26	VQ	.	.	.	.
1.083	2.0953	37.54	VQ	.	.	.	.
1.167	2.3621	38.74	VQ	.	.	.	.
1.250	2.6366	39.86	VQ	.	.	.	.
1.333	2.9184	40.91	VQ	.	.	.	.
1.417	3.2069	41.89	VQ	.	.	.	.
1.500	3.5017	42.81	VQ	.	.	.	.
1.583	3.8025	43.67	VQ	.	.	.	.
1.667	4.1088	44.48	VQ	.	.	.	.
1.750	4.4204	45.24	VQ	.	.	.	.
1.833	4.7369	45.96	VQ	.	.	.	.
1.917	5.0581	46.63	VQ	.	.	.	.
2.000	5.3836	47.26	VQ	.	.	.	.
2.083	5.7132	47.87	VQ	.	.	.	.
2.167	6.0468	48.43	.Q	.	.	.	.
2.250	6.3841	48.97	.Q	.	.	.	.
2.333	6.7249	49.48	.Q	.	.	.	.
2.417	7.0690	49.97	.Q	.	.	.	.
2.500	7.4163	50.43	.VQ	.	.	.	.
2.583	7.7667	50.88	.VQ	.	.	.	.
2.667	8.1200	51.30	.VQ	.	.	.	.
2.750	8.4761	51.70	.VQ	.	.	.	.
2.833	8.8349	52.09	.VQ	.	.	.	.
2.917	9.1962	52.47	.VQ	.	.	.	.
3.000	9.5600	52.83	.VQ	.	.	.	.

3.083	9.9262	53.17	.VQ	.	.	.	.
3.167	10.2948	53.51	.VQ	.	.	.	.
3.250	10.6655	53.84	.VQ	.	.	.	.
3.333	11.0385	54.15	.VQ	.	.	.	.
3.417	11.4136	54.46	.VQ	.	.	.	.
3.500	11.7907	54.76	. Q	.	.	.	.
3.583	12.1699	55.06	. Q	.	.	.	.
3.667	12.5510	55.34	. Q	.	.	.	.
3.750	12.9341	55.62	. Q	.	.	.	.
3.833	13.3191	55.90	. Q	.	.	.	.
3.917	13.7060	56.17	. Q	.	.	.	.
4.000	14.0947	56.44	. Q	.	.	.	.
4.083	14.4852	56.71	. Q	.	.	.	.
4.167	14.8776	56.97	. Q	.	.	.	.
4.250	15.2717	57.23	. Q	.	.	.	.
4.333	15.6676	57.48	. Q	.	.	.	.
4.417	16.0653	57.74	. Q	.	.	.	.
4.500	16.4647	57.99	. Q	.	.	.	.
4.583	16.8658	58.24	. Q	.	.	.	.
4.667	17.2687	58.50	. Q	.	.	.	.
4.750	17.6733	58.75	. QV	.	.	.	.
4.833	18.0796	59.00	. QV	.	.	.	.
4.917	18.4876	59.25	. QV	.	.	.	.
5.000	18.8974	59.50	. QV	.	.	.	.
5.083	19.3089	59.75	. QV	.	.	.	.
5.167	19.7221	60.00	. QV	.	.	.	.
5.250	20.1371	60.25	. QV	.	.	.	.
5.333	20.5538	60.51	. QV	.	.	.	.
5.417	20.9722	60.76	. QV	.	.	.	.
5.500	21.3924	61.01	. QV	.	.	.	.
5.583	21.8144	61.27	. QV	.	.	.	.
5.667	22.2382	61.53	. QV	.	.	.	.
5.750	22.6637	61.79	. QV	.	.	.	.
5.833	23.0911	62.05	. QV	.	.	.	.
5.917	23.5202	62.31	. Q V	.	.	.	.
6.000	23.9512	62.58	. Q V	.	.	.	.
6.083	24.3841	62.85	. Q V	.	.	.	.
6.167	24.8188	63.12	. Q V	.	.	.	.
6.250	25.2554	63.39	. Q V	.	.	.	.
6.333	25.6938	63.67	. Q V	.	.	.	.
6.417	26.1342	63.95	. Q V	.	.	.	.
6.500	26.5766	64.23	. Q V	.	.	.	.
6.583	27.0209	64.51	. Q V	.	.	.	.
6.667	27.4671	64.80	. Q V	.	.	.	.
6.750	27.9154	65.09	. Q V	.	.	.	.
6.833	28.3657	65.38	. Q V	.	.	.	.
6.917	28.8180	65.68	. Q V	.	.	.	.
7.000	29.2724	65.98	. Q V	.	.	.	.
7.083	29.7288	66.28	. Q V	.	.	.	.
7.167	30.1874	66.59	. Q V	.	.	.	.
7.250	30.6482	66.90	. Q V	.	.	.	.

```
 7.333     31.1111     67.21  . Q  V    .         .         .         .
 7.417     31.5762     67.53  . Q  V    .         .         .         .
 7.500     32.0435     67.86  . Q  V    .         .         .         .
 7.583     32.5131     68.18  . Q  V    .         .         .         .
 7.667     32.9850     68.52  . Q  V    .         .         .         .
 7.750     33.4592     68.85  . Q  V    .         .         .         .
 7.833     33.9357     69.19  . Q  V    .         .         .         .
 7.917     34.4147     69.54  . Q  V    .         .         .         .
 8.000     34.8960     69.89  . Q   V   .         .         .         .
 8.083     35.3798     70.25  . Q   V   .         .         .         .
 8.167     35.8661     70.61  . Q   V   .         .         .         .
 8.250     36.3549     70.97  . Q   V   .         .         .         .
 8.333     36.8462     71.34  . Q   V   .         .         .         .
 8.417     37.3402     71.72  . Q   V   .         .         .         .
 8.500     37.8368     72.10  . Q   V   .         .         .         .
 8.583     38.3360     72.49  . Q   V   .         .         .         .
 8.667     38.8380     72.89  . Q   V   .         .         .         .
 8.750     39.3427     73.29  . Q   V   .         .         .         .
 8.833     39.8503     73.70  . Q   V   .         .         .         .
 8.917     40.3607     74.11  . Q   V   .         .         .         .
 9.000     40.8740     74.53  . Q    V  .         .         .         .
 9.083     41.3902     74.96  . Q    V  .         .         .         .
 9.167     41.9094     75.39  .  Q   V  .         .         .         .
 9.250     42.4317     75.83  .  Q   V  .         .         .         .
 9.333     42.9571     76.28  .  Q   V  .         .         .         .
 9.417     43.4856     76.74  .  Q   V  .         .         .         .
 9.500     44.0173     77.21  .  Q   V  .         .         .         .
 9.583     44.5523     77.68  .  Q   V  .         .         .         .
 9.667     45.0906     78.16  .  Q   V  .         .         .         .
 9.750     45.6323     78.65  .  Q   V  .         .         .         .
 9.833     46.1775     79.15  .  Q   V  .         .         .         .
 9.917     46.7261     79.66  .  Q    V .         .         .         .
10.000     47.2783     80.18  .  Q    V .         .         .         .
10.083     47.8342     80.71  .  Q    V .         .         .         .
10.167     48.3937     81.25  .  Q    V .         .         .         .
10.250     48.9571     81.80  .  Q    V .         .         .         .
10.333     49.5243     82.36  .  Q    V .         .         .         .
10.417     50.0955     82.93  .  Q    V .         .         .         .
10.500     50.6706     83.52  .  Q    V .         .         .         .
10.583     51.2499     84.11  .  Q    V .         .         .         .
10.667     51.8334     84.72  .  Q    V .         .         .         .
10.750     52.4211     85.34  .  Q     V.         .         .         .
10.833     53.0133     85.98  .  Q     V.         .         .         .
10.917     53.6098     86.62  .  Q     V.         .         .         .
11.000     54.2110     87.29  .  Q     V.         .         .         .
11.083     54.8168     87.97  .  Q     V.         .         .         .
11.167     55.4274     88.66  .  Q     V.         .         .         .
11.250     56.0429     89.37  .  Q     V.         .         .         .
11.333     56.6634     90.10  .  Q     V.         .         .         .
11.417     57.2890     90.84  .  Q     V.         .         .         .
11.500     57.9199     91.60  .  Q      V         .         .         .
```

11.583	58.5562	92.39	.	Q	V	.	.	.
11.667	59.1980	93.19	.	Q	V	.	.	.
11.750	59.8454	94.01	.	Q	V	.	.	.
11.833	60.4987	94.85	.	Q	V	.	.	.
11.917	61.1579	95.72	.	Q	V	.	.	.
12.000	61.8232	96.61	.	Q	V	.	.	.
12.083	62.4941	97.41	.	Q	V	.	.	.
12.167	63.1660	97.57	.	Q	V	.	.	.
12.250	63.8317	96.66	.	Q	.V	.	.	.
12.333	64.4871	95.16	.	Q	.V	.	.	.
12.417	65.1352	94.10	.	Q	.V	.	.	.
12.500	65.7812	93.80	.	Q	.V	.	.	.
12.583	66.4285	93.98	.	Q	.V	.	.	.
12.667	67.0785	94.39	.	Q	.V	.	.	.
12.750	67.7323	94.93	.	Q	.V	.	.	.
12.833	68.3904	95.55	.	Q	.V	.	.	.
12.917	69.0534	96.27	.	Q	.V	.	.	.
13.000	69.7220	97.08	.	Q	. V	.	.	.
13.083	70.3967	97.97	.	Q	. V	.	.	.
13.167	71.0781	98.94	.	Q	. V	.	.	.
13.250	71.7667	99.99	.	Q	. V	.	.	.
13.333	72.4631	101.12	.	Q	. V	.	.	.
13.417	73.1679	102.33	.	Q	. V	.	.	.
13.500	73.8816	103.63	.	Q	. V	.	.	.
13.583	74.6050	105.03	.	Q	. V	.	.	.
13.667	75.3385	106.51	.	Q	. V	.	.	.
13.750	76.0830	108.10	.	Q	. V	.	.	.
13.833	76.8391	109.78	.	Q	. V	.	.	.
13.917	77.6075	111.58	.	Q	. V	.	.	.
14.000	78.3891	113.49	.	Q	. V	.	.	.
14.083	79.1839	115.40	.	Q	. V	.	.	.
14.167	79.9875	116.69	.	Q	. V	.	.	.
14.250	80.7925	116.89	.	Q	. V	.	.	.
14.333	81.5951	116.53	.	Q	. V	.	.	.
14.417	82.3992	116.75	.	Q	. V	.	.	.
14.500	83.2116	117.96	.	Q	. V	.	.	.
14.583	84.0369	119.85	.	Q	. V	.	.	.
14.667	84.8785	122.19	.	Q	. V	.	.	.
14.750	85.7385	124.87	.	Q	. V	.	.	.
14.833	86.6194	127.91	.	Q	. V	.	.	.
14.917	87.5239	131.33	.	Q	. V	.	.	.
15.000	88.4549	135.18	.	Q	. V	.	.	.
15.083	89.4157	139.51	.	Q	. V	.	.	.
15.167	90.4101	144.40	.	Q	. V	.	.	.
15.250	91.4427	149.93	.	Q	. V	.	.	.
15.333	92.5188	156.25	.	Q	. V	.	.	.
15.417	93.6482	163.99	.	Q	. V	.	.	.
15.500	94.8579	175.65	.	Q	. V	.	.	.
15.583	96.1895	193.35	.	Q	. V	.	.	.
15.667	97.6761	215.85	.	Q	. V	.	.	.
15.750	99.3269	239.69	.	Q	. V	.	.	.

```
15.833    101.1460    264.14  .         Q      V  .         .         .
15.917    103.1479    290.67  .         .Q     V  .         .         .
16.000    105.4189    329.74  .         .  Q    V .         .         .
16.083    108.3133    420.27  .         .     Q V .         .         .
16.167    112.6799    634.03  .         .        V.    Q    .         .
16.250    118.8543    896.53  .         .         V         .    Q    .
16.333    125.6587    988.00  .         .         .V        .        Q.
16.417    131.3724    829.62  .         .         . V       .  Q      .
16.500    135.5705    609.57  .         .         .  VQ     .         .
16.583    138.8055    469.72  .         .       Q .   V     .         .
16.667    141.5201    394.16  .         .    Q    .   V     .         .
16.750    143.9811    357.34  .         .   Q     .   V     .         .
16.833    146.2883    335.00  .         .  Q      .    V    .         .
16.917    148.4789    318.06  .         . Q       .    V    .         .
17.000    150.5803    305.12  .         . Q       .     V   .         .
17.083    152.6130    295.16  .         .Q        .     V   .         .
17.167    154.5932    287.53  .         .Q        .     V   .         .
17.250    156.5339    281.78  .         .Q        .      V  .         .
17.333    158.4423    277.11  .         .Q        .      V  .         .
17.417    160.3174    272.26  .         Q         .      V  .         .
17.500    162.1553    266.87  .         Q         .       V .         .
17.583    163.9547    261.27  .         Q         .       V .         .
17.667    165.7158    255.72  .         Q         .       V .         .
17.750    167.4399    250.33  .         Q         .       V .         .
17.833    169.1281    245.13  .        Q.         .        V.         .
17.917    170.7816    240.08  .        Q.         .        V.         .
18.000    172.4009    235.12  .        Q.         .        V.         .
18.083    173.9795    229.22  .        Q.         .         V         .
18.167    175.5155    223.03  .       Q .         .         V         .
18.250    177.0178    218.13  .       Q .         .         V         .
18.333    178.4918    214.02  .       Q .         .         V         .
18.417    179.9358    209.67  .       Q .         .         .V        .
18.500    181.3462    204.78  .       Q .         .         .V        .
18.583    182.7214    199.68  .      Q  .         .         .V        .
18.667    184.0615    194.59  .      Q  .         .         .V        .
18.750    185.3677    189.65  .      Q  .         .         . V       .
18.833    186.6409    184.87  .      Q  .         .         . V       .
18.917    187.8823    180.25  .      Q  .         .         . V       .
19.000    189.0929    175.78  .      Q  .         .         . V       .
19.083    190.2739    171.47  .     Q   .         .         . V       .
19.167    191.4262    167.32  .     Q   .         .         .  V      .
19.250    192.5509    163.30  .     Q   .         .         .  V      .
19.333    193.6489    159.43  .     Q   .         .         .  V      .
19.417    194.7212    155.70  .     Q   .         .         .  V      .
19.500    195.7687    152.09  .     Q   .         .         .  V      .
19.583    196.7916    148.53  .    Q    .         .         .   V     .
19.667    197.7836    144.04  .    Q    .         .         .   V     .
19.750    198.7395    138.80  .    Q    .         .         .   V     .
19.833    199.6617    133.91  .    Q    .         .         .   V     .
19.917    200.5524    129.32  .    Q    .         .         .   V     .
20.000    201.4134    125.02  .    Q    .         .         .   V     .
```

```
  20.083    202.2467    120.99  .   Q     .         .         .    V    .
  20.167    203.0539    117.21  .   Q     .         .         .    V    .
  20.250    203.8367    113.67  .   Q     .         .         .    V    .
  20.333    204.5966    110.34  .   Q     .         .         .    V    .
  20.417    205.3349    107.21  .   Q     .         .         .    V    .
  20.500    206.0530    104.27  .   Q     .         .         .    V    .
  20.583    206.7521    101.50  .   Q     .         .         .    V    .
  20.667    207.4332     98.90  .  Q      .         .         .    V    .
  20.750    208.0974     96.45  .  Q      .         .         .     V   .
  20.833    208.7458     94.14  .  Q      .         .         .     V   .
  20.917    209.3791     91.96  .  Q      .         .         .     V   .
  21.000    209.9982     89.90  .  Q      .         .         .     V   .
  21.083    210.6040     87.96  .  Q      .         .         .     V   .
  21.167    211.1972     86.12  .  Q      .         .         .     V   .
  21.250    211.7784     84.39  .  Q      .         .         .     V   .
  21.333    212.3483     82.75  .  Q      .         .         .     V   .
  21.417    212.9074     81.19  .  Q      .         .         .     V   .
  21.500    213.4564     79.72  .  Q      .         .         .     V   .
  21.583    213.9958     78.32  .  Q      .         .         .      V  .
  21.667    214.5260     76.99  .  Q      .         .         .      V  .
  21.750    215.0475     75.72  .  Q      .         .         .      V  .
  21.833    215.5607     74.52  . Q       .         .         .      V  .
  21.917    216.0661     73.38  . Q       .         .         .      V  .
  22.000    216.5640     72.29  . Q       .         .         .      V  .
  22.083    217.0547     71.25  . Q       .         .         .      V  .
  22.167    217.5386     70.26  . Q       .         .         .      V  .
  22.250    218.0160     69.31  . Q       .         .         .      V  .
  22.333    218.4871     68.41  . Q       .         .         .      V  .
  22.417    218.9523     67.54  . Q       .         .         .      V  .
  22.500    219.4118     66.71  . Q       .         .         .      V  .
  22.583    219.8658     65.92  . Q       .         .         .       V .
  22.667    220.3145     65.16  . Q       .         .         .       V .
  22.750    220.7582     64.43  . Q       .         .         .       V .
  22.833    221.1971     63.72  . Q       .         .         .       V .
  22.917    221.6313     63.05  . Q       .         .         .       V .
  23.000    222.0610     62.40  . Q       .         .         .       V .
  23.083    222.4864     61.77  . Q       .         .         .       V .
  23.167    222.9077     61.17  . Q       .         .         .       V .
  23.250    223.3249     60.58  . Q       .         .         .       V .
  23.333    223.7383     60.02  . Q       .         .         .       V .
  23.417    224.1479     59.47  . Q       .         .         .       V .
  23.500    224.5539     58.95  . Q       .         .         .       V .
  23.583    224.9563     58.44  . Q       .         .         .       V .
  23.667    225.3554     57.95  . Q       .         .         .        V.
  23.750    225.7512     57.47  . Q       .         .         .        V.
  23.833    226.1438     57.00  . Q       .         .         .        V.
  23.917    226.5333     56.55  . Q       .         .         .        V.
  24.000    226.9198     56.12  . Q       .         .         .        V.
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
```

an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.0
10%	455.0
20%	180.0
30%	65.0
40%	35.0
50%	25.0
60%	25.0
70%	15.0
80%	15.0
90%	10.0

END OF FLOODSCx ROUTING ANALYSIS

PROPOSED MITIGATED 5-YEAR REGIONAL ANALYSIS TRIBUTARY TO EX DBL 6X6 POC #1 / NODE 101

LOSS RATE CALCULATIONS

PROJECT REGIONAL
5-YR ANALYSIS
NODE 101 (MITIGATED)

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 ************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
 ************************************************************************
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                           Analysis prepared by:



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  Problem Descriptions:
   Grand Terrace
   Barton+Deberry WS-Prop-5year
   2022-03-10
 ========================================================================
 *** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
     AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

     TOTAL 24-HOUR DURATION RAINFALL DEPTH =     2.52 (inches)

     SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
        TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
          1         30.16       20.00            32.       0.975       0.727
          2         23.43       20.00            69.       0.566       0.761
          3         57.55       10.00            32.       0.975       0.818
          4         37.59       10.00            69.       0.566       0.835
          5        121.44       50.00            32.       0.975       0.454
          6         93.70       50.00            69.       0.566       0.540
          7          0.84       50.00            75.       0.470       0.586
          8          0.91      100.00            50.       0.820       0.010
          9         23.00      100.00            69.       0.566       0.171
         10          0.56      100.00            79.       0.398       0.338
         11         74.01      100.00            83.       0.326       0.425
         12         14.07       60.00            32.       0.975       0.364
         13          1.07       60.00            69.       0.566       0.466
         14         58.07       10.00            32.       0.975       0.818
         15         41.55       10.00            69.       0.566       0.835

     TOTAL AREA (Acres) =    577.95

     AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.271

     AREA-AVERAGED LOW LOSS FRACTION, Y = 0.398
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**************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
==========================================================================
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                            Analysis prepared by:

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 Problem Descriptions:
  Grand Terrace
  Van Buren WS-Prop-5year
  2022-03-10
==========================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     2.52 (inches)

    SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
         1         35.19       20.00            32.       0.975       0.727
         2         28.06       20.00            69.       0.566       0.761
         3         29.80       10.00            32.       0.975       0.818
         4         27.82       10.00            69.       0.566       0.835
         5        118.35       50.00            32.       0.975       0.454
         6         62.06       50.00            69.       0.566       0.540
         7          0.77       50.00            75.       0.470       0.586
         8          9.14      100.00            50.       0.820       0.010
         9          4.16      100.00            69.       0.566       0.171
        10         16.79      100.00            79.       0.398       0.338
        11         29.95      100.00            83.       0.326       0.425
        12         20.33       60.00            32.       0.975       0.364
        13          2.38       60.00            69.       0.566       0.466
        14         44.08       10.00            32.       0.975       0.818
        15          1.28       10.00            56.       0.748       0.822
        16         36.16       10.00            69.       0.566       0.835

    TOTAL AREA (Acres) =    466.32

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.290

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.405
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 ************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
 ========================================================================
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                            Analysis prepared by:




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  Problem Descriptions:
   Grand Terrace
   Canal WS-Prop-5year
   2022-03-10
 ========================================================================
 *** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
     AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

     TOTAL 24-HOUR DURATION RAINFALL DEPTH =     2.52 (inches)

     SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
        TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
          1          0.80       10.00            32.       0.975       0.818
          2          1.95       10.00            69.       0.566       0.835
          3        168.79       50.00            32.       0.975       0.454
          4          7.88       50.00            69.       0.566       0.540
          5          0.52       50.00            75.       0.470       0.586
          6         25.58      100.00            50.       0.820       0.010
          7          0.97      100.00            79.       0.398       0.338
          8        120.61      100.00            83.       0.326       0.425
          9         36.67       60.00            32.       0.975       0.364
         10         34.51       60.00            69.       0.566       0.466
         11         52.37       10.00            32.       0.975       0.818
         12          1.65       10.00            69.       0.566       0.835

     TOTAL AREA (Acres) =    452.30

     AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.407

     AREA-AVERAGED LOW LOSS FRACTION, Y = 0.538
 ========================================================================
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 ************************************************************************

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




 ************************* DESCRIPTION OF STUDY *************************
* GRAND TERRACE GATEWAY                                                 *
* REGIONAL PROPOSED MITIGATED CONDITION - 5 YR                          *
* 2023-03-17                                                            *
 ************************************************************************

  FILE NAME: REGPR5.DAT
  TIME/DATE OF STUDY: 09:04 03/17/2023


************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    303.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     466.320 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.240 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.290
         LOW LOSS FRACTION = 0.405
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.58
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.75
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.10
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.38
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.52
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.979
30-MINUTE FACTOR = 0.979
1-HOUR FACTOR = 0.979
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 34.722

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.308	130.143
2	14.779	703.335
3	38.225	1322.270
4	66.233	1579.474
5	84.561	1033.643
6	93.250	490.001
7	97.213	223.544
8	98.477	71.232
9	99.128	36.719
10	99.651	29.519
11	99.913	14.759
12	100.000	4.920

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 35.7907
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 62.0126

==========

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

==========

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
0.083	0.0020	0.29	Q	.	.	.	.
0.167	0.0150	1.89	Q	.	.	.	.
0.250	0.0487	4.89	Q	.	.	.	.
0.333	0.1070	8.47	Q	.	.	.	.
0.417	0.1817	10.84	Q	.	.	.	.
0.500	0.2642	11.98	Q	.	.	.	.
0.583	0.3504	12.52	Q	.	.	.	.
0.667	0.4380	12.72	Q	.	.	.	.
0.750	0.5264	12.84	Q	.	.	.	.
0.833	0.6156	12.95	Q	.	.	.	.
0.917	0.7052	13.02	Q	.	.	.	.
1.000	0.7953	13.07	Q	.	.	.	.
1.083	0.8856	13.11	Q	.	.	.	.
1.167	0.9761	13.15	Q	.	.	.	.
1.250	1.0670	13.19	Q	.	.	.	.
1.333	1.1581	13.23	Q	.	.	.	.
1.417	1.2495	13.28	Q	.	.	.	.
1.500	1.3413	13.32	Q	.	.	.	.
1.583	1.4333	13.36	Q	.	.	.	.
1.667	1.5256	13.40	Q	.	.	.	.
1.750	1.6182	13.45	QV	.	.	.	.
1.833	1.7111	13.49	QV	.	.	.	.
1.917	1.8043	13.53	QV	.	.	.	.
2.000	1.8978	13.58	QV	.	.	.	.
2.083	1.9916	13.62	QV	.	.	.	.
2.167	2.0858	13.67	QV	.	.	.	.
2.250	2.1802	13.71	QV	.	.	.	.
2.333	2.2750	13.76	QV	.	.	.	.
2.417	2.3701	13.81	QV	.	.	.	.
2.500	2.4655	13.85	QV	.	.	.	.
2.583	2.5612	13.90	QV	.	.	.	.
2.667	2.6573	13.95	QV	.	.	.	.
2.750	2.7537	14.00	QV	.	.	.	.
2.833	2.8505	14.05	QV	.	.	.	.
2.917	2.9475	14.10	QV	.	.	.	.
3.000	3.0449	14.15	QV	.	.	.	.
3.083	3.1427	14.20	Q V	.	.	.	.
3.167	3.2408	14.25	Q V	.	.	.	.
3.250	3.3393	14.30	Q V	.	.	.	.
3.333	3.4381	14.35	Q V	.	.	.	.

3.417	3.5373	14.40	Q	V	.	.	.	.
3.500	3.6369	14.45	Q	V	.	.	.	.
3.583	3.7368	14.51	Q	V	.	.	.	.
3.667	3.8371	14.56	Q	V	.	.	.	.
3.750	3.9377	14.62	Q	V	.	.	.	.
3.833	4.0388	14.67	Q	V	.	.	.	.
3.917	4.1402	14.73	Q	V	.	.	.	.
4.000	4.2420	14.78	Q	V	.	.	.	.
4.083	4.3442	14.84	Q	V	.	.	.	.
4.167	4.4468	14.90	Q	V	.	.	.	.
4.250	4.5498	14.96	Q	V	.	.	.	.
4.333	4.6532	15.01	.Q	V	.	.	.	.
4.417	4.7570	15.07	.Q	V	.	.	.	.
4.500	4.8612	15.13	.Q	V	.	.	.	.
4.583	4.9659	15.19	.Q	V	.	.	.	.
4.667	5.0709	15.26	.Q	V	.	.	.	.
4.750	5.1764	15.32	.Q	V	.	.	.	.
4.833	5.2824	15.38	.Q	V	.	.	.	.
4.917	5.3887	15.44	.Q	V	.	.	.	.
5.000	5.4955	15.51	.Q	V	.	.	.	.
5.083	5.6028	15.57	.Q	V	.	.	.	.
5.167	5.7105	15.64	.Q	V	.	.	.	.
5.250	5.8186	15.70	.Q	V	.	.	.	.
5.333	5.9272	15.77	.Q	V	.	.	.	.
5.417	6.0363	15.84	.Q	V	.	.	.	.
5.500	6.1459	15.91	.Q	V	.	.	.	.
5.583	6.2559	15.98	.Q	V	.	.	.	.
5.667	6.3665	16.05	.Q	V	.	.	.	.
5.750	6.4775	16.12	.Q	V	.	.	.	.
5.833	6.5890	16.19	.Q	V	.	.	.	.
5.917	6.7010	16.27	.Q	V	.	.	.	.
6.000	6.8136	16.34	.Q	V	.	.	.	.
6.083	6.9266	16.41	.Q	V	.	.	.	.
6.167	7.0402	16.49	.Q	V	.	.	.	.
6.250	7.1543	16.57	.Q	V	.	.	.	.
6.333	7.2689	16.65	.Q	V	.	.	.	.
6.417	7.3841	16.72	.Q	V	.	.	.	.
6.500	7.4998	16.80	.Q	V	.	.	.	.
6.583	7.6161	16.89	.Q	V	.	.	.	.
6.667	7.7330	16.97	.Q	V	.	.	.	.
6.750	7.8504	17.05	.Q	V	.	.	.	.
6.833	7.9684	17.14	.Q	V	.	.	.	.
6.917	8.0870	17.22	.Q	V	.	.	.	.
7.000	8.2062	17.31	.Q	V	.	.	.	.
7.083	8.3260	17.40	.Q	V	.	.	.	.
7.167	8.4465	17.49	.Q	V	.	.	.	.
7.250	8.5675	17.58	.Q	V	.	.	.	.
7.333	8.6892	17.67	.Q	V	.	.	.	.
7.417	8.8115	17.76	.Q	V	.	.	.	.
7.500	8.9345	17.86	.Q	V	.	.	.	.
7.583	9.0581	17.95	.Q	V	.	.	.	.

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 7.667      9.1824     18.05  .Q   V    .         .         .         .
 7.750      9.3074     18.15  .Q    V   .         .         .         .
 7.833      9.4331     18.25  .Q    V   .         .         .         .
 7.917      9.5595     18.35  .Q    V   .         .         .         .
 8.000      9.6866     18.45  .Q    V   .         .         .         .
 8.083      9.8144     18.56  .Q    V   .         .         .         .
 8.167      9.9429     18.67  .Q    V   .         .         .         .
 8.250     10.0722     18.77  .Q    V   .         .         .         .
 8.333     10.2023     18.89  .Q    V   .         .         .         .
 8.417     10.3332     19.00  .Q    V   .         .         .         .
 8.500     10.4648     19.11  .Q    V   .         .         .         .
 8.583     10.5972     19.23  .Q    V   .         .         .         .
 8.667     10.7304     19.35  .Q    V   .         .         .         .
 8.750     10.8645     19.47  .Q     V  .         .         .         .
 8.833     10.9994     19.59  .Q     V  .         .         .         .
 8.917     11.1352     19.71  .Q     V  .         .         .         .
 9.000     11.2718     19.84  .Q     V  .         .         .         .
 9.083     11.4093     19.97  .Q     V  .         .         .         .
 9.167     11.5478     20.10  .Q     V  .         .         .         .
 9.250     11.6871     20.23  .Q     V  .         .         .         .
 9.333     11.8274     20.37  .Q     V  .         .         .         .
 9.417     11.9686     20.51  .Q     V  .         .         .         .
 9.500     12.1108     20.65  .Q     V  .         .         .         .
 9.583     12.2540     20.79  .Q     V  .         .         .         .
 9.667     12.3982     20.94  .Q     V  .         .         .         .
 9.750     12.5435     21.09  .Q      V .         .         .         .
 9.833     12.6898     21.24  .Q      V .         .         .         .
 9.917     12.8371     21.40  .Q      V .         .         .         .
10.000     12.9856     21.56  .Q      V .         .         .         .
10.083     13.1352     21.72  .Q      V .         .         .         .
10.167     13.2859     21.89  .Q      V .         .         .         .
10.250     13.4378     22.05  .Q      V .         .         .         .
10.333     13.5909     22.23  .Q      V .         .         .         .
10.417     13.7452     22.40  .Q      V .         .         .         .
10.500     13.9007     22.59  .Q      V .         .         .         .
10.583     14.0575     22.77  .Q       V.         .         .         .
10.667     14.2156     22.96  .Q       V.         .         .         .
10.750     14.3751     23.15  .Q       V.         .         .         .
10.833     14.5359     23.35  .Q       V.         .         .         .
10.917     14.6981     23.55  .Q       V.         .         .         .
11.000     14.8617     23.76  .Q       V.         .         .         .
11.083     15.0268     23.97  .Q       V.         .         .         .
11.167     15.1935     24.19  .Q       V.         .         .         .
11.250     15.3616     24.42  .Q       V.         .         .         .
11.333     15.5313     24.65  .Q        V         .         .         .
11.417     15.7027     24.88  .Q        V         .         .         .
11.500     15.8757     25.12  .Q        V         .         .         .
11.583     16.0505     25.37  .Q        V         .         .         .
11.667     16.2270     25.63  .Q        V         .         .         .
11.750     16.4053     25.89  .Q        V         .         .         .
11.833     16.5855     26.16  .Q        V         .         .         .
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11.917     16.7676     26.44  .Q        V         .         .         .
12.000     16.9517     26.73  .Q        V         .         .         .
12.083     17.1367     26.87  .Q        .V        .         .         .
12.167     17.3180     26.33  .Q        .V        .         .         .
12.250     17.4905     25.05  .Q        .V        .         .         .
12.333     17.6521     23.47  .Q        .V        .         .         .
12.417     17.8073     22.54  .Q        .V        .         .         .
12.500     17.9607     22.27  .Q        .V        .         .         .
12.583     18.1145     22.32  .Q        .V        .         .         .
12.667     18.2700     22.58  .Q        .V        .         .         .
12.750     18.4276     22.89  .Q        .V        .         .         .
12.833     18.5875     23.22  .Q        .V        .         .         .
12.917     18.7499     23.58  .Q        . V       .         .         .
13.000     18.9149     23.97  .Q        . V       .         .         .
13.083     19.0828     24.38  .Q        . V       .         .         .
13.167     19.2537     24.81  .Q        . V       .         .         .
13.250     19.4277     25.26  .Q        . V       .         .         .
13.333     19.6049     25.73  .Q        . V       .         .         .
13.417     19.7855     26.22  .Q        . V       .         .         .
13.500     19.9697     26.75  .Q        . V       .         .         .
13.583     20.1577     27.29  .Q        .  V      .         .         .
13.667     20.3496     27.86  .Q        .  V      .         .         .
13.750     20.5456     28.46  .Q        .  V      .         .         .
13.833     20.7461     29.11  .Q        .  V      .         .         .
13.917     20.9512     29.78  .Q        .  V      .         .         .
14.000     21.1612     30.50  . Q       .  V      .         .         .
14.083     21.3770     31.34  . Q       .  V      .         .         .
14.167     21.6016     32.61  . Q       .  V      .         .         .
14.250     21.8380     34.32  . Q       .   V     .         .         .
14.333     22.0879     36.29  . Q       .   V     .         .         .
14.417     22.3494     37.97  . Q       .   V     .         .         .
14.500     22.6209     39.41  . Q       .   V     .         .         .
14.583     22.9015     40.75  . Q       .   V     .         .         .
14.667     23.1915     42.11  . Q       .   V     .         .         .
14.750     23.4913     43.54  . Q       .    V    .         .         .
14.833     23.8020     45.12  .  Q      .    V    .         .         .
14.917     24.1244     46.81  .  Q      .    V    .         .         .
15.000     24.4599     48.71  .  Q      .    V    .         .         .
15.083     24.8096     50.78  .  Q      .     V   .         .         .
15.167     25.1756     53.14  .  Q      .     V   .         .         .
15.250     25.5596     55.76  .  Q      .     V   .         .         .
15.333     25.9645     58.79  .  Q      .     V   .         .         .
15.417     26.3934     62.27  .   Q     .      V  .         .         .
15.500     26.8516     66.54  .   Q     .      V  .         .         .
15.583     27.3451     71.66  .   Q     .      V  .         .         .
15.667     27.8825     78.02  .    Q    .      V  .         .         .
15.750     28.4756     86.13  .    Q    .       V .         .         .
15.833     29.1541     98.51  .     Q   .       V .         .         .
15.917     29.9612    117.19  .      Q  .        V.         .         .
16.000     30.9852    148.69  .        Q.        V.         .         .
16.083     32.5064    220.88  .         .   Q     V         .         .
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16.167     35.1075    377.67  .         .         . V  Q    .         .
16.250     38.6578    515.50  .         .         .   V     .   Q     .
16.333     42.3671    538.59  .         .         .      V  .    Q    .
16.417     45.0205    385.28  .         .         .    Q   V.         .
16.500     46.6350    234.43  .         .    Q    .         V         .
16.583     47.6616    149.05  .        Q.         .         V         .
16.667     48.3386     98.31  .     Q   .         .         .V        .
16.750     48.8768     78.14  .    Q    .         .         .V        .
16.833     49.3415     67.47  .   Q     .         .         .V        .
16.917     49.7388     57.69  .  Q      .         .         . V       .
17.000     50.0865     50.49  .  Q      .         .         . V       .
17.083     50.3994     45.43  .  Q      .         .         . V       .
17.167     50.6873     41.80  . Q       .         .         . V       .
17.250     50.9514     38.35  . Q       .         .         . V       .
17.333     51.1936     35.16  . Q       .         .         .  V      .
17.417     51.4184     32.64  . Q       .         .         .  V      .
17.500     51.6300     30.73  . Q       .         .         .  V      .
17.583     51.8309     29.17  .Q        .         .         .  V      .
17.667     52.0229     27.87  .Q        .         .         .  V      .
17.750     52.2070     26.73  .Q        .         .         .  V      .
17.833     52.3839     25.69  .Q        .         .         .  V      .
17.917     52.5545     24.76  .Q        .         .         .  V      .
18.000     52.7192     23.91  .Q        .         .         .   V     .
18.083     52.8796     23.30  .Q        .         .         .   V     .
18.167     53.0409     23.42  .Q        .         .         .   V     .
18.250     53.2085     24.34  .Q        .         .         .   V     .
18.333     53.3847     25.59  .Q        .         .         .   V     .
18.417     53.5653     26.21  .Q        .         .         .   V     .
18.500     53.7458     26.21  .Q        .         .         .   V     .
18.583     53.9243     25.92  .Q        .         .         .   V     .
18.667     54.0997     25.47  .Q        .         .         .   V     .
18.750     54.2720     25.01  .Q        .         .         .    V    .
18.833     54.4412     24.57  .Q        .         .         .    V    .
18.917     54.6075     24.14  .Q        .         .         .    V    .
19.000     54.7708     23.72  .Q        .         .         .    V    .
19.083     54.9313     23.31  .Q        .         .         .    V    .
19.167     55.0891     22.92  .Q        .         .         .    V    .
19.250     55.2444     22.54  .Q        .         .         .    V    .
19.333     55.3972     22.19  .Q        .         .         .    V    .
19.417     55.5477     21.85  .Q        .         .         .    V    .
19.500     55.6959     21.52  .Q        .         .         .    V    .
19.583     55.8419     21.21  .Q        .         .         .     V   .
19.667     55.9859     20.90  .Q        .         .         .     V   .
19.750     56.1279     20.62  .Q        .         .         .     V   .
19.833     56.2679     20.34  .Q        .         .         .     V   .
19.917     56.4061     20.07  .Q        .         .         .     V   .
20.000     56.5426     19.81  .Q        .         .         .     V   .
20.083     56.6773     19.56  .Q        .         .         .     V   .
20.167     56.8103     19.32  .Q        .         .         .     V   .
20.250     56.9418     19.08  .Q        .         .         .     V   .
20.333     57.0716     18.86  .Q        .         .         .     V   .
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20.417     57.2000     18.64  .Q        .         .         .     V   .
20.500     57.3269     18.43  .Q        .         .         .     V   .
20.583     57.4524     18.22  .Q        .         .         .      V  .
20.667     57.5766     18.02  .Q        .         .         .      V  .
20.750     57.6994     17.83  .Q        .         .         .      V  .
20.833     57.8209     17.64  .Q        .         .         .      V  .
20.917     57.9412     17.46  .Q        .         .         .      V  .
21.000     58.0602     17.29  .Q        .         .         .      V  .
21.083     58.1781     17.11  .Q        .         .         .      V  .
21.167     58.2948     16.95  .Q        .         .         .      V  .
21.250     58.4104     16.78  .Q        .         .         .      V  .
21.333     58.5249     16.62  .Q        .         .         .      V  .
21.417     58.6383     16.47  .Q        .         .         .      V  .
21.500     58.7507     16.32  .Q        .         .         .      V  .
21.583     58.8621     16.17  .Q        .         .         .      V  .
21.667     58.9725     16.03  .Q        .         .         .       V .
21.750     59.0819     15.89  .Q        .         .         .       V .
21.833     59.1904     15.75  .Q        .         .         .       V .
21.917     59.2980     15.62  .Q        .         .         .       V .
22.000     59.4046     15.49  .Q        .         .         .       V .
22.083     59.5104     15.36  .Q        .         .         .       V .
22.167     59.6154     15.24  .Q        .         .         .       V .
22.250     59.7195     15.12  .Q        .         .         .       V .
22.333     59.8228     15.00  Q         .         .         .       V .
22.417     59.9253     14.88  Q         .         .         .       V .
22.500     60.0270     14.77  Q         .         .         .       V .
22.583     60.1279     14.66  Q         .         .         .       V .
22.667     60.2281     14.55  Q         .         .         .       V .
22.750     60.3276     14.44  Q         .         .         .       V .
22.833     60.4263     14.34  Q         .         .         .       V .
22.917     60.5243     14.23  Q         .         .         .        V.
23.000     60.6216     14.13  Q         .         .         .        V.
23.083     60.7183     14.03  Q         .         .         .        V.
23.167     60.8142     13.94  Q         .         .         .        V.
23.250     60.9096     13.84  Q         .         .         .        V.
23.333     61.0042     13.75  Q         .         .         .        V.
23.417     61.0983     13.66  Q         .         .         .        V.
23.500     61.1917     13.57  Q         .         .         .        V.
23.583     61.2845     13.48  Q         .         .         .        V.
23.667     61.3768     13.39  Q         .         .         .        V.
23.750     61.4684     13.31  Q         .         .         .        V.
23.833     61.5595     13.22  Q         .         .         .        V.
23.917     61.6500     13.14  Q         .         .         .        V.
24.000     61.7399     13.06  Q         .         .         .        V.
24.083     61.8273     12.69  Q         .         .         .        V.
24.167     61.9032     11.02  Q         .         .         .        V.
24.250     61.9580      7.97  Q         .         .         .        V.
24.333     61.9880      4.35  Q         .         .         .        V.
24.417     62.0017      1.99  Q         .         .         .        V.
24.500     62.0077      0.87  Q         .         .         .        V.
24.583     62.0101      0.36  Q         .         .         .        V.
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  24.667     62.0115      0.20  Q         .         .         .        V.
  24.750     62.0123      0.11  Q         .         .         .        V.
  24.833     62.0126      0.04  Q         .         .         .        V.
  24.917     62.0126      0.01  Q         .         .         .         V
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated               Duration
       Peak Flow Rate                    (minutes)
   ======================              =========
              0%                        1495.0
             10%                         105.0
             20%                          45.0
             30%                          30.0
             40%                          30.0
             50%                          20.0
             60%                          20.0
             70%                          20.0
             80%                          10.0
             90%                          10.0


********************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    303.00 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
================================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     452.300 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.250 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.407
         LOW LOSS FRACTION = 0.538
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.58
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.75
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.10
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.38
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.52

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
```

5-MINUTE FACTOR = 0.980
30-MINUTE FACTOR = 0.980
1-HOUR FACTOR = 0.980
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 33.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.170	118.706
2	13.591	624.746
3	35.416	1193.805
4	62.732	1494.169
5	82.211	1065.530
6	91.877	528.733
7	96.496	252.663
8	98.279	97.498
9	98.906	34.326
10	99.441	29.221
11	99.776	18.362
12	99.944	9.181
13	100.000	3.060

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 46.3159
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 48.5557

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	125.0	250.0	375.0	500.0
0.083	0.0014	0.21	Q	.	.	.	.
0.167	0.0104	1.31	Q	.	.	.	.
0.250	0.0339	3.41	Q	.	.	.	.
0.333	0.0755	6.04	Q	.	.	.	.
0.417	0.1302	7.93	Q	.	.	.	.
0.500	0.1914	8.89	Q	.	.	.	.
0.583	0.2558	9.36	Q	.	.	.	.
0.667	0.3216	9.56	Q	.	.	.	.
0.750	0.3881	9.65	Q	.	.	.	.
0.833	0.4551	9.73	Q	.	.	.	.
0.917	0.5225	9.79	Q	.	.	.	.
1.000	0.5902	9.83	Q	.	.	.	.
1.083	0.6582	9.87	Q	.	.	.	.
1.167	0.7264	9.90	Q	.	.	.	.
1.250	0.7948	9.93	Q	.	.	.	.
1.333	0.8634	9.96	Q	.	.	.	.
1.417	0.9322	9.99	Q	.	.	.	.
1.500	1.0012	10.03	Q	.	.	.	.
1.583	1.0705	10.06	Q	.	.	.	.
1.667	1.1400	10.09	Q	.	.	.	.
1.750	1.2097	10.12	Q	.	.	.	.
1.833	1.2797	10.16	QV	.	.	.	.
1.917	1.3498	10.19	QV	.	.	.	.
2.000	1.4202	10.22	QV	.	.	.	.
2.083	1.4909	10.26	QV	.	.	.	.
2.167	1.5617	10.29	QV	.	.	.	.
2.250	1.6328	10.32	QV	.	.	.	.
2.333	1.7042	10.36	QV	.	.	.	.
2.417	1.7758	10.39	QV	.	.	.	.
2.500	1.8476	10.43	QV	.	.	.	.
2.583	1.9197	10.46	QV	.	.	.	.
2.667	1.9920	10.50	QV	.	.	.	.
2.750	2.0645	10.54	QV	.	.	.	.
2.833	2.1374	10.57	QV	.	.	.	.
2.917	2.2104	10.61	QV	.	.	.	.
3.000	2.2838	10.65	QV	.	.	.	.
3.083	2.3574	10.69	QV	.	.	.	.
3.167	2.4312	10.72	Q V	.	.	.	.
3.250	2.5054	10.76	Q V	.	.	.	.
3.333	2.5798	10.80	Q V	.	.	.	.

3.417	2.6544	10.84	Q	V	.	.	.	.
3.500	2.7294	10.88	Q	V	.	.	.	.
3.583	2.8046	10.92	Q	V	.	.	.	.
3.667	2.8801	10.96	Q	V	.	.	.	.
3.750	2.9558	11.00	Q	V	.	.	.	.
3.833	3.0319	11.04	Q	V	.	.	.	.
3.917	3.1083	11.09	Q	V	.	.	.	.
4.000	3.1849	11.13	Q	V	.	.	.	.
4.083	3.2618	11.17	Q	V	.	.	.	.
4.167	3.3391	11.21	Q	V	.	.	.	.
4.250	3.4166	11.26	Q	V	.	.	.	.
4.333	3.4944	11.30	Q	V	.	.	.	.
4.417	3.5726	11.35	Q	V	.	.	.	.
4.500	3.6510	11.39	Q	V	.	.	.	.
4.583	3.7298	11.44	Q	V	.	.	.	.
4.667	3.8089	11.48	Q	V	.	.	.	.
4.750	3.8883	11.53	Q	V	.	.	.	.
4.833	3.9680	11.58	Q	V	.	.	.	.
4.917	4.0481	11.62	Q	V	.	.	.	.
5.000	4.1285	11.67	Q	V	.	.	.	.
5.083	4.2092	11.72	Q	V	.	.	.	.
5.167	4.2903	11.77	Q	V	.	.	.	.
5.250	4.3717	11.82	Q	V	.	.	.	.
5.333	4.4534	11.87	Q	V	.	.	.	.
5.417	4.5355	11.92	Q	V	.	.	.	.
5.500	4.6180	11.97	Q	V	.	.	.	.
5.583	4.7008	12.03	Q	V	.	.	.	.
5.667	4.7840	12.08	Q	V	.	.	.	.
5.750	4.8676	12.13	Q	V	.	.	.	.
5.833	4.9515	12.19	Q	V	.	.	.	.
5.917	5.0359	12.24	Q	V	.	.	.	.
6.000	5.1206	12.30	Q	V	.	.	.	.
6.083	5.2056	12.35	Q	V	.	.	.	.
6.167	5.2911	12.41	Q	V	.	.	.	.
6.250	5.3770	12.47	Q	V	.	.	.	.
6.333	5.4633	12.53	.Q	V	.	.	.	.
6.417	5.5500	12.59	.Q	V	.	.	.	.
6.500	5.6371	12.65	.Q	V	.	.	.	.
6.583	5.7246	12.71	.Q	V	.	.	.	.
6.667	5.8126	12.77	.Q	V	.	.	.	.
6.750	5.9010	12.83	.Q	V	.	.	.	.
6.833	5.9898	12.90	.Q	V	.	.	.	.
6.917	6.0790	12.96	.Q	V	.	.	.	.
7.000	6.1688	13.03	.Q	V	.	.	.	.
7.083	6.2589	13.09	.Q	V	.	.	.	.
7.167	6.3496	13.16	.Q	V	.	.	.	.
7.250	6.4407	13.23	.Q	V	.	.	.	.
7.333	6.5323	13.30	.Q	V	.	.	.	.
7.417	6.6243	13.37	.Q	V	.	.	.	.
7.500	6.7169	13.44	.Q	V	.	.	.	.
7.583	6.8099	13.51	.Q	V	.	.	.	.

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 7.667      6.9035     13.58  .Q   V    .         .         .         .
 7.750      6.9975     13.66  .Q   V    .         .         .         .
 7.833      7.0921     13.73  .Q   V    .         .         .         .
 7.917      7.1872     13.81  .Q   V    .         .         .         .
 8.000      7.2829     13.89  .Q   V    .         .         .         .
 8.083      7.3791     13.97  .Q    V   .         .         .         .
 8.167      7.4758     14.05  .Q    V   .         .         .         .
 8.250      7.5731     14.13  .Q    V   .         .         .         .
 8.333      7.6710     14.21  .Q    V   .         .         .         .
 8.417      7.7695     14.30  .Q    V   .         .         .         .
 8.500      7.8685     14.38  .Q    V   .         .         .         .
 8.583      7.9682     14.47  .Q    V   .         .         .         .
 8.667      8.0685     14.56  .Q    V   .         .         .         .
 8.750      8.1694     14.65  .Q    V   .         .         .         .
 8.833      8.2709     14.74  .Q    V   .         .         .         .
 8.917      8.3730     14.83  .Q    V   .         .         .         .
 9.000      8.4759     14.93  .Q    V   .         .         .         .
 9.083      8.5794     15.03  .Q     V  .         .         .         .
 9.167      8.6835     15.12  .Q     V  .         .         .         .
 9.250      8.7884     15.22  .Q     V  .         .         .         .
 9.333      8.8939     15.33  .Q     V  .         .         .         .
 9.417      9.0002     15.43  .Q     V  .         .         .         .
 9.500      9.1072     15.54  .Q     V  .         .         .         .
 9.583      9.2150     15.65  .Q     V  .         .         .         .
 9.667      9.3235     15.76  .Q     V  .         .         .         .
 9.750      9.4328     15.87  .Q     V  .         .         .         .
 9.833      9.5428     15.98  .Q     V  .         .         .         .
 9.917      9.6537     16.10  .Q     V  .         .         .         .
10.000      9.7654     16.22  .Q      V .         .         .         .
10.083      9.8780     16.34  .Q      V .         .         .         .
10.167      9.9914     16.47  .Q      V .         .         .         .
10.250     10.1057     16.59  .Q      V .         .         .         .
10.333     10.2208     16.72  .Q      V .         .         .         .
10.417     10.3369     16.86  .Q      V .         .         .         .
10.500     10.4539     16.99  .Q      V .         .         .         .
10.583     10.5719     17.13  .Q      V .         .         .         .
10.667     10.6909     17.27  .Q      V .         .         .         .
10.750     10.8108     17.42  .Q      V .         .         .         .
10.833     10.9318     17.57  .Q       V.         .         .         .
10.917     11.0538     17.72  .Q       V.         .         .         .
11.000     11.1770     17.88  .Q       V.         .         .         .
11.083     11.3012     18.03  .Q       V.         .         .         .
11.167     11.4265     18.20  .Q       V.         .         .         .
11.250     11.5530     18.37  .Q       V.         .         .         .
11.333     11.6807     18.54  .Q       V.         .         .         .
11.417     11.8096     18.72  .Q       V.         .         .         .
11.500     11.9397     18.90  .Q       V.         .         .         .
11.583     12.0712     19.08  .Q       V.         .         .         .
11.667     12.2039     19.28  .Q        V         .         .         .
11.750     12.3381     19.47  .Q        V         .         .         .
11.833     12.4736     19.68  .Q        V         .         .         .
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11.917     12.6105     19.89  .Q        V         .         .         .
12.000     12.7490     20.10  .Q        V         .         .         .
12.083     12.8882     20.21  .Q        V         .         .         .
12.167     13.0250     19.86  .Q        V         .         .         .
12.250     13.1557     18.98  .Q        V         .         .         .
12.333     13.2784     17.82  .Q        V         .         .         .
12.417     13.3959     17.06  .Q        .V        .         .         .
12.500     13.5116     16.81  .Q        .V        .         .         .
12.583     13.6275     16.82  .Q        .V        .         .         .
12.667     13.7444     16.98  .Q        .V        .         .         .
12.750     13.8629     17.21  .Q        .V        .         .         .
12.833     13.9832     17.46  .Q        .V        .         .         .
12.917     14.1052     17.72  .Q        .V        .         .         .
13.000     14.2293     18.01  .Q        .V        .         .         .
13.083     14.3555     18.32  .Q        .V        .         .         .
13.167     14.4839     18.64  .Q        .V        .         .         .
13.250     14.6146     18.98  .Q        . V       .         .         .
13.333     14.7477     19.33  .Q        . V       .         .         .
13.417     14.8834     19.70  .Q        . V       .         .         .
13.500     15.0218     20.09  .Q        . V       .         .         .
13.583     15.1629     20.50  .Q        . V       .         .         .
13.667     15.3071     20.93  .Q        . V       .         .         .
13.750     15.4543     21.38  .Q        . V       .         .         .
13.833     15.6048     21.86  .Q        . V       .         .         .
13.917     15.7588     22.36  .Q        . V       .         .         .
14.000     15.9165     22.90  .Q        .  V      .         .         .
14.083     16.0785     23.52  .Q        .  V      .         .         .
14.167     16.2468     24.44  .Q        .  V      .         .         .
14.250     16.4237     25.68  . Q       .  V      .         .         .
14.333     16.6105     27.12  . Q       .  V      .         .         .
14.417     16.8061     28.41  . Q       .  V      .         .         .
14.500     17.0093     29.50  . Q       .   V     .         .         .
14.583     17.2195     30.52  . Q       .   V     .         .         .
14.667     17.4368     31.55  . Q       .   V     .         .         .
14.750     17.6614     32.61  . Q       .   V     .         .         .
14.833     17.8941     33.79  . Q       .   V     .         .         .
14.917     18.1355     35.06  . Q       .   V     .         .         .
15.000     18.3867     36.47  . Q       .    V    .         .         .
15.083     18.6484     38.01  .  Q      .    V    .         .         .
15.167     18.9223     39.76  .  Q      .    V    .         .         .
15.250     19.2095     41.71  .  Q      .    V    .         .         .
15.333     19.5123     43.96  .  Q      .     V   .         .         .
15.417     19.8328     46.54  .  Q      .     V   .         .         .
15.500     20.1750     49.69  .  Q      .     V   .         .         .
15.583     20.5434     53.49  .   Q     .     V   .         .         .
15.667     20.9441     58.19  .   Q     .      V  .         .         .
15.750     21.3862     64.18  .    Q    .      V  .         .         .
15.833     21.8901     73.17  .    Q    .       V .         .         .
15.917     22.4870     86.68  .     Q   .       V .         .         .
16.000     23.2444    109.97  .       Q .        V.         .         .
16.083     24.4116    169.47  .         .  Q      V         .         .
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16.167	26.5105	304.77	. . .V Q . .
16.250	29.4930	433.06	. . . V . Q .
16.333	32.7530	473.34	. . . V . Q .
16.417	35.1863	353.32	. . . Q . .
16.500	36.6563	213.45	. . Q . V .
16.583	37.5700	132.66	. Q . V .
16.667	38.1541	84.82	. Q . . .V .
16.750	38.5787	61.65	. Q . . .V .
16.833	38.9456	53.28	. Q . . . V .
16.917	39.2609	45.77	. Q . . . V .
17.000	39.5350	39.80	. Q . . . V .
17.083	39.7781	35.30	. Q . . . V .
17.167	39.9975	31.86	. Q . . . V .
17.250	40.1988	29.23	. Q . . . V .
17.333	40.3834	26.80	. Q . . . V .
17.417	40.5544	24.84	.Q . . . V .
17.500	40.7152	23.34	.Q . . . V .
17.583	40.8676	22.13	.Q . . . V .
17.667	41.0131	21.13	.Q . . . V .
17.750	41.1526	20.25	.Q . . . V .
17.833	41.2866	19.46	.Q . . . V .
17.917	41.4157	18.74	.Q . . . V .
18.000	41.5403	18.10	.Q . . . V .
18.083	41.6616	17.61	.Q . . . V .
18.167	41.7831	17.65	.Q . . . V .
18.250	41.9088	18.25	.Q . . . V .
18.333	42.0408	19.16	.Q . . . V .
18.417	42.1763	19.68	.Q . . . V .
18.500	42.3122	19.73	.Q . . . V .
18.583	42.4468	19.54	.Q . . . V .
18.667	42.5792	19.23	.Q . . . V .
18.750	42.7092	18.88	.Q . . . V .
18.833	42.8369	18.54	.Q . . . V .
18.917	42.9624	18.22	.Q . . . V .
19.000	43.0857	17.90	.Q . . . V .
19.083	43.2068	17.59	.Q . . . V .
19.167	43.3260	17.30	.Q . . . V .
19.250	43.4432	17.02	.Q . . . V .
19.333	43.5585	16.75	.Q . . . V .
19.417	43.6720	16.49	.Q . . . V .
19.500	43.7839	16.24	.Q . . . V .
19.583	43.8941	16.00	.Q . . . V .
19.667	44.0027	15.77	.Q . . . V .
19.750	44.1098	15.55	.Q . . . V .
19.833	44.2155	15.34	.Q . . . V .
19.917	44.3198	15.14	.Q . . . V .
20.000	44.4227	14.94	.Q . . . V .
20.083	44.5243	14.76	.Q . . . V .
20.167	44.6247	14.57	.Q . . . V .
20.250	44.7238	14.40	.Q . . . V .
20.333	44.8218	14.23	.Q . . . V .

20.417	44.9186	14.06	.Q	.	.	.	V .
20.500	45.0144	13.90	.Q	.	.	.	V .
20.583	45.1090	13.74	.Q	.	.	.	V .
20.667	45.2026	13.59	.Q	.	.	.	V .
20.750	45.2953	13.45	.Q	.	.	.	V .
20.833	45.3869	13.31	.Q	.	.	.	V .
20.917	45.4776	13.17	.Q	.	.	.	V .
21.000	45.5674	13.04	.Q	.	.	.	V .
21.083	45.6563	12.91	.Q	.	.	.	V .
21.167	45.7443	12.78	.Q	.	.	.	V .
21.250	45.8314	12.66	.Q	.	.	.	V .
21.333	45.9178	12.54	.Q	.	.	.	V .
21.417	46.0033	12.42	Q	.	.	.	V .
21.500	46.0881	12.31	Q	.	.	.	V .
21.583	46.1721	12.19	Q	.	.	.	V .
21.667	46.2553	12.09	Q	.	.	.	V .
21.750	46.3378	11.98	Q	.	.	.	V .
21.833	46.4196	11.88	Q	.	.	.	V .
21.917	46.5007	11.78	Q	.	.	.	V .
22.000	46.5811	11.68	Q	.	.	.	V .
22.083	46.6609	11.58	Q	.	.	.	V .
22.167	46.7400	11.49	Q	.	.	.	V .
22.250	46.8185	11.40	Q	.	.	.	V .
22.333	46.8964	11.31	Q	.	.	.	V .
22.417	46.9737	11.22	Q	.	.	.	V .
22.500	47.0503	11.13	Q	.	.	.	V .
22.583	47.1264	11.05	Q	.	.	.	V .
22.667	47.2020	10.97	Q	.	.	.	V .
22.750	47.2769	10.89	Q	.	.	.	V .
22.833	47.3514	10.81	Q	.	.	.	V.
22.917	47.4252	10.73	Q	.	.	.	V.
23.000	47.4986	10.65	Q	.	.	.	V.
23.083	47.5715	10.58	Q	.	.	.	V.
23.167	47.6438	10.50	Q	.	.	.	V.
23.250	47.7157	10.43	Q	.	.	.	V.
23.333	47.7870	10.36	Q	.	.	.	V.
23.417	47.8579	10.29	Q	.	.	.	V.
23.500	47.9283	10.23	Q	.	.	.	V.
23.583	47.9983	10.16	Q	.	.	.	V.
23.667	48.0678	10.09	Q	.	.	.	V.
23.750	48.1369	10.03	Q	.	.	.	V.
23.833	48.2055	9.97	Q	.	.	.	V.
23.917	48.2737	9.90	Q	.	.	.	V.
24.000	48.3415	9.84	Q	.	.	.	V.
24.083	48.4075	9.57	Q	.	.	.	V.
24.167	48.4655	8.42	Q	.	.	.	V.
24.250	48.5087	6.28	Q	.	.	.	V.
24.333	48.5336	3.62	Q	.	.	.	V.
24.417	48.5455	1.73	Q	.	.	.	V.
24.500	48.5509	0.79	Q	.	.	.	V.
24.583	48.5533	0.34	Q	.	.	.	V.

```
  24.667     48.5544      0.17  Q         .         .         .        V.
  24.750     48.5551      0.11  Q         .         .         .        V.
  24.833     48.5555      0.05  Q         .         .         .        V.
  24.917     48.5557      0.02  Q         .         .         .        V.
  25.000     48.5557      0.01  Q         .         .         .        V.
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated               Duration
       Peak Flow Rate                    (minutes)
   ======================                =========
             0%                           1500.0
            10%                             85.0
            20%                             40.0
            30%                             30.0
            40%                             25.0
            50%                             20.0
            60%                             20.0
            70%                             15.0
            80%                             10.0
            90%                             10.0


********************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 IS CODE =   7
--------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
================================================================================


********************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    101.00 IS CODE = 3.1
--------------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
================================================================================

                    INFLOW
                  (STREAM 1)
                       |
                       |
                       V                __effective depth
                   -----------          |   (and volume)
                  |           |    |    |
                  |           |    |....V........
                  | detention |<-->|           outflow
                  |   basin   |    |.........._______
                   -----------     |    ^    |  \
                       |           |  dead   |   basin outlet
                       V           | storage |
```

OUTFLOW ---------
(STREAM 1)

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

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	5.00	113.00	9.830
3	10.00	192.00	22.020
4	15.00	248.00	36.780
5	20.00	293.00	54.330
6	25.00	332.00	74.840

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(5-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
0.083	0.000	0.50	0.00	0.00	0.0	0.003
0.167	0.000	3.19	0.00	0.01	0.2	0.024
0.250	0.000	8.29	0.00	0.04	0.6	0.077
0.333	0.000	14.52	0.00	0.09	1.4	0.168
0.417	0.000	18.77	0.00	0.14	2.6	0.279
0.500	0.000	20.87	0.00	0.20	3.9	0.396
0.583	0.000	21.88	0.00	0.26	5.2	0.511
0.667	0.000	22.28	0.00	0.32	6.5	0.620
0.750	0.000	22.49	0.00	0.37	7.7	0.721
0.833	0.000	22.67	0.00	0.42	8.8	0.817
0.917	0.000	22.81	0.00	0.46	9.9	0.906
1.000	0.000	22.90	0.00	0.50	10.9	0.988
1.083	0.000	22.98	0.00	0.54	11.8	1.065
1.167	0.000	23.05	0.00	0.58	12.7	1.137
1.250	0.000	23.12	0.00	0.61	13.5	1.203
1.333	0.000	23.20	0.00	0.64	14.2	1.266

1.417	0.000	23.27	0.00	0.67	14.9	1.323
1.500	0.000	23.34	0.00	0.70	15.5	1.377
1.583	0.000	23.42	0.00	0.73	16.1	1.427
1.667	0.000	23.49	0.00	0.75	16.7	1.474
1.750	0.000	23.57	0.00	0.77	17.2	1.518
1.833	0.000	23.65	0.00	0.79	17.7	1.559
1.917	0.000	23.72	0.00	0.81	18.1	1.598
2.000	0.000	23.80	0.00	0.83	18.6	1.634
2.083	0.000	23.88	0.00	0.85	19.0	1.667
2.167	0.000	23.96	0.00	0.86	19.4	1.699
2.250	0.000	24.04	0.00	0.88	19.7	1.729
2.333	0.000	24.12	0.00	0.89	20.0	1.757
2.417	0.000	24.20	0.00	0.91	20.4	1.784
2.500	0.000	24.28	0.00	0.92	20.6	1.809
2.583	0.000	24.37	0.00	0.93	20.9	1.832
2.667	0.000	24.45	0.00	0.94	21.2	1.855
2.750	0.000	24.53	0.00	0.95	21.4	1.876
2.833	0.000	24.62	0.00	0.96	21.7	1.896
2.917	0.000	24.71	0.00	0.97	21.9	1.916
3.000	0.000	24.79	0.00	0.98	22.1	1.934
3.083	0.000	24.88	0.00	0.99	22.3	1.952
3.167	0.000	24.97	0.00	1.00	22.5	1.968
3.250	0.000	25.06	0.00	1.01	22.7	1.984
3.333	0.000	25.15	0.00	1.02	22.9	2.000
3.417	0.000	25.24	0.00	1.02	23.1	2.015
3.500	0.000	25.34	0.00	1.03	23.2	2.029
3.583	0.000	25.43	0.00	1.04	23.4	2.043
3.667	0.000	25.52	0.00	1.05	23.6	2.057
3.750	0.000	25.62	0.00	1.05	23.7	2.070
3.833	0.000	25.72	0.00	1.06	23.9	2.083
3.917	0.000	25.81	0.00	1.07	24.0	2.095
4.000	0.000	25.91	0.00	1.07	24.2	2.107
4.083	0.000	26.01	0.00	1.08	24.3	2.119
4.167	0.000	26.11	0.00	1.08	24.4	2.131
4.250	0.000	26.21	0.00	1.09	24.6	2.142
4.333	0.000	26.32	0.00	1.10	24.7	2.153
4.417	0.000	26.42	0.00	1.10	24.8	2.164
4.500	0.000	26.52	0.00	1.11	24.9	2.175
4.583	0.000	26.63	0.00	1.11	25.1	2.186
4.667	0.000	26.74	0.00	1.12	25.2	2.197
4.750	0.000	26.85	0.00	1.12	25.3	2.207
4.833	0.000	26.96	0.00	1.13	25.4	2.218
4.917	0.000	27.07	0.00	1.13	25.6	2.228
5.000	0.000	27.18	0.00	1.14	25.7	2.238
5.083	0.000	27.29	0.00	1.14	25.8	2.249
5.167	0.000	27.41	0.00	1.15	25.9	2.259
5.250	0.000	27.53	0.00	1.15	26.0	2.269
5.333	0.000	27.64	0.00	1.16	26.1	2.280
5.417	0.000	27.76	0.00	1.16	26.3	2.290
5.500	0.000	27.88	0.00	1.17	26.4	2.300
5.583	0.000	28.00	0.00	1.18	26.5	2.311

5.667	0.000	28.13	0.00	1.18	26.6	2.321
5.750	0.000	28.25	0.00	1.19	26.7	2.331
5.833	0.000	28.38	0.00	1.19	26.9	2.342
5.917	0.000	28.51	0.00	1.20	27.0	2.352
6.000	0.000	28.64	0.00	1.20	27.1	2.363
6.083	0.000	28.77	0.00	1.21	27.2	2.374
6.167	0.000	28.90	0.00	1.21	27.3	2.384
6.250	0.000	29.04	0.00	1.22	27.5	2.395
6.333	0.000	29.17	0.00	1.22	27.6	2.406
6.417	0.000	29.31	0.00	1.23	27.7	2.417
6.500	0.000	29.45	0.00	1.24	27.8	2.428
6.583	0.000	29.59	0.00	1.24	28.0	2.439
6.667	0.000	29.74	0.00	1.25	28.1	2.450
6.750	0.000	29.88	0.00	1.25	28.2	2.462
6.833	0.000	30.03	0.00	1.26	28.4	2.473
6.917	0.000	30.18	0.00	1.26	28.5	2.485
7.000	0.000	30.34	0.00	1.27	28.6	2.497
7.083	0.000	30.49	0.00	1.28	28.8	2.508
7.167	0.000	30.65	0.00	1.28	28.9	2.520
7.250	0.000	30.80	0.00	1.29	29.0	2.533
7.333	0.000	30.97	0.00	1.29	29.2	2.545
7.417	0.000	31.13	0.00	1.30	29.3	2.557
7.500	0.000	31.29	0.00	1.31	29.5	2.570
7.583	0.000	31.46	0.00	1.31	29.6	2.583
7.667	0.000	31.63	0.00	1.32	29.8	2.595
7.750	0.000	31.81	0.00	1.33	29.9	2.609
7.833	0.000	31.98	0.00	1.33	30.1	2.622
7.917	0.000	32.16	0.00	1.34	30.2	2.635
8.000	0.000	32.34	0.00	1.35	30.4	2.649
8.083	0.000	32.53	0.00	1.35	30.5	2.662
8.167	0.000	32.72	0.00	1.36	30.7	2.676
8.250	0.000	32.90	0.00	1.37	30.8	2.691
8.333	0.000	33.10	0.00	1.38	31.0	2.705
8.417	0.000	33.29	0.00	1.38	31.2	2.720
8.500	0.000	33.50	0.00	1.39	31.3	2.734
8.583	0.000	33.70	0.00	1.40	31.5	2.749
8.667	0.000	33.91	0.00	1.41	31.7	2.765
8.750	0.000	34.11	0.00	1.41	31.9	2.780
8.833	0.000	34.33	0.00	1.42	32.0	2.796
8.917	0.000	34.55	0.00	1.43	32.2	2.812
9.000	0.000	34.77	0.00	1.44	32.4	2.828
9.083	0.000	34.99	0.00	1.45	32.6	2.844
9.167	0.000	35.22	0.00	1.46	32.8	2.861
9.250	0.000	35.46	0.00	1.46	33.0	2.878
9.333	0.000	35.70	0.00	1.47	33.2	2.895
9.417	0.000	35.94	0.00	1.48	33.4	2.913
9.500	0.000	36.19	0.00	1.49	33.6	2.931
9.583	0.000	36.44	0.00	1.50	33.8	2.949
9.667	0.000	36.70	0.00	1.51	34.0	2.968
9.750	0.000	36.96	0.00	1.52	34.2	2.986
9.833	0.000	37.23	0.00	1.53	34.4	3.006

9.917	0.000	37.50	0.00	1.54	34.7	3.025
10.000	0.000	37.78	0.00	1.55	34.9	3.045
10.083	0.000	38.06	0.00	1.56	35.1	3.065
10.167	0.000	38.35	0.00	1.57	35.4	3.086
10.250	0.000	38.65	0.00	1.58	35.6	3.107
10.333	0.000	38.95	0.00	1.59	35.8	3.128
10.417	0.000	39.26	0.00	1.60	36.1	3.150
10.500	0.000	39.58	0.00	1.61	36.3	3.172
10.583	0.000	39.90	0.00	1.63	36.6	3.195
10.667	0.000	40.23	0.00	1.64	36.9	3.218
10.750	0.000	40.57	0.00	1.65	37.1	3.242
10.833	0.000	40.92	0.00	1.66	37.4	3.266
10.917	0.000	41.27	0.00	1.67	37.7	3.291
11.000	0.000	41.64	0.00	1.69	38.0	3.316
11.083	0.000	42.01	0.00	1.70	38.3	3.342
11.167	0.000	42.39	0.00	1.71	38.6	3.368
11.250	0.000	42.78	0.00	1.73	38.9	3.395
11.333	0.000	43.19	0.00	1.74	39.2	3.423
11.417	0.000	43.60	0.00	1.76	39.5	3.451
11.500	0.000	44.02	0.00	1.77	39.8	3.480
11.583	0.000	44.46	0.00	1.78	40.2	3.509
11.667	0.000	44.91	0.00	1.80	40.5	3.539
11.750	0.000	45.37	0.00	1.82	40.9	3.570
11.833	0.000	45.84	0.00	1.83	41.2	3.602
11.917	0.000	46.33	0.00	1.85	41.6	3.635
12.000	0.000	46.83	0.00	1.87	42.0	3.668
12.083	0.000	47.08	0.00	1.88	42.4	3.701
12.167	0.000	46.19	0.00	1.89	42.7	3.725
12.250	0.000	44.02	0.00	1.90	42.9	3.733
12.333	0.000	41.28	0.00	1.89	42.8	3.722
12.417	0.000	39.60	0.00	1.88	42.7	3.701
12.500	0.000	39.08	0.00	1.87	42.4	3.678
12.583	0.000	39.14	0.00	1.86	42.2	3.657
12.667	0.000	39.56	0.00	1.85	41.9	3.641
12.750	0.000	40.10	0.00	1.85	41.8	3.629
12.833	0.000	40.68	0.00	1.84	41.7	3.622
12.917	0.000	41.30	0.00	1.84	41.6	3.620
13.000	0.000	41.98	0.00	1.84	41.6	3.622
13.083	0.000	42.70	0.00	1.85	41.7	3.629
13.167	0.000	43.46	0.00	1.85	41.8	3.641
13.250	0.000	44.24	0.00	1.86	41.9	3.657
13.333	0.000	45.07	0.00	1.87	42.2	3.677
13.417	0.000	45.93	0.00	1.88	42.4	3.701
13.500	0.000	46.84	0.00	1.90	42.7	3.730
13.583	0.000	47.78	0.00	1.91	43.1	3.762
13.667	0.000	48.79	0.00	1.93	43.5	3.799
13.750	0.000	49.84	0.00	1.95	43.9	3.840
13.833	0.000	50.97	0.00	1.98	44.4	3.885
13.917	0.000	52.14	0.00	2.00	44.9	3.934
14.000	0.000	53.40	0.00	2.03	45.5	3.989
14.083	0.000	54.86	0.00	2.06	46.2	4.048

14.167	0.000	57.05	0.00	2.09	46.9	4.118
14.250	0.000	60.00	0.00	2.14	47.8	4.202
14.333	0.000	63.42	0.00	2.19	48.9	4.302
14.417	0.000	66.38	0.00	2.25	50.1	4.414
14.500	0.000	68.91	0.00	2.31	51.4	4.534
14.583	0.000	71.26	0.00	2.37	52.9	4.661
14.667	0.000	73.65	0.00	2.44	54.3	4.794
14.750	0.000	76.15	0.00	2.51	55.9	4.934
14.833	0.000	78.91	0.00	2.58	57.6	5.081
14.917	0.000	81.87	0.00	2.66	59.3	5.236
15.000	0.000	85.18	0.00	2.75	61.1	5.402
15.083	0.000	88.79	0.00	2.84	63.1	5.578
15.167	0.000	92.90	0.00	2.93	65.2	5.769
15.250	0.000	97.46	0.00	3.04	67.5	5.975
15.333	0.000	102.75	0.00	3.15	70.0	6.201
15.417	0.000	108.81	0.00	3.28	72.7	6.450
15.500	0.000	116.23	0.00	3.42	75.7	6.728
15.583	0.000	125.14	0.00	3.58	79.2	7.045
15.667	0.000	136.21	0.00	3.77	83.1	7.411
15.750	0.000	150.31	0.00	3.99	87.7	7.842
15.833	0.000	171.68	0.00	4.26	93.3	8.382
15.917	0.000	203.87	0.00	4.63	100.5	9.095
16.000	0.000	258.66	0.00	5.12	109.7	10.121
16.083	0.000	390.35	0.00	5.88	120.9	11.976
16.167	0.000	682.44	0.00	7.42	139.0	15.719
16.250	0.000	948.57	0.00	9.62	168.6	21.091
16.333	0.000	1011.94	0.00	11.58	197.9	26.697
16.417	0.000	738.59	0.00	12.80	216.6	30.292
16.500	0.000	447.88	0.00	13.32	226.3	31.819
16.583	0.000	281.71	0.00	13.44	229.9	32.176
16.667	0.000	183.13	0.00	13.33	229.9	31.853
16.750	0.000	139.79	0.00	13.12	228.2	31.245
16.833	0.000	120.75	0.00	12.88	225.6	30.523
16.917	0.000	103.46	0.00	12.60	222.7	29.701
17.000	0.000	90.29	0.00	12.30	219.5	28.812
17.083	0.000	80.73	0.00	11.99	216.0	27.880
17.167	0.000	73.66	0.00	11.66	212.4	26.925
17.250	0.000	67.58	0.00	11.33	208.8	25.952
17.333	0.000	61.96	0.00	11.00	205.0	24.967
17.417	0.000	57.48	0.00	10.66	201.3	23.976
17.500	0.000	54.07	0.00	10.33	197.5	22.988
17.583	0.000	51.31	0.00	9.99	193.8	22.007
17.667	0.000	49.00	0.00	9.60	188.8	21.044
17.750	0.000	46.98	0.00	9.22	182.6	20.110
17.833	0.000	45.15	0.00	8.84	176.7	19.204
17.917	0.000	43.50	0.00	8.48	170.9	18.326
18.000	0.000	42.01	0.00	8.14	165.3	17.477
18.083	0.000	40.91	0.00	7.80	159.9	16.658
18.167	0.000	41.07	0.00	7.48	154.7	15.875
18.250	0.000	42.59	0.00	7.18	149.8	15.137
18.333	0.000	44.74	0.00	6.89	145.2	14.445

18.417	0.000	45.89	0.00	6.62	140.8	13.792
18.500	0.000	45.94	0.00	6.37	136.6	13.167
18.583	0.000	45.46	0.00	6.12	132.7	12.566
18.667	0.000	44.70	0.00	5.88	128.9	11.987
18.750	0.000	43.89	0.00	5.66	125.2	11.427
18.833	0.000	43.12	0.00	5.43	121.6	10.886
18.917	0.000	42.36	0.00	5.22	118.2	10.364
19.000	0.000	41.62	0.00	5.01	114.8	9.860
19.083	0.000	40.90	0.00	4.77	110.5	9.381
19.167	0.000	40.21	0.00	4.54	105.3	8.933
19.250	0.000	39.56	0.00	4.33	100.3	8.515
19.333	0.000	38.93	0.00	4.13	95.6	8.124
19.417	0.000	38.33	0.00	3.95	91.3	7.759
19.500	0.000	37.76	0.00	3.77	87.2	7.419
19.583	0.000	37.21	0.00	3.61	83.4	7.100
19.667	0.000	36.68	0.00	3.46	79.9	6.802
19.750	0.000	36.17	0.00	3.32	76.6	6.524
19.833	0.000	35.68	0.00	3.19	73.5	6.264
19.917	0.000	35.21	0.00	3.06	70.6	6.020
20.000	0.000	34.75	0.00	2.95	67.9	5.792
20.083	0.000	34.31	0.00	2.84	65.3	5.578
20.167	0.000	33.89	0.00	2.74	63.0	5.378
20.250	0.000	33.48	0.00	2.64	60.7	5.190
20.333	0.000	33.08	0.00	2.55	58.6	5.014
20.417	0.000	32.70	0.00	2.47	56.7	4.849
20.500	0.000	32.33	0.00	2.39	54.8	4.694
20.583	0.000	31.97	0.00	2.31	53.1	4.548
20.667	0.000	31.62	0.00	2.24	51.5	4.411
20.750	0.000	31.28	0.00	2.18	50.0	4.282
20.833	0.000	30.95	0.00	2.12	48.5	4.161
20.917	0.000	30.63	0.00	2.06	47.2	4.047
21.000	0.000	30.32	0.00	2.00	45.9	3.940
21.083	0.000	30.02	0.00	1.95	44.7	3.839
21.167	0.000	29.73	0.00	1.90	43.6	3.743
21.250	0.000	29.44	0.00	1.86	42.5	3.653
21.333	0.000	29.16	0.00	1.81	41.5	3.568
21.417	0.000	28.89	0.00	1.77	40.6	3.488
21.500	0.000	28.63	0.00	1.74	39.7	3.412
21.583	0.000	28.37	0.00	1.70	38.8	3.340
21.667	0.000	28.12	0.00	1.66	38.0	3.272
21.750	0.000	27.87	0.00	1.63	37.2	3.207
21.833	0.000	27.63	0.00	1.60	36.5	3.146
21.917	0.000	27.40	0.00	1.57	35.8	3.088
22.000	0.000	27.17	0.00	1.54	35.2	3.033
22.083	0.000	26.95	0.00	1.52	34.6	2.980
22.167	0.000	26.73	0.00	1.49	34.0	2.931
22.250	0.000	26.51	0.00	1.47	33.4	2.883
22.333	0.000	26.30	0.00	1.44	32.9	2.838
22.417	0.000	26.10	0.00	1.42	32.4	2.795
22.500	0.000	25.90	0.00	1.40	31.9	2.753
22.583	0.000	25.70	0.00	1.38	31.4	2.714

22.667	0.000	25.51	0.00	1.36	31.0	2.676
22.750	0.000	25.33	0.00	1.34	30.6	2.640
22.833	0.000	25.14	0.00	1.33	30.2	2.606
22.917	0.000	24.96	0.00	1.31	29.8	2.573
23.000	0.000	24.78	0.00	1.29	29.4	2.541
23.083	0.000	24.61	0.00	1.28	29.0	2.510
23.167	0.000	24.44	0.00	1.26	28.7	2.481
23.250	0.000	24.27	0.00	1.25	28.4	2.453
23.333	0.000	24.11	0.00	1.23	28.0	2.426
23.417	0.000	23.95	0.00	1.22	27.7	2.400
23.500	0.000	23.79	0.00	1.21	27.4	2.375
23.583	0.000	23.64	0.00	1.20	27.2	2.350
23.667	0.000	23.48	0.00	1.18	26.9	2.327
23.750	0.000	23.34	0.00	1.17	26.6	2.304
23.833	0.000	23.19	0.00	1.16	26.4	2.283
23.917	0.000	23.04	0.00	1.15	26.1	2.261

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 110.568 AF
BASIN STORAGE = 0.000 AF (WITH 0.000 AF INITIALLY FILLED)
OUTFLOW VOLUME = 110.568 AF
LOSS VOLUME = 0.000 AF

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FLOW PROCESS FROM NODE 302.00 TO NODE 100.00 IS CODE = 1

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

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(UNIT-HYDROGRAPH ADDED TO STREAM #3)

WATERSHED AREA = 577.950 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
*USER ENTERED "LAG" TIME = 0.210 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY(DEVELOPED) S-GRAPH SELECTED
MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) = 0.271
LOW LOSS FRACTION = 0.398
HYDROGRAPH MODEL #1 SPECIFIED

SPECIFIED PEAK 5-MINUTES RAINFALL(INCH)= 0.27
SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)= 0.58
SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 0.75
SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 1.10
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 1.38
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 2.52

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:

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            5-MINUTE FACTOR = 0.974
           30-MINUTE FACTOR = 0.974
            1-HOUR FACTOR = 0.974
            3-HOUR FACTOR = 0.996
            6-HOUR FACTOR = 0.998
           24-HOUR FACTOR = 0.999

          UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
          UNIT INTERVAL PERCENTAGE OF LAG-TIME =  39.683
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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.872	200.764
2	19.165	1138.762
3	48.437	2045.999
4	76.826	1984.323
5	90.830	978.816
6	96.604	403.564
7	98.430	127.619
8	99.173	51.923
9	99.669	34.688
10	99.917	17.344
11	100.000	5.781

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    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      43.4538
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      77.7346
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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	200.0	400.0	600.0	800.0
0.083	0.0032	0.46	Q	.	.	.	.
0.167	0.0243	3.07	Q	.	.	.	.
0.250	0.0778	7.76	Q	.	.	.	.
0.333	0.1627	12.33	Q	.	.	.	.
0.417	0.2633	14.61	Q	.	.	.	.
0.500	0.3705	15.57	Q	.	.	.	.
0.583	0.4801	15.91	Q	.	.	.	.
0.667	0.5908	16.08	Q	.	.	.	.
0.750	0.7024	16.21	Q	.	.	.	.
0.833	0.8147	16.30	Q	.	.	.	.
0.917	0.9273	16.36	Q	.	.	.	.
1.000	1.0403	16.41	Q	.	.	.	.
1.083	1.1537	16.46	Q	.	.	.	.
1.167	1.2674	16.51	Q	.	.	.	.
1.250	1.3815	16.56	Q	.	.	.	.
1.333	1.4959	16.61	Q	.	.	.	.
1.417	1.6107	16.67	Q	.	.	.	.
1.500	1.7258	16.72	Q	.	.	.	.
1.583	1.8414	16.77	Q	.	.	.	.
1.667	1.9573	16.83	QV	.	.	.	.
1.750	2.0735	16.88	QV	.	.	.	.
1.833	2.1902	16.94	QV	.	.	.	.
1.917	2.3072	16.99	QV	.	.	.	.
2.000	2.4246	17.05	QV	.	.	.	.
2.083	2.5424	17.10	QV	.	.	.	.
2.167	2.6606	17.16	QV	.	.	.	.
2.250	2.7792	17.22	QV	.	.	.	.
2.333	2.8982	17.28	QV	.	.	.	.
2.417	3.0176	17.34	QV	.	.	.	.
2.500	3.1374	17.40	QV	.	.	.	.
2.583	3.2576	17.45	QV	.	.	.	.
2.667	3.3782	17.52	QV	.	.	.	.
2.750	3.4993	17.58	QV	.	.	.	.
2.833	3.6207	17.64	QV	.	.	.	.
2.917	3.7426	17.70	QV	.	.	.	.
3.000	3.8650	17.76	QV	.	.	.	.
3.083	3.9877	17.82	Q V	.	.	.	.
3.167	4.1109	17.89	Q V	.	.	.	.
3.250	4.2346	17.95	Q V	.	.	.	.
3.333	4.3587	18.02	Q V	.	.	.	.

3.417	4.4832	18.08	Q	V	.	.	.	.
3.500	4.6082	18.15	Q	V	.	.	.	.
3.583	4.7337	18.22	Q	V	.	.	.	.
3.667	4.8596	18.29	Q	V	.	.	.	.
3.750	4.9860	18.35	Q	V	.	.	.	.
3.833	5.1129	18.42	Q	V	.	.	.	.
3.917	5.2403	18.49	Q	V	.	.	.	.
4.000	5.3681	18.56	Q	V	.	.	.	.
4.083	5.4965	18.64	Q	V	.	.	.	.
4.167	5.6253	18.71	Q	V	.	.	.	.
4.250	5.7547	18.78	Q	V	.	.	.	.
4.333	5.8845	18.86	Q	V	.	.	.	.
4.417	6.0149	18.93	Q	V	.	.	.	.
4.500	6.1458	19.01	Q	V	.	.	.	.
4.583	6.2772	19.08	Q	V	.	.	.	.
4.667	6.4091	19.16	Q	V	.	.	.	.
4.750	6.5416	19.24	Q	V	.	.	.	.
4.833	6.6747	19.32	Q	V	.	.	.	.
4.917	6.8082	19.40	Q	V	.	.	.	.
5.000	6.9424	19.48	Q	V	.	.	.	.
5.083	7.0771	19.56	Q	V	.	.	.	.
5.167	7.2123	19.64	Q	V	.	.	.	.
5.250	7.3482	19.72	Q	V	.	.	.	.
5.333	7.4846	19.81	Q	V	.	.	.	.
5.417	7.6216	19.89	Q	V	.	.	.	.
5.500	7.7592	19.98	Q	V	.	.	.	.
5.583	7.8974	20.07	.Q	V	.	.	.	.
5.667	8.0363	20.16	.Q	V	.	.	.	.
5.750	8.1757	20.25	.Q	V	.	.	.	.
5.833	8.3158	20.34	.Q	V	.	.	.	.
5.917	8.4565	20.43	.Q	V	.	.	.	.
6.000	8.5978	20.52	.Q	V	.	.	.	.
6.083	8.7398	20.62	.Q	V	.	.	.	.
6.167	8.8825	20.71	.Q	V	.	.	.	.
6.250	9.0258	20.81	.Q	V	.	.	.	.
6.333	9.1698	20.91	.Q	V	.	.	.	.
6.417	9.3145	21.01	.Q	V	.	.	.	.
6.500	9.4599	21.11	.Q	V	.	.	.	.
6.583	9.6060	21.21	.Q	V	.	.	.	.
6.667	9.7528	21.32	.Q	V	.	.	.	.
6.750	9.9003	21.42	.Q	V	.	.	.	.
6.833	10.0486	21.53	.Q	V	.	.	.	.
6.917	10.1976	21.63	.Q	V	.	.	.	.
7.000	10.3473	21.74	.Q	V	.	.	.	.
7.083	10.4979	21.85	.Q	V	.	.	.	.
7.167	10.6492	21.97	.Q	V	.	.	.	.
7.250	10.8012	22.08	.Q	V	.	.	.	.
7.333	10.9541	22.20	.Q	V	.	.	.	.
7.417	11.1078	22.32	.Q	V	.	.	.	.
7.500	11.2623	22.44	.Q	V	.	.	.	.
7.583	11.4177	22.56	.Q	V	.	.	.	.

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 7.667     11.5738     22.68  .Q   V    .         .         .         .
 7.750     11.7309     22.80  .Q    V   .         .         .         .
 7.833     11.8888     22.93  .Q    V   .         .         .         .
 7.917     12.0476     23.06  .Q    V   .         .         .         .
 8.000     12.2073     23.19  .Q    V   .         .         .         .
 8.083     12.3680     23.32  .Q    V   .         .         .         .
 8.167     12.5295     23.46  .Q    V   .         .         .         .
 8.250     12.6920     23.59  .Q    V   .         .         .         .
 8.333     12.8555     23.73  .Q    V   .         .         .         .
 8.417     13.0199     23.87  .Q    V   .         .         .         .
 8.500     13.1853     24.02  .Q    V   .         .         .         .
 8.583     13.3517     24.17  .Q    V   .         .         .         .
 8.667     13.5192     24.32  .Q    V   .         .         .         .
 8.750     13.6877     24.47  .Q     V  .         .         .         .
 8.833     13.8573     24.62  .Q     V  .         .         .         .
 8.917     14.0279     24.78  .Q     V  .         .         .         .
 9.000     14.1996     24.94  .Q     V  .         .         .         .
 9.083     14.3725     25.10  .Q     V  .         .         .         .
 9.167     14.5465     25.27  .Q     V  .         .         .         .
 9.250     14.7217     25.43  .Q     V  .         .         .         .
 9.333     14.8980     25.61  .Q     V  .         .         .         .
 9.417     15.0756     25.78  .Q     V  .         .         .         .
 9.500     15.2543     25.96  .Q     V  .         .         .         .
 9.583     15.4344     26.14  .Q     V  .         .         .         .
 9.667     15.6157     26.33  .Q      V .         .         .         .
 9.750     15.7983     26.51  .Q      V .         .         .         .
 9.833     15.9822     26.71  .Q      V .         .         .         .
 9.917     16.1675     26.90  .Q      V .         .         .         .
10.000     16.3542     27.11  .Q      V .         .         .         .
10.083     16.5423     27.31  .Q      V .         .         .         .
10.167     16.7318     27.52  .Q      V .         .         .         .
10.250     16.9228     27.73  .Q      V .         .         .         .
10.333     17.1153     27.95  .Q      V .         .         .         .
10.417     17.3093     28.17  .Q      V .         .         .         .
10.500     17.5050     28.41  .Q       V.         .         .         .
10.583     17.7022     28.64  .Q       V.         .         .         .
10.667     17.9011     28.88  .Q       V.         .         .         .
10.750     18.1016     29.12  .Q       V.         .         .         .
10.833     18.3039     29.37  .Q       V.         .         .         .
10.917     18.5080     29.63  .Q       V.         .         .         .
11.000     18.7138     29.89  .Q       V.         .         .         .
11.083     18.9216     30.16  .Q       V.         .         .         .
11.167     19.1312     30.44  .Q       V.         .         .         .
11.250     19.3428     30.72  .Q       V.         .         .         .
11.333     19.5563     31.01  .Q        V         .         .         .
11.417     19.7720     31.31  .Q        V         .         .         .
11.500     19.9897     31.62  .Q        V         .         .         .
11.583     20.2096     31.93  .Q        V         .         .         .
11.667     20.4318     32.26  .Q        V         .         .         .
11.750     20.6562     32.59  .Q        V         .         .         .
11.833     20.8831     32.93  .Q        V         .         .         .
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11.917     21.1123     33.28  .Q        V         .         .         .
12.000     21.3441     33.65  .Q        V         .         .         .
12.083     21.5767     33.78  .Q        .V        .         .         .
12.167     21.8025     32.79  .Q        .V        .         .         .
12.250     22.0140     30.70  .Q        .V        .         .         .
12.333     22.2117     28.70  .Q        .V        .         .         .
12.417     22.4038     27.91  .Q        .V        .         .         .
12.500     22.5955     27.82  .Q        .V        .         .         .
12.583     22.7889     28.08  .Q        .V        .         .         .
12.667     22.9848     28.45  .Q        .V        .         .         .
12.750     23.1835     28.85  .Q        .V        .         .         .
12.833     23.3853     29.30  .Q        . V       .         .         .
12.917     23.5904     29.77  .Q        . V       .         .         .
13.000     23.7989     30.28  .Q        . V       .         .         .
13.083     24.0111     30.80  .Q        . V       .         .         .
13.167     24.2270     31.36  .Q        . V       .         .         .
13.250     24.4469     31.93  .Q        . V       .         .         .
13.333     24.6710     32.53  .Q        . V       .         .         .
13.417     24.8993     33.16  .Q        . V       .         .         .
13.500     25.1323     33.82  .Q        . V       .         .         .
13.583     25.3700     34.51  .Q        .  V      .         .         .
13.667     25.6127     35.25  .Q        .  V      .         .         .
13.750     25.8608     36.02  .Q        .  V      .         .         .
13.833     26.1145     36.84  .Q        .  V      .         .         .
13.917     26.3742     37.70  .Q        .  V      .         .         .
14.000     26.6402     38.62  .Q        .  V      .         .         .
14.083     26.9138     39.73  .Q        .  V      .         .         .
14.167     27.2003     41.60  . Q       .  V      .         .         .
14.250     27.5045     44.17  . Q       .   V     .         .         .
14.333     27.8270     46.82  . Q       .   V     .         .         .
14.417     28.1633     48.83  . Q       .   V     .         .         .
14.500     28.5116     50.57  . Q       .   V     .         .         .
14.583     28.8711     52.20  . Q       .   V     .         .         .
14.667     29.2426     53.95  . Q       .    V    .         .         .
14.750     29.6269     55.79  . Q       .    V    .         .         .
14.833     30.0252     57.83  . Q       .    V    .         .         .
14.917     30.4386     60.03  .  Q      .    V    .         .         .
15.000     30.8690     62.50  .  Q      .    V    .         .         .
15.083     31.3180     65.19  .  Q      .     V   .         .         .
15.167     31.7882     68.28  .  Q      .     V   .         .         .
15.250     32.2820     71.70  .  Q      .     V   .         .         .
15.333     32.8034     75.70  .  Q      .     V   .         .         .
15.417     33.3561     80.25  .   Q     .      V  .         .         .
15.500     33.9469     85.79  .   Q     .      V  .         .         .
15.583     34.5830     92.35  .   Q     .      V  .         .         .
15.667     35.2755    100.56  .    Q    .       V .         .         .
15.750     36.0421    111.31  .    Q    .       V .         .         .
15.833     36.9281    128.65  .     Q   .        V.         .         .
15.917     37.9985    155.42  .      Q  .        V.         .         .
16.000     39.3829    201.00  .         Q         V         .         .
16.083     41.5097    308.82  .         .    Q    .V        .         .
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16.167     45.2945    549.55  .         .         .  V   Q  .         .
16.250     50.3114    728.45  .         .         .    V    .     Q   .
16.333     54.8640    661.05  .         .         .       V .  Q      .
16.417     57.6070    398.28  .         .        Q.        V.         .
16.500     59.1987    231.12  .         .Q        .         V         .
16.583     60.1814    142.69  .      Q  .         .         V         .
16.667     60.9167    106.77  .    Q    .         .         .V        .
16.750     61.5336     89.57  .   Q     .         .         .V        .
16.833     62.0593     76.33  .  Q      .         .         .V        .
16.917     62.5187     66.71  .  Q      .         .         . V       .
17.000     62.9320     60.01  .  Q      .         .         . V       .
17.083     63.3141     55.48  . Q       .         .         . V       .
17.167     63.6660     51.09  . Q       .         .         . V       .
17.250     63.9872     46.65  . Q       .         .         . V       .
17.333     64.2813     42.70  . Q       .         .         .  V      .
17.417     64.5557     39.84  .Q        .         .         .  V      .
17.500     64.8150     37.66  .Q        .         .         .  V      .
17.583     65.0622     35.89  .Q        .         .         .  V      .
17.667     65.2988     34.36  .Q        .         .         .  V      .
17.750     65.5260     32.99  .Q        .         .         .  V      .
17.833     65.7447     31.75  .Q        .         .         .  V      .
17.917     65.9557     30.64  .Q        .         .         .  V      .
18.000     66.1597     29.62  .Q        .         .         .   V     .
18.083     66.3589     28.92  .Q        .         .         .   V     .
18.167     66.5615     29.43  .Q        .         .         .   V     .
18.250     66.7755     31.07  .Q        .         .         .   V     .
18.333     67.0006     32.68  .Q        .         .         .   V     .
18.417     67.2286     33.10  .Q        .         .         .   V     .
18.500     67.4549     32.87  .Q        .         .         .   V     .
18.583     67.6776     32.33  .Q        .         .         .   V     .
18.667     67.8962     31.74  .Q        .         .         .   V     .
18.750     68.1109     31.17  .Q        .         .         .    V    .
18.833     68.3217     30.61  .Q        .         .         .    V    .
18.917     68.5287     30.06  .Q        .         .         .    V    .
19.000     68.7321     29.53  .Q        .         .         .    V    .
19.083     68.9320     29.03  .Q        .         .         .    V    .
19.167     69.1286     28.55  .Q        .         .         .    V    .
19.250     69.3220     28.09  .Q        .         .         .    V    .
19.333     69.5125     27.65  .Q        .         .         .    V    .
19.417     69.7000     27.23  .Q        .         .         .    V    .
19.500     69.8848     26.83  .Q        .         .         .    V    .
19.583     70.0668     26.44  .Q        .         .         .     V   .
19.667     70.2464     26.07  .Q        .         .         .     V   .
19.750     70.4234     25.71  .Q        .         .         .     V   .
19.833     70.5981     25.37  .Q        .         .         .     V   .
19.917     70.7705     25.03  .Q        .         .         .     V   .
20.000     70.9408     24.71  .Q        .         .         .     V   .
20.083     71.1088     24.40  .Q        .         .         .     V   .
20.167     71.2748     24.11  .Q        .         .         .     V   .
20.250     71.4389     23.82  .Q        .         .         .     V   .
20.333     71.6010     23.54  .Q        .         .         .     V   .
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20.417     71.7612     23.27  .Q        .         .         .     V   .
20.500     71.9197     23.01  .Q        .         .         .      V  .
20.583     72.0764     22.75  .Q        .         .         .      V  .
20.667     72.2314     22.51  .Q        .         .         .      V  .
20.750     72.3847     22.27  .Q        .         .         .      V  .
20.833     72.5365     22.03  .Q        .         .         .      V  .
20.917     72.6867     21.81  .Q        .         .         .      V  .
21.000     72.8354     21.59  .Q        .         .         .      V  .
21.083     72.9826     21.38  .Q        .         .         .      V  .
21.167     73.1284     21.17  .Q        .         .         .      V  .
21.250     73.2728     20.97  .Q        .         .         .      V  .
21.333     73.4158     20.77  .Q        .         .         .      V  .
21.417     73.5576     20.58  .Q        .         .         .      V  .
21.500     73.6980     20.39  .Q        .         .         .      V  .
21.583     73.8372     20.21  .Q        .         .         .      V  .
21.667     73.9752     20.03  .Q        .         .         .       V .
21.750     74.1119     19.86  Q         .         .         .       V .
21.833     74.2475     19.69  Q         .         .         .       V .
21.917     74.3820     19.52  Q         .         .         .       V .
22.000     74.5153     19.36  Q         .         .         .       V .
22.083     74.6476     19.20  Q         .         .         .       V .
22.167     74.7788     19.05  Q         .         .         .       V .
22.250     74.9089     18.90  Q         .         .         .       V .
22.333     75.0380     18.75  Q         .         .         .       V .
22.417     75.1662     18.60  Q         .         .         .       V .
22.500     75.2933     18.46  Q         .         .         .       V .
22.583     75.4195     18.32  Q         .         .         .       V .
22.667     75.5448     18.19  Q         .         .         .       V .
22.750     75.6692     18.06  Q         .         .         .       V .
22.833     75.7926     17.93  Q         .         .         .        V.
22.917     75.9152     17.80  Q         .         .         .        V.
23.000     76.0369     17.67  Q         .         .         .        V.
23.083     76.1577     17.55  Q         .         .         .        V.
23.167     76.2778     17.43  Q         .         .         .        V.
23.250     76.3970     17.31  Q         .         .         .        V.
23.333     76.5154     17.19  Q         .         .         .        V.
23.417     76.6330     17.08  Q         .         .         .        V.
23.500     76.7499     16.97  Q         .         .         .        V.
23.583     76.8660     16.86  Q         .         .         .        V.
23.667     76.9814     16.75  Q         .         .         .        V.
23.750     77.0960     16.64  Q         .         .         .        V.
23.833     77.2099     16.54  Q         .         .         .        V.
23.917     77.3231     16.44  Q         .         .         .        V.
24.000     77.4356     16.34  Q         .         .         .        V.
24.083     77.5443     15.78  Q         .         .         .        V.
24.167     77.6344     13.08  Q         .         .         .        V.
24.250     77.6917      8.33  Q         .         .         .        V.
24.333     77.7175      3.74  Q         .         .         .        V.
24.417     77.7277      1.48  Q         .         .         .        V.
24.500     77.7315      0.55  Q         .         .         .        V.
24.583     77.7332      0.25  Q         .         .         .        V.
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  24.667     77.7341      0.13  Q         .         .         .        V.
  24.750     77.7345      0.05  Q         .         .         .        V.
  24.833     77.7346      0.01  Q         .         .         .        V.
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated                Duration
       Peak Flow Rate                     (minutes)
   ======================                 =========
              0%                           1490.0
             10%                             95.0
             20%                             40.0
             30%                             30.0
             40%                             25.0
             50%                             20.0
             60%                             15.0
             70%                             15.0
             80%                             10.0
             90%                             10.0


********************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 5.2
--------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
================================================================================

         THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
         TO ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE
         INTERVALS(Reference: the National Engineering Handbook,
         Hydrology, Chapter 17, page 17-52, August,1972,
         U.S. Department of Commerce).


         ASSUMED REGULAR CHANNEL INFORMATION:
           BASEWIDTH(FT) =   30.00     CHANNEL Z =  2.00
           UPSTREAM ELEVATION(FT) =     938.00
           DOWNSTREAM ELEVATION(FT) =     909.00
           CHANNEL LENGTH(FT) =    2185.72     MANNING'S FACTOR = 0.015
           CONSTANT LOSS RATE(CFS) =    0.00


         CHANNEL ROUTING COEFFICIENT ESTIMATED:
           MAXIMUM INFLOW(CFS) =   728.45
           AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW =   584.33
           CHANNEL NORMAL VELOCITY FOR Q =   584.33 CFS =  13.07 FPS
           ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.885

         MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
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UNIT INTERVALS IS CSTAR = 0.974

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 3) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 3) (CFS)
0.083	0.46	0.23	0.23
0.167	3.07	1.74	1.74
0.250	7.76	5.35	5.35
0.333	12.33	9.95	9.95
0.417	14.61	13.39	13.39
0.500	15.57	15.05	15.05
0.583	15.91	15.73	15.73
0.667	16.08	15.99	15.99
0.750	16.21	16.14	16.14
0.833	16.30	16.25	16.25
0.917	16.36	16.33	16.33
1.000	16.41	16.38	16.38
1.083	16.46	16.43	16.43
1.167	16.51	16.48	16.48
1.250	16.56	16.54	16.54
1.333	16.61	16.59	16.59
1.417	16.67	16.64	16.64
1.500	16.72	16.69	16.69
1.583	16.77	16.75	16.75
1.667	16.83	16.80	16.80
1.750	16.88	16.85	16.85
1.833	16.94	16.91	16.91
1.917	16.99	16.96	16.96
2.000	17.05	17.02	17.02
2.083	17.10	17.08	17.08
2.167	17.16	17.13	17.13
2.250	17.22	17.19	17.19
2.333	17.28	17.25	17.25
2.417	17.34	17.31	17.31
2.500	17.40	17.36	17.36
2.583	17.45	17.42	17.42
2.667	17.52	17.48	17.48
2.750	17.58	17.54	17.54
2.833	17.64	17.61	17.61
2.917	17.70	17.67	17.67
3.000	17.76	17.73	17.73
3.083	17.82	17.79	17.79
3.167	17.89	17.86	17.86
3.250	17.95	17.92	17.92
3.333	18.02	17.98	17.98
3.417	18.08	18.05	18.05
3.500	18.15	18.12	18.12
3.583	18.22	18.18	18.18

3.667	18.29	18.25	18.25
3.750	18.35	18.32	18.32
3.833	18.42	18.39	18.39
3.917	18.49	18.46	18.46
4.000	18.56	18.53	18.53
4.083	18.64	18.60	18.60
4.167	18.71	18.67	18.67
4.250	18.78	18.74	18.74
4.333	18.86	18.82	18.82
4.417	18.93	18.89	18.89
4.500	19.01	18.97	18.97
4.583	19.08	19.04	19.04
4.667	19.16	19.12	19.12
4.750	19.24	19.20	19.20
4.833	19.32	19.27	19.27
4.917	19.40	19.35	19.35
5.000	19.48	19.43	19.43
5.083	19.56	19.52	19.52
5.167	19.64	19.60	19.60
5.250	19.72	19.68	19.68
5.333	19.81	19.76	19.76
5.417	19.89	19.85	19.85
5.500	19.98	19.94	19.94
5.583	20.07	20.02	20.02
5.667	20.16	20.11	20.11
5.750	20.25	20.20	20.20
5.833	20.34	20.29	20.29
5.917	20.43	20.38	20.38
6.000	20.52	20.48	20.48
6.083	20.62	20.57	20.57
6.167	20.71	20.66	20.66
6.250	20.81	20.76	20.76
6.333	20.91	20.86	20.86
6.417	21.01	20.96	20.96
6.500	21.11	21.06	21.06
6.583	21.21	21.16	21.16
6.667	21.32	21.26	21.26
6.750	21.42	21.37	21.37
6.833	21.53	21.47	21.47
6.917	21.63	21.58	21.58
7.000	21.74	21.69	21.69
7.083	21.85	21.80	21.80
7.167	21.97	21.91	21.91
7.250	22.08	22.02	22.02
7.333	22.20	22.14	22.14
7.417	22.32	22.25	22.25
7.500	22.44	22.37	22.37
7.583	22.56	22.49	22.49
7.667	22.68	22.62	22.62
7.750	22.80	22.74	22.74
7.833	22.93	22.86	22.86

7.917	23.06	22.99	22.99
8.000	23.19	23.12	23.12
8.083	23.32	23.25	23.25
8.167	23.46	23.39	23.39
8.250	23.59	23.52	23.52
8.333	23.73	23.66	23.66
8.417	23.87	23.80	23.80
8.500	24.02	23.94	23.94
8.583	24.17	24.09	24.09
8.667	24.32	24.24	24.24
8.750	24.47	24.39	24.39
8.833	24.62	24.54	24.54
8.917	24.78	24.70	24.70
9.000	24.94	24.85	24.85
9.083	25.10	25.01	25.01
9.167	25.27	25.18	25.18
9.250	25.43	25.35	25.35
9.333	25.61	25.52	25.52
9.417	25.78	25.69	25.69
9.500	25.96	25.87	25.87
9.583	26.14	26.05	26.05
9.667	26.33	26.23	26.23
9.750	26.51	26.42	26.42
9.833	26.71	26.61	26.61
9.917	26.90	26.80	26.80
10.000	27.11	27.00	27.00
10.083	27.31	27.20	27.20
10.167	27.52	27.41	27.41
10.250	27.73	27.62	27.62
10.333	27.95	27.84	27.84
10.417	28.17	28.06	28.06
10.500	28.41	28.29	28.29
10.583	28.64	28.52	28.52
10.667	28.88	28.75	28.75
10.750	29.12	28.99	28.99
10.833	29.37	29.24	29.24
10.917	29.63	29.50	29.50
11.000	29.89	29.76	29.76
11.083	30.16	30.02	30.02
11.167	30.44	30.29	30.29
11.250	30.72	30.57	30.57
11.333	31.01	30.86	30.86
11.417	31.31	31.15	31.15
11.500	31.62	31.46	31.46
11.583	31.93	31.77	31.77
11.667	32.26	32.09	32.09
11.750	32.59	32.42	32.42
11.833	32.93	32.75	32.75
11.917	33.28	33.10	33.10
12.000	33.65	33.46	33.46
12.083	33.78	33.71	33.71

12.167	32.79	33.29	33.29
12.250	30.70	31.77	31.77
12.333	28.70	29.74	29.74
12.417	27.91	28.34	28.34
12.500	27.82	27.88	27.88
12.583	28.08	27.95	27.95
12.667	28.45	28.26	28.26
12.750	28.85	28.65	28.65
12.833	29.30	29.07	29.07
12.917	29.77	29.53	29.53
13.000	30.28	30.02	30.02
13.083	30.80	30.53	30.53
13.167	31.36	31.07	31.07
13.250	31.93	31.63	31.63
13.333	32.53	32.22	32.22
13.417	33.16	32.83	32.83
13.500	33.82	33.48	33.48
13.583	34.51	34.16	34.16
13.667	35.25	34.87	34.87
13.750	36.02	35.62	35.62
13.833	36.84	36.41	36.41
13.917	37.70	37.25	37.25
14.000	38.62	38.14	38.14
14.083	39.73	39.16	39.16
14.167	41.60	40.64	40.64
14.250	44.17	42.84	42.84
14.333	46.82	45.44	45.44
14.417	48.83	47.78	47.78
14.500	50.57	49.66	49.66
14.583	52.20	51.35	51.35
14.667	53.95	53.04	53.04
14.750	55.79	54.83	54.83
14.833	57.83	56.77	56.77
14.917	60.03	58.89	58.89
15.000	62.50	61.22	61.22
15.083	65.19	63.79	63.79
15.167	68.28	66.68	66.68
15.250	71.70	69.93	69.93
15.333	75.70	73.63	73.63
15.417	80.25	77.89	77.89
15.500	85.79	82.92	82.92
15.583	92.35	88.95	88.95
15.667	100.56	96.31	96.31
15.750	111.31	105.75	105.75
15.833	128.65	119.72	119.72
15.917	155.42	141.63	141.63
16.000	201.00	177.56	177.56
16.083	308.82	253.60	253.60
16.167	549.55	426.18	426.18
16.250	728.45	634.62	634.62
16.333	661.05	692.73	692.73

16.417	398.28	532.19	532.19
16.500	231.12	319.28	319.28
16.583	142.69	189.78	189.78
16.667	106.77	126.19	126.19
16.750	89.57	98.79	98.79
16.833	76.33	83.28	83.28
16.917	66.71	71.76	71.76
17.000	60.01	63.53	63.53
17.083	55.48	57.87	57.87
17.167	51.09	53.38	53.38
17.250	46.65	48.96	48.96
17.333	42.70	44.76	44.76
17.417	39.84	41.34	41.34
17.500	37.66	38.80	38.80
17.583	35.89	36.81	36.81
17.667	34.36	35.16	35.16
17.750	32.99	33.70	33.70
17.833	31.75	32.40	32.40
17.917	30.64	31.22	31.22
18.000	29.62	30.15	30.15
18.083	28.92	29.29	29.29
18.167	29.43	29.18	29.18
18.250	31.07	30.23	30.23
18.333	32.68	31.85	31.85
18.417	33.10	32.87	32.87
18.500	32.87	32.98	32.98
18.583	32.33	32.61	32.61
18.667	31.74	32.05	32.05
18.750	31.17	31.47	31.47
18.833	30.61	30.90	30.90
18.917	30.06	30.34	30.34
19.000	29.53	29.80	29.80
19.083	29.03	29.29	29.29
19.167	28.55	28.80	28.80
19.250	28.09	28.33	28.33
19.333	27.65	27.88	27.88
19.417	27.23	27.45	27.45
19.500	26.83	27.04	27.04
19.583	26.44	26.64	26.64
19.667	26.07	26.26	26.26
19.750	25.71	25.90	25.90
19.833	25.37	25.55	25.55
19.917	25.03	25.21	25.21
20.000	24.71	24.88	24.88
20.083	24.40	24.57	24.57
20.167	24.11	24.26	24.26
20.250	23.82	23.97	23.97
20.333	23.54	23.68	23.68
20.417	23.27	23.41	23.41
20.500	23.01	23.14	23.14
20.583	22.75	22.88	22.88

20.667	22.51	22.63	22.63
20.750	22.27	22.39	22.39
20.833	22.03	22.16	22.16
20.917	21.81	21.93	21.93
21.000	21.59	21.70	21.70
21.083	21.38	21.49	21.49
21.167	21.17	21.28	21.28
21.250	20.97	21.07	21.07
21.333	20.77	20.87	20.87
21.417	20.58	20.68	20.68
21.500	20.39	20.49	20.49
21.583	20.21	20.30	20.30
21.667	20.03	20.12	20.12
21.750	19.86	19.95	19.95
21.833	19.69	19.78	19.78
21.917	19.52	19.61	19.61
22.000	19.36	19.45	19.45
22.083	19.20	19.29	19.29
22.167	19.05	19.13	19.13
22.250	18.90	18.98	18.98
22.333	18.75	18.83	18.83
22.417	18.60	18.68	18.68
22.500	18.46	18.54	18.54
22.583	18.32	18.40	18.40
22.667	18.19	18.26	18.26
22.750	18.06	18.12	18.12
22.833	17.93	17.99	17.99
22.917	17.80	17.86	17.86
23.000	17.67	17.74	17.74
23.083	17.55	17.61	17.61
23.167	17.43	17.49	17.49
23.250	17.31	17.37	17.37
23.333	17.19	17.25	17.25
23.417	17.08	17.14	17.14
23.500	16.97	17.03	17.03
23.583	16.86	16.92	16.92
23.667	16.75	16.81	16.81
23.750	16.64	16.70	16.70
23.833	16.54	16.59	16.59
23.917	16.44	16.49	16.49
24.000	16.34	16.39	16.39

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PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 77.735 AF

OUTFLOW VOLUME = 77.735 AF

LOSS VOLUME = 0.000 AF

****

FLOW PROCESS FROM NODE 101.00 TO NODE 101.00 IS CODE = 7

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


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

            STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
--------------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      225.0     450.0     675.0     900.0
--------------------------------------------------------------------------------
   0.083      0.0017      0.25  Q         .         .         .         .
   0.167      0.0148      1.90  Q         .         .         .         .
   0.250      0.0557      5.93  Q         .         .         .         .
   0.333      0.1339     11.36  Q         .         .         .         .
   0.417      0.2438     15.96  Q         .         .         .         .
   0.500      0.3742     18.93  Q         .         .         .         .
   0.583      0.5184     20.94  Q         .         .         .         .
   0.667      0.6733     22.49  Q         .         .         .         .
   0.750      0.8375     23.85  VQ        .         .         .         .
   0.833      1.0103     25.09  VQ        .         .         .         .
   0.917      1.1909     26.22  VQ        .         .         .         .
   1.000      1.3787     27.27  VQ        .         .         .         .
   1.083      1.5732     28.24  VQ        .         .         .         .
   1.167      1.7739     29.14  VQ        .         .         .         .
   1.250      1.9804     29.99  VQ        .         .         .         .
   1.333      2.1924     30.78  VQ        .         .         .         .
   1.417      2.4095     31.52  VQ        .         .         .         .
   1.500      2.6313     32.21  VQ        .         .         .         .
   1.583      2.8577     32.87  VQ        .         .         .         .
   1.667      3.0882     33.48  VQ        .         .         .         .
   1.750      3.3228     34.05  VQ        .         .         .         .
   1.833      3.5610     34.60  VQ        .         .         .         .
   1.917      3.8028     35.11  VQ        .         .         .         .
   2.000      4.0479     35.59  VQ        .         .         .         .
   2.083      4.2962     36.05  VQ        .         .         .         .
   2.167      4.5475     36.48  VQ        .         .         .         .
   2.250      4.8016     36.89  .Q        .         .         .         .
   2.333      5.0583     37.28  .Q        .         .         .         .
   2.417      5.3177     37.66  .Q        .         .         .         .
   2.500      5.5795     38.01  .Q        .         .         .         .
   2.583      5.8436     38.35  .Q        .         .         .         .
   2.667      6.1100     38.68  .Q        .         .         .         .
   2.750      6.3785     38.99  .Q        .         .         .         .
   2.833      6.6491     39.29  .Q        .         .         .         .
   2.917      6.9216     39.58  .Q        .         .         .         .
   3.000      7.1961     39.86  .Q        .         .         .         .
```

3.083	7.4725	40.12	.Q	.	.	.	.
3.167	7.7506	40.39	.Q	.	.	.	.
3.250	8.0305	40.64	.Q	.	.	.	.
3.333	8.3121	40.89	.Q	.	.	.	.
3.417	8.5953	41.13	.Q	.	.	.	.
3.500	8.8802	41.36	.Q	.	.	.	.
3.583	9.1666	41.59	.Q	.	.	.	.
3.667	9.4546	41.82	.QV	.	.	.	.
3.750	9.7441	42.04	.QV	.	.	.	.
3.833	10.0351	42.25	.QV	.	.	.	.
3.917	10.3276	42.47	.QV	.	.	.	.
4.000	10.6215	42.68	.QV	.	.	.	.
4.083	10.9169	42.89	.QV	.	.	.	.
4.167	11.2137	43.10	.QV	.	.	.	.
4.250	11.5119	43.30	.QV	.	.	.	.
4.333	11.8115	43.50	.QV	.	.	.	.
4.417	12.1125	43.71	.QV	.	.	.	.
4.500	12.4149	43.91	.QV	.	.	.	.
4.583	12.7187	44.11	.QV	.	.	.	.
4.667	13.0238	44.31	.QV	.	.	.	.
4.750	13.3303	44.51	.QV	.	.	.	.
4.833	13.6382	44.71	.QV	.	.	.	.
4.917	13.9475	44.91	.QV	.	.	.	.
5.000	14.2582	45.11	. QV	.	.	.	.
5.083	14.5702	45.31	. QV	.	.	.	.
5.167	14.8836	45.51	. QV	.	.	.	.
5.250	15.1984	45.71	. QV	.	.	.	.
5.333	15.5146	45.91	. QV	.	.	.	.
5.417	15.8322	46.12	. QV	.	.	.	.
5.500	16.1512	46.32	. QV	.	.	.	.
5.583	16.4716	46.53	. QV	.	.	.	.
5.667	16.7935	46.73	. QV	.	.	.	.
5.750	17.1168	46.94	. QV	.	.	.	.
5.833	17.4415	47.15	. QV	.	.	.	.
5.917	17.7677	47.36	. QV	.	.	.	.
6.000	18.0954	47.58	. QV	.	.	.	.
6.083	18.4246	47.79	. QV	.	.	.	.
6.167	18.7552	48.01	. QV	.	.	.	.
6.250	19.0874	48.23	. Q V	.	.	.	.
6.333	19.4211	48.45	. Q V	.	.	.	.
6.417	19.7564	48.68	. Q V	.	.	.	.
6.500	20.0932	48.91	. Q V	.	.	.	.
6.583	20.4316	49.13	. Q V	.	.	.	.
6.667	20.7716	49.37	. Q V	.	.	.	.
6.750	21.1132	49.60	. Q V	.	.	.	.
6.833	21.4564	49.84	. Q V	.	.	.	.
6.917	21.8013	50.08	. Q V	.	.	.	.
7.000	22.1478	50.32	. Q V	.	.	.	.
7.083	22.4961	50.57	. Q V	.	.	.	.
7.167	22.8461	50.81	. Q V	.	.	.	.
7.250	23.1978	51.07	. Q V	.	.	.	.

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 7.333     23.5512     51.32  . Q  V    .         .         .         .
 7.417     23.9064     51.58  . Q  V    .         .         .         .
 7.500     24.2635     51.84  . Q  V    .         .         .         .
 7.583     24.6223     52.11  . Q  V    .         .         .         .
 7.667     24.9831     52.38  . Q  V    .         .         .         .
 7.750     25.3457     52.65  . Q  V    .         .         .         .
 7.833     25.7102     52.93  . Q  V    .         .         .         .
 7.917     26.0766     53.21  . Q  V    .         .         .         .
 8.000     26.4450     53.49  . Q  V    .         .         .         .
 8.083     26.8154     53.78  . Q  V    .         .         .         .
 8.167     27.1878     54.07  . Q  V    .         .         .         .
 8.250     27.5623     54.37  . Q  V    .         .         .         .
 8.333     27.9388     54.67  . Q  V    .         .         .         .
 8.417     28.3175     54.98  . Q   V   .         .         .         .
 8.500     28.6983     55.29  . Q   V   .         .         .         .
 8.583     29.0813     55.61  . Q   V   .         .         .         .
 8.667     29.4664     55.93  . Q   V   .         .         .         .
 8.750     29.8539     56.26  . Q   V   .         .         .         .
 8.833     30.2436     56.59  . Q   V   .         .         .         .
 8.917     30.6357     56.93  . Q   V   .         .         .         .
 9.000     31.0301     57.27  . Q   V   .         .         .         .
 9.083     31.4269     57.62  . Q   V   .         .         .         .
 9.167     31.8262     57.97  . Q   V   .         .         .         .
 9.250     32.2279     58.33  . Q   V   .         .         .         .
 9.333     32.6322     58.70  . Q   V   .         .         .         .
 9.417     33.0390     59.07  . Q    V  .         .         .         .
 9.500     33.4485     59.45  . Q    V  .         .         .         .
 9.583     33.8606     59.84  . Q    V  .         .         .         .
 9.667     34.2755     60.24  . Q    V  .         .         .         .
 9.750     34.6931     60.64  . Q    V  .         .         .         .
 9.833     35.1136     61.05  . Q    V  .         .         .         .
 9.917     35.5369     61.47  . Q    V  .         .         .         .
10.000     35.9631     61.89  . Q    V  .         .         .         .
10.083     36.3923     62.32  . Q    V  .         .         .         .
10.167     36.8246     62.77  . Q    V  .         .         .         .
10.250     37.2600     63.22  . Q    V  .         .         .         .
10.333     37.6985     63.68  . Q     V .         .         .         .
10.417     38.1403     64.15  . Q     V .         .         .         .
10.500     38.5854     64.63  . Q     V .         .         .         .
10.583     39.0339     65.12  . Q     V .         .         .         .
10.667     39.4858     65.62  . Q     V .         .         .         .
10.750     39.9412     66.13  . Q     V .         .         .         .
10.833     40.4002     66.65  . Q     V .         .         .         .
10.917     40.8629     67.18  . Q     V .         .         .         .
11.000     41.3294     67.73  .  Q    V .         .         .         .
11.083     41.7997     68.29  .  Q    V .         .         .         .
11.167     42.2739     68.86  .  Q    V .         .         .         .
11.250     42.7522     69.45  .  Q     V.         .         .         .
11.333     43.2346     70.05  .  Q     V.         .         .         .
11.417     43.7213     70.66  .  Q     V.         .         .         .
11.500     44.2123     71.29  .  Q     V.         .         .         .
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11.583     44.7077     71.94  .  Q     V.          .          .          .
11.667     45.2077     72.60  .  Q     V.          .          .          .
11.750     45.7124     73.28  .  Q     V.          .          .          .
11.833     46.2219     73.98  .  Q     V.          .          .          .
11.917     46.7364     74.70  .  Q     V.          .          .          .
12.000     47.2559     75.44  .  Q      V          .          .          .
12.083     47.7798     76.07  .  Q      V          .          .          .
12.167     48.3030     75.97  .  Q      V          .          .          .
12.250     48.8171     74.64  .  Q      V          .          .          .
12.333     49.3170     72.59  .  Q      V          .          .          .
12.417     49.8060     71.00  .  Q      V          .          .          .
12.500     50.2901     70.29  .  Q      V          .          .          .
12.583     50.7730     70.11  .  Q      V          .          .          .
12.667     51.2565     70.21  .  Q      V          .          .          .
12.750     51.7416     70.43  .  Q      V          .          .          .
12.833     52.2288     70.75  .  Q      .V         .          .          .
12.917     52.7189     71.15  .  Q      .V         .          .          .
13.000     53.2123     71.65  .  Q      .V         .          .          .
13.083     53.7096     72.21  .  Q      .V         .          .          .
13.167     54.2114     72.86  .  Q      .V         .          .          .
13.250     54.7181     73.57  .  Q      .V         .          .          .
13.333     55.2303     74.37  .  Q      .V         .          .          .
13.417     55.7485     75.24  .  Q      .V         .          .          .
13.500     56.2732     76.19  .  Q      .V         .          .          .
13.583     56.8050     77.21  .  Q      . V        .          .          .
13.667     57.3444     78.33  .  Q      . V        .          .          .
13.750     57.8921     79.52  .  Q      . V        .          .          .
13.833     58.4487     80.81  .  Q      . V        .          .          .
13.917     59.0148     82.20  .  Q      . V        .          .          .
14.000     59.5911     83.68  .  Q      . V        .          .          .
14.083     60.1789     85.35  .  Q      . V        .          .          .
14.167     60.7820     87.57  .  Q      . V        .          .          .
14.250     61.4064     90.66  .   Q     .  V       .          .          .
14.333     62.0560     94.32  .   Q     .  V       .          .          .
14.417     62.7301     97.87  .   Q     .  V       .          .          .
14.500     63.4263    101.10  .   Q     .  V       .          .          .
14.583     64.1440    104.21  .   Q     .  V       .          .          .
14.667     64.8836    107.39  .   Q     .  V       .          .          .
14.750     65.6463    110.75  .   Q     .  V       .          .          .
14.833     66.4337    114.33  .    Q    .   V      .          .          .
14.917     67.2477    118.19  .    Q    .   V      .          .          .
15.000     68.0904    122.36  .    Q    .   V      .          .          .
15.083     68.9643    126.90  .    Q    .   V      .          .          .
15.167     69.8727    131.90  .    Q    .   V      .          .          .
15.250     70.8192    137.43  .     Q   .    V     .          .          .
15.333     71.8083    143.61  .     Q   .    V     .          .          .
15.417     72.8455    150.61  .     Q   .    V     .          .          .
15.500     73.9383    158.67  .      Q  .    V     .          .          .
15.583     75.0961    168.12  .      Q  .    V     .          .          .
15.667     76.3317    179.40  .      Q  .     V    .          .          .
15.750     77.6638    193.42  .       Q .     V    .          .          .
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15.833     79.1306    212.98  .        Q.     V   .         .         .
15.917     80.7979    242.09  .         Q      V  .         .         .
16.000     82.7763    287.27  .         . Q    V  .         .         .
16.083     85.3555    374.50  .         .     Q V .         .         .
16.167     89.2482    565.22  .         .       V .    Q    .         .
16.250     94.7798    803.19  .         .         V         .    Q    .
16.333    100.9133    890.59  .         .         .V        .        Q.
16.417    106.0701    748.76  .         .         . V       .  Q      .
16.500    109.8274    545.56  .         .         .  VQ     .         .
16.583    112.7174    419.63  .         .       Q .  V      .         .
16.667    115.1700    356.11  .         .    Q    .   V     .         .
16.750    117.4217    326.95  .         .   Q     .   V     .         .
16.833    119.5491    308.91  .         .  Q       .    V    .         .
16.917    121.5771    294.46  .         .  Q       .    V    .         .
17.000    123.5261    282.99  .         . Q        .     V   .         .
17.083    125.4122    273.87  .         . Q        .     V   .         .
17.167    127.2428    265.80  .         .Q         .      V  .         .
17.250    129.0177    257.72  .         .Q         .      V  .         .
17.333    130.7382    249.81  .         .Q         .      V  .         .
17.417    132.4093    242.64  .         Q          .       V .         .
17.500    134.0370    236.35  .         Q          .       V .         .
17.583    135.6252    230.61  .         Q          .       V .         .
17.667    137.1676    223.95  .        Q.          .        V.         .
17.750    138.6576    216.35  .        Q.          .        V.         .
17.833    140.0976    209.08  .        Q.          .        V.         .
17.917    141.4896    202.13  .       Q .          .         V         .
18.000    142.8358    195.46  .       Q .          .         V         .
18.083    144.1387    189.19  .       Q .          .         V         .
18.167    145.4052    183.89  .       Q .          .         V         .
18.250    146.6450    180.02  .       Q .          .         .V        .
18.333    147.8640    177.00  .      Q  .          .         .V        .
18.417    149.0600    173.66  .      Q  .          .         .V        .
18.500    150.2282    169.63  .      Q  .          .         .V        .
18.583    151.3665    165.28  .      Q  .          .         . V       .
18.667    152.4747    160.90  .      Q  .          .         . V       .
18.750    153.5534    156.63  .     Q   .          .         . V       .
18.833    154.6037    152.50  .     Q   .          .         . V       .
18.917    155.6264    148.50  .     Q   .          .         .  V      .
19.000    156.6225    144.63  .     Q   .          .         .  V      .
19.083    157.5853    139.80  .     Q   .          .         .  V      .
19.167    158.5086    134.06  .    Q    .          .         .  V      .
19.250    159.3943    128.61  .    Q    .          .         .  V      .
19.333    160.2450    123.51  .    Q    .          .         .   V     .
19.417    161.0628    118.74  .    Q    .          .         .   V     .
19.500    161.8498    114.27  .    Q    .          .         .   V     .
19.583    162.6080    110.09  .   Q     .          .         .   V     .
19.667    163.3392    106.17  .   Q     .          .         .   V     .
19.750    164.0450    102.49  .   Q     .          .         .   V     .
19.833    164.7271     99.04  .   Q     .          .         .   V     .
19.917    165.3870     95.81  .   Q     .          .         .    V    .
20.000    166.0259     92.77  .   Q     .          .         .    V    .
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  20.083    166.6451     89.91  .  Q      .         .         .    V    .
  20.167    167.2459     87.23  .  Q      .         .         .    V    .
  20.250    167.8292     84.71  .  Q      .         .         .    V    .
  20.333    168.3963     82.33  .  Q      .         .         .    V    .
  20.417    168.9479     80.09  .  Q      .         .         .    V    .
  20.500    169.4850     77.99  .  Q      .         .         .     V   .
  20.583    170.0084     76.00  .  Q      .         .         .     V   .
  20.667    170.5189     74.13  .  Q      .         .         .     V   .
  20.750    171.0173     72.36  .  Q      .         .         .     V   .
  20.833    171.5041     70.69  .  Q      .         .         .     V   .
  20.917    171.9800     69.11  .  Q      .         .         .     V   .
  21.000    172.4457     67.61  .  Q      .         .         .     V   .
  21.083    172.9016     66.20  . Q       .         .         .     V   .
  21.167    173.3482     64.86  . Q       .         .         .     V   .
  21.250    173.7861     63.59  . Q       .         .         .     V   .
  21.333    174.2158     62.38  . Q       .         .         .      V  .
  21.417    174.6375     61.24  . Q       .         .         .      V  .
  21.500    175.0517     60.15  . Q       .         .         .      V  .
  21.583    175.4588     59.11  . Q       .         .         .      V  .
  21.667    175.8592     58.13  . Q       .         .         .      V  .
  21.750    176.2530     57.19  . Q       .         .         .      V  .
  21.833    176.6407     56.30  . Q       .         .         .      V  .
  21.917    177.0226     55.44  . Q       .         .         .      V  .
  22.000    177.3988     54.63  . Q       .         .         .      V  .
  22.083    177.7696     53.85  . Q       .         .         .      V  .
  22.167    178.1354     53.10  . Q       .         .         .      V  .
  22.250    178.4962     52.39  . Q       .         .         .      V  .
  22.333    178.8523     51.71  . Q       .         .         .      V  .
  22.417    179.2039     51.05  . Q       .         .         .       V .
  22.500    179.5511     50.42  . Q       .         .         .       V .
  22.583    179.8943     49.82  . Q       .         .         .       V .
  22.667    180.2334     49.24  . Q       .         .         .       V .
  22.750    180.5687     48.68  . Q       .         .         .       V .
  22.833    180.9002     48.15  . Q       .         .         .       V .
  22.917    181.2283     47.63  . Q       .         .         .       V .
  23.000    181.5528     47.13  . Q       .         .         .       V .
  23.083    181.8741     46.65  . Q       .         .         .       V .
  23.167    182.1921     46.18  . Q       .         .         .       V .
  23.250    182.5071     45.73  . Q       .         .         .       V .
  23.333    182.8191     45.30  . Q       .         .         .       V .
  23.417    183.1281     44.88  .Q        .         .         .       V .
  23.500    183.4344     44.47  .Q        .         .         .       V .
  23.583    183.7379     44.07  .Q        .         .         .        V.
  23.667    184.0388     43.69  .Q        .         .         .        V.
  23.750    184.3372     43.32  .Q        .         .         .        V.
  23.833    184.6330     42.96  .Q        .         .         .        V.
  23.917    184.9265     42.61  .Q        .         .         .        V.
  24.000    185.2176     42.27  .Q        .         .         .        V.
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
```

an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.0
10%	355.0
20%	160.0
30%	70.0
40%	35.0
50%	25.0
60%	25.0
70%	15.0
80%	15.0
90%	10.0

END OF FLOODSCx ROUTING ANALYSIS

PROPOSED MITIGATED 2-YEAR REGIONAL ANALYSIS TRIBUTARY TO EX DBL 6X6 POC #1 / NODE 101

LOSS RATE CALCULATIONS

PROJECT REGIONAL
2-YR ANALYSIS
NODE 101 (MITIGATED)

```
 ************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                    AND LOW LOSS FRACTION ESTIMATIONS
 ************************************************************************
         (C) Copyright 1989-2015 Advanced Engineering Software (aes)
             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                           Analysis prepared by:


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

  Problem Descriptions:
   Grand Terrace
   Barton+Deberry WS-Prop-2year
   2022-03-14
 ========================================================================
 *** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
     AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

     TOTAL 24-HOUR DURATION RAINFALL DEPTH =     1.80 (inches)
```

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	30.16	20.00	32.	0.975	0.701
2	23.43	20.00	69.	0.566	0.717
3	57.55	10.00	32.	0.975	0.788
4	37.59	10.00	69.	0.566	0.797
5	121.44	50.00	32.	0.975	0.438
6	93.70	50.00	69.	0.566	0.480
7	0.84	50.00	75.	0.470	0.518
8	0.91	100.00	50.	0.820	0.000
9	23.00	100.00	69.	0.566	0.084
10	0.56	100.00	79.	0.398	0.228
11	74.01	100.00	83.	0.326	0.312
12	14.07	60.00	32.	0.975	0.350
13	1.07	60.00	69.	0.566	0.401
14	58.07	10.00	32.	0.975	0.788
15	41.55	10.00	69.	0.566	0.797

```
     TOTAL AREA (Acres) =    577.95

     AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.271

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

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

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

 Problem Descriptions:
  Grand Terrace
  Van Buren-Prop-2year
  2022-03-14
==========================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     1.80 (inches)
```

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	35.19	20.00	32.	0.975	0.701
2	28.06	20.00	69.	0.566	0.717
3	29.80	10.00	32.	0.975	0.788
4	27.82	10.00	69.	0.566	0.797
5	118.35	50.00	32.	0.975	0.438
6	62.06	50.00	69.	0.566	0.480
7	0.77	50.00	75.	0.470	0.518
8	9.14	100.00	50.	0.820	0.000
9	4.16	100.00	69.	0.566	0.084
10	16.79	100.00	79.	0.398	0.228
11	29.95	100.00	83.	0.326	0.312
12	20.33	60.00	32.	0.975	0.350
13	2.38	60.00	69.	0.566	0.401
14	44.08	10.00	32.	0.975	0.788
15	1.28	10.00	56.	0.748	0.789
16	36.16	10.00	69.	0.566	0.797

```
    TOTAL AREA (Acres) =    466.32

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.290

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.446
==========================================================================
```

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




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

 Problem Descriptions:
  Grand Terrace
  Canal-Prop-2year
  2022-03-14
=============================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     1.80 (inches)

    SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)    YIELD
         1          0.80       10.00            32.       0.975       0.788
         2          1.95       10.00            69.       0.566       0.797
         3        168.79       50.00            32.       0.975       0.438
         4          7.88       50.00            69.       0.566       0.480
         5          0.52       50.00            75.       0.470       0.518
         6         25.58      100.00            50.       0.820       0.000
         7          0.97      100.00            79.       0.398       0.228
         8        120.61      100.00            83.       0.326       0.312
         9         36.67       60.00            32.       0.975       0.350
        10         34.51       60.00            69.       0.566       0.401
        11         52.37       10.00            32.       0.975       0.788
        12          1.65       10.00            69.       0.566       0.797

    TOTAL AREA (Acres) =    452.30

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.407

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.586
=============================================================================
```

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

             F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* GRAND TERRACE GATEWAY                                                 *
* REGIONAL PROPOSED MITIGATED CONDITION - 2 YR                          *
* 2023-03-16                                                            *
 ************************************************************************

  FILE NAME: REGPR2.DAT
  TIME/DATE OF STUDY: 16:51 03/16/2023


************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    303.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     466.320 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.240 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.290
         LOW LOSS FRACTION = 0.446
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.22
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.45
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  0.87
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  1.80
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.979
30-MINUTE FACTOR = 0.979
1-HOUR FACTOR = 0.979
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 34.722

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.308	130.143
2	14.779	703.335
3	38.225	1322.270
4	66.233	1579.474
5	84.561	1033.643
6	93.250	490.001
7	97.213	223.544
8	98.477	71.232
9	99.128	36.719
10	99.651	29.519
11	99.913	14.759
12	100.000	4.920

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 28.1205
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 41.7404

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	125.0	250.0	375.0	500.0
0.083	0.0011	0.16	Q	.	.	.	.
0.167	0.0082	1.03	Q	.	.	.	.
0.250	0.0265	2.66	Q	.	.	.	.
0.333	0.0583	4.61	Q	.	.	.	.
0.417	0.0989	5.90	Q	.	.	.	.
0.500	0.1438	6.52	Q	.	.	.	.
0.583	0.1908	6.82	Q	.	.	.	.
0.667	0.2385	6.93	Q	.	.	.	.
0.750	0.2867	7.00	Q	.	.	.	.
0.833	0.3354	7.06	Q	.	.	.	.
0.917	0.3843	7.10	Q	.	.	.	.
1.000	0.4334	7.14	Q	.	.	.	.
1.083	0.4827	7.16	Q	.	.	.	.
1.167	0.5322	7.19	Q	.	.	.	.
1.250	0.5819	7.21	Q	.	.	.	.
1.333	0.6317	7.24	Q	.	.	.	.
1.417	0.6818	7.26	Q	.	.	.	.
1.500	0.7320	7.29	Q	.	.	.	.
1.583	0.7823	7.32	Q	.	.	.	.
1.667	0.8329	7.34	Q	.	.	.	.
1.750	0.8837	7.37	Q	.	.	.	.
1.833	0.9346	7.40	Q	.	.	.	.
1.917	0.9857	7.42	Q	.	.	.	.
2.000	1.0371	7.45	Q	.	.	.	.
2.083	1.0886	7.48	QV	.	.	.	.
2.167	1.1403	7.51	QV	.	.	.	.
2.250	1.1922	7.54	QV	.	.	.	.
2.333	1.2443	7.57	QV	.	.	.	.
2.417	1.2966	7.60	QV	.	.	.	.
2.500	1.3491	7.62	QV	.	.	.	.
2.583	1.4018	7.65	QV	.	.	.	.
2.667	1.4548	7.68	QV	.	.	.	.
2.750	1.5079	7.71	QV	.	.	.	.
2.833	1.5612	7.75	QV	.	.	.	.
2.917	1.6148	7.78	QV	.	.	.	.
3.000	1.6686	7.81	QV	.	.	.	.
3.083	1.7226	7.84	QV	.	.	.	.
3.167	1.7768	7.87	QV	.	.	.	.
3.250	1.8312	7.90	QV	.	.	.	.
3.333	1.8859	7.94	QV	.	.	.	.

3.417	1.9408	7.97	QV	.	.	.	.
3.500	1.9959	8.00	QV	.	.	.	.
3.583	2.0512	8.04	QV	.	.	.	.
3.667	2.1068	8.07	Q V	.	.	.	.
3.750	2.1626	8.10	Q V	.	.	.	.
3.833	2.2187	8.14	Q V	.	.	.	.
3.917	2.2750	8.17	Q V	.	.	.	.
4.000	2.3315	8.21	Q V	.	.	.	.
4.083	2.3883	8.25	Q V	.	.	.	.
4.167	2.4454	8.28	Q V	.	.	.	.
4.250	2.5027	8.32	Q V	.	.	.	.
4.333	2.5602	8.36	Q V	.	.	.	.
4.417	2.6180	8.39	Q V	.	.	.	.
4.500	2.6761	8.43	Q V	.	.	.	.
4.583	2.7344	8.47	Q V	.	.	.	.
4.667	2.7931	8.51	Q V	.	.	.	.
4.750	2.8519	8.55	Q V	.	.	.	.
4.833	2.9111	8.59	Q V	.	.	.	.
4.917	2.9705	8.63	Q V	.	.	.	.
5.000	3.0302	8.67	Q V	.	.	.	.
5.083	3.0902	8.71	Q V	.	.	.	.
5.167	3.1505	8.75	Q V	.	.	.	.
5.250	3.2111	8.80	Q V	.	.	.	.
5.333	3.2720	8.84	Q V	.	.	.	.
5.417	3.3332	8.88	Q V	.	.	.	.
5.500	3.3946	8.93	Q V	.	.	.	.
5.583	3.4564	8.97	Q V	.	.	.	.
5.667	3.5185	9.02	Q V	.	.	.	.
5.750	3.5809	9.06	Q V	.	.	.	.
5.833	3.6437	9.11	Q V	.	.	.	.
5.917	3.7067	9.16	Q V	.	.	.	.
6.000	3.7701	9.20	Q V	.	.	.	.
6.083	3.8338	9.25	Q V	.	.	.	.
6.167	3.8978	9.30	Q V	.	.	.	.
6.250	3.9622	9.35	Q V	.	.	.	.
6.333	4.0270	9.40	Q V	.	.	.	.
6.417	4.0921	9.45	Q V	.	.	.	.
6.500	4.1575	9.50	Q V	.	.	.	.
6.583	4.2233	9.55	Q V	.	.	.	.
6.667	4.2895	9.61	Q V	.	.	.	.
6.750	4.3560	9.66	Q V	.	.	.	.
6.833	4.4229	9.72	Q V	.	.	.	.
6.917	4.4902	9.77	Q V	.	.	.	.
7.000	4.5579	9.83	Q V	.	.	.	.
7.083	4.6260	9.88	Q V	.	.	.	.
7.167	4.6944	9.94	Q V	.	.	.	.
7.250	4.7633	10.00	Q V	.	.	.	.
7.333	4.8326	10.06	Q V	.	.	.	.
7.417	4.9023	10.12	Q V	.	.	.	.
7.500	4.9724	10.18	Q V	.	.	.	.
7.583	5.0430	10.24	Q V	.	.	.	.

```
 7.667      5.1140     10.31  Q   V     .         .         .         .
 7.750      5.1854     10.37  Q   V     .         .         .         .
 7.833      5.2573     10.44  Q    V    .         .         .         .
 7.917      5.3297     10.50  Q    V    .         .         .         .
 8.000      5.4025     10.57  Q    V    .         .         .         .
 8.083      5.4758     10.64  Q    V    .         .         .         .
 8.167      5.5496     10.71  Q    V    .         .         .         .
 8.250      5.6238     10.78  Q    V    .         .         .         .
 8.333      5.6986     10.86  Q    V    .         .         .         .
 8.417      5.7738     10.93  Q    V    .         .         .         .
 8.500      5.8496     11.00  Q    V    .         .         .         .
 8.583      5.9259     11.08  Q    V    .         .         .         .
 8.667      6.0028     11.16  Q    V    .         .         .         .
 8.750      6.0802     11.24  Q    V    .         .         .         .
 8.833      6.1581     11.32  Q    V    .         .         .         .
 8.917      6.2366     11.40  Q    V    .         .         .         .
 9.000      6.3157     11.48  Q     V   .         .         .         .
 9.083      6.3953     11.57  Q     V   .         .         .         .
 9.167      6.4756     11.65  Q     V   .         .         .         .
 9.250      6.5565     11.74  Q     V   .         .         .         .
 9.333      6.6379     11.83  Q     V   .         .         .         .
 9.417      6.7201     11.92  Q     V   .         .         .         .
 9.500      6.8028     12.02  Q     V   .         .         .         .
 9.583      6.8863     12.11  Q     V   .         .         .         .
 9.667      6.9704     12.21  Q     V   .         .         .         .
 9.750      7.0551     12.31  Q     V   .         .         .         .
 9.833      7.1406     12.41  Q     V   .         .         .         .
 9.917      7.2268     12.52  .Q    V   .         .         .         .
10.000      7.3137     12.62  .Q     V  .         .         .         .
10.083      7.4014     12.73  .Q     V  .         .         .         .
10.167      7.4898     12.84  .Q     V  .         .         .         .
10.250      7.5791     12.95  .Q     V  .         .         .         .
10.333      7.6691     13.07  .Q     V  .         .         .         .
10.417      7.7599     13.19  .Q     V  .         .         .         .
10.500      7.8516     13.31  .Q     V  .         .         .         .
10.583      7.9441     13.43  .Q     V  .         .         .         .
10.667      8.0375     13.56  .Q     V  .         .         .         .
10.750      8.1318     13.69  .Q     V  .         .         .         .
10.833      8.2270     13.83  .Q     V  .         .         .         .
10.917      8.3232     13.96  .Q     V  .         .         .         .
11.000      8.4203     14.10  .Q      V .         .         .         .
11.083      8.5184     14.25  .Q      V .         .         .         .
11.167      8.6176     14.40  .Q      V .         .         .         .
11.250      8.7178     14.55  .Q      V .         .         .         .
11.333      8.8190     14.70  .Q      V .         .         .         .
11.417      8.9214     14.86  .Q      V .         .         .         .
11.500      9.0249     15.03  .Q      V .         .         .         .
11.583      9.1296     15.20  .Q      V .         .         .         .
11.667      9.2355     15.37  .Q      V .         .         .         .
11.750      9.3426     15.55  .Q      V .         .         .         .
11.833      9.4510     15.74  .Q       V.         .         .         .
```

```
11.917     9.5607    15.93  .Q      V.        .        .        .
12.000     9.6718    16.13  .Q      V.        .        .        .
12.083     9.7842    16.32  .Q      V.        .        .        .
12.167     9.8974    16.44  .Q      V.        .        .        .
12.250    10.0109    16.48  .Q      V.        .        .        .
12.333    10.1246    16.51  .Q      V.        .        .        .
12.417    10.2390    16.61  .Q      V.        .        .        .
12.500    10.3546    16.78  .Q      V.        .        .        .
12.583    10.4716    17.00  .Q       V        .        .        .
12.667    10.5904    17.25  .Q       V        .        .        .
12.750    10.7109    17.50  .Q       V        .        .        .
12.833    10.8334    17.78  .Q       V        .        .        .
12.917    10.9577    18.06  .Q       V        .        .        .
13.000    11.0842    18.36  .Q       V        .        .        .
13.083    11.2127    18.67  .Q       V        .        .        .
13.167    11.3435    18.99  .Q       V        .        .        .
13.250    11.4767    19.33  .Q       V        .        .        .
13.333    11.6123    19.69  .Q       .V       .        .        .
13.417    11.7504    20.06  .Q       .V       .        .        .
13.500    11.8912    20.45  .Q       .V       .        .        .
13.583    12.0348    20.85  .Q       .V       .        .        .
13.667    12.1814    21.29  .Q       .V       .        .        .
13.750    12.3312    21.74  .Q       .V       .        .        .
13.833    12.4842    22.22  .Q       .V       .        .        .
13.917    12.6407    22.72  .Q       . V      .        .        .
14.000    12.8009    23.26  .Q       . V      .        .        .
14.083    12.9652    23.85  .Q       . V      .        .        .
14.167    13.1346    24.60  .Q       . V      .        .        .
14.250    13.3101    25.48  . Q      . V      .        .        .
14.333    13.4925    26.48  . Q      . V      .        .        .
14.417    13.6813    27.42  . Q      .  V     .        .        .
14.500    13.8764    28.33  . Q      .  V     .        .        .
14.583    14.0777    29.24  . Q      .  V     .        .        .
14.667    14.2858    30.21  . Q      .  V     .        .        .
14.750    14.5009    31.24  . Q      .  V     .        .        .
14.833    14.7240    32.38  . Q      .   V    .        .        .
14.917    14.9555    33.62  . Q      .   V    .        .        .
15.000    15.1966    35.00  . Q      .   V    .        .        .
15.083    15.4480    36.51  . Q      .   V    .        .        .
15.167    15.7114    38.24  .  Q     .    V   .        .        .
15.250    15.9879    40.15  .  Q     .    V   .        .        .
15.333    16.2798    42.38  .  Q     .    V   .        .        .
15.417    16.5906    45.12  .  Q     .    V   .        .        .
15.500    16.9302    49.31  .  Q     .     V  .        .        .
15.583    17.3095    55.08  .   Q    .     V  .        .        .
15.667    17.7380    62.22  .   Q    .     V  .        .        .
15.750    18.2167    69.50  .    Q   .      V .        .        .
15.833    18.7501    77.45  .     Q  .      V .        .        .
15.917    19.3523    87.43  .     Q  .       V.        .        .
16.000    20.0705   104.29  .       Q.        V.       .        .
16.083    21.1255   153.18  .         . Q      V       .        .
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16.167     23.0109    273.76  .         .         .QV       .         .
16.250     25.6644    385.30  .         .         .   V     Q         .
16.333     28.4968    411.26  .         .         .      V  . Q       .
16.417     30.5328    295.62  .         .         .  Q     V.         .
16.500     31.7767    180.62  .         .   Q     .         V         .
16.583     32.5687    115.00  .        Q.         .         .V        .
16.667     33.0802     74.27  .    Q    .         .         .V        .
16.750     33.4795     57.98  .   Q     .         .         . V       .
16.833     33.8206     49.53  .  Q      .         .         . V       .
16.917     34.1093     41.92  .  Q      .         .         . V       .
17.000     34.3605     36.47  . Q       .         .         . V       .
17.083     34.5858     32.71  . Q       .         .         .  V      .
17.167     34.7940     30.23  . Q       .         .         .  V      .
17.250     34.9873     28.06  . Q       .         .         .  V      .
17.333     35.1675     26.16  . Q       .         .         .  V      .
17.417     35.3369     24.60  .Q        .         .         .  V      .
17.500     35.4975     23.32  .Q        .         .         .   V     .
17.583     35.6505     22.22  .Q        .         .         .   V     .
17.667     35.7970     21.27  .Q        .         .         .   V     .
17.750     35.9376     20.42  .Q        .         .         .   V     .
17.833     36.0729     19.65  .Q        .         .         .   V     .
17.917     36.2034     18.95  .Q        .         .         .   V     .
18.000     36.3296     18.32  .Q        .         .         .   V     .
18.083     36.4518     17.75  .Q        .         .         .   V     .
18.167     36.5710     17.30  .Q        .         .         .    V    .
18.250     36.6878     16.97  .Q        .         .         .    V    .
18.333     36.8028     16.70  .Q        .         .         .    V    .
18.417     36.9157     16.39  .Q        .         .         .    V    .
18.500     37.0262     16.04  .Q        .         .         .    V    .
18.583     37.1343     15.68  .Q        .         .         .    V    .
18.667     37.2398     15.33  .Q        .         .         .    V    .
18.750     37.3431     14.99  .Q        .         .         .    V    .
18.833     37.4441     14.67  .Q        .         .         .    V    .
18.917     37.5430     14.36  .Q        .         .         .    V    .
19.000     37.6400     14.07  .Q        .         .         .     V   .
19.083     37.7350     13.80  .Q        .         .         .     V   .
19.167     37.8282     13.53  .Q        .         .         .     V   .
19.250     37.9197     13.28  .Q        .         .         .     V   .
19.333     38.0095     13.04  .Q        .         .         .     V   .
19.417     38.0978     12.82  .Q        .         .         .     V   .
19.500     38.1845     12.60  .Q        .         .         .     V   .
19.583     38.2699     12.39  Q         .         .         .     V   .
19.667     38.3538     12.19  Q         .         .         .     V   .
19.750     38.4364     12.00  Q         .         .         .     V   .
19.833     38.5178     11.81  Q         .         .         .     V   .
19.917     38.5979     11.63  Q         .         .         .     V   .
20.000     38.6768     11.46  Q         .         .         .      V  .
20.083     38.7546     11.30  Q         .         .         .      V  .
20.167     38.8313     11.14  Q         .         .         .      V  .
20.250     38.9070     10.99  Q         .         .         .      V  .
20.333     38.9816     10.84  Q         .         .         .      V  .
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20.417	39.0553	10.69	Q	.	.	.	V .
20.500	39.1280	10.56	Q	.	.	.	V .
20.583	39.1998	10.42	Q	.	.	.	V .
20.667	39.2706	10.29	Q	.	.	.	V .
20.750	39.3407	10.17	Q	.	.	.	V .
20.833	39.4099	10.05	Q	.	.	.	V .
20.917	39.4782	9.93	Q	.	.	.	V .
21.000	39.5458	9.81	Q	.	.	.	V .
21.083	39.6126	9.70	Q	.	.	.	V .
21.167	39.6787	9.59	Q	.	.	.	V .
21.250	39.7440	9.49	Q	.	.	.	V .
21.333	39.8087	9.39	Q	.	.	.	V .
21.417	39.8727	9.29	Q	.	.	.	V .
21.500	39.9359	9.19	Q	.	.	.	V .
21.583	39.9986	9.10	Q	.	.	.	V .
21.667	40.0606	9.00	Q	.	.	.	V .
21.750	40.1220	8.91	Q	.	.	.	V .
21.833	40.1828	8.83	Q	.	.	.	V .
21.917	40.2430	8.74	Q	.	.	.	V .
22.000	40.3027	8.66	Q	.	.	.	V .
22.083	40.3617	8.58	Q	.	.	.	V .
22.167	40.4203	8.50	Q	.	.	.	V .
22.250	40.4783	8.42	Q	.	.	.	V .
22.333	40.5358	8.35	Q	.	.	.	V .
22.417	40.5927	8.27	Q	.	.	.	V .
22.500	40.6492	8.20	Q	.	.	.	V .
22.583	40.7052	8.13	Q	.	.	.	V.
22.667	40.7607	8.06	Q	.	.	.	V.
22.750	40.8158	7.99	Q	.	.	.	V.
22.833	40.8704	7.93	Q	.	.	.	V.
22.917	40.9245	7.86	Q	.	.	.	V.
23.000	40.9782	7.80	Q	.	.	.	V.
23.083	41.0315	7.74	Q	.	.	.	V.
23.167	41.0844	7.68	Q	.	.	.	V.
23.250	41.1368	7.62	Q	.	.	.	V.
23.333	41.1889	7.56	Q	.	.	.	V.
23.417	41.2406	7.50	Q	.	.	.	V.
23.500	41.2918	7.44	Q	.	.	.	V.
23.583	41.3427	7.39	Q	.	.	.	V.
23.667	41.3932	7.33	Q	.	.	.	V.
23.750	41.4434	7.28	Q	.	.	.	V.
23.833	41.4932	7.23	Q	.	.	.	V.
23.917	41.5426	7.18	Q	.	.	.	V.
24.000	41.5917	7.13	Q	.	.	.	V.
24.083	41.6393	6.92	Q	.	.	.	V.
24.167	41.6807	6.01	Q	.	.	.	V.
24.250	41.7106	4.34	Q	.	.	.	V.
24.333	41.7269	2.37	Q	.	.	.	V.
24.417	41.7344	1.08	Q	.	.	.	V.
24.500	41.7377	0.47	Q	.	.	.	V.
24.583	41.7390	0.20	Q	.	.	.	V.

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  24.667     41.7397      0.11  Q         .         .         .        V.
  24.750     41.7402      0.06  Q         .         .         .        V.
  24.833     41.7403      0.02  Q         .         .         .        V.
  24.917     41.7404      0.01  Q         .         .         .         V
-------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated               Duration
       Peak Flow Rate                    (minutes)
   ======================              =========
              0%                        1495.0
             10%                         100.0
             20%                          45.0
             30%                          30.0
             40%                          25.0
             50%                          20.0
             60%                          20.0
             70%                          15.0
             80%                          10.0
             90%                          10.0


*******************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    303.00 IS CODE =   1
-------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
===============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     452.300 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.250 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.407
         LOW LOSS FRACTION = 0.586
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.22
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.45
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  0.87
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  1.80

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
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5-MINUTE FACTOR = 0.980
30-MINUTE FACTOR = 0.980
1-HOUR FACTOR = 0.980
3-HOUR FACTOR = 0.997
6-HOUR FACTOR = 0.998
24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 33.333

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.170	118.706
2	13.591	624.746
3	35.416	1193.805
4	62.732	1494.169
5	82.211	1065.530
6	91.877	528.733
7	96.496	252.663
8	98.279	97.498
9	98.906	34.326
10	99.441	29.221
11	99.776	18.362
12	99.944	9.181
13	100.000	3.060

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 35.9970
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 31.7699

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

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	100.0	200.0	300.0	400.0
0.083	0.0008	0.11	Q	.	.	.	.
0.167	0.0055	0.68	Q	.	.	.	.
0.250	0.0178	1.79	Q	.	.	.	.
0.333	0.0396	3.17	Q	.	.	.	.
0.417	0.0682	4.16	Q	.	.	.	.
0.500	0.1003	4.66	Q	.	.	.	.
0.583	0.1341	4.91	Q	.	.	.	.
0.667	0.1686	5.01	Q	.	.	.	.
0.750	0.2034	5.06	Q	.	.	.	.
0.833	0.2386	5.11	Q	.	.	.	.
0.917	0.2740	5.14	Q	.	.	.	.
1.000	0.3096	5.17	Q	.	.	.	.
1.083	0.3453	5.19	Q	.	.	.	.
1.167	0.3811	5.21	Q	.	.	.	.
1.250	0.4171	5.22	Q	.	.	.	.
1.333	0.4532	5.24	Q	.	.	.	.
1.417	0.4895	5.26	Q	.	.	.	.
1.500	0.5258	5.28	Q	.	.	.	.
1.583	0.5623	5.30	Q	.	.	.	.
1.667	0.5990	5.32	Q	.	.	.	.
1.750	0.6358	5.34	Q	.	.	.	.
1.833	0.6727	5.36	Q	.	.	.	.
1.917	0.7097	5.38	Q	.	.	.	.
2.000	0.7469	5.40	Q	.	.	.	.
2.083	0.7842	5.42	Q	.	.	.	.
2.167	0.8217	5.44	QV	.	.	.	.
2.250	0.8593	5.46	QV	.	.	.	.
2.333	0.8970	5.48	QV	.	.	.	.
2.417	0.9349	5.50	QV	.	.	.	.
2.500	0.9730	5.52	QV	.	.	.	.
2.583	1.0112	5.55	QV	.	.	.	.
2.667	1.0495	5.57	QV	.	.	.	.
2.750	1.0880	5.59	QV	.	.	.	.
2.833	1.1266	5.61	QV	.	.	.	.
2.917	1.1654	5.63	QV	.	.	.	.
3.000	1.2044	5.66	QV	.	.	.	.
3.083	1.2435	5.68	QV	.	.	.	.
3.167	1.2828	5.70	QV	.	.	.	.
3.250	1.3222	5.73	QV	.	.	.	.
3.333	1.3618	5.75	QV	.	.	.	.

3.417	1.4016	5.77	QV	.	.	.	.
3.500	1.4415	5.80	QV	.	.	.	.
3.583	1.4816	5.82	QV	.	.	.	.
3.667	1.5219	5.85	QV	.	.	.	.
3.750	1.5623	5.87	QV	.	.	.	.
3.833	1.6029	5.90	Q V	.	.	.	.
3.917	1.6437	5.92	Q V	.	.	.	.
4.000	1.6847	5.95	Q V	.	.	.	.
4.083	1.7258	5.97	Q V	.	.	.	.
4.167	1.7671	6.00	Q V	.	.	.	.
4.250	1.8086	6.03	Q V	.	.	.	.
4.333	1.8503	6.05	Q V	.	.	.	.
4.417	1.8922	6.08	Q V	.	.	.	.
4.500	1.9343	6.11	Q V	.	.	.	.
4.583	1.9765	6.14	Q V	.	.	.	.
4.667	2.0190	6.16	Q V	.	.	.	.
4.750	2.0616	6.19	Q V	.	.	.	.
4.833	2.1045	6.22	Q V	.	.	.	.
4.917	2.1475	6.25	Q V	.	.	.	.
5.000	2.1908	6.28	Q V	.	.	.	.
5.083	2.2343	6.31	Q V	.	.	.	.
5.167	2.2779	6.34	Q V	.	.	.	.
5.250	2.3218	6.37	Q V	.	.	.	.
5.333	2.3659	6.40	Q V	.	.	.	.
5.417	2.4102	6.43	Q V	.	.	.	.
5.500	2.4548	6.47	Q V	.	.	.	.
5.583	2.4995	6.50	Q V	.	.	.	.
5.667	2.5445	6.53	Q V	.	.	.	.
5.750	2.5897	6.56	Q V	.	.	.	.
5.833	2.6351	6.60	Q V	.	.	.	.
5.917	2.6808	6.63	Q V	.	.	.	.
6.000	2.7267	6.67	Q V	.	.	.	.
6.083	2.7729	6.70	Q V	.	.	.	.
6.167	2.8193	6.74	Q V	.	.	.	.
6.250	2.8659	6.77	Q V	.	.	.	.
6.333	2.9128	6.81	Q V	.	.	.	.
6.417	2.9599	6.85	Q V	.	.	.	.
6.500	3.0073	6.88	Q V	.	.	.	.
6.583	3.0550	6.92	Q V	.	.	.	.
6.667	3.1029	6.96	Q V	.	.	.	.
6.750	3.1511	7.00	Q V	.	.	.	.
6.833	3.1996	7.04	Q V	.	.	.	.
6.917	3.2483	7.08	Q V	.	.	.	.
7.000	3.2973	7.12	Q V	.	.	.	.
7.083	3.3467	7.16	Q V	.	.	.	.
7.167	3.3962	7.20	Q V	.	.	.	.
7.250	3.4461	7.24	Q V	.	.	.	.
7.333	3.4963	7.29	Q V	.	.	.	.
7.417	3.5468	7.33	Q V	.	.	.	.
7.500	3.5976	7.38	Q V	.	.	.	.
7.583	3.6487	7.42	Q V	.	.	.	.

7.667	3.7001	7.47	Q	V	.	.	.	.
7.750	3.7519	7.51	Q	V	.	.	.	.
7.833	3.8039	7.56	Q	V	.	.	.	.
7.917	3.8563	7.61	Q	V	.	.	.	.
8.000	3.9091	7.66	Q	V	.	.	.	.
8.083	3.9621	7.71	Q	V	.	.	.	.
8.167	4.0156	7.76	Q	V	.	.	.	.
8.250	4.0693	7.81	Q	V	.	.	.	.
8.333	4.1235	7.86	Q	V	.	.	.	.
8.417	4.1780	7.91	Q	V	.	.	.	.
8.500	4.2329	7.97	Q	V	.	.	.	.
8.583	4.2881	8.02	Q	V	.	.	.	.
8.667	4.3438	8.08	Q	V	.	.	.	.
8.750	4.3998	8.14	Q	V	.	.	.	.
8.833	4.4563	8.20	Q	V	.	.	.	.
8.917	4.5131	8.25	Q	V	.	.	.	.
9.000	4.5704	8.31	Q	V	.	.	.	.
9.083	4.6281	8.38	Q	V	.	.	.	.
9.167	4.6862	8.44	Q	V	.	.	.	.
9.250	4.7447	8.50	Q	V	.	.	.	.
9.333	4.8037	8.57	Q	V	.	.	.	.
9.417	4.8632	8.63	Q	V	.	.	.	.
9.500	4.9231	8.70	Q	V	.	.	.	.
9.583	4.9835	8.77	Q	V	.	.	.	.
9.667	5.0444	8.84	Q	V	.	.	.	.
9.750	5.1058	8.91	Q	V	.	.	.	.
9.833	5.1677	8.99	Q	V	.	.	.	.
9.917	5.2301	9.06	Q	V	.	.	.	.
10.000	5.2931	9.14	Q	V	.	.	.	.
10.083	5.3565	9.22	Q	V	.	.	.	.
10.167	5.4206	9.30	Q	V	.	.	.	.
10.250	5.4852	9.38	Q	V	.	.	.	.
10.333	5.5503	9.46	Q	V	.	.	.	.
10.417	5.6161	9.55	Q	V	.	.	.	.
10.500	5.6825	9.64	Q	V	.	.	.	.
10.583	5.7494	9.73	Q	V	.	.	.	.
10.667	5.8171	9.82	Q	V	.	.	.	.
10.750	5.8853	9.91	Q	V	.	.	.	.
10.833	5.9543	10.01	.Q	V	.	.	.	.
10.917	6.0239	10.11	.Q	V	.	.	.	.
11.000	6.0942	10.21	.Q	V	.	.	.	.
11.083	6.1652	10.31	.Q	V	.	.	.	.
11.167	6.2370	10.42	.Q	V	.	.	.	.
11.250	6.3095	10.53	.Q	V	.	.	.	.
11.333	6.3828	10.64	.Q	V	.	.	.	.
11.417	6.4569	10.76	.Q	V	.	.	.	.
11.500	6.5318	10.88	.Q	V	.	.	.	.
11.583	6.6076	11.00	.Q	V	.	.	.	.
11.667	6.6842	11.13	.Q	V	.	.	.	.
11.750	6.7618	11.26	.Q	V	.	.	.	.
11.833	6.8402	11.39	.Q	V	.	.	.	.

```
11.917     6.9196    11.53  .Q     V .        .        .        .
12.000     7.0000    11.67  .Q     V .        .        .        .
12.083     7.0813    11.81  .Q     V .        .        .        .
12.167     7.1633    11.90  .Q      V.        .        .        .
12.250     7.2455    11.94  .Q      V.        .        .        .
12.333     7.3279    11.96  .Q      V.        .        .        .
12.417     7.4108    12.03  .Q      V.        .        .        .
12.500     7.4944    12.15  .Q      V.        .        .        .
12.583     7.5791    12.30  .Q      V.        .        .        .
12.667     7.6651    12.48  .Q      V.        .        .        .
12.750     7.7523    12.66  .Q      V.        .        .        .
12.833     7.8408    12.86  .Q      V.        .        .        .
12.917     7.9308    13.06  .Q      V.        .        .        .
13.000     8.0222    13.28  .Q       V        .        .        .
13.083     8.1152    13.50  .Q       V        .        .        .
13.167     8.2098    13.74  .Q       V        .        .        .
13.250     8.3061    13.98  .Q       V        .        .        .
13.333     8.4041    14.24  .Q       V        .        .        .
13.417     8.5040    14.50  .Q       V        .        .        .
13.500     8.6058    14.78  .Q       V        .        .        .
13.583     8.7096    15.08  .Q       V        .        .        .
13.667     8.8156    15.39  .Q       .V       .        .        .
13.750     8.9238    15.71  .Q       .V       .        .        .
13.833     9.0344    16.06  .Q       .V       .        .        .
13.917     9.1475    16.42  .Q       .V       .        .        .
14.000     9.2633    16.81  .Q       .V       .        .        .
14.083     9.3820    17.23  .Q       .V       .        .        .
14.167     9.5043    17.76  .Q       .V       .        .        .
14.250     9.6309    18.38  .Q       . V      .        .        .
14.333     9.7623    19.09  .Q       . V      .        .        .
14.417     9.8985    19.77  .Q       . V      .        .        .
14.500    10.0391    20.42  . Q      . V      .        .        .
14.583    10.1843    21.08  . Q      . V      .        .        .
14.667    10.3343    21.78  . Q      .  V     .        .        .
14.750    10.4894    22.52  . Q      .  V     .        .        .
14.833    10.6502    23.34  . Q      .  V     .        .        .
14.917    10.8170    24.23  . Q      .  V     .        .        .
15.000    10.9907    25.22  . Q      .  V     .        .        .
15.083    11.1719    26.30  . Q      .   V    .        .        .
15.167    11.3615    27.53  . Q      .   V    .        .        .
15.250    11.5606    28.90  . Q      .   V    .        .        .
15.333    11.7705    30.49  .  Q     .   V    .        .        .
15.417    11.9940    32.44  .  Q     .    V   .        .        .
15.500    12.2376    35.37  .  Q     .    V   .        .        .
15.583    12.5090    39.41  .  Q     .    V   .        .        .
15.667    12.8153    44.47  .   Q    .     V  .        .        .
15.750    13.1580    49.75  .   Q    .     V  .        .        .
15.833    13.5400    55.46  .    Q   .      V .        .        .
15.917    13.9708    62.56  .     Q  .      V .        .        .
16.000    14.4839    74.50  .      Q .       V.        .        .
16.083    15.2646   113.37  .        .Q      V.        .        .
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16.167     16.7439    214.80  .         .         .Q        .         .
16.250     18.9188    315.79  .         .         .  V      .Q        .
16.333     21.3578    354.15  .         .         .     V   .    Q    .
16.417     23.1905    266.11  .         .         .     Q  V.         .
16.500     24.2969    160.64  .         .     Q   .         V         .
16.583     24.9840     99.77  .        Q.         .         .V        .
16.667     25.4147     62.54  .     Q   .         .         .V        .
16.750     25.7194     44.24  .   Q     .         .         . V       .
16.833     25.9803     37.88  .  Q      .         .         . V       .
16.917     26.2020     32.20  .  Q      .         .         . V       .
17.000     26.3934     27.79  . Q       .         .         .  V      .
17.083     26.5623     24.53  . Q       .         .         .  V      .
17.167     26.7150     22.17  . Q       .         .         .  V      .
17.250     26.8566     20.56  . Q       .         .         .  V      .
17.333     26.9885     19.15  .Q        .         .         .  V      .
17.417     27.1123     17.98  .Q        .         .         .   V     .
17.500     27.2296     17.03  .Q        .         .         .   V     .
17.583     27.3413     16.21  .Q        .         .         .   V     .
17.667     27.4481     15.51  .Q        .         .         .   V     .
17.750     27.5506     14.88  .Q        .         .         .   V     .
17.833     27.6492     14.32  .Q        .         .         .   V     .
17.917     27.7443     13.80  .Q        .         .         .   V     .
18.000     27.8361     13.34  .Q        .         .         .    V    .
18.083     27.9251     12.92  .Q        .         .         .    V    .
18.167     28.0118     12.58  .Q        .         .         .    V    .
18.250     28.0967     12.33  .Q        .         .         .    V    .
18.333     28.1802     12.13  .Q        .         .         .    V    .
18.417     28.2623     11.91  .Q        .         .         .    V    .
18.500     28.3426     11.66  .Q        .         .         .    V    .
18.583     28.4211     11.40  .Q        .         .         .    V    .
18.667     28.4979     11.15  .Q        .         .         .    V    .
18.750     28.5729     10.90  .Q        .         .         .    V    .
18.833     28.6464     10.66  .Q        .         .         .     V   .
18.917     28.7183     10.44  .Q        .         .         .     V   .
19.000     28.7887     10.23  .Q        .         .         .     V   .
19.083     28.8578     10.03  .Q        .         .         .     V   .
19.167     28.9255      9.84  Q         .         .         .     V   .
19.250     28.9920      9.65  Q         .         .         .     V   .
19.333     29.0572      9.48  Q         .         .         .     V   .
19.417     29.1214      9.31  Q         .         .         .     V   .
19.500     29.1844      9.15  Q         .         .         .     V   .
19.583     29.2464      9.00  Q         .         .         .     V   .
19.667     29.3074      8.85  Q         .         .         .     V   .
19.750     29.3674      8.71  Q         .         .         .     V   .
19.833     29.4264      8.58  Q         .         .         .      V  .
19.917     29.4846      8.45  Q         .         .         .      V  .
20.000     29.5420      8.32  Q         .         .         .      V  .
20.083     29.5985      8.20  Q         .         .         .      V  .
20.167     29.6542      8.09  Q         .         .         .      V  .
20.250     29.7091      7.98  Q         .         .         .      V  .
20.333     29.7633      7.87  Q         .         .         .      V  .
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20.417	29.8168	7.77	Q	.	.	.	V .
20.500	29.8696	7.66	Q	.	.	.	V .
20.583	29.9217	7.57	Q	.	.	.	V .
20.667	29.9732	7.47	Q	.	.	.	V .
20.750	30.0240	7.38	Q	.	.	.	V .
20.833	30.0742	7.29	Q	.	.	.	V .
20.917	30.1238	7.21	Q	.	.	.	V .
21.000	30.1729	7.12	Q	.	.	.	V .
21.083	30.2214	7.04	Q	.	.	.	V .
21.167	30.2694	6.96	Q	.	.	.	V .
21.250	30.3168	6.89	Q	.	.	.	V .
21.333	30.3637	6.81	Q	.	.	.	V .
21.417	30.4102	6.74	Q	.	.	.	V .
21.500	30.4561	6.67	Q	.	.	.	V .
21.583	30.5016	6.60	Q	.	.	.	V .
21.667	30.5466	6.54	Q	.	.	.	V .
21.750	30.5911	6.47	Q	.	.	.	V .
21.833	30.6353	6.41	Q	.	.	.	V .
21.917	30.6790	6.34	Q	.	.	.	V .
22.000	30.7222	6.28	Q	.	.	.	V .
22.083	30.7651	6.23	Q	.	.	.	V .
22.167	30.8076	6.17	Q	.	.	.	V .
22.250	30.8497	6.11	Q	.	.	.	V .
22.333	30.8914	6.06	Q	.	.	.	V .
22.417	30.9327	6.00	Q	.	.	.	V .
22.500	30.9737	5.95	Q	.	.	.	V .
22.583	31.0144	5.90	Q	.	.	.	V.
22.667	31.0546	5.85	Q	.	.	.	V.
22.750	31.0946	5.80	Q	.	.	.	V.
22.833	31.1342	5.75	Q	.	.	.	V.
22.917	31.1735	5.71	Q	.	.	.	V.
23.000	31.2125	5.66	Q	.	.	.	V.
23.083	31.2511	5.61	Q	.	.	.	V.
23.167	31.2895	5.57	Q	.	.	.	V.
23.250	31.3275	5.53	Q	.	.	.	V.
23.333	31.3653	5.48	Q	.	.	.	V.
23.417	31.4028	5.44	Q	.	.	.	V.
23.500	31.4400	5.40	Q	.	.	.	V.
23.583	31.4769	5.36	Q	.	.	.	V.
23.667	31.5136	5.32	Q	.	.	.	V.
23.750	31.5499	5.28	Q	.	.	.	V.
23.833	31.5861	5.25	Q	.	.	.	V.
23.917	31.6219	5.21	Q	.	.	.	V.
24.000	31.6576	5.17	Q	.	.	.	V.
24.083	31.6922	5.03	Q	.	.	.	V.
24.167	31.7226	4.42	Q	.	.	.	V.
24.250	31.7453	3.29	Q	.	.	.	V.
24.333	31.7583	1.90	Q	.	.	.	V.
24.417	31.7646	0.91	Q	.	.	.	V.
24.500	31.7674	0.41	Q	.	.	.	V.
24.583	31.7686	0.18	Q	.	.	.	V.

```
  24.667     31.7692      0.09  Q         .         .         .        V.
  24.750     31.7696      0.06  Q         .         .         .        V.
  24.833     31.7698      0.03  Q         .         .         .        V.
  24.917     31.7699      0.01  Q         .         .         .        V.
  25.000     31.7699      0.00  Q         .         .         .         V
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated               Duration
       Peak Flow Rate                    (minutes)
   ======================                =========
             0%                           1500.0
            10%                             80.0
            20%                             40.0
            30%                             30.0
            40%                             25.0
            50%                             20.0
            60%                             20.0
            70%                             15.0
            80%                             10.0
            90%                              5.0


********************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 IS CODE =   7
--------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
================================================================================


********************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    101.00 IS CODE = 3.1
--------------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
================================================================================

                    INFLOW
                  (STREAM 1)
                       |
                       |
                       V                __effective depth
                   -----------          |   (and volume)
                  |           |    |    |
                  |           |    |....V........
                  | detention |<-->|           outflow
                  |   basin   |    |.........._______
                   -----------     |    ^    |  \
                       |           |  dead   |   basin outlet
                       V           | storage |
```

OUTFLOW ---------
(STREAM 1)

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

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	5.00	113.00	9.830
3	10.00	192.00	22.020
4	15.00	248.00	36.780
5	20.00	293.00	54.330
6	25.00	332.00	74.840

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(5-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
0.083	0.000	0.27	0.00	0.00	0.0	0.002
0.167	0.000	1.71	0.00	0.01	0.1	0.013
0.250	0.000	4.44	0.00	0.02	0.3	0.041
0.333	0.000	7.78	0.00	0.05	0.8	0.090
0.417	0.000	10.06	0.00	0.08	1.4	0.150
0.500	0.000	11.18	0.00	0.11	2.1	0.212
0.583	0.000	11.73	0.00	0.14	2.8	0.274
0.667	0.000	11.94	0.00	0.17	3.5	0.332
0.750	0.000	12.06	0.00	0.20	4.1	0.387
0.833	0.000	12.17	0.00	0.22	4.7	0.438
0.917	0.000	12.24	0.00	0.25	5.3	0.486
1.000	0.000	12.30	0.00	0.27	5.8	0.530
1.083	0.000	12.35	0.00	0.29	6.3	0.572
1.167	0.000	12.39	0.00	0.31	6.8	0.610
1.250	0.000	12.44	0.00	0.33	7.2	0.646
1.333	0.000	12.48	0.00	0.35	7.6	0.680

1.417	0.000	12.52	0.00	0.36	8.0	0.711
1.500	0.000	12.57	0.00	0.38	8.3	0.740
1.583	0.000	12.62	0.00	0.39	8.7	0.767
1.667	0.000	12.66	0.00	0.40	9.0	0.793
1.750	0.000	12.71	0.00	0.42	9.2	0.816
1.833	0.000	12.76	0.00	0.43	9.5	0.839
1.917	0.000	12.80	0.00	0.44	9.8	0.860
2.000	0.000	12.85	0.00	0.45	10.0	0.879
2.083	0.000	12.90	0.00	0.46	10.2	0.898
2.167	0.000	12.95	0.00	0.47	10.4	0.915
2.250	0.000	13.00	0.00	0.47	10.6	0.932
2.333	0.000	13.05	0.00	0.48	10.8	0.947
2.417	0.000	13.10	0.00	0.49	11.0	0.962
2.500	0.000	13.15	0.00	0.50	11.1	0.976
2.583	0.000	13.20	0.00	0.50	11.3	0.989
2.667	0.000	13.25	0.00	0.51	11.4	1.001
2.750	0.000	13.30	0.00	0.52	11.6	1.013
2.833	0.000	13.36	0.00	0.52	11.7	1.024
2.917	0.000	13.41	0.00	0.53	11.8	1.035
3.000	0.000	13.46	0.00	0.53	12.0	1.046
3.083	0.000	13.52	0.00	0.54	12.1	1.056
3.167	0.000	13.57	0.00	0.54	12.2	1.065
3.250	0.000	13.63	0.00	0.55	12.3	1.074
3.333	0.000	13.69	0.00	0.55	12.4	1.083
3.417	0.000	13.74	0.00	0.56	12.5	1.092
3.500	0.000	13.80	0.00	0.56	12.6	1.100
3.583	0.000	13.86	0.00	0.56	12.7	1.108
3.667	0.000	13.92	0.00	0.57	12.8	1.116
3.750	0.000	13.98	0.00	0.57	12.9	1.123
3.833	0.000	14.04	0.00	0.58	13.0	1.131
3.917	0.000	14.10	0.00	0.58	13.0	1.138
4.000	0.000	14.16	0.00	0.58	13.1	1.145
4.083	0.000	14.22	0.00	0.59	13.2	1.152
4.167	0.000	14.28	0.00	0.59	13.3	1.159
4.250	0.000	14.35	0.00	0.59	13.4	1.166
4.333	0.000	14.41	0.00	0.60	13.4	1.173
4.417	0.000	14.48	0.00	0.60	13.5	1.179
4.500	0.000	14.54	0.00	0.60	13.6	1.186
4.583	0.000	14.61	0.00	0.61	13.7	1.192
4.667	0.000	14.67	0.00	0.61	13.7	1.199
4.750	0.000	14.74	0.00	0.61	13.8	1.205
4.833	0.000	14.81	0.00	0.62	13.9	1.211
4.917	0.000	14.88	0.00	0.62	14.0	1.218
5.000	0.000	14.95	0.00	0.62	14.0	1.224
5.083	0.000	15.02	0.00	0.63	14.1	1.230
5.167	0.000	15.10	0.00	0.63	14.2	1.237
5.250	0.000	15.17	0.00	0.63	14.3	1.243
5.333	0.000	15.24	0.00	0.64	14.3	1.249
5.417	0.000	15.32	0.00	0.64	14.4	1.256
5.500	0.000	15.39	0.00	0.64	14.5	1.262
5.583	0.000	15.47	0.00	0.65	14.5	1.268

5.667	0.000	15.55	0.00	0.65	14.6	1.275
5.750	0.000	15.63	0.00	0.65	14.7	1.281
5.833	0.000	15.71	0.00	0.65	14.8	1.288
5.917	0.000	15.79	0.00	0.66	14.8	1.294
6.000	0.000	15.87	0.00	0.66	14.9	1.301
6.083	0.000	15.95	0.00	0.66	15.0	1.307
6.167	0.000	16.04	0.00	0.67	15.1	1.314
6.250	0.000	16.12	0.00	0.67	15.1	1.321
6.333	0.000	16.21	0.00	0.68	15.2	1.328
6.417	0.000	16.30	0.00	0.68	15.3	1.334
6.500	0.000	16.38	0.00	0.68	15.4	1.341
6.583	0.000	16.47	0.00	0.69	15.5	1.348
6.667	0.000	16.57	0.00	0.69	15.5	1.355
6.750	0.000	16.66	0.00	0.69	15.6	1.363
6.833	0.000	16.75	0.00	0.70	15.7	1.370
6.917	0.000	16.85	0.00	0.70	15.8	1.377
7.000	0.000	16.95	0.00	0.70	15.9	1.384
7.083	0.000	17.04	0.00	0.71	16.0	1.392
7.167	0.000	17.14	0.00	0.71	16.0	1.400
7.250	0.000	17.24	0.00	0.72	16.1	1.407
7.333	0.000	17.35	0.00	0.72	16.2	1.415
7.417	0.000	17.45	0.00	0.72	16.3	1.423
7.500	0.000	17.56	0.00	0.73	16.4	1.431
7.583	0.000	17.66	0.00	0.73	16.5	1.439
7.667	0.000	17.78	0.00	0.74	16.6	1.447
7.750	0.000	17.89	0.00	0.74	16.7	1.455
7.833	0.000	18.00	0.00	0.74	16.8	1.464
7.917	0.000	18.11	0.00	0.75	16.9	1.472
8.000	0.000	18.23	0.00	0.75	17.0	1.481
8.083	0.000	18.35	0.00	0.76	17.1	1.490
8.167	0.000	18.47	0.00	0.76	17.2	1.499
8.250	0.000	18.59	0.00	0.77	17.3	1.508
8.333	0.000	18.72	0.00	0.77	17.4	1.517
8.417	0.000	18.84	0.00	0.78	17.5	1.526
8.500	0.000	18.97	0.00	0.78	17.6	1.536
8.583	0.000	19.10	0.00	0.79	17.7	1.545
8.667	0.000	19.24	0.00	0.79	17.8	1.555
8.750	0.000	19.37	0.00	0.80	17.9	1.565
8.833	0.000	19.51	0.00	0.80	18.0	1.575
8.917	0.000	19.65	0.00	0.81	18.2	1.585
9.000	0.000	19.80	0.00	0.81	18.3	1.596
9.083	0.000	19.94	0.00	0.82	18.4	1.606
9.167	0.000	20.09	0.00	0.82	18.5	1.617
9.250	0.000	20.24	0.00	0.83	18.7	1.628
9.333	0.000	20.40	0.00	0.83	18.8	1.639
9.417	0.000	20.56	0.00	0.84	18.9	1.651
9.500	0.000	20.72	0.00	0.85	19.0	1.662
9.583	0.000	20.88	0.00	0.85	19.2	1.674
9.667	0.000	21.05	0.00	0.86	19.3	1.686
9.750	0.000	21.22	0.00	0.86	19.5	1.698
9.833	0.000	21.40	0.00	0.87	19.6	1.711

9.917	0.000	21.58	0.00	0.88	19.7	1.723
10.000	0.000	21.76	0.00	0.88	19.9	1.736
10.083	0.000	21.95	0.00	0.89	20.0	1.749
10.167	0.000	22.14	0.00	0.90	20.2	1.763
10.250	0.000	22.33	0.00	0.90	20.3	1.776
10.333	0.000	22.53	0.00	0.91	20.5	1.790
10.417	0.000	22.74	0.00	0.92	20.7	1.805
10.500	0.000	22.95	0.00	0.93	20.8	1.819
10.583	0.000	23.16	0.00	0.93	21.0	1.834
10.667	0.000	23.38	0.00	0.94	21.2	1.849
10.750	0.000	23.60	0.00	0.95	21.3	1.865
10.833	0.000	23.84	0.00	0.96	21.5	1.881
10.917	0.000	24.07	0.00	0.96	21.7	1.897
11.000	0.000	24.31	0.00	0.97	21.9	1.914
11.083	0.000	24.56	0.00	0.98	22.1	1.931
11.167	0.000	24.82	0.00	0.99	22.3	1.948
11.250	0.000	25.08	0.00	1.00	22.5	1.966
11.333	0.000	25.35	0.00	1.01	22.7	1.984
11.417	0.000	25.62	0.00	1.02	22.9	2.003
11.500	0.000	25.91	0.00	1.03	23.1	2.022
11.583	0.000	26.20	0.00	1.04	23.4	2.041
11.667	0.000	26.50	0.00	1.05	23.6	2.061
11.750	0.000	26.81	0.00	1.06	23.8	2.082
11.833	0.000	27.13	0.00	1.07	24.1	2.103
11.917	0.000	27.46	0.00	1.08	24.3	2.125
12.000	0.000	27.80	0.00	1.09	24.6	2.147
12.083	0.000	28.12	0.00	1.10	24.8	2.170
12.167	0.000	28.34	0.00	1.12	25.1	2.193
12.250	0.000	28.43	0.00	1.13	25.3	2.214
12.333	0.000	28.47	0.00	1.14	25.6	2.234
12.417	0.000	28.63	0.00	1.15	25.8	2.254
12.500	0.000	28.93	0.00	1.16	26.0	2.274
12.583	0.000	29.30	0.00	1.17	26.3	2.295
12.667	0.000	29.72	0.00	1.18	26.5	2.317
12.750	0.000	30.17	0.00	1.19	26.8	2.340
12.833	0.000	30.64	0.00	1.20	27.0	2.365
12.917	0.000	31.12	0.00	1.22	27.3	2.391
13.000	0.000	31.64	0.00	1.23	27.6	2.418
13.083	0.000	32.17	0.00	1.24	28.0	2.447
13.167	0.000	32.73	0.00	1.26	28.3	2.478
13.250	0.000	33.31	0.00	1.28	28.7	2.510
13.333	0.000	33.92	0.00	1.29	29.0	2.543
13.417	0.000	34.56	0.00	1.31	29.4	2.579
13.500	0.000	35.23	0.00	1.33	29.9	2.616
13.583	0.000	35.93	0.00	1.35	30.3	2.654
13.667	0.000	36.68	0.00	1.37	30.7	2.695
13.750	0.000	37.45	0.00	1.39	31.2	2.738
13.833	0.000	38.28	0.00	1.42	31.7	2.783
13.917	0.000	39.15	0.00	1.44	32.3	2.831
14.000	0.000	40.08	0.00	1.47	32.8	2.881
14.083	0.000	41.09	0.00	1.49	33.4	2.933

14.167	0.000	42.35	0.00	1.52	34.0	2.991
14.250	0.000	43.87	0.00	1.55	34.7	3.053
14.333	0.000	45.57	0.00	1.59	35.5	3.123
14.417	0.000	47.18	0.00	1.63	36.3	3.198
14.500	0.000	48.75	0.00	1.67	37.2	3.277
14.583	0.000	50.32	0.00	1.71	38.2	3.361
14.667	0.000	51.99	0.00	1.75	39.1	3.449
14.750	0.000	53.76	0.00	1.80	40.2	3.543
14.833	0.000	55.73	0.00	1.85	41.3	3.642
14.917	0.000	57.85	0.00	1.91	42.5	3.748
15.000	0.000	60.22	0.00	1.96	43.7	3.861
15.083	0.000	62.82	0.00	2.03	45.1	3.984
15.167	0.000	65.77	0.00	2.09	46.6	4.116
15.250	0.000	69.06	0.00	2.17	48.1	4.260
15.333	0.000	72.87	0.00	2.25	49.9	4.418
15.417	0.000	77.57	0.00	2.34	51.8	4.596
15.500	0.000	84.68	0.00	2.44	54.0	4.807
15.583	0.000	94.49	0.00	2.58	56.7	5.067
15.667	0.000	106.69	0.00	2.74	60.1	5.388
15.750	0.000	119.26	0.00	2.93	64.1	5.767
15.833	0.000	132.91	0.00	3.16	68.8	6.209
15.917	0.000	149.99	0.00	3.42	74.4	6.730
16.000	0.000	178.78	0.00	3.76	81.2	7.401
16.083	0.000	266.55	0.00	4.38	92.0	8.604
16.167	0.000	488.55	0.00	5.57	110.4	11.208
16.250	0.000	701.09	0.00	7.17	134.6	15.110
16.333	0.000	765.41	0.00	8.87	160.7	19.274
16.417	0.000	561.72	0.00	9.94	182.7	21.885
16.500	0.000	341.26	0.00	10.30	193.2	22.904
16.583	0.000	214.76	0.00	10.34	195.6	23.036
16.667	0.000	136.81	0.00	10.21	195.1	22.635
16.750	0.000	102.23	0.00	10.00	193.1	22.009
16.833	0.000	87.41	0.00	9.71	189.6	21.305
16.917	0.000	74.11	0.00	9.39	184.9	20.542
17.000	0.000	64.26	0.00	9.07	179.8	19.746
17.083	0.000	57.25	0.00	8.74	174.6	18.937
17.167	0.000	52.40	0.00	8.40	169.4	18.131
17.250	0.000	48.62	0.00	8.08	164.2	17.335
17.333	0.000	45.31	0.00	7.76	159.1	16.551
17.417	0.000	42.58	0.00	7.44	154.1	15.784
17.500	0.000	40.34	0.00	7.13	149.2	15.034
17.583	0.000	38.43	0.00	6.84	144.4	14.305
17.667	0.000	36.78	0.00	6.54	139.7	13.596
17.750	0.000	35.30	0.00	6.26	135.2	12.908
17.833	0.000	33.97	0.00	5.99	130.8	12.241
17.917	0.000	32.76	0.00	5.72	126.5	11.595
18.000	0.000	31.65	0.00	5.47	122.4	10.970
18.083	0.000	30.67	0.00	5.22	118.4	10.366
18.167	0.000	29.88	0.00	4.98	114.5	9.783
18.250	0.000	29.30	0.00	4.70	109.3	9.232
18.333	0.000	28.83	0.00	4.44	103.2	8.720

18.417	0.000	28.30	0.00	4.19	97.5	8.244
18.500	0.000	27.70	0.00	3.97	92.2	7.799
18.583	0.000	27.09	0.00	3.76	87.3	7.385
18.667	0.000	26.47	0.00	3.56	82.7	6.998
18.750	0.000	25.89	0.00	3.38	78.4	6.636
18.833	0.000	25.33	0.00	3.20	74.3	6.299
18.917	0.000	24.81	0.00	3.04	70.6	5.984
19.000	0.000	24.30	0.00	2.89	67.1	5.689
19.083	0.000	23.82	0.00	2.75	63.8	5.413
19.167	0.000	23.37	0.00	2.62	60.8	5.156
19.250	0.000	22.94	0.00	2.50	57.9	4.915
19.333	0.000	22.52	0.00	2.39	55.2	4.690
19.417	0.000	22.13	0.00	2.28	52.7	4.480
19.500	0.000	21.75	0.00	2.18	50.4	4.283
19.583	0.000	21.39	0.00	2.08	48.2	4.098
19.667	0.000	21.04	0.00	2.00	46.1	3.925
19.750	0.000	20.71	0.00	1.91	44.2	3.764
19.833	0.000	20.39	0.00	1.84	42.4	3.612
19.917	0.000	20.08	0.00	1.77	40.7	3.470
20.000	0.000	19.79	0.00	1.70	39.1	3.337
20.083	0.000	19.50	0.00	1.63	37.6	3.212
20.167	0.000	19.23	0.00	1.57	36.2	3.095
20.250	0.000	18.96	0.00	1.52	34.9	2.985
20.333	0.000	18.71	0.00	1.47	33.7	2.881
20.417	0.000	18.46	0.00	1.42	32.6	2.784
20.500	0.000	18.22	0.00	1.37	31.5	2.693
20.583	0.000	17.99	0.00	1.33	30.5	2.607
20.667	0.000	17.77	0.00	1.28	29.5	2.526
20.750	0.000	17.55	0.00	1.25	28.6	2.450
20.833	0.000	17.34	0.00	1.21	27.8	2.378
20.917	0.000	17.13	0.00	1.18	27.0	2.311
21.000	0.000	16.94	0.00	1.14	26.2	2.247
21.083	0.000	16.74	0.00	1.11	25.5	2.187
21.167	0.000	16.56	0.00	1.08	24.8	2.130
21.250	0.000	16.38	0.00	1.06	24.2	2.076
21.333	0.000	16.20	0.00	1.03	23.6	2.025
21.417	0.000	16.03	0.00	1.01	23.0	1.977
21.500	0.000	15.86	0.00	0.98	22.5	1.932
21.583	0.000	15.70	0.00	0.96	22.0	1.889
21.667	0.000	15.54	0.00	0.94	21.5	1.848
21.750	0.000	15.39	0.00	0.92	21.0	1.809
21.833	0.000	15.23	0.00	0.90	20.6	1.772
21.917	0.000	15.09	0.00	0.88	20.2	1.737
22.000	0.000	14.94	0.00	0.87	19.8	1.704
22.083	0.000	14.80	0.00	0.85	19.4	1.672
22.167	0.000	14.67	0.00	0.84	19.0	1.642
22.250	0.000	14.53	0.00	0.82	18.7	1.613
22.333	0.000	14.40	0.00	0.81	18.4	1.586
22.417	0.000	14.28	0.00	0.79	18.1	1.560
22.500	0.000	14.15	0.00	0.78	17.8	1.535
22.583	0.000	14.03	0.00	0.77	17.5	1.511

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          22.667        0.000    13.91     0.00      0.76     17.2      1.488
          22.750        0.000    13.79     0.00      0.75     17.0      1.466
          22.833        0.000    13.68     0.00      0.73     16.7      1.445
          22.917        0.000    13.57     0.00      0.72     16.5      1.425
          23.000        0.000    13.46     0.00      0.71     16.3      1.405
          23.083        0.000    13.35     0.00      0.71     16.0      1.387
          23.167        0.000    13.25     0.00      0.70     15.8      1.369
          23.250        0.000    13.14     0.00      0.69     15.6      1.352
          23.333        0.000    13.04     0.00      0.68     15.4      1.335
          23.417        0.000    12.94     0.00      0.67     15.3      1.319
          23.500        0.000    12.85     0.00      0.66     15.1      1.304
          23.583        0.000    12.75     0.00      0.66     14.9      1.289
          23.667        0.000    12.66     0.00      0.65     14.7      1.275
          23.750        0.000    12.56     0.00      0.64     14.6      1.261
          23.833        0.000    12.47     0.00      0.63     14.4      1.248
          23.917        0.000    12.39     0.00      0.63     14.3      1.235
--------------------------------------------------------------------------------
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =     73.510 AF
    BASIN  STORAGE =      0.000 AF (WITH      0.000 AF INITIALLY FILLED)
    OUTFLOW VOLUME =     73.510 AF
    LOSS    VOLUME =      0.000 AF


********************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    100.00 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
================================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #3)

         WATERSHED AREA =     577.950 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.210 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.271
         LOW LOSS FRACTION = 0.444
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.22
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.45
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  0.87
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  1.80

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
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            5-MINUTE FACTOR = 0.974
           30-MINUTE FACTOR = 0.974
            1-HOUR FACTOR = 0.974
            3-HOUR FACTOR = 0.996
            6-HOUR FACTOR = 0.998
           24-HOUR FACTOR = 0.999

          UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
          UNIT INTERVAL PERCENTAGE OF LAG-TIME =  39.683
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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	2.872	200.764
2	19.165	1138.762
3	48.437	2045.999
4	76.826	1984.323
5	90.830	978.816
6	96.604	403.564
7	98.430	127.619
8	99.173	51.923
9	99.669	34.688
10	99.917	17.344
11	100.000	5.781

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    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      34.5761
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      51.9889
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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	150.0	300.0	450.0	600.0
0.083	0.0017	0.25	Q	.	.	.	.
0.167	0.0131	1.66	Q	.	.	.	.
0.250	0.0420	4.19	Q	.	.	.	.
0.333	0.0878	6.66	Q	.	.	.	.
0.417	0.1422	7.89	Q	.	.	.	.
0.500	0.2001	8.41	Q	.	.	.	.
0.583	0.2593	8.60	Q	.	.	.	.
0.667	0.3192	8.69	Q	.	.	.	.
0.750	0.3796	8.77	Q	.	.	.	.
0.833	0.4403	8.82	Q	.	.	.	.
0.917	0.5013	8.86	Q	.	.	.	.
1.000	0.5625	8.89	Q	.	.	.	.
1.083	0.6239	8.92	Q	.	.	.	.
1.167	0.6856	8.95	Q	.	.	.	.
1.250	0.7474	8.98	Q	.	.	.	.
1.333	0.8095	9.01	Q	.	.	.	.
1.417	0.8718	9.05	Q	.	.	.	.
1.500	0.9344	9.08	Q	.	.	.	.
1.583	0.9971	9.11	Q	.	.	.	.
1.667	1.0601	9.15	Q	.	.	.	.
1.750	1.1233	9.18	Q	.	.	.	.
1.833	1.1868	9.21	Q	.	.	.	.
1.917	1.2505	9.25	Q	.	.	.	.
2.000	1.3144	9.28	QV	.	.	.	.
2.083	1.3786	9.32	QV	.	.	.	.
2.167	1.4430	9.35	QV	.	.	.	.
2.250	1.5077	9.39	QV	.	.	.	.
2.333	1.5726	9.43	QV	.	.	.	.
2.417	1.6378	9.46	QV	.	.	.	.
2.500	1.7032	9.50	QV	.	.	.	.
2.583	1.7689	9.54	QV	.	.	.	.
2.667	1.8348	9.57	QV	.	.	.	.
2.750	1.9010	9.61	QV	.	.	.	.
2.833	1.9674	9.65	QV	.	.	.	.
2.917	2.0342	9.69	QV	.	.	.	.
3.000	2.1012	9.73	QV	.	.	.	.
3.083	2.1684	9.77	QV	.	.	.	.
3.167	2.2360	9.81	QV	.	.	.	.
3.250	2.3038	9.85	QV	.	.	.	.
3.333	2.3719	9.89	QV	.	.	.	.

3.417	2.4403	9.93	QV	.	.	.	.
3.500	2.5089	9.97	QV	.	.	.	.
3.583	2.5779	10.01	QV	.	.	.	.
3.667	2.6471	10.06	Q V	.	.	.	.
3.750	2.7167	10.10	Q V	.	.	.	.
3.833	2.7865	10.14	Q V	.	.	.	.
3.917	2.8567	10.19	Q V	.	.	.	.
4.000	2.9271	10.23	Q V	.	.	.	.
4.083	2.9979	10.27	Q V	.	.	.	.
4.167	3.0690	10.32	Q V	.	.	.	.
4.250	3.1404	10.37	Q V	.	.	.	.
4.333	3.2121	10.41	Q V	.	.	.	.
4.417	3.2841	10.46	Q V	.	.	.	.
4.500	3.3565	10.51	Q V	.	.	.	.
4.583	3.4292	10.56	Q V	.	.	.	.
4.667	3.5022	10.60	Q V	.	.	.	.
4.750	3.5756	10.65	Q V	.	.	.	.
4.833	3.6493	10.70	Q V	.	.	.	.
4.917	3.7234	10.75	Q V	.	.	.	.
5.000	3.7978	10.81	Q V	.	.	.	.
5.083	3.8725	10.86	Q V	.	.	.	.
5.167	3.9477	10.91	Q V	.	.	.	.
5.250	4.0232	10.96	Q V	.	.	.	.
5.333	4.0990	11.02	Q V	.	.	.	.
5.417	4.1753	11.07	Q V	.	.	.	.
5.500	4.2519	11.13	Q V	.	.	.	.
5.583	4.3289	11.18	Q V	.	.	.	.
5.667	4.4063	11.24	Q V	.	.	.	.
5.750	4.4841	11.29	Q V	.	.	.	.
5.833	4.5623	11.35	Q V	.	.	.	.
5.917	4.6408	11.41	Q V	.	.	.	.
6.000	4.7198	11.47	Q V	.	.	.	.
6.083	4.7992	11.53	Q V	.	.	.	.
6.167	4.8791	11.59	Q V	.	.	.	.
6.250	4.9593	11.65	Q V	.	.	.	.
6.333	5.0400	11.72	Q V	.	.	.	.
6.417	5.1211	11.78	Q V	.	.	.	.
6.500	5.2027	11.84	Q V	.	.	.	.
6.583	5.2847	11.91	Q V	.	.	.	.
6.667	5.3672	11.98	Q V	.	.	.	.
6.750	5.4502	12.04	Q V	.	.	.	.
6.833	5.5336	12.11	Q V	.	.	.	.
6.917	5.6175	12.18	Q V	.	.	.	.
7.000	5.7018	12.25	Q V	.	.	.	.
7.083	5.7867	12.32	Q V	.	.	.	.
7.167	5.8721	12.39	Q V	.	.	.	.
7.250	5.9579	12.47	Q V	.	.	.	.
7.333	6.0443	12.54	Q V	.	.	.	.
7.417	6.1312	12.62	Q V	.	.	.	.
7.500	6.2186	12.70	Q V	.	.	.	.
7.583	6.3066	12.77	Q V	.	.	.	.

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 7.667      6.3951     12.85  Q   V     .         .         .         .
 7.750      6.4842     12.93  Q   V     .         .         .         .
 7.833      6.5738     13.02  Q    V    .         .         .         .
 7.917      6.6640     13.10  Q    V    .         .         .         .
 8.000      6.7548     13.18  Q    V    .         .         .         .
 8.083      6.8462     13.27  Q    V    .         .         .         .
 8.167      6.9382     13.36  Q    V    .         .         .         .
 8.250      7.0308     13.45  Q    V    .         .         .         .
 8.333      7.1241     13.54  Q    V    .         .         .         .
 8.417      7.2179     13.63  Q    V    .         .         .         .
 8.500      7.3124     13.72  Q    V    .         .         .         .
 8.583      7.4076     13.82  Q    V    .         .         .         .
 8.667      7.5034     13.92  Q    V    .         .         .         .
 8.750      7.5999     14.01  Q    V    .         .         .         .
 8.833      7.6971     14.11  Q    V    .         .         .         .
 8.917      7.7950     14.22  Q    V    .         .         .         .
 9.000      7.8937     14.32  Q     V   .         .         .         .
 9.083      7.9930     14.43  Q     V   .         .         .         .
 9.167      8.0932     14.54  Q     V   .         .         .         .
 9.250      8.1940     14.65  Q     V   .         .         .         .
 9.333      8.2957     14.76  Q     V   .         .         .         .
 9.417      8.3981     14.87  Q     V   .         .         .         .
 9.500      8.5014     14.99  Q     V   .         .         .         .
 9.583      8.6055     15.11  .Q    V   .         .         .         .
 9.667      8.7104     15.24  .Q    V   .         .         .         .
 9.750      8.8162     15.36  .Q    V   .         .         .         .
 9.833      8.9228     15.49  .Q    V   .         .         .         .
 9.917      9.0304     15.62  .Q    V   .         .         .         .
10.000      9.1388     15.75  .Q     V  .         .         .         .
10.083      9.2482     15.89  .Q     V  .         .         .         .
10.167      9.3586     16.03  .Q     V  .         .         .         .
10.250      9.4699     16.17  .Q     V  .         .         .         .
10.333      9.5823     16.31  .Q     V  .         .         .         .
10.417      9.6957     16.46  .Q     V  .         .         .         .
10.500      9.8101     16.61  .Q     V  .         .         .         .
10.583      9.9256     16.77  .Q     V  .         .         .         .
10.667     10.0422     16.93  .Q     V  .         .         .         .
10.750     10.1599     17.09  .Q     V  .         .         .         .
10.833     10.2787     17.26  .Q     V  .         .         .         .
10.917     10.3988     17.43  .Q      V .         .         .         .
11.000     10.5201     17.61  .Q      V .         .         .         .
11.083     10.6426     17.79  .Q      V .         .         .         .
11.167     10.7664     17.98  .Q      V .         .         .         .
11.250     10.8915     18.17  .Q      V .         .         .         .
11.333     11.0180     18.36  .Q      V .         .         .         .
11.417     11.1458     18.56  .Q      V .         .         .         .
11.500     11.2751     18.77  .Q      V .         .         .         .
11.583     11.4058     18.98  .Q      V .         .         .         .
11.667     11.5381     19.21  .Q      V .         .         .         .
11.750     11.6719     19.43  .Q      V .         .         .         .
11.833     11.8074     19.67  .Q       V.         .         .         .
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11.917     11.9445     19.90  .Q       V.         .         .         .
12.000     12.0833     20.16  .Q       V.         .         .         .
12.083     12.2237     20.38  .Q       V.         .         .         .
12.167     12.3649     20.51  .Q       V.         .         .         .
12.250     12.5063     20.53  .Q       V.         .         .         .
12.333     12.6479     20.57  .Q       V.         .         .         .
12.417     12.7907     20.73  .Q       V.         .         .         .
12.500     12.9352     20.98  .Q       V.         .         .         .
12.583     13.0817     21.27  .Q        V         .         .         .
12.667     13.2304     21.59  .Q        V         .         .         .
12.750     13.3814     21.92  .Q        V         .         .         .
12.833     13.5347     22.27  .Q        V         .         .         .
12.917     13.6905     22.62  .Q        V         .         .         .
13.000     13.8489     23.00  .Q        V         .         .         .
13.083     14.0100     23.39  .Q        V         .         .         .
13.167     14.1740     23.81  .Q        V         .         .         .
13.250     14.3409     24.23  .Q        .V        .         .         .
13.333     14.5108     24.68  .Q        .V        .         .         .
13.417     14.6840     25.15  .Q        .V        .         .         .
13.500     14.8607     25.65  .Q        .V        .         .         .
13.583     15.0408     26.16  .Q        .V        .         .         .
13.667     15.2248     26.71  .Q        .V        .         .         .
13.750     15.4127     27.28  .Q        .V        .         .         .
13.833     15.6048     27.89  .Q        . V       .         .         .
13.917     15.8013     28.53  .Q        . V       .         .         .
14.000     16.0025     29.22  .Q        . V       .         .         .
14.083     16.2090     29.98  .Q        . V       .         .         .
14.167     16.4227     31.03  . Q       . V       .         .         .
14.250     16.6453     32.32  . Q       . V       .         .         .
14.333     16.8773     33.68  . Q       . V       .         .         .
14.417     17.1174     34.86  . Q       .  V      .         .         .
14.500     17.3653     36.01  . Q       .  V      .         .         .
14.583     17.6212     37.15  . Q       .  V      .         .         .
14.667     17.8856     38.40  . Q       .  V      .         .         .
14.750     18.1592     39.72  . Q       .  V      .         .         .
14.833     18.4429     41.19  . Q       .   V     .         .         .
14.917     18.7375     42.78  . Q       .   V     .         .         .
15.000     19.0445     44.57  . Q       .   V     .         .         .
15.083     19.3649     46.53  .  Q      .   V     .         .         .
15.167     19.7008     48.76  .  Q      .    V    .         .         .
15.250     20.0538     51.25  .  Q      .    V    .         .         .
15.333     20.4267     54.16  .  Q      .    V    .         .         .
15.417     20.8246     57.77  .  Q      .     V   .         .         .
15.500     21.2620     63.51  .   Q     .     V   .         .         .
15.583     21.7538     71.40  .   Q     .     V   .         .         .
15.667     22.3081     80.49  .    Q    .      V  .         .         .
15.750     22.9241     89.45  .    Q    .      V  .         .         .
15.833     23.6100     99.59  .     Q   .       V .         .         .
15.917     24.3866    112.77  .      Q  .       V .         .         .
16.000     25.3292    136.87  .        Q.        V.         .         .
16.083     26.7841    211.26  .         .   Q     V         .         .
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16.167     29.5426    400.52  .         .         . V   Q   .         .
16.250     33.3347    550.61  .         .         .    V    .     Q   .
16.333     36.8304    507.58  .         .         .       V .  Q      .
16.417     38.9362    305.77  .         .         Q        V.         .
16.500     40.1653    178.46  .         .Q        .         V         .
16.583     40.9151    108.86  .      Q  .         .         .V        .
16.667     41.4623     79.46  .    Q    .         .         .V        .
16.750     41.9136     65.53  .   Q     .         .         . V       .
16.833     42.2934     55.13  .  Q      .         .         . V       .
16.917     42.6229     47.85  .  Q      .         .         . V       .
17.000     42.9180     42.85  . Q       .         .         .  V      .
17.083     43.1906     39.59  . Q       .         .         .  V      .
17.167     43.4434     36.71  . Q       .         .         .  V      .
17.250     43.6779     34.05  . Q       .         .         .  V      .
17.333     43.8966     31.75  . Q       .         .         .  V      .
17.417     44.1026     29.92  .Q        .         .         .  V      .
17.500     44.2984     28.42  .Q        .         .         .   V     .
17.583     44.4854     27.15  .Q        .         .         .   V     .
17.667     44.6646     26.03  .Q        .         .         .   V     .
17.750     44.8369     25.01  .Q        .         .         .   V     .
17.833     45.0029     24.10  .Q        .         .         .   V     .
17.917     45.1631     23.27  .Q        .         .         .   V     .
18.000     45.3181     22.51  .Q        .         .         .   V     .
18.083     45.4684     21.83  .Q        .         .         .   V     .
18.167     45.6153     21.32  .Q        .         .         .    V    .
18.250     45.7597     20.97  .Q        .         .         .    V    .
18.333     45.9019     20.65  .Q        .         .         .    V    .
18.417     46.0413     20.24  .Q        .         .         .    V    .
18.500     46.1776     19.79  .Q        .         .         .    V    .
18.583     46.3108     19.34  .Q        .         .         .    V    .
18.667     46.4409     18.90  .Q        .         .         .    V    .
18.750     46.5682     18.49  .Q        .         .         .    V    .
18.833     46.6929     18.09  .Q        .         .         .    V    .
18.917     46.8149     17.72  .Q        .         .         .     V   .
19.000     46.9345     17.37  .Q        .         .         .     V   .
19.083     47.0518     17.03  .Q        .         .         .     V   .
19.167     47.1669     16.71  .Q        .         .         .     V   .
19.250     47.2798     16.40  .Q        .         .         .     V   .
19.333     47.3908     16.11  .Q        .         .         .     V   .
19.417     47.4998     15.83  .Q        .         .         .     V   .
19.500     47.6070     15.57  .Q        .         .         .     V   .
19.583     47.7125     15.31  .Q        .         .         .     V   .
19.667     47.8162     15.06  .Q        .         .         .     V   .
19.750     47.9184     14.83  Q         .         .         .     V   .
19.833     48.0189     14.60  Q         .         .         .     V   .
19.917     48.1180     14.39  Q         .         .         .      V  .
20.000     48.2156     14.18  Q         .         .         .      V  .
20.083     48.3119     13.97  Q         .         .         .      V  .
20.167     48.4068     13.78  Q         .         .         .      V  .
20.250     48.5004     13.59  Q         .         .         .      V  .
20.333     48.5927     13.41  Q         .         .         .      V  .
```

20.417	48.6839	13.23	Q	.	.	.	V .
20.500	48.7738	13.06	Q	.	.	.	V .
20.583	48.8627	12.90	Q	.	.	.	V .
20.667	48.9504	12.74	Q	.	.	.	V .
20.750	49.0371	12.59	Q	.	.	.	V .
20.833	49.1228	12.44	Q	.	.	.	V .
20.917	49.2075	12.29	Q	.	.	.	V .
21.000	49.2911	12.15	Q	.	.	.	V .
21.083	49.3739	12.01	Q	.	.	.	V .
21.167	49.4557	11.88	Q	.	.	.	V .
21.250	49.5367	11.75	Q	.	.	.	V .
21.333	49.6167	11.63	Q	.	.	.	V .
21.417	49.6960	11.50	Q	.	.	.	V .
21.500	49.7744	11.39	Q	.	.	.	V .
21.583	49.8520	11.27	Q	.	.	.	V .
21.667	49.9288	11.16	Q	.	.	.	V .
21.750	50.0049	11.05	Q	.	.	.	V .
21.833	50.0803	10.94	Q	.	.	.	V .
21.917	50.1549	10.83	Q	.	.	.	V .
22.000	50.2288	10.73	Q	.	.	.	V .
22.083	50.3020	10.63	Q	.	.	.	V .
22.167	50.3746	10.54	Q	.	.	.	V .
22.250	50.4465	10.44	Q	.	.	.	V .
22.333	50.5177	10.35	Q	.	.	.	V .
22.417	50.5884	10.26	Q	.	.	.	V .
22.500	50.6584	10.17	Q	.	.	.	V .
22.583	50.7278	10.08	Q	.	.	.	V.
22.667	50.7966	9.99	Q	.	.	.	V.
22.750	50.8649	9.91	Q	.	.	.	V.
22.833	50.9326	9.83	Q	.	.	.	V.
22.917	50.9997	9.75	Q	.	.	.	V.
23.000	51.0663	9.67	Q	.	.	.	V.
23.083	51.1324	9.59	Q	.	.	.	V.
23.167	51.1980	9.52	Q	.	.	.	V.
23.250	51.2631	9.45	Q	.	.	.	V.
23.333	51.3276	9.37	Q	.	.	.	V.
23.417	51.3917	9.30	Q	.	.	.	V.
23.500	51.4553	9.23	Q	.	.	.	V.
23.583	51.5184	9.17	Q	.	.	.	V.
23.667	51.5811	9.10	Q	.	.	.	V.
23.750	51.6433	9.03	Q	.	.	.	V.
23.833	51.7050	8.97	Q	.	.	.	V.
23.917	51.7664	8.91	Q	.	.	.	V.
24.000	51.8273	8.84	Q	.	.	.	V.
24.083	51.8860	8.53	Q	.	.	.	V.
24.167	51.9347	7.07	Q	.	.	.	V.
24.250	51.9657	4.50	Q	.	.	.	V.
24.333	51.9796	2.02	Q	.	.	.	V.
24.417	51.9852	0.80	Q	.	.	.	V.
24.500	51.9872	0.30	Q	.	.	.	V.
24.583	51.9881	0.14	Q	.	.	.	V.

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  24.667     51.9886      0.07  Q         .         .         .        V.
  24.750     51.9888      0.03  Q         .         .         .        V.
  24.833     51.9889      0.01  Q         .         .         .         V
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated                Duration
       Peak Flow Rate                     (minutes)
   ======================                 =========
              0%                           1490.0
             10%                             90.0
             20%                             40.0
             30%                             30.0
             40%                             20.0
             50%                             20.0
             60%                             15.0
             70%                             15.0
             80%                             10.0
             90%                             10.0


********************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 5.2
--------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
================================================================================

         THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
         TO ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE
         INTERVALS(Reference: the National Engineering Handbook,
         Hydrology, Chapter 17, page 17-52, August,1972,
         U.S. Department of Commerce).


         ASSUMED REGULAR CHANNEL INFORMATION:
           BASEWIDTH(FT) =   30.00     CHANNEL Z =  2.00
           UPSTREAM ELEVATION(FT) =     938.00
           DOWNSTREAM ELEVATION(FT) =     909.00
           CHANNEL LENGTH(FT) =    2185.72     MANNING'S FACTOR = 0.015
           CONSTANT LOSS RATE(CFS) =    0.00


         CHANNEL ROUTING COEFFICIENT ESTIMATED:
           MAXIMUM INFLOW(CFS) =   550.61
           AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW =   441.12
           CHANNEL NORMAL VELOCITY FOR Q =   441.12 CFS =  11.85 FPS
           ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.875

         MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
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UNIT INTERVALS IS CSTAR = 0.962

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 3) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 3) (CFS)
0.083	0.25	0.11	0.11
0.167	1.66	0.87	0.87
0.250	4.19	2.75	2.75
0.333	6.66	5.23	5.23
0.417	7.89	7.15	7.15
0.500	8.41	8.09	8.09
0.583	8.60	8.48	8.48
0.667	8.69	8.64	8.64
0.750	8.77	8.72	8.72
0.833	8.82	8.79	8.79
0.917	8.86	8.83	8.83
1.000	8.89	8.87	8.87
1.083	8.92	8.90	8.90
1.167	8.95	8.93	8.93
1.250	8.98	8.96	8.96
1.333	9.01	9.00	9.00
1.417	9.05	9.03	9.03
1.500	9.08	9.06	9.06
1.583	9.11	9.09	9.09
1.667	9.15	9.13	9.13
1.750	9.18	9.16	9.16
1.833	9.21	9.19	9.19
1.917	9.25	9.23	9.23
2.000	9.28	9.26	9.26
2.083	9.32	9.30	9.30
2.167	9.35	9.33	9.33
2.250	9.39	9.37	9.37
2.333	9.43	9.40	9.40
2.417	9.46	9.44	9.44
2.500	9.50	9.48	9.48
2.583	9.54	9.51	9.51
2.667	9.57	9.55	9.55
2.750	9.61	9.59	9.59
2.833	9.65	9.63	9.63
2.917	9.69	9.67	9.67
3.000	9.73	9.70	9.70
3.083	9.77	9.74	9.74
3.167	9.81	9.78	9.78
3.250	9.85	9.82	9.82
3.333	9.89	9.86	9.86
3.417	9.93	9.91	9.91
3.500	9.97	9.95	9.95
3.583	10.01	9.99	9.99

3.667	10.06	10.03	10.03
3.750	10.10	10.07	10.07
3.833	10.14	10.12	10.12
3.917	10.19	10.16	10.16
4.000	10.23	10.20	10.20
4.083	10.27	10.25	10.25
4.167	10.32	10.29	10.29
4.250	10.37	10.34	10.34
4.333	10.41	10.39	10.39
4.417	10.46	10.43	10.43
4.500	10.51	10.48	10.48
4.583	10.56	10.53	10.53
4.667	10.60	10.58	10.58
4.750	10.65	10.63	10.63
4.833	10.70	10.67	10.67
4.917	10.75	10.72	10.72
5.000	10.81	10.78	10.78
5.083	10.86	10.83	10.83
5.167	10.91	10.88	10.88
5.250	10.96	10.93	10.93
5.333	11.02	10.98	10.98
5.417	11.07	11.04	11.04
5.500	11.13	11.09	11.09
5.583	11.18	11.15	11.15
5.667	11.24	11.20	11.20
5.750	11.29	11.26	11.26
5.833	11.35	11.32	11.32
5.917	11.41	11.38	11.38
6.000	11.47	11.44	11.44
6.083	11.53	11.50	11.50
6.167	11.59	11.56	11.56
6.250	11.65	11.62	11.62
6.333	11.72	11.68	11.68
6.417	11.78	11.74	11.74
6.500	11.84	11.81	11.81
6.583	11.91	11.87	11.87
6.667	11.98	11.94	11.94
6.750	12.04	12.00	12.00
6.833	12.11	12.07	12.07
6.917	12.18	12.14	12.14
7.000	12.25	12.21	12.21
7.083	12.32	12.28	12.28
7.167	12.39	12.35	12.35
7.250	12.47	12.43	12.43
7.333	12.54	12.50	12.50
7.417	12.62	12.57	12.57
7.500	12.70	12.65	12.65
7.583	12.77	12.73	12.73
7.667	12.85	12.81	12.81
7.750	12.93	12.89	12.89
7.833	13.02	12.97	12.97

7.917	13.10	13.05	13.05
8.000	13.18	13.13	13.13
8.083	13.27	13.22	13.22
8.167	13.36	13.31	13.31
8.250	13.45	13.39	13.39
8.333	13.54	13.48	13.48
8.417	13.63	13.58	13.58
8.500	13.72	13.67	13.67
8.583	13.82	13.76	13.76
8.667	13.92	13.86	13.86
8.750	14.01	13.96	13.96
8.833	14.11	14.06	14.06
8.917	14.22	14.16	14.16
9.000	14.32	14.26	14.26
9.083	14.43	14.37	14.37
9.167	14.54	14.47	14.47
9.250	14.65	14.58	14.58
9.333	14.76	14.69	14.69
9.417	14.87	14.81	14.81
9.500	14.99	14.92	14.92
9.583	15.11	15.04	15.04
9.667	15.24	15.16	15.16
9.750	15.36	15.29	15.29
9.833	15.49	15.41	15.41
9.917	15.62	15.54	15.54
10.000	15.75	15.67	15.67
10.083	15.89	15.81	15.81
10.167	16.03	15.94	15.94
10.250	16.17	16.08	16.08
10.333	16.31	16.23	16.23
10.417	16.46	16.38	16.38
10.500	16.61	16.53	16.53
10.583	16.77	16.68	16.68
10.667	16.93	16.84	16.84
10.750	17.09	17.00	17.00
10.833	17.26	17.16	17.16
10.917	17.43	17.33	17.33
11.000	17.61	17.51	17.51
11.083	17.79	17.69	17.69
11.167	17.98	17.87	17.87
11.250	18.17	18.06	18.06
11.333	18.36	18.25	18.25
11.417	18.56	18.45	18.45
11.500	18.77	18.65	18.65
11.583	18.98	18.86	18.86
11.667	19.21	19.08	19.08
11.750	19.43	19.30	19.30
11.833	19.67	19.53	19.53
11.917	19.90	19.77	19.77
12.000	20.16	20.01	20.01
12.083	20.38	20.25	20.25

12.167	20.51	20.44	20.44
12.250	20.53	20.52	20.52
12.333	20.57	20.54	20.54
12.417	20.73	20.64	20.64
12.500	20.98	20.84	20.84
12.583	21.27	21.11	21.11
12.667	21.59	21.41	21.41
12.750	21.92	21.73	21.73
12.833	22.27	22.07	22.07
12.917	22.62	22.42	22.42
13.000	23.00	22.78	22.78
13.083	23.39	23.17	23.17
13.167	23.81	23.57	23.57
13.250	24.23	23.98	23.98
13.333	24.68	24.42	24.42
13.417	25.15	24.88	24.88
13.500	25.65	25.36	25.36
13.583	26.16	25.86	25.86
13.667	26.71	26.39	26.39
13.750	27.28	26.95	26.95
13.833	27.89	27.54	27.54
13.917	28.53	28.16	28.16
14.000	29.22	28.82	28.82
14.083	29.98	29.54	29.54
14.167	31.03	30.43	30.43
14.250	32.32	31.58	31.58
14.333	33.68	32.90	32.90
14.417	34.86	34.18	34.18
14.500	36.01	35.35	35.35
14.583	37.15	36.49	36.49
14.667	38.40	37.68	37.68
14.750	39.72	38.96	38.96
14.833	41.19	40.35	40.35
14.917	42.78	41.87	41.87
15.000	44.57	43.54	43.54
15.083	46.53	45.40	45.40
15.167	48.76	47.48	47.48
15.250	51.25	49.82	49.82
15.333	54.16	52.49	52.49
15.417	57.77	55.70	55.70
15.500	63.51	60.25	60.25
15.583	71.40	66.90	66.90
15.667	80.49	75.27	75.27
15.750	89.45	84.27	84.27
15.833	99.59	93.76	93.76
15.917	112.77	105.23	105.23
16.000	136.87	123.20	123.20
16.083	211.26	169.43	169.43
16.167	400.52	293.84	293.84
16.250	550.61	463.21	463.21
16.333	507.58	528.14	528.14

16.417	305.77	418.60	418.60
16.500	178.46	253.45	253.45
16.583	108.86	150.36	150.36
16.667	79.46	97.37	97.37
16.750	65.53	73.95	73.95
16.833	55.13	61.23	61.23
16.917	47.85	52.12	52.12
17.000	42.85	45.79	45.79
17.083	39.59	41.51	41.51
17.167	36.71	38.38	38.38
17.250	34.05	35.59	35.59
17.333	31.75	33.09	33.09
17.417	29.92	30.98	30.98
17.500	28.42	29.29	29.29
17.583	27.15	27.89	27.89
17.667	26.03	26.68	26.68
17.750	25.01	25.60	25.60
17.833	24.10	24.63	24.63
17.917	23.27	23.75	23.75
18.000	22.51	22.95	22.95
18.083	21.83	22.22	22.22
18.167	21.32	21.62	21.62
18.250	20.97	21.18	21.18
18.333	20.65	20.83	20.83
18.417	20.24	20.47	20.47
18.500	19.79	20.05	20.05
18.583	19.34	19.60	19.60
18.667	18.90	19.15	19.15
18.750	18.49	18.73	18.73
18.833	18.09	18.32	18.32
18.917	17.72	17.94	17.94
19.000	17.37	17.57	17.57
19.083	17.03	17.22	17.22
19.167	16.71	16.89	16.89
19.250	16.40	16.58	16.58
19.333	16.11	16.28	16.28
19.417	15.83	15.99	15.99
19.500	15.57	15.72	15.72
19.583	15.31	15.46	15.46
19.667	15.06	15.21	15.21
19.750	14.83	14.97	14.97
19.833	14.60	14.73	14.73
19.917	14.39	14.51	14.51
20.000	14.18	14.30	14.30
20.083	13.97	14.09	14.09
20.167	13.78	13.89	13.89
20.250	13.59	13.70	13.70
20.333	13.41	13.51	13.51
20.417	13.23	13.34	13.34
20.500	13.06	13.16	13.16
20.583	12.90	13.00	13.00

20.667	12.74	12.83	12.83
20.750	12.59	12.68	12.68
20.833	12.44	12.52	12.52
20.917	12.29	12.38	12.38
21.000	12.15	12.23	12.23
21.083	12.01	12.09	12.09
21.167	11.88	11.96	11.96
21.250	11.75	11.83	11.83
21.333	11.63	11.70	11.70
21.417	11.50	11.58	11.58
21.500	11.39	11.45	11.45
21.583	11.27	11.34	11.34
21.667	11.16	11.22	11.22
21.750	11.05	11.11	11.11
21.833	10.94	11.00	11.00
21.917	10.83	10.90	10.90
22.000	10.73	10.79	10.79
22.083	10.63	10.69	10.69
22.167	10.54	10.59	10.59
22.250	10.44	10.49	10.49
22.333	10.35	10.40	10.40
22.417	10.26	10.31	10.31
22.500	10.17	10.22	10.22
22.583	10.08	10.13	10.13
22.667	9.99	10.04	10.04
22.750	9.91	9.96	9.96
22.833	9.83	9.88	9.88
22.917	9.75	9.80	9.80
23.000	9.67	9.72	9.72
23.083	9.59	9.64	9.64
23.167	9.52	9.56	9.56
23.250	9.45	9.49	9.49
23.333	9.37	9.42	9.42
23.417	9.30	9.34	9.34
23.500	9.23	9.27	9.27
23.583	9.17	9.20	9.20
23.667	9.10	9.14	9.14
23.750	9.03	9.07	9.07
23.833	8.97	9.01	9.01
23.917	8.91	8.94	8.94
24.000	8.84	8.88	8.88

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PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 51.989 AF

OUTFLOW VOLUME = 51.989 AF

LOSS VOLUME = 0.000 AF

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FLOW PROCESS FROM NODE 101.00 TO NODE 101.00 IS CODE = 7

>>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
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****
FLOW PROCESS FROM NODE 101.00 TO NODE 101.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
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STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	175.0	350.0	525.0	700.0
0.083	0.0008	0.12	Q	.	.	.	.
0.167	0.0074	0.95	Q	.	.	.	.
0.250	0.0285	3.07	Q	.	.	.	.
0.333	0.0698	5.99	Q	.	.	.	.
0.417	0.1285	8.53	Q	.	.	.	.
0.500	0.1985	10.17	Q	.	.	.	.
0.583	0.2762	11.28	Q	.	.	.	.
0.667	0.3597	12.12	Q	.	.	.	.
0.750	0.4482	12.86	Q	.	.	.	.
0.833	0.5414	13.53	Q	.	.	.	.
0.917	0.6388	14.14	Q	.	.	.	.
1.000	0.7401	14.71	Q	.	.	.	.
1.083	0.8450	15.23	Q	.	.	.	.
1.167	0.9533	15.72	Q	.	.	.	.
1.250	1.0647	16.18	Q	.	.	.	.
1.333	1.1792	16.61	Q	.	.	.	.
1.417	1.2964	17.02	Q	.	.	.	.
1.500	1.4162	17.40	Q	.	.	.	.
1.583	1.5385	17.76	VQ	.	.	.	.
1.667	1.6631	18.09	VQ	.	.	.	.
1.750	1.7898	18.41	VQ	.	.	.	.
1.833	1.9187	18.71	VQ	.	.	.	.
1.917	2.0495	18.99	VQ	.	.	.	.
2.000	2.1821	19.26	VQ	.	.	.	.
2.083	2.3165	19.51	VQ	.	.	.	.
2.167	2.4526	19.75	VQ	.	.	.	.
2.250	2.5902	19.98	VQ	.	.	.	.
2.333	2.7293	20.20	VQ	.	.	.	.
2.417	2.8699	20.41	VQ	.	.	.	.
2.500	3.0119	20.61	VQ	.	.	.	.
2.583	3.1552	20.81	.Q	.	.	.	.
2.667	3.2997	20.99	.Q	.	.	.	.
2.750	3.4455	21.17	.Q	.	.	.	.
2.833	3.5925	21.34	.Q	.	.	.	.
2.917	3.7406	21.51	.Q	.	.	.	.
3.000	3.8898	21.67	.Q	.	.	.	.

3.083	4.0401	21.82	.Q	.	.	.	.
3.167	4.1914	21.97	.Q	.	.	.	.
3.250	4.3438	22.12	.Q	.	.	.	.
3.333	4.4971	22.26	.Q	.	.	.	.
3.417	4.6514	22.41	.Q	.	.	.	.
3.500	4.8067	22.54	.Q	.	.	.	.
3.583	4.9629	22.68	.Q	.	.	.	.
3.667	5.1200	22.81	.Q	.	.	.	.
3.750	5.2780	22.94	.Q	.	.	.	.
3.833	5.4369	23.07	.Q	.	.	.	.
3.917	5.5967	23.20	.Q	.	.	.	.
4.000	5.7574	23.33	.Q	.	.	.	.
4.083	5.9189	23.45	.Q	.	.	.	.
4.167	6.0813	23.58	.Q	.	.	.	.
4.250	6.2445	23.70	.Q	.	.	.	.
4.333	6.4086	23.83	.QV	.	.	.	.
4.417	6.5736	23.95	.QV	.	.	.	.
4.500	6.7394	24.07	.QV	.	.	.	.
4.583	6.9060	24.20	.QV	.	.	.	.
4.667	7.0735	24.32	.QV	.	.	.	.
4.750	7.2418	24.44	.QV	.	.	.	.
4.833	7.4110	24.56	.QV	.	.	.	.
4.917	7.5810	24.69	.QV	.	.	.	.
5.000	7.7519	24.81	.QV	.	.	.	.
5.083	7.9236	24.93	.QV	.	.	.	.
5.167	8.0962	25.06	.QV	.	.	.	.
5.250	8.2696	25.18	.QV	.	.	.	.
5.333	8.4439	25.31	.QV	.	.	.	.
5.417	8.6191	25.44	.QV	.	.	.	.
5.500	8.7951	25.56	.QV	.	.	.	.
5.583	8.9721	25.69	.QV	.	.	.	.
5.667	9.1499	25.82	.QV	.	.	.	.
5.750	9.3286	25.95	.QV	.	.	.	.
5.833	9.5083	26.08	.Q V	.	.	.	.
5.917	9.6888	26.22	.Q V	.	.	.	.
6.000	9.8703	26.35	.Q V	.	.	.	.
6.083	10.0527	26.49	.Q V	.	.	.	.
6.167	10.2361	26.62	.Q V	.	.	.	.
6.250	10.4204	26.76	.Q V	.	.	.	.
6.333	10.6057	26.90	.Q V	.	.	.	.
6.417	10.7919	27.04	.Q V	.	.	.	.
6.500	10.9791	27.19	.Q V	.	.	.	.
6.583	11.1674	27.33	.Q V	.	.	.	.
6.667	11.3566	27.48	.Q V	.	.	.	.
6.750	11.5469	27.63	.Q V	.	.	.	.
6.833	11.7382	27.78	.Q V	.	.	.	.
6.917	11.9305	27.93	.Q V	.	.	.	.
7.000	12.1239	28.08	.Q V	.	.	.	.
7.083	12.3184	28.24	.Q V	.	.	.	.
7.167	12.5140	28.40	.Q V	.	.	.	.
7.250	12.7107	28.56	.Q V	.	.	.	.

7.333	12.9085	28.72	.Q	V	.	.	.	.
7.417	13.1074	28.89	.Q	V	.	.	.	.
7.500	13.3075	29.05	.Q	V	.	.	.	.
7.583	13.5087	29.22	.Q	V	.	.	.	.
7.667	13.7112	29.39	.Q	V	.	.	.	.
7.750	13.9148	29.57	.Q	V	.	.	.	.
7.833	14.1197	29.75	.Q	V	.	.	.	.
7.917	14.3258	29.93	.Q	V	.	.	.	.
8.000	14.5331	30.11	.Q	V	.	.	.	.
8.083	14.7418	30.29	.Q	V	.	.	.	.
8.167	14.9517	30.48	.Q	V	.	.	.	.
8.250	15.1629	30.67	.Q	V	.	.	.	.
8.333	15.3755	30.87	.Q	V	.	.	.	.
8.417	15.5895	31.07	.Q	V	.	.	.	.
8.500	15.8048	31.27	.Q	V	.	.	.	.
8.583	16.0215	31.47	.Q	V	.	.	.	.
8.667	16.2397	31.68	.Q	V	.	.	.	.
8.750	16.4593	31.89	.Q	V	.	.	.	.
8.833	16.6804	32.10	.Q	V	.	.	.	.
8.917	16.9030	32.32	.Q	V	.	.	.	.
9.000	17.1272	32.54	.Q	V	.	.	.	.
9.083	17.3528	32.77	.Q	V	.	.	.	.
9.167	17.5801	33.00	.Q	V	.	.	.	.
9.250	17.8090	33.23	.Q	V	.	.	.	.
9.333	18.0395	33.47	.Q	V	.	.	.	.
9.417	18.2718	33.72	.Q	V	.	.	.	.
9.500	18.5057	33.96	.Q	V	.	.	.	.
9.583	18.7413	34.22	.Q	V	.	.	.	.
9.667	18.9788	34.47	.Q	V	.	.	.	.
9.750	19.2180	34.74	.Q	V	.	.	.	.
9.833	19.4591	35.00	. Q	V	.	.	.	.
9.917	19.7020	35.28	. Q	V	.	.	.	.
10.000	19.9469	35.56	. Q	V	.	.	.	.
10.083	20.1938	35.84	. Q	V	.	.	.	.
10.167	20.4426	36.13	. Q	V	.	.	.	.
10.250	20.6935	36.43	. Q	V	.	.	.	.
10.333	20.9464	36.73	. Q	V	.	.	.	.
10.417	21.2015	37.04	. Q	V	.	.	.	.
10.500	21.4588	37.36	. Q	V	.	.	.	.
10.583	21.7183	37.68	. Q	V	.	.	.	.
10.667	21.9800	38.01	. Q	V	.	.	.	.
10.750	22.2441	38.35	. Q	V	.	.	.	.
10.833	22.5106	38.69	. Q	V	.	.	.	.
10.917	22.7795	39.05	. Q	V	.	.	.	.
11.000	23.0510	39.41	. Q	V	.	.	.	.
11.083	23.3249	39.78	. Q	V	.	.	.	.
11.167	23.6015	40.16	. Q	V	.	.	.	.
11.250	23.8808	40.55	. Q	V	.	.	.	.
11.333	24.1628	40.95	. Q	V	.	.	.	.
11.417	24.4477	41.36	. Q	V	.	.	.	.
11.500	24.7355	41.78	. Q	V	.	.	.	.

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11.583     25.0262     42.22  . Q    V  .         .         .         .
11.667     25.3200     42.66  . Q     V .         .         .         .
11.750     25.6170     43.12  . Q     V .         .         .         .
11.833     25.9172     43.59  . Q     V .         .         .         .
11.917     26.2207     44.07  . Q     V .         .         .         .
12.000     26.5276     44.57  . Q     V .         .         .         .
12.083     26.8380     45.07  . Q     V .         .         .         .
12.167     27.1515     45.51  . Q     V .         .         .         .
12.250     27.4672     45.84  . Q     V .         .         .         .
12.333     27.7847     46.11  . Q     V .         .         .         .
12.417     28.1045     46.43  . Q     V .         .         .         .
12.500     28.4272     46.86  . Q      V.         .         .         .
12.583     28.7534     47.36  . Q      V.         .         .         .
12.667     29.0834     47.91  . Q      V.         .         .         .
12.750     29.4174     48.50  . Q      V.         .         .         .
12.833     29.7556     49.11  . Q      V.         .         .         .
12.917     30.0982     49.75  . Q      V.         .         .         .
13.000     30.4455     50.43  . Q      V.         .         .         .
13.083     30.7977     51.13  . Q      V.         .         .         .
13.167     31.1550     51.88  . Q      V.         .         .         .
13.250     31.5176     52.65  .  Q      V         .         .         .
13.333     31.8858     53.47  .  Q      V         .         .         .
13.417     32.2599     54.32  .  Q      V         .         .         .
13.500     32.6402     55.21  .  Q      V         .         .         .
13.583     33.0269     56.15  .  Q      V         .         .         .
13.667     33.4204     57.14  .  Q      V         .         .         .
13.750     33.8212     58.18  .  Q      V         .         .         .
13.833     34.2294     59.28  .  Q      V         .         .         .
13.917     34.6456     60.43  .  Q      .V        .         .         .
14.000     35.0702     61.65  .  Q      .V        .         .         .
14.083     35.5038     62.96  .  Q      .V        .         .         .
14.167     35.9479     64.48  .  Q      .V        .         .         .
14.250     36.4046     66.32  .  Q      .V        .         .         .
14.333     36.8757     68.40  .  Q      .V        .         .         .
14.417     37.3612     70.50  .   Q     .V        .         .         .
14.500     37.8609     72.56  .   Q     . V       .         .         .
14.583     38.3750     74.64  .   Q     . V       .         .         .
14.667     38.9041     76.82  .   Q     . V       .         .         .
14.750     39.4492     79.15  .   Q     . V       .         .         .
14.833     40.0114     81.64  .   Q     . V       .         .         .
14.917     40.5923     84.34  .   Q     . V       .         .         .
15.000     41.1934     87.28  .   Q     .  V      .         .         .
15.083     41.8166     90.49  .    Q    .  V      .         .         .
15.167     42.4642     94.03  .    Q    .  V      .         .         .
15.250     43.1389     97.96  .    Q    .  V      .         .         .
15.333     43.8440    102.37  .    Q    .  V      .         .         .
15.417     44.5844    107.51  .     Q   .   V     .         .         .
15.500     45.3715    114.29  .     Q   .   V     .         .         .
15.583     46.2231    123.65  .      Q  .   V     .         .         .
15.667     47.1553    135.36  .      Q  .    V    .         .         .
15.750     48.1773    148.39  .       Q .    V    .         .         .
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15.833     49.2971    162.59  .        Q.    V    .         .         .
15.917     50.5339    179.59  .         Q     V   .         .         .
16.000     51.9418    204.42  .         .Q    V   .         .         .
16.083     53.7422    261.43  .         .   Q  V  .         .         .
16.167     56.5264    404.26  .         .       V .  Q      .         .
16.250     60.6434    597.79  .         .        V.         .   Q     .
16.333     65.3875    688.85  .         .         V         .        Q.
16.417     69.5285    601.26  .         .         . V       .   Q     .
16.500     72.6048    446.69  .         .         .  V Q    .         .
16.583     74.9875    345.97  .         .        Q.  V      .         .
16.667     77.0017    292.46  .         .     Q   .   V     .         .
16.750     78.8411    267.08  .         .    Q    .    V    .         .
16.833     80.5689    250.87  .         .   Q     .    V    .         .
16.917     82.2012    237.02  .         .  Q      .     V   .         .
17.000     83.7551    225.63  .         . Q       .     V   .         .
17.083     85.2437    216.15  .         . Q       .      V  .         .
17.167     86.6748    207.79  .         .Q        .      V  .         .
17.250     88.0509    199.81  .         .Q        .       V .         .
17.333     89.3745    192.19  .         Q         .       V .         .
17.417     90.6490    185.06  .         Q         .       V .         .
17.500     91.8780    178.45  .         Q         .        V.         .
17.583     93.0643    172.25  .        Q.         .        V.         .
17.667     94.2102    166.38  .        Q.         .         V         .
17.750     95.3174    160.78  .        Q.         .         V         .
17.833     96.3878    155.42  .       Q .         .         V         .
17.917     97.4228    150.28  .       Q .         .         .V        .
18.000     98.4239    145.36  .       Q .         .         .V        .
18.083     99.3926    140.65  .       Q .         .         .V        .
18.167    100.3299    136.09  .      Q  .         .         .V        .
18.250    101.2284    130.47  .      Q  .         .         . V       .
18.333    102.0826    124.02  .      Q  .         .         . V       .
18.417    102.8951    117.98  .     Q   .         .         . V       .
18.500    103.6682    112.26  .     Q   .         .         .  V      .
18.583    104.4043    106.87  .     Q   .         .         .  V      .
18.667    105.1055    101.82  .    Q    .         .         .  V      .
18.750    105.7742     97.09  .    Q    .         .         .  V      .
18.833    106.4124     92.67  .    Q    .         .         .  V      .
18.917    107.0221     88.53  .    Q    .         .         .   V     .
19.000    107.6052     84.66  .   Q     .         .         .   V     .
19.083    108.1633     81.04  .   Q     .         .         .   V     .
19.167    108.6981     77.64  .   Q     .         .         .   V     .
19.250    109.2109     74.47  .   Q     .         .         .   V     .
19.333    109.7033     71.49  .   Q     .         .         .   V     .
19.417    110.1764     68.70  .  Q      .         .         .    V    .
19.500    110.6315     66.08  .  Q      .         .         .    V    .
19.583    111.0697     63.63  .  Q      .         .         .    V    .
19.667    111.4921     61.32  .  Q      .         .         .    V    .
19.750    111.8995     59.16  .  Q      .         .         .    V    .
19.833    112.2929     57.13  .  Q      .         .         .    V    .
19.917    112.6732     55.22  .  Q      .         .         .    V    .
20.000    113.0411     53.42  .  Q      .         .         .     V   .
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20.083	113.3974	51.73	. Q	.	.	.	V .
20.167	113.7427	50.14	. Q	.	.	.	V .
20.250	114.0777	48.64	. Q	.	.	.	V .
20.333	114.4030	47.23	. Q	.	.	.	V .
20.417	114.7191	45.90	. Q	.	.	.	V .
20.500	115.0266	44.64	. Q	.	.	.	V .
20.583	115.3259	43.46	. Q	.	.	.	V .
20.667	115.6175	42.34	. Q	.	.	.	V .
20.750	115.9017	41.28	. Q	.	.	.	V .
20.833	116.1791	40.28	. Q	.	.	.	V .
20.917	116.4500	39.33	. Q	.	.	.	V .
21.000	116.7146	38.43	. Q	.	.	.	V .
21.083	116.9734	37.58	. Q	.	.	.	V .
21.167	117.2267	36.77	. Q	.	.	.	V .
21.250	117.4746	36.00	. Q	.	.	.	V .
21.333	117.7176	35.27	. Q	.	.	.	V .
21.417	117.9557	34.58	.Q	.	.	.	V .
21.500	118.1893	33.92	.Q	.	.	.	V .
21.583	118.4187	33.30	.Q	.	.	.	V .
21.667	118.6439	32.70	.Q	.	.	.	V .
21.750	118.8651	32.13	.Q	.	.	.	V .
21.833	119.0826	31.58	.Q	.	.	.	V .
21.917	119.2966	31.07	.Q	.	.	.	V .
22.000	119.5071	30.57	.Q	.	.	.	V .
22.083	119.7144	30.09	.Q	.	.	.	V .
22.167	119.9185	29.64	.Q	.	.	.	V .
22.250	120.1197	29.21	.Q	.	.	.	V .
22.333	120.3179	28.79	.Q	.	.	.	V .
22.417	120.5134	28.39	.Q	.	.	.	V .
22.500	120.7063	28.00	.Q	.	.	.	V .
22.583	120.8966	27.63	.Q	.	.	.	V .
22.667	121.0845	27.28	.Q	.	.	.	V .
22.750	121.2700	26.94	.Q	.	.	.	V .
22.833	121.4532	26.61	.Q	.	.	.	V .
22.917	121.6343	26.29	.Q	.	.	.	V .
23.000	121.8132	25.98	.Q	.	.	.	V .
23.083	121.9901	25.69	.Q	.	.	.	V .
23.167	122.1651	25.40	.Q	.	.	.	V .
23.250	122.3381	25.13	.Q	.	.	.	V .
23.333	122.5093	24.86	.Q	.	.	.	V.
23.417	122.6788	24.60	.Q	.	.	.	V.
23.500	122.8465	24.35	.Q	.	.	.	V.
23.583	123.0125	24.11	.Q	.	.	.	V.
23.667	123.1769	23.87	.Q	.	.	.	V.
23.750	123.3398	23.65	.Q	.	.	.	V.
23.833	123.5011	23.42	.Q	.	.	.	V.
23.917	123.6609	23.21	.Q	.	.	.	V.
24.000	123.8193	23.00	.Q	.	.	.	V.

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

an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.0
10%	300.0
20%	145.0
30%	70.0
40%	35.0
50%	30.0
60%	20.0
70%	15.0
80%	15.0
90%	5.0

END OF FLOODSCx ROUTING ANALYSIS