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File 1994-0085 Name: Grandview Subdivision - Preliminary Final Plan - 28 and F ¼ Road

Present	Scanned	A few items are denoted with an asterisk (*), which means they are to be scanned for permanent record on the ISYS retrieval system. In some instances, items are found on the list but are not present in the scanned electronic development file because they are already scanned elsewhere on the system. These scanned documents are denoted with (**) and will be found on the ISYS query system in their designated categories. Documents specific to certain files, not found in the standard checklist materials, are listed at the bottom of the page. Remaining items, (not selected for scanning), will be listed and marked present. This index can serve as a quick guide for the contents of each file.
X	X	**Table of Contents**
		***Review Sheet Summary**
X	X	***Application form**
X		Review Sheets
X		Receipts for fees paid for anything
X	X	***Submittal checklist**
		***General project report**
		Reduced copy of final plans or drawings
		Reduction of assessor's map.
		Evidence of title, deeds, easements
		***Mailing list to adjacent property owners**
		Public notice cards
		Record of certified mail
X		Legal description
		Appraisal of raw land
		Reduction of any maps – final copy
X	X	***Final reports for drainage and soils (geotechnical reports)**
		Other bound or non-bound reports
		Traffic studies
X	X	***Review Comments**
X	X	***Petitioner's response to comments**
X	X	***Staff Reports**
		***Planning Commission staff report and exhibits**
		***City Council staff report and exhibits**
		***Summary sheet of final conditions**

DOCUMENT DESCRIPTION:

X	X	Landscaping Standards	X	X	Traffic Study – 6/30/94
X	X	Preliminary Development Plan – 5/1/93	X	X	Planning Commission Minutes – 9/6/94 - **
X		Planning Commission Notice of Public Hearing mail-out – 9/6/94	X		Posting of Public Notice Signs
X		Declaration of Covenants and Restrictions-BK 2143/Pg 753	X	X	Landscape Plan – to be scanned
X		Chicago Title Ins. Co. – Commitment for Title Ins.	X	X	Plat – GIS Historical Maps - **
X	X	Stormwater Management			a. Street Plan
X	X	Roadway Improvements			b. Street Profiles
X	X	Correspondence			c. Street Details
X	X	DIA – Bk 2143/Pg 743 - **			d. Sewer & Water Plan
X	X	Avigation Easement – not recorded – scanned with file			e. Sewer Profiles
X		Preliminary Drainage Report – 5/1/94			f. Sewer Details
X	X	Subsurface Soils Exploration – 6/29/94			g. Water Details
X	X	Hydraulic Calculations			

SUBMITTAL CHECKLIST

MAJOR SUBDIVISION: PRELIMINARY

Location: 28 Road & (F 1/4) Hawthorne Project Name: Grand View Subdivisi

85 94

$630.00 plus Acreage fees (15.00 per/Acre)

Original Do NOT Remove From Office

ITEMS DESCRIPTION	ID REFERENCE	● City Community Development	● City Dev. Eng.	● City Utility Eng.	● City Property Agent	● City Parks/Recreation	● City Fire Department	● City Attorney	● City G.J.P.C. (8 sets)	○ City Downtown Dev. Auth.	● City Police	● County Planning	● Walker Field	● School Dist. #51	● Irrigation District	○ Drainage District	● Water District UTE	○ Sewer District	● U.S. West	● Public Service	○ GVRP	○ CDOT	○ Corps of Engineers	○ Colorado Geological Survey	● US Postal Service	○ Persigo WWTF	TOTAL REQ'D.
● Application Fee	VII-1	1																									
● Submittal Checklist*	VII-3	1																									
● Review Agency Cover Sheet*	VII-3	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● Application Form*	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● Assessor's Map	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● Evidence of Title	VII-2	1			1			1																			
● Names and Addresses	VII-3	1																									
● Legal Description	VII-2	1			1																						
● General Project Report	X-7	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● Location Map	IX-21	1																									
● Preliminary Plan	IX-26	1	2	1	1																						
● 11"x17" Reduction of Prelim. Plan	IX-26	1				1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● Preliminary Drainage Report	X-12	1	2																								

NOTES:
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3) Each submitted item must be labeled, named, or otherwise identified as described above in the description column.

PRE-APPLICATION CONFERENCE

Date: 3-31-94

Conference Attendance: TOM Logue / DAVE THORNTON

Proposal:

Location: 28 ROAD between Hawthorne & Ridge Drive

Tax Parcel Number:

Review Fee: 630^{00} plus 15^{00} per Acre

(Fee is due at the time of submittal. Make check payable to the City of Grand Junction.)

Additional ROW required? Along 28 ROAD (30' from Centerline)

Adjacent road improvements required? Along 28 ROAD AT FINAL Approval

Area identified as a need in the Master Plan of Parks and Recreation? Possible PARK site

Parks and Open Space fees required? Yes AT FINAL Estimated Amount: 225^{00} per unit

Recording fees required? Yes AT FINAL Estimated Amount:

Half street improvement fees required? Yes or (be built if Approved) Estimated Amount:

Revocable Permit required? NA

State Highway Access Permit required? NA

Applicable Plans, Policies and Guidelines NA

Located in identified floodplain? FIRM panel #

Located in other geohazard area?

Located in established Airport Zone? Clear Zone, Critical Zone, Area of Influence? Yes

Avigation Easement required? Yes AT FINAL PlAt

While all factors in a development proposal require careful thought, preparation and design, the following "checked" items are brought to the petitioner's attention as needing special attention or consideration. Other items of special concern may be identified during the review process.

● Access/Parking
● Drainage
○ Floodplain/Wetlands Mitigation
○ Other

● Screening/Buffering
● Landscaping
○ Availability of Utilities

○ Land Use Compatibility
● Traffic Generation
○ Geologic Hazards/Soils

Related Files:

It is recommended that the applicant inform the neighboring property owners and tenants of the proposal prior to the public hearing and preferably prior to submittal to the City.

PRE-APPLICATION CONFERENCE

WE RECOGNIZE that we, ourselves, or our representative(s) must be present at all hearings relative to this proposal and it is our responsibility to know when and where those hearings are.

In the event that the petitioner is not represented, the proposed item will be dropped from the agenda, and an additional fee shall be charged to cover rescheduling expenses. Such fee must be paid before the proposed item can again be placed on the agenda. Any changes to the approved plan will require a re-review and approval by the Community Development Department prior to those changes being accepted.

WE UNDERSTAND that incomplete submittals will not be accepted and submittals with insufficient information, identified in the review process, which has not been addressed by the applicant, may be withdrawn from the agenda.

WE FURTHER UNDERSTAND that failure to meet any deadlines as identified by the Community Development Department for the review process may result in the project not being scheduled for hearing or being pulled from the agenda.

X
Signature(s) of Petitioner(s)

X
Signature(s) of Representative(s)

SUBMITTAL CHECKLIST

85 94(2)

MAJOR SUBDIVISION: FINAL

[redacted] 94

Location: 28 Road N of Patterson

Project Name: Grand View Filing #1

Original Do Not Remove From Office

Date Received ______

Receipt # ______

File # ______

ITEMS		DISTRIBUTION																																
DESCRIPTION $915.00	SSID REFERENCE	● City Community Development	● City Dev. Eng.	● City Utility Eng.	● City Property Agent	● City Parks/Recreation	● City Fire Department	● City Attorney	● City G.J.P.C. (8 sets)	○ City Downtown Dev. Auth.	● City Police	● County Planning	○ County Bldg. Dept.	● County Surveyor	● Walker Field	● School Dist. #51	● Irrigation District - Grand Valley	● Drainage District - GJ Drainage	● Water District - UTE	● Sewer District -	● U.S. West	● Public Service	○ GVRP	○ CDOT	○ Corps of Engineers	● Colorado Geologic Survey	● U.S. Postal Service	● Persigo WWTF	● TCI CABLE					TOTAL REQ'D. 22
● Application Fee $720 + $15/acre	VII-1	1																																
● Submittal Checklist*	VII-3	1																																1
● Review Agency Cover Sheet*	VII-3	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
● Application Form*	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
● 11"x17" Reduction of Assessor's Map	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
● Evidence of Title	VII-2	1			1			1																										
● ~~Appraisal of Raw Land~~	VII-1	1			1	1																												
● Names and Addresses	VII-2	1																																
● Legal Description	VII-2	1			1																													2
○ Deeds	VII-1	1			1			1																										
○ Easements	VII-2	1	1	1	1			1													1	1	1											
○ Avigation Easement	VII-1	1			1			1							1																			
○ ROW	VII-3	1	1	1	1			1													1	1	1											
● Covenants, Conditions, & Restrictions	VII-1	1	1					1																										2
○ Common Space Agreements	VII-1	1	1					1																										
● County Treasurer's Tax Cert.	VII-1	1																																1
● Improvements Agreement/Guarantee*	VII-2	1	1	1				1																										4
○ CDOT Access Permit	VII-3	1	1																															
○ 404 Permit	VII-3	1	1																															
○ Floodplain Permit*	VII-4	1	1																															
● General Project Report	X-7	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1						
● Composite Plan	IX-10	1	2	1	1																													
● 11"x17" Reduction Composite Plan	IX-10	1				1	1	1	8	1	1	1	1				1	1	1	1	1	1	1	1	1	1		1						
● Final Plat	IX-15	1	2	1	1			1						1																				
● 11"x17" Reduction of Final Plat	IX-15	1							8	1	1	1			1	1	1	1	1	1	1	1	1				1							29
● Cover Sheet	IX-11	1	2																															
● Grading & Stormwater Mgmt Plan	IX-17	1	2															1							1	1								
● Storm Drainage Plan and Profile	IX-30	1	2															1			1	1	1											
● Water and Sewer Plan and Profile	IX-34	1	2	1			1												1	1	1	1	1					1						
● Roadway Plan and Profile	IX-28	1	2															1																
● Road Cross-sections	IX-27	1	2																															
● Detail Sheet	IX-12	1	2																															
● Landscape Plan	IX-20	2	1	1					8																									
● Geotechnical Report	X-8	1	1										1													1								4
○ Phase I & II Environmental Report	X-10,11	1	1																															
● Final Drainage Report	X-5,6	1	2															1																3
● Stormwater Management Plan	X-14	1	2															1							1									
○ Sewer System Design Report	X-13	1	2	1																1														
○ Water System Design Report	X-16	1	2	1															1															
● Traffic Impact Study	X-15	1	2																					1										
● Site Plan	IX-29	1	2	1	1		1		8																									

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PRE-APPLICATION CONFERENCE

Date: 6/30/94

Conference Attendance: Michael Drollinger, Tom Logue

Proposal: Final Plat - Filing #1

Location: 28 Road N of Patterson Rd.

Tax Parcel Number:

Review Fee: $720 + $15/acre

(Fee is due at the time of submittal. Make check payable to the City of Grand Junction.)

Related Files: #85-94

Additional ROW required? Yes

Area identified as a need in the Master Plan of Parks and Recreation? No

Parks and Open Space fees required? Yes - to be paid at time of recording Estimated Amount: $225/unit

Recording fees required? Yes Estimated Amount:

Adjacent Half street improvements/fees required? TCP - Transportation Capacity Payment

Revocable Permit required? ?

State Highway Access Permit required? No

Applicable Plans, Policies and Guidelines Zoning & Devel. Code

Located in identified floodplain? FIRM panel # No

Located in other geohazard area? ?

Located in established Airport Zone? Clear Zone, Critical Zone, Area of Influence? - Possibly

Avigation Easement required? ?

While all factors in a development proposal require careful thought, preparation and design, the following "checked" items are brought to the petitioner's attention as needing special attention or consideration. Other items of special concern may be identified during the review process.

○ Access/Parking
○ Drainage
○ Floodplain/Wetlands Mitigation
○ Other

● Screening/Buffering
● Landscaping
○ Availability of Utilities

○ Land Use Compatibility
○ Traffic Generation
○ Geologic Hazards/Soils

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X Don dela Motte
Ada dela Motte

Signature(s) of Petitioner(s)

X

Signature(s) of Representative(s)

DEVELOPME[illegible] APPLICATION

Community Development Department
250 North 5th Street Grand Junction, CO 81501
(303) 244-1430

Receipt 1187
Date 5-3-94
Rec'd By NP
File No. #85 94

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· Preliminary PLAN/PLAT

We, the undersigned, being the owners of property situated in Mesa County, State of Colorado, as described herein do hereby petition this:

PETITION	PHASE	SIZE	LOCATION	ZONE	LAND USE
☒ Subdivision Plat/Plan	☐ Minor ☒ Major ☐ Resub	66.7	NW 28 Rd. & Hawthorn Ave	RSF-5	Residental
☐ Rezone				From: To:	
☐ Planned Development	☐ ODP ☒ Prelim ☐ Final				
☐ Conditional Use					
☐ Zone of Annex					
☐ Text Amendment					
☐ Special Use					
☐ Vacation					☐ Right-of-Way ☐ Easement

☒ PROPERTY OWNER	☒ DEVELOPER	☒ REPRESENTATIVE
Ben Carnes & Discovery, 76 Corp. Name	Don Dela Motte Name	Thomas A. Logue Name
2499 U.S. Hwy. 50 Address	634 Avalon Dr. Address	227 So. 9th Street Address
Grand Jct. Co. 81501 City/State/Zip	Grand Jct. CO 81504 City/State/Zip	Grand Jct. Co. 81501 City/State/Zip
243-0456 Business Phone No.	434-6224 Business Phone No.	245-4099 Business Phone No.

NOTE: Legal property owner is owner of record on date of submittal.

We hereby acknowledge that we have familiarized ourselves with the rules and regulations with respect to the preparation of this submittal, that the foregoing information is true and complete to the best of our knowledge, and that we assume the responsibility to monitor the status of the application and the review comments. We recognize that we or our representative(s) must be present at all hearings. In the event that the petitioner is not represented, the item will be dropped from the agenda, and an additional fee charged to cover rescheduling expenses before it can again be placed on the agenda.

X Thomas A. Logue 4/26/94
Signature of Person Completing Application Date

X Frank Dinley Jr. Pres Discovery 76 4/26/94

Signature of Property Owner(s) - Attach Additional Sheets if Necessary

TYPE LEGAL DESCRIPTION (S) BELOW, USING ADDITIONAL SH[illegible]TS AS NECESSARY. USE SINGLE SPACING WITH A ONE I[illegible] MARGIN ON EACH SIDE.

SECTION 6, TOWNSHIP 1 SOUTH, RANGE 1 EAST, UTE MERIDIAN

NE 1/4 SW 1/4 NW 1/4,

SE 1/4 SW 1/4 NW 1/4,

NW 1/4 SW 1/4,

SW 1/4 SW 1/4 NW 1/4, EXCEPT Beginning at a point being the W 1/2 Section 6, Township 1 South, Range 1 East, Ute Meridian, thence North 536.25 feet, thence East 165.0 feet, thence South 210.25 feet, thence 261.8 feet along the arc of a 50 foot radius curve to the right, the chord of which bears South 50 feet, thence South 276.0 feet to the South line of the NW 1/4 Section 6, Township 1 South, Range 1 East, Ute Meridian, thence West 165.00 feet to the point of beginning,

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PRELIMINARY DEVELOPMENT PLAN

FOR:

GRAND VIEW SUBDIVISION

MAY 1, 1993

A *LanDesign* Partner

PRELIMINARY PLAN for: *GRAND VIEW SUBDIVISION*

INTRODUCTION - Grand view Subdivision site is located 1/4 mile north of Patterson Road, east of 28 Road in the City of Grand Junction. The 64.8 acre site was formerly known as "Fox Estates" which gained a change in zoning and Preliminary Plan approval from Mesa County in 1980. The approved development application consisted of a "mixed use" type development. A land use summary of the existing development plan follows:

EXISTING LAND USE SUMMARY		
USE	NO. OF DWELLING UNITS	% OF TOTAL UNITS
SF DETACHED	114	14.7
TOWNHOMES	201	25.9
CONDOMINIUMS	460	59.4
TOTAL	775	▨
DENSITY: 12.0 DU/AC.		

Included as part of this Preliminary Plan application annexation to the City of Grand Junction is also requested.

EXISTING LAND USE - The property under consideration is comprised of 64.9 acres and contains one single family dwelling and two out buildings. The most dominate feature of the site is the commanding view of the Bookcliffs and Grand Mesa. The topography of the site is considered to be "flat" in nature and slopes towards the southwest at a typical rate of one percent. Other than that area surrounding the existing home site, all of the property is being farmed, which is the historical land use. A small groves of cottonwood trees are evident around the existing house.

The property was zoned PR (planned residential) 12.5 units per acre by Mesa County. The pending annexation will establish a City zone designation of RSF-5.

SURROUNDING LAND USE - The dominate land use in the area surrounding Grand View is Spring Valley a single family development on moderately sized lots. Some acreage sized parcel with single family dwellings adjoin the subject site adjacent to 28 Road. Land to the south consists of a large fallow parcel that does not have any plans for development. Matchett Village a new development which is currently in the County process adjoins the easterly boundary of Grand View. The Matchett Village proposal consists of a mixed use development consisting of single family, multi-family and non-residential uses. There are no existing non-residential uses in the surrounding area.

SURROUNDING LAND USE MATRIX

NORTH			
USE	AREA in ac.	UNITS	ZONE
Single Family	15.0	4	County R-2
Vacant Land	7.3	0	County R-2
Highline Canal & 1-70			

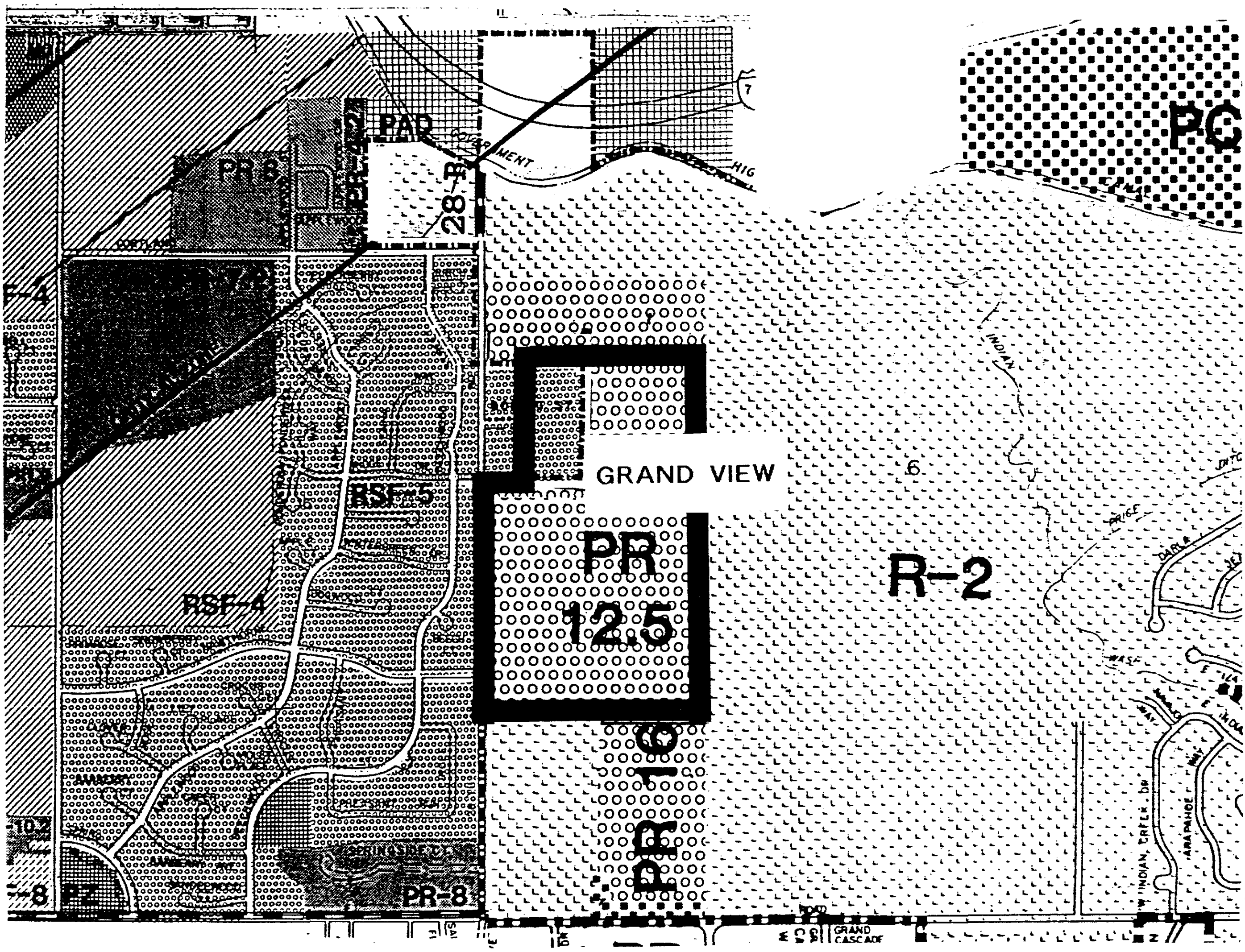
SOUTH			
USE	AREA in ac.	UNITS	ZONE
Vacant Land	20.0	0	County R-2
Matchett Village	20.0	0	County PR-16

EAST			
USE	AREA in ac.	UNITS	ZONE
Matchett Village	160.0	750 proposed	County PR (proposed) County R-2 (existing)

WEST			
USE	AREA in ac.	UNITS	ZONE
Spring Valley	169.8	443	RSF - 5
Pheasant Run Condos.	3.2	17	PR -8
Garfield View Sub.	2.1	**4**	**RSF - 5**

A Location Map at the end of this narrative statement illustrates the location of Grand View in relationship to the surrounding land ownership. A reproduction from the Grand Junction and Mesa County Zoning maps follow:

SURROUNDING ZONING MAP



PROPOSED LAND USE - The proposal calls fro the ultimate development of 200 single family building sites on 64.8 acres. The resulting density is 3.1 dwelling units per acre. Lots range in size from 8000 square feet to 12,500 square feet. Building Setback requirements for each lot is illustrated on the following chart:

PRINCIPAL BUILDING SETBACK REQUIREMENTS	
FRONT	20 feet
SIDE	10 feet
REAR	20 feet
Maximum Building Height = 32 feet	

The accompanying Preliminary Development Plan depicts the relationship of each dwelling use type to the property boundary, roadway access and Open Spaces.

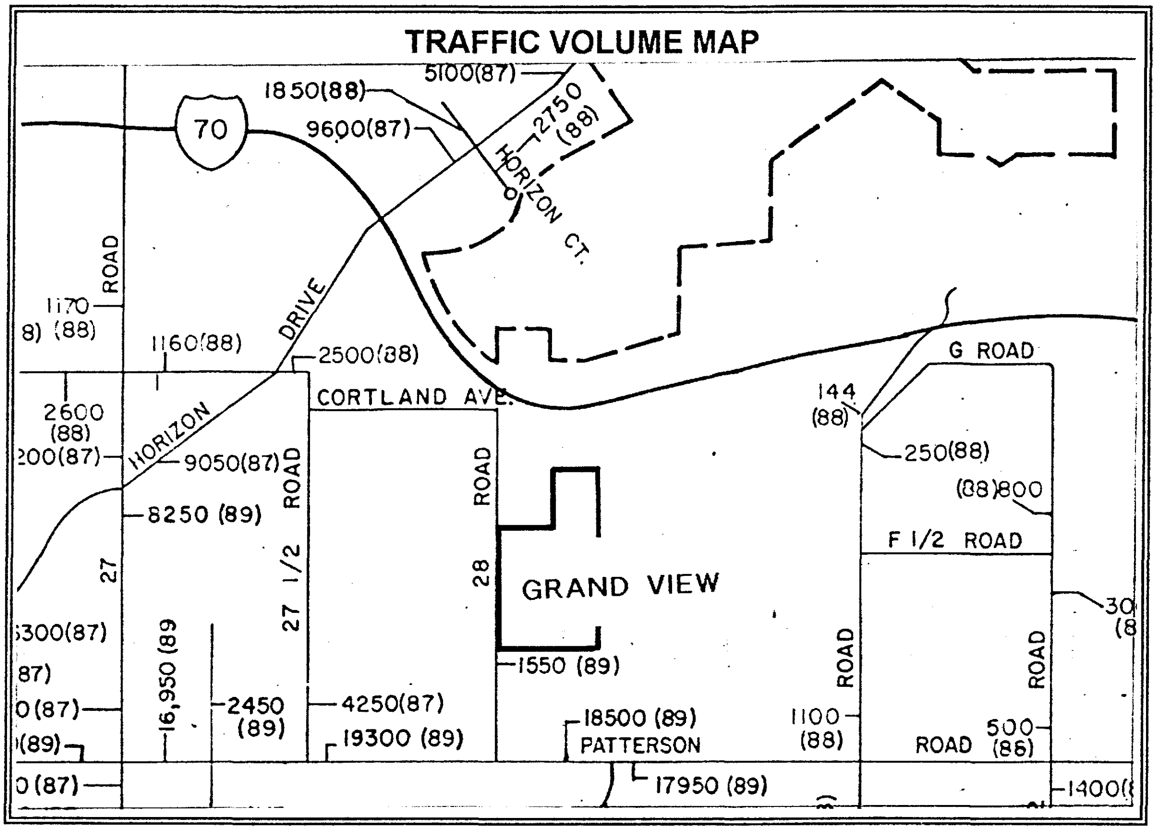
Almost 5% of the total site is designated as two separate Private Open Spaces which includes 2.25 acres site near the south west corner which will be fully landscaped and contain a small pond. This open space will also serve as a buffer between Grand View and the proposed multi-family and non-residential uses which are currently proposed as part of the Matchett Village development. The second private open space is located along 28 Road. This landscaped area will serve as a buffer between the proposed lots and the adjoining roadway.

LAND USE SUMMARY			
USE	UNITS	AREA	% OF TOTAL
SINGLE FAMILY AREA	200	48.1	74.29
ROADS		13.6	21.00
PRIVATE OPEN SPACE		3.1	4.80
TOTAL	200	64.8	100.00
DENSITY: 3.1 DWELLING UNITS PER ACRE			

In addition to the individual lot development standards presented herein, architectural controls will be implemented to insure an ascetically pleasing and orderly development. To achieve this, covenants, conditions and restrictions (C.C. & R's) will be adopted to insure ongoing protection to the future residents of Grand View and surrounding property owners. The C. C. & R's will also include provisions for ownership and maintenance of the designated irrigation system.

ACCESS - Primary access is gained to Grand View from 28 Road. Patterson Road is located 1/4 mile south of the site and serves as a major arterial east/west roadway in Grand Junction. Several other access are also available from Hawthorn Avenue, Ridge Drive, and Courtland Avenue which affords access to 27 1/2 Road And Horizon Drive. Access to the future single family lots within the development will be from either a new "Urban Residential Street" or an "Urban Residential Collector" (as modified). The modified collector roadway proposal includes a 16 foot wide landscaped median. Three "inter-neighborhood" connectors are also provided to adjoining undeveloped properties and will improve the circulation of traffic in the neighborhood. According to the City of Grand Junction's, *Trip Generator*, 1900 average week day trips would be realized when the Grand View is fully developed.

The following map illustrates traffic counts made by the City of Grand Junction major roads in the vicinity of Grand View.



TRAFFIC VOLUME MAP

UTILITY SERVICE

DOMESTIC WATER - All dwellings within Grand View will be served by an public owned domestic water distribution system. An existing 18 inch water main is located within 28 Road and will be used to provide water service to the new dwellings. New 8, 6 and 4 inch mains will be extended within the property. The existing water main has been transferred to the Ute Water Conservancy District. Fire hydrants will be placed throughout the development, as required. Sufficient flows and pressure exist to provide adequate water supply for fire protection.

SANITARY SEWER - A new sanitary sewage collection system will be constructed. Sewer service will be extended from an existing main, owned and maintained by the City, located in Hawthorn Avenue within Spring Valley Subdivsion. It is estimated that peak sewage flows generated by the lots within the development will be 60,000 gallons per day.

Proposed utility construction will improve the infrastructure in the neighborhood by extending sewer and water lines to adjoining properties. This can allow surrounding undeveloped land to have easier access to improved water and sewer service.

ELECTRIC, GAS, PHONE & CATV - Electric, gas, and communication lines will be extended to each lot within the development from existing lines located adjacent to the proposed development. Proposed gas, electric, and communication lines will be located in a "common trench" adjacent to the dedicated road right-of-way.

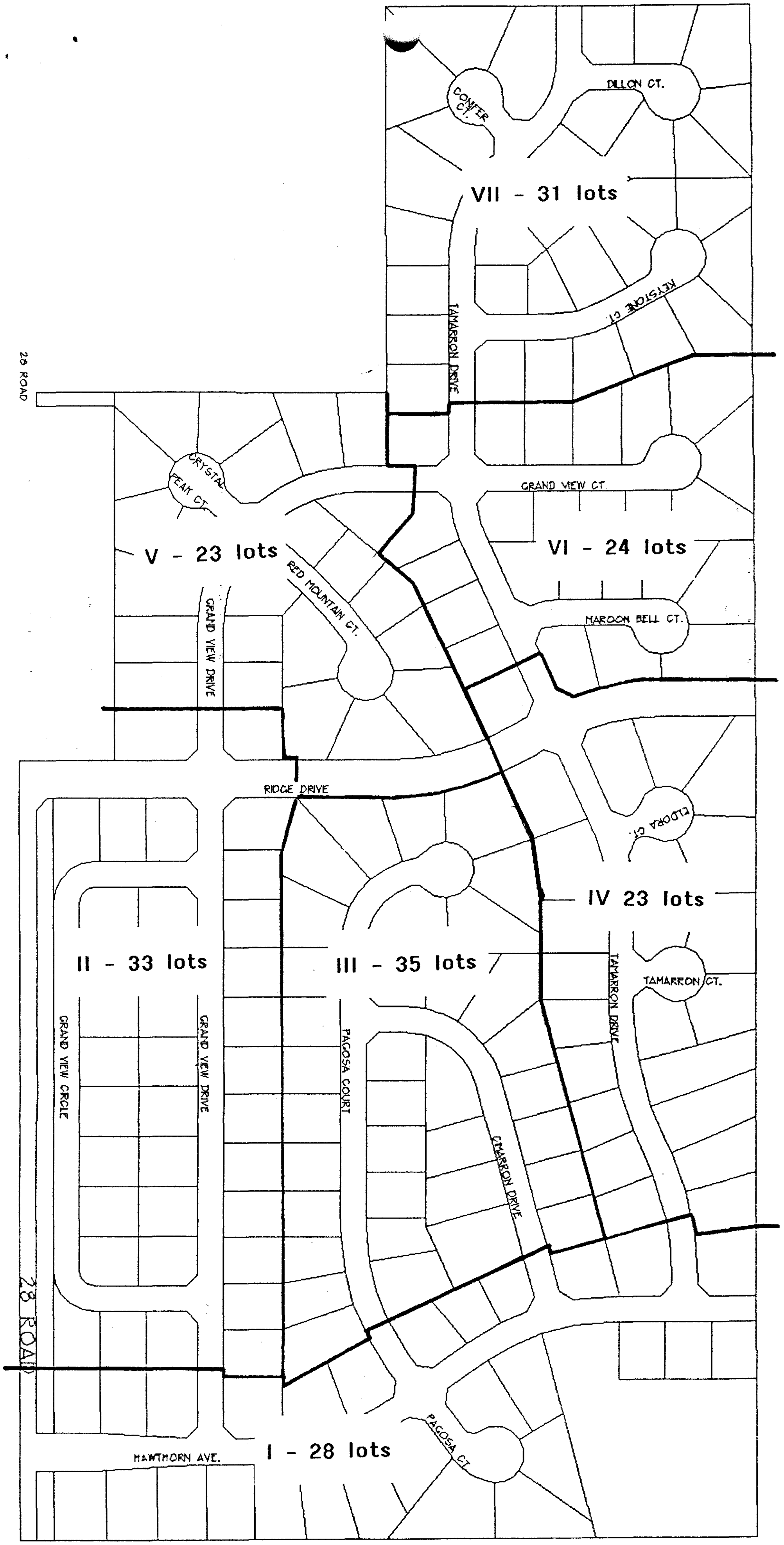
IRRIGATION WATER - Irrigation water will be provided by a zoned pressurized delivery system which will create water conservation. A central pumping facility will be located within the proposed Private Open Space near the southeast property corner, where the petitioners water rights are available.

DRAINAGE - A Preliminary Drainage Report which evaluates the impacts on existing drainage patterns has been submitted to the City Engineering and Community Development Departments under separate cover. Most of the future drainage will be carried on the ground surface to the proposed street system to three separate detention facilities; the irrigation pond, the buffer strip along 28 Road, and an existing drainage channel along the south property boundary .

SOILS AND GEOLOGY - There are no known geologic hazards within Grand View. The Soil Conservation Service (SCS) has identified two soil types within the site:

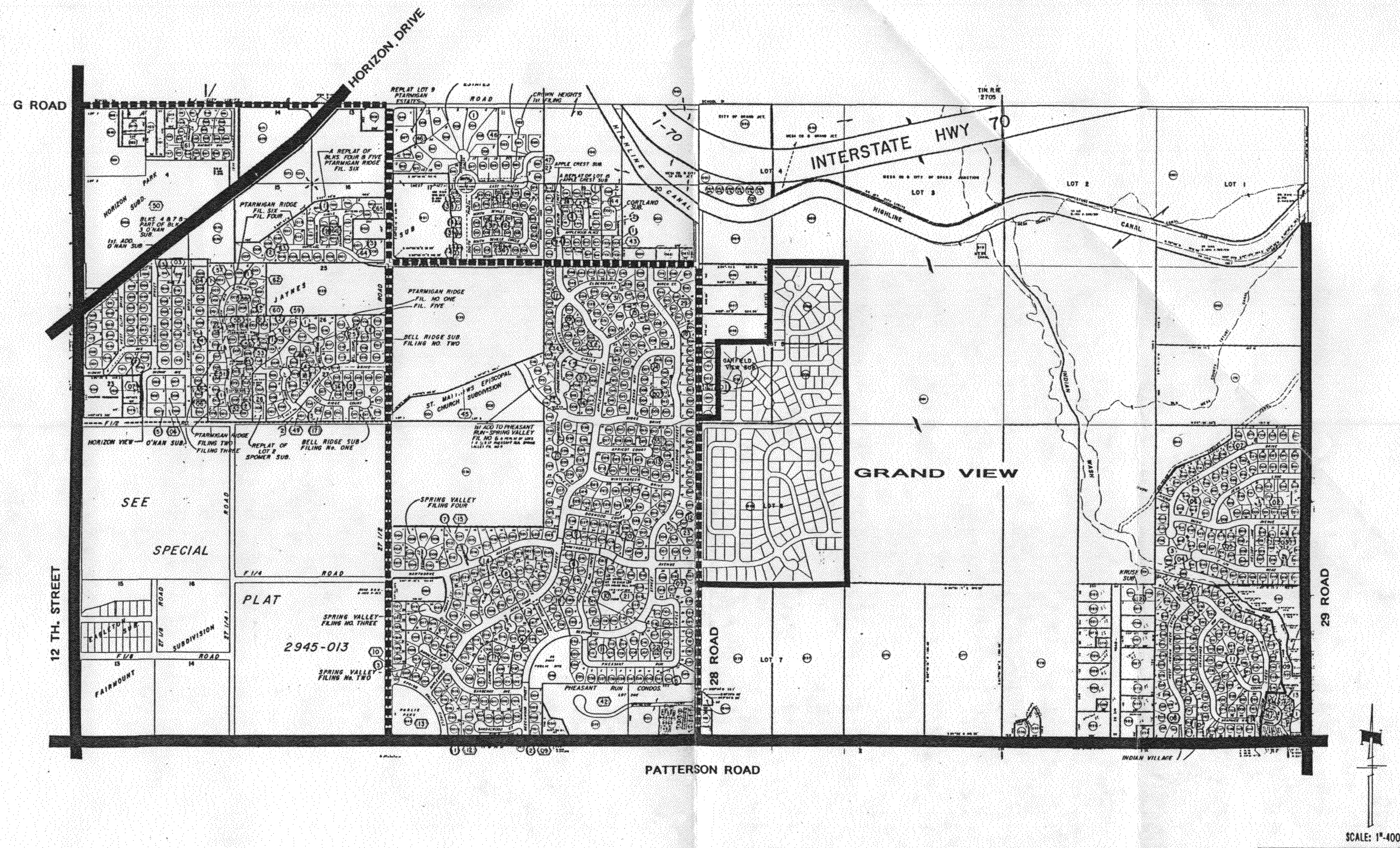
> BILLINGS SILTY CLAY LOAM, Class IIs Land (Bc) - This soil is classified as severe for local roads and streets due to poor traffic supporting capacity and moderate to high water tables.
>
> RAVOLA VERY FINE SANDY LOAM, Class I Land (Rf) - SCS has not identified any severe limitations for this soil type.

DEVELOPMENT SCHEDULE - The rate at which development of Grand View will occur is dependent upon the City's future housing needs. It is anticipated that site development will occur in phases as shown on the Phasing Plan on the next page.


DILLON CT.
CONIFER CT.
VII - 31 lots
KEYSTONE CT.
TAMARRON DRIVE
28 ROAD
CRYSTAL PEAK CT.
GRAND VIEW CT.
V - 23 lots
VI - 24 lots
RED MOUNTAIN CT.
MAROON BELL CT.
GRAND VIEW DRIVE
RIDGE DRIVE
ELDORA CT.
IV 23 lots
II - 33 lots
III - 35 lots
TAMARRON CT.
TAMARRON DRIVE
GRAND VIEW CIRCLE
GRAND VIEW DRIVE
PAGOSA COURT
CIMARRON DRIVE
28 ROAD
HAWTHORN AVE.
I - 28 lots
PAGOSA CT.

PHASE PLAN

AIRPORT OVERLAY ZONE - Grand View is located within the "Area of Influence" according to the *Airport Overlay Map*, within Section 5.11.2B of the *Grand Junction Zoning and Development Code.* The code indicates that the proposal is a compatible use at the density proposed.

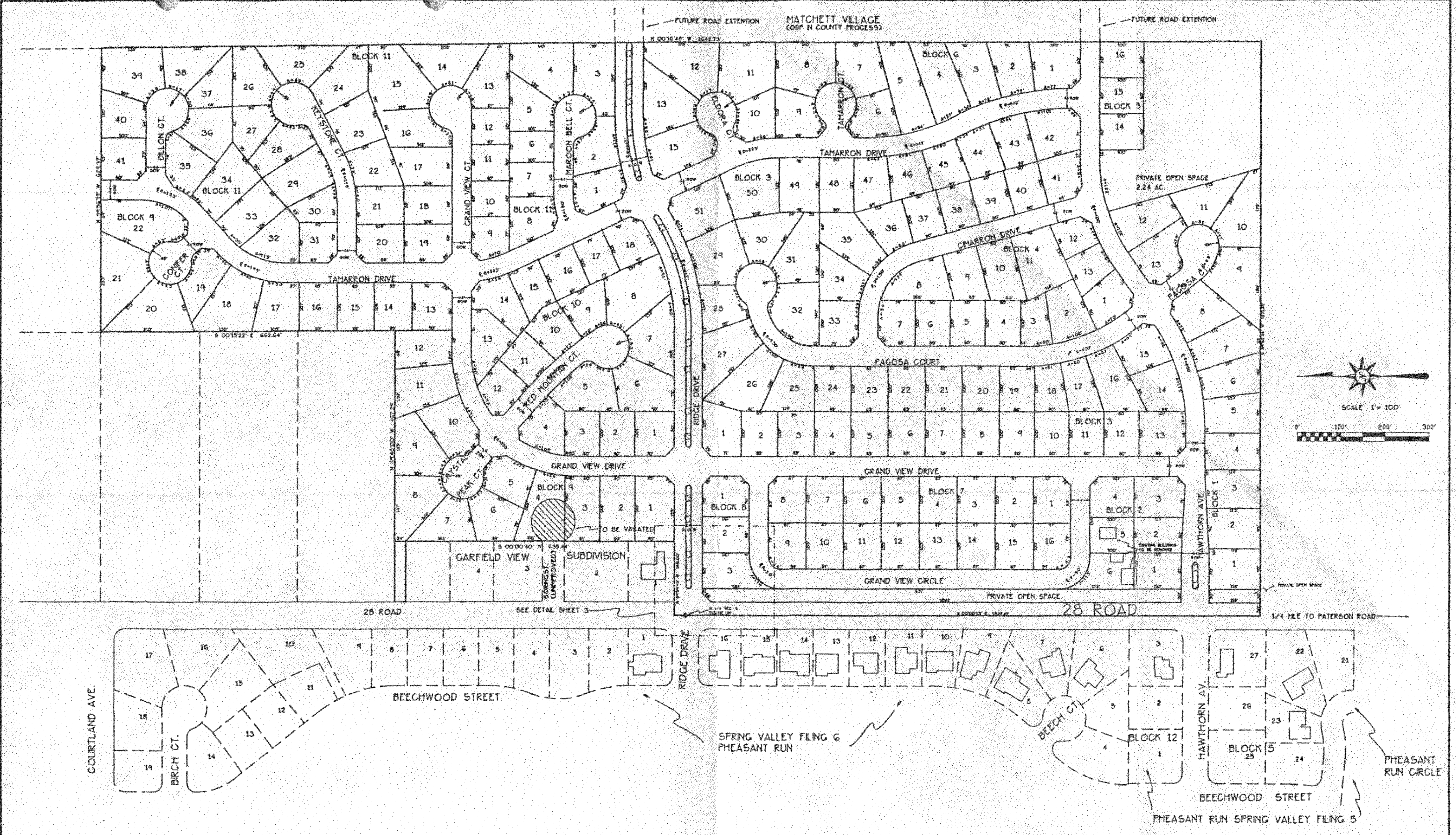


LOCATION MAP

GRAND VIEW SUBDIVISION

T-L THOMAS A. LOGUE
LAND DEVELOPMENT CONSULTANTS
237 SOUTH 7th STREET GRAND JUNCTION COLORADO 81501
(303) 245-4099

PROJECT NO. C:\SCE1\WORK\94033\GV	SHEET	OF
DATE: APRIL 1994	1	3



PRINCIPAL BUILDING SETBACKS	
FRONT	20 ft.
REAR	20 ft.
SIDE	10 ft.
MAX. BUILDING HEIGHT = 32'	

LAND USE SUMARY

USE	UNITS	AREA	% OF TOTAL
SINGLE FAMILY AREA	200	48.1	74.29
ROADS		13.6	21.00
PRIVATE OPEN SPACE		3.1	04.80
TOTAL	200	64.8	100.00

DENSITY = 3.1 DWELLING UNITS PER ACRE

PRELIMINARY SITE DEVELOPMENT PLAN

GRAND VIEW SUBDIVISION

THOMAS A. LOGUE
LAND DEVELOPMENT CONSULTANTS

	SHEET	OF
PROJECT NO. C:\BC12\WORK\94033\GV	2	5
DATE: APRIL 1994		

REVIEW COMMENTS

Page 1 of 3

FILE #85-94 **TITLE HEADING:** Preliminary Plan/Plat - Grand View Subdivision

LOCATION: 28 & F 1/4 Roads

PETITIONER: Ben Carnes & Discovery 76 Corp.

PETITIONER'S ADDRESS/TELEPHONE:
2499 Highway 6 & 50
Grand Junction, CO 81505
243-0456

PETITIONER'S REPRESENTATIVE: Tom Logue

STAFF REPRESENTATIVE: Michael Drollinger

NOTE: WRITTEN RESPONSE BY THE PETITIONER TO THE REVIEW COMMENTS IS REQUIRED ON OR BEFORE 5:00 P.M., MAY 27, 1994.

U.S. WEST **5/4/94**
Leon Peach **244-4964**

New or additional telephone facilities necessitated by this project may result in a "contract" and up-front monies required from developer, prior to ordering or placing of said facilities. For more information, please call: Leon Peach, 244-4964.

U.S. POSTAL SERVICE **5/4/94**
Cheryl Fiegel **244-3435**

1. Delivery options are centralized - preferred - immediate deliver - curbside or behind sidewalk -50% complete prior to delivery.
2. Townhomes will need to be centralized due to parking concerns.
3. Condos must be centralized and customer provides the equipment.

CITY UTILITY ENGINEER **5/9/94**
Bill Cheney **244-1590**

1. Show utilities for "Preliminary Plan" submittal as required in the SSID manual.
2. Sewer lines to be stubbed to the east property line for all future road extensions.
3. A portion of the sewer lines may have to be enlarged to accommodate development to the east. Sewer system will pay for upgrades if needed.
4. More hydrants will be required than are shown on the "Utility Plan" which is O.K. since the submittal is conceptual only.

GRAND JUNCTION FIRE DEPARTMENT **5/6/94**
George Bennett **244-1400**

The fire hydrant placement for this subdivision needs to be reconfigured to meet with the standards. These standards require that fire hydrants be placed at each intersection and no greater than 500 feet apart thereafter. Please contact our office for assistance in placing the fire hydrants.

MESA COUNTY PLANNING **5/11/94**
Karl G. Metzner **244-1867**

1. A Grand View Drive already exists at C.25 and 31.75.
2. If the cul-de-sac portion of Boeing Street is vacated, all of the street should be vacated.
3. Cortland Avenue right-of-way extension should be provided to connect future 28 1/4 Road to existing Cortland Avenue.
4. Recommend 3 lots adjacent to open space be deleted to create a larger and more useable open space area around the pond.

UTE WATER DISTRICT **5/11/94**
Gary R. Mathews **242-7491**

1. Fire hydrants should be placed at intersections and no more than 500' apart.
2. Water mains are installed 2-3 foot in oil on the North and East side of the street.
3. All valves are installed at the main line and fire hydrants are required to be valved.
4. Policies and fees in effect at the time of application will apply.

PARKS & RECREATION DEPARTMENT **5/12/94**
Don Hobbs **244-1542**

Dedication and development, to City standards, of a minimum of 5 continuous acres for a public park should be part of this development. It would be desirable if this could be adjoining to Matchett Village.

GRAND JUNCTION POLICE DEPARTMENT **5/16/94**
Dave Stassen **244-3587**

In reference to the open space that runs along 28 Road, I would recommend that landscaping be of that type does not totally block vision from 28 Road to the homes (i.e. intermittent trees or shrubs as opposed to a solid wall of green). Keeping with this idea, if fencing is to be used at this location, I would recommend a type that allows for unobstructed vision from the street (wrought iron or similar in nature).

I would also suggest some low, decorative, see through fencing around the irrigation pond to keep children from the water.

CITY UTILITY ENGINEER 5/17/94
Jody Kliska 244-1591

See attached comments, red-lined text and red-lined drawings.

CITY DEVELOPMENT ENGINEER 5/18/94
Michael Drollinger 244-1439

See attached comments.

MESA COUNTY SCHOOL DISTRICT 5/16/94
Lou Grasso 242-8500

See attached comments.

PUBLIC SERVICE COMPANY 5/19/94
Dale Clawson 244-2695

ELECTRIC & GAS: No objections.

MTD

RESPONSE TO REVIEW COMMENTS

May 26, 1994

Title: GRAND VIEW, Preliminary Plan and Plat

File No: 85-94

Location: 28 Road & F 1/4 Road

RESPONSE TO U.S. WEST:

Comments do not require response.

RESPONSE TO POSTAL SERVICE:

Centralized delivery points will be identified on the Final Plat and Plan.

RESPONSE TO UTILITY ENGINEER:

Sewer lines will be extended 10 feet beyond the street improvements at all stubs to the east.

Fire Hydrants will be place as directed in the Fire Department review comments.

Sewer main enlargement will be coordinated with the Department during the final design phase.

RESPONSE TO FIRE DEPARTMENT:

Fire Hydrants will be reconfigured as requested with the submission of the Final Plat and Plans.

RESPONSE TO MESA COUNTY PLANNING:

1. Grand View Drive will be renamed.

2. Land owners adjoining Boeing Street will be contacted to determine if they would be willing to vacate Boeing Street.

3. Courtland Avenue and future 28 1/4 Road extensions will occur on property not currently owned by the applicant.

4. The three lots around the private open space are included within the development plan in order to increase the number of people who can observe activities which may occur in the park area.

RESPONSE TO UTE WATER:

1. Fire hydrants will be placed as directed by the Fire Department.
2. Water mains will be placed within the roadway as requested.
3. Valves will be placed as requested.

RESPONSE TO CITY PARKS:

Discussions with personal from the City Parks and Recreation Department resulted in not including a public park at this time. At such time as development plans for the Matchett property are finalized further discussions may be required to determine if a Public Park can be developed in conjunction with the Matchett site. Further, the $225.00 per lot open space fees would be in effect for Grand View Subdivision.

RESPONSE TO POLICE DEPARTMENT:

The proposal as submitted includes landscaping and screening which will comply with the departments suggestions.

RESPONSE TO DEVELOPMENT ENGINEER:

Site Plan - The median islands on Ridge and Hawthorne are to be described as separate tract which will be transferred to the Home Owner Association for ownership and maintenance.

The corners on Grand View Circle have been modified to be "bulbed" out similar to a cul-de-sac.

A stub street has been provided to the south opposite of the Grand View Drive and Hawthorn Avenue intersection.

Street Details - The applicant has had discussion with the property owner at the northeast corner of 28 Road and Hawthorn Avenue. the property owner indicated a willingness to relocate their existing driveway from 28 Road to a point approximately 130 feet east of 28 Road on Hawthorn Avenue. Since the property owner's home is located near the north right-of-way for proposed Hawthorn Avenue, it would be difficult to request any additional right-of-way dedication for the Hawthorn Avenue extension.

A R4-7 traffic control sign will be installed on both ends of the median planed within Hawthorn Avenue. A traffic analysis will be submitted with the Final Plat and Plan which will address the need for a left turn lane and storage requirement at Hawthorn Avenue and 28 Road.

All "sight zone" requirements will be maintained at all intersections within the development.

The Final Landscape Plan will indicate that trees will be planted an minimum of five feet from the back of the walk.

The entrance sign will be relocated outside of the "sight zone" area and will not exceed 30 inches in height above the curb line.

The Final Plans for the 28 road widening will show any pavement markings.

Grading and Drainage - A meeting between the City Department and the project engineer was held to discuss items within the Departments review. Comments raised were addressed.

Developers of the Matchett property have indicated to the applicant that their drainage control plan has been evaluated and have been taken care of on their site.

Traffic - A traffic impact analysis will be provided for the entire project with the Final Plan submittal.

RESPONSE TO COMMUNITY DEVELOPMENT:

1. A ten foot pressurized irrigated landscaping easement adjacent to both sides of Ridge Drive will be provided at the rear of those lots which adjoin Ridge Drive.

2. Planting details will be provided with the Final Landscape Plans.

3. Ownership and maintenance of all private open spaces will be the responsibility of the Homeowner's Association.

4. Intersection sight distances will not be impaired with landscaping.

5. The entrance feature signs will be relocated to the corner of the intersection outside of the sigh distance triangles.

6. The applicant has had discussion with the property owner at the northeast corner of 28 Road and Hawthorn Avenue. The property owner indicated a willingness to relocate their existing driveway from 28 Road to a point approximately 130 feet east of 28 Road on Hawthorn Avenue. The property owner also indicated that they were not interested in any fencing along their south property line adjacent to the Hawthorn Avenue extension.

7. The applicant will attempt to coordinate the entire vacation of Boeing Street prior to the submission of the Final Plat and Plan for that phase.

8. At this time there is no firm development plans for the property east of Dillon Court and Tamarron Court. Therefore, the applicant is reluctant to commit to the

dedication of any pedestrian easements until a plan for development has been submitted for review by a public agency.

9. the Private Open Space will also be label as a "Irrigation and Stormwater Detention" on the Final Plat.

10. It is the applicants desire to maintain a low level landscaped screen area along 28 Road instead of a landscaped berm. A below grade detention structure would be a hardship for maintenance by the Home Owner's Association. The landscaped private open space along 28 Road will be labeled as a Detention Storage and Buffer Area on the Final Plat.

11. The land owner's on either side of the small strip of land between Lot 8, Block 9 will be contacted by the applicant too see if they are interested in ownership.

12. Grand View Drive has been extended to the south on the revised Preliminary Plan.

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SUBSURFACE SOILS EXPLORATION

GRAND VIEW SUBDIVISION, Fil. 1

Grand Junction, Colorado

Prepared For:

Mr. Don Dela Motte
634 Avalon Drive
Grand Junction, CO.

Prepared By:

LINCOLN-DeVORE, INC.
1441 Motor Street
Grand Junction, CO 81505

June 29, 1994

June 29, 1994

117 94

Mr. Don Dela Motte
634 Avalon Drive
Grand Junction, CO.

Re: SUBSURFACE SOILS EXPLORATION

GRAND VIEW SUBDIVISION, Fil. 1

Grand Junction, Colorado

Dear Sir:

Transmitted herein are the results of a Subsurface Soils Exploration for the proposed single family residential Grand View Subdivision, Filing #1.

If you have any questions after reviewing this report, please feel free to contact this office at any time. This opportunity to provide Geotechnical Engineering services is sincerely appreciated.

Respectfully submitted,

LINCOLN-DeVORE, INC.

By:
Edward M. Morris, E.I.T.
Western Slope Branch Manager
Grand Junction, Office

Reviewed by: ______________________
George D. Morris, P.E.
Colorado Springs Office

LDTL Job No. 81273-J

EMM/ss

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INTRODUCTION

PROJECT DESCRIPTION

This report presents the results of our geotechnical evaluation performed to determine the general subsurface conditions of the site applicable to construction of 28 single family residential structures, in Filing #1 of the Grand View Subdivision. A vicinity map is included in the Appendix of this report.

To assist in our exploration, we were provided with a preliminary site development plan prepared by Thomas A. Logue, Land Development Consultant. The Boring Location Plan attached to this report is based on that plan provided to us.

We understand that the proposed structures may consist of one and possibly two story, wood framed structures with the possibility of a partial basement and concrete floor slab on grade. Lincoln DeVore has not seen a full set of building plans, but structures of this type typically develop wall loads on the order of 600 to 1800 plf and column loads on the order of 8 to 16 kips.

The characteristics of the subsurface materials encountered were evaluated with regard to the type of construction described above. Recommendations are included herein to match the described construction to the soil characteristics found. The information contained herein may or may not be valid for other purposes. If the proposed site use is changed or types of construction proposed, other than noted herein, Lincoln

DeVore should be contacted to determine if the information in this report can be used for the new construction without further field evaluations.

PROJECT SCOPE

The purpose of our exploration was to evaluate the surface and subsurface soil and geologic conditions of the site and, based on the conditions encountered, to provide recommendations pertaining to the geotechnical aspects of the site development as previously described. The conclusions and recommendations included herein are based on an analysis of the data obtained from our field explorations, laboratory testing program, and on our experience with similar soil and geologic conditions in the area.

The scope of our geotechnical exploration consisted of a surface reconnaissance, a geophoto study, subsurface exploration, obtaining representative samples, laboratory testing, analysis of field and laboratory data, and a review of geologic literature.

Specifically, the intent of this study is to:

1. Explore the subsurface conditions to the depth expected to be influenced by the proposed construction.
2. Evaluate by laboratory and field tests the general engineering properties of the various strata which could influence the development.
3. Define the general geology of the site including likely geologic hazards which could have an effect on site development.

4. Develop geotechnical criteria for site grading and earthwork.

5. Identify potential construction difficulties and provide recommendations concerning these problems.

6. Recommend an appropriate foundation system for the anticipated structure and develop criteria for foundation design.

FIELD EXPLORATION AND LABORATORY TESTING

A field evaluation was performed on June14, 1994, and consisted of a site reconnaissance by our geotechnical personnel and the drilling of 3 shallow exploration borings. These 3 exploration borings were drilled within the proposed building sites near the locations indicated on the Boring Location Plan. The exploration borings were located to obtain a reasonably good profile of the subsurface soil conditions. All exploration borings were drilled using a CME 45B, truck mounted drill rig with continuous flight auger to depths of approximately 18 to 25 feet. Samples were taken with a standard split spoon sampler, thin wall Shelby tubes, and by bulk methods. Logs describing the subsurface conditions are presented in the attached figures.

Laboratory tests were performed on representative soil samples to determine their relative engineering properties. Tests were performed in accordance with test methods of the American Society for Testing and Materials or other accepted standards. The results of our laboratory tests are included in this report. The in-place moisture content and the standard penetration test values are presented on the attached drilling logs.

FINDINGS

SITE DESCRIPTION

The project site is located in the Northwest Quarter of the Southwest Quarter of Section 6, Township 1 South, Range 1 East of the Ute Principal Meridian, Mesa County, Colorado. More specifically the site is located West of 28 Road and will include the Eastward extension of Hawthorne Avenue from the Spring Valley Subdivision. The site is located approximately 1/4 mile North of Patterson Road and is approximately 2 miles Northeast of the main downtown business district of Grand Junction, Colorado.

The topography of the site is relatively flat, with a slight overall gradient to the South. The exact direction of surface runoff on this site will be controlled by the proposed construction and therefore will be variable. In general, surface runoff is expected to travel to the drain ditch along the South boundary, continuing along established drain ditches in the area, eventually entering the Colorado River to the Southwest. Surface and subsurface drainage on this site would be described as poor.

GENERAL GEOLOGY AND SUBSURFACE DESCRIPTION

The geologic materials encountered under the site consist of low density alluvial soils which overlie the Mancos Shale Formation which is considered to be bedrock in this area. The geologic and engineering properties of the materials found in our 3 exploration borings will be discussed in the following sections.

The surface soils on this site consist of an alluvial deposit placed by the action of the ancient debris fans which originate in the Bookcliffs to the North. This stratification of upper soils results in a layered system of silts and clays with thin, interbedded sand lenses overlying the Mancos Shale Formation. Generally, the silts and clays are soft, wet and of low density. Soil density decreases and the moisture content increases with increasing depth. The upper 2 feet of the soil profile are stiffer and relatively dry due to surface desiccation.

The upper 2 feet of the surface soils have been extensively re-worked by agricultural activity and have been subjected to flood and furrow irrigation for many years.

The surface soils were found to be quite consistent and have been grouped together and designated Soil Type I. This Soil Type was classified as a silty clay (CL) under the Unified Classification System. This material is of low to very low plasticity, of low to moderate permeability, and was encountered in a low to very low density, wet condition. If this soil is found in a relatively dry condition, it may undergo mild expansion with the entry of small amounts of moisture, but will undergo long-term consolidation upon the addition of larger amounts of moisture. This soil will settle after being loaded. The maximum allowable bearing capacity for this soil was found to be 800 psf, with 100 minimum dead load pressure required. The finer grained portion of Soil Type I contains sulfates in detrimental quantities.

The Mancos Shale Formation is considered to be bedrock in this area. The Mancos Shale is described as a thinbedded, drab, light to dark gray marine shale, with thinly interbedded fine grain sandstone and siltstone layers. Some portions of the Mancos Shale are bentonitic, and therefore, are highly expansive. The majority of the shale, however, has only a moderate expansion potential. Formational shale was encountered in Test Boring No. 1 at a depth of 32 feet. It is anticipated that this formational shale will not affect the construction and the performance of any shallow foundations placed on the site. If a deep foundation system, such as drilled piers, is utilized the Mancos Shale will affect the construction and performance of foundations on this site.

The lines defining the change between soil types or rock materials on the attached boring logs and soil profiles are determined by interpolation and therefore are approximations. The transition between soil types may be abrupt or may be gradual.

The boring logs and related information show subsurface conditions at the date and location of this exploration. Soil conditions may differ at locations other than those of the exploratory borings. If the structure is moved any appreciable distance from the locations of the borings, the soil conditions may not be the same as those reported here. The passage of time may also result in a change in the soil conditions at the boring locations.

GROUND WATER:

A free water table came to equilibrium

during drilling at 5 to 7 feet below the present ground surface. This is probably not a true phreatic surface but is an accumulation of subsurface seepage moisture (perched water). In our opinion the subsurface water conditions shown are a permanent feature on this site. The depth to free water would be subject to fluctuation, depending upon external environmental effects.

Because of capillary rise, the soil zone within a few feet above the free water level identified in the borings will be quite wet. Pumping and rutting may occur during the excavation process, particularly if the bottom of the foundations are near the capillary fringe. Pumping is a temporary, quick condition caused by vibration of excavating equipment on the site. If pumping occurs, it can often be stopped by removal of the equipment and greater care exercised in the excavation process. In other cases, geotextile fabric layers can be designed or cobble sized material can be introduced into the bottom of the excavation and worked into the soft soils. Such a geotextile or cobble raft is designed to stabilize the bottom of the excavation and to provide a firm base for equipment.

Data presented in this report concerning ground water levels are representative of those levels at the time of our field exploration. Groundwater levels are subject to change seasonally or by changed environmental conditions. Quantitative information concerning rates of flow into excavations or pumping capacities necessary to dewater excavations is not included and is beyond the scope of this report. If this information is desired, permeability and field pumping tests will be required.

This area has been extensively irrigated in the past for agricultural purposes. It is possible that after agricultural irrigation has ceased in the area, the water table may drop somewhat. It is not anticipated the free water table will rise in the future however, the water table should not be expected to drop more than 2 feet during the Summer and Fall months after area-wide irrigation has ceased or been diminished.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL DISCUSSION

No geologic conditions were apparent during our reconnaissance which would preclude the site development as planned, provided the recommendations contained herein are fully complied with. Based on our investigation to date and the knowledge of the proposed construction, the site condition which would have the greatest effect on the planned development is the soft soils and the relatively high water table.

Since the exact magnitude and nature of the foundation loads are not precisely known at the present time, the following recommendations must be somewhat general in nature. Any special loads or unusual design conditions should be reported to Lincoln DeVore so that changes in these recommendations may be made, if necessary. However, based upon our analysis of the soil conditions and project characteristics previously outlined, the following recommendations are made.

OPEN FOUNDATION OBSERVATION

Since the recommendations in this report are based on information obtained through random borings, it is possible that the subsurface materials between the boring points could vary. Therefore, prior to placing forms or pouring concrete, an open excavation observation should be performed by representatives of Lincoln DeVore. The purpose of this observation is to determine if the subsurface soils directly below the proposed foundations are similar to those encountered in our exploration borings. If the materials below the proposed foundations differ from those encountered, or in our opinion, are not capable of supporting the applied loads, additional recommendations could be provided at that time.

EXCAVATION & STRUCTURAL FILL:

Subgrade

Site preparation in all areas to receive structural fill should begin with the removal of all topsoil, vegetation, and other deleterious materials. Prior to placing any fill, the subgrade should be observed by representatives of Lincoln DeVore to determine if the existing vegetation has been adequately removed and that the subgrade is capable of supporting the proposed fills. The subgrade should then be scarified to a depth of 10 inches, brought to near optimum moisture conditions and compacted to at least 90% of its maximum modified Proctor dry density [ASTM D-1557]. The moisture content of this material should be within + or - 2% of optimum moisture, as determined by ASTM D-1557.

Structural Fill

In general, we recommend all structural fill in the area beneath any proposed structure or roadway be compacted to a minimum of 90% of its maximum modified Proctor dry density (ASTM D1557). We recommend that fill be placed and compacted at approximately its optimum moisture content (+/-2%) as determined by ASTM D 1557. Structural fill should be a granular, coarse grained, non-free draining, non-expansive soil. This structural fill should be placed in the overexcavated portion of this site in lifts not to exceed 6 inches after compaction. This

Structural Fill must be brought to the required density by mechanical means. No soaking, jetting or puddling techniques of any type should be used in placement of fill on this site.

Non-Structural Fill

We recommend that all backfill placed around the exterior of the building, and in utility trenches which are outside the perimeter of the building and not located beneath roadways or parking lots, be compacted to a minimum of 80% of its maximum modified Proctor dry density (ASTM D-1557).

Fill Limits

To provide adequate lateral support, we recommend that the zone of overexcavation extend at least 3 feet beyond the perimeter of the building on all sides. The Structural Fill should be a minimum of 3 feet in final compacted thickness.

No major difficulties are anticipated in the course of excavating into the surficial soils on the site. It is probable that safety provisions such as sloping or bracing the sides of excavations over 4 feet deep will be necessary. Any such safety provisions shall conform to reasonable industry safety practices and to applicable OSHA regulations. **The OSHA classification for excavation purposes on this site is Soil Class C.**

Field Observation & Testing:

During the placement of any structural fill, it is recommended that a sufficient amount of field tests and observation be performed under the direction of the geotechnical engineer. The geotechnical engineer should determine the amount of observation time and field density tests required to determine substantial conformance with these recommendations. It is recommended that surface density tests be taken at maximum 2 foot vertical interval.

The opinions and conclusions of a geotechnical report are based on the interpretation of information obtained by random borings. Therefore the actual site conditions may vary somewhat from those indicated in this report. It is our opinion that field observations by the geotechnical engineer who has prepared this report are critical to the continuity of the project.

Slope Angles

Allowable slope angle for cuts in the native soils is dependent on soil conditions, slope geometry, the moisture content and other factors. Should deep cuts be planned for this site, we recommend that a slope stability analysis be performed when the location and depth of the cut is known.

DRAINAGE AND GRADIENT:

Adequate site drainage should be provided in the foundation area both during and after construction to prevent the ponding of water and the saturation of the subsurface soils. We recommend that the ground surface around the structure be graded so that surface water will be carried quickly away from the building. The minimum gradient within 10 feet of the building will depend on surface landscaping. We recommend that paved areas maintain a minimum gradient of 2%, and that landscaped areas maintain a minimum gradient of 8%. It is further recommended that roof drain downspouts be carried across all backfilled areas and discharged at least 10 feet away from the structure. Proper discharge of roof drain downspouts may require the use subsurface piping in some areas. Planters, if any, should be so constructed that moisture is not allowed to seep into foundation areas or beneath slabs or pavements.

If adequate surface drainage cannot be maintained, or if subsurface seepage is encountered during excavation for foundation construction, a full perimeter drain is recommended for this building. It is recommended that this drain consist of a perforated drain pipe and a gravel collector, the whole being fully wrapped in a geotextile filter fabric. We recommend that this drain be constructed with a gravity outlet. If sufficient grade does not exist on the site for a gravity outlet, then a sealed sump and pump is recommended. Under no circumstances should a dry well be used on this site.

If a half basement type structure is planned on any of these sites, the high water level found across the tract should be controlled to prevent large upward fluctuations of this water surface. For this purpose, we recommend that this be accomplished by construction of an area drain beneath the building area. To control water surface movement, it is recommended that the drain outfall in a free gravity drain. If a gravity outfall is not possible, a sealed sump and pump is recommended to remove the water.

Should an automatic lawn irrigation systems be used on this site, we recommend that the sprinkler heads be installed no less than 5 feet from the buildings. In addition, these heads should be adjusted so that spray from the system does not fall onto the walls of the buildings and that such water does not excessively wet the backfill soils.

It is recommended that lawn and landscaping irrigation be reasonably limited, so as to prevent complete saturation of subsurface soils. Several methods of irrigation water control are possible, to include, but not limited to:

- Metering the Irrigation water.
- Sizing the irrigation distribution service piping to limit on-site water usage.
- Encourage efficient landscaping practices.
- Enforcing reasonable limits on the size of high water usage landscaping for each lot and any park areas.

system should be designed as grade beams capable of spanning at least thirteen feet. These "grade beams" should be horizontally reinforced both near the top and near the bottom. The horizontal reinforcement required should be placed continuously around the structure with no gaps or breaks. A foundation system designed in this manner should provide a rather rigid system and, therefore, be better able to tolerate differential movements associated with consolidation of the underlying soft soils.

If increased bearing capacity is required, the Structural Fill recommendations given for Structural Slab Foundation systems could be utilized. When The structural fill is completed, an allowable bearing capacity of 1600 psf maximum may be assumed for proportioning the footings.

Structural Slab

If the design of the upper structure is such that loads can be balanced reasonably well, a floating structural slab type of foundation could be used on this site. Such a slab would require heavy reinforcing to resist differential bending along the rim wall. It is possible to design such a slab either as a thickened edge only, a solid or a ribbed slab. A rim wall must be used for confinement purposes. Any such slab must be specifically designed for the anticipated loading.

Such a foundation system may settle to some degree however, the use of a structural fill beneath the slab and rim wall will help reduce settlement and hold differential movement to a minimum. Relatively large slabs will tend to experience minor cracking and heave of lightly loaded interior portions, unless the slabs are specifically designed with this movement in mind.

The existing low density, metastable soils should be removed to a depth of 2 feet below the proposed bottom footing or rimwall elevation. Once it is felt that adequate soil removal has been achieved, it is recommended that the excavation be closely examined by a representative of Lincoln-DeVore to ensure that an adequate overexcavation depth has indeed occurred and that the exposed soils are suitable to support the proposed structural man-made fill.

Once this examination has been completed, it is recommended that a coarse-grained, non-expansive, non-free draining man-made structural fill be imported to the site. The native soils may be utilized as structural fill, if specifically approved by the Geotechnical Engineer. This imported fill should be placed in the overexcavated portion of this site in lifts not to exceed 6 inches after compaction. A minimum of 90% of the soils maximum Modified Proctor dry density (ASTM D-1557) must be maintained during the soil placement. These soils should be placed at a moisture content conducive to the required compaction (usually Proctor optimum moisture content ± 2%). The granular material must be brought to the required density by mechanical means. No soaking, jetting or puddling techniques of any type should be used in placement of fill on this site. To ensure adequate lateral support, we must recommend that the zone of overexcavation extend at least 2 feet around the perimeter of the proposed footing. To confirm the quality of the compacted fill product, it is recommended that surface density tests be taken at maximum 2 foot vertical intervals.

The placement of a geotextile fabric for separation between the native soils and the structural fill is may be recommended to aid the fill placement and to improve the stability of the completed fill.

When The structural fill is completed, an allowable bearing capacity of 1600 psf maximum may be assumed for proportioning the footings.

The placement of the structural fill a minimum of two feet beyond the edge of the structural slab should provide additional support for the eccentrically placed wall loads on the slab edges.

SETTLEMENT:

We anticipate that total and/or differential settlements for the proposed structures may be considered to be within tolerable limits, provided the recommendations presented in this report are fully complied with. In general, we expect total settlements for the proposed structure to be less than 1-1/2 inch.

FROST PROTECTION

We recommend that the bottom of all foundation components rest a minimum of 1-1/2 feet below finished grade or as required by the local building codes. Foundation components must not be placed on frozen soils.

DRILLED PIERS:

Under some loading conditions, we recommend that a deep foundation system, consisting of drilled piers be used to carry the weight of the proposed structure. Deep foundations must extend through the low density upper low plastic clay materials and into the underlying clays and shales of the Mancos Shale Formation. The upper soils are very soft and wet with a water table being encountered at approximately 5 feet below the ground surface. Squeezing, caving and seepage moisture are anticipated during installation of these drilled piers, requiring that casing and dewatering equipment be on the site available for use during construction.

We recommend that drilled piers have a minimum shaft length of 38 feet and be embedded at least 6 feet into the relatively unweathered clays of the Mancos Shale Formation. At this level,these piers may be designed for a maximum end bearing capacity of 25000 psf, plus 2000 psf side support considering only the side wall area embedded in the bedrock. Due to the expansive potential of the bedrock, a minimum dead load uplift is required, consisting of a point uplift of 2200 psf and 300 psf side uplift, based on the side wall embedded in the bedrock. The overburden is soft and no supporting or uplift values are assigned to this material. The weight of the concrete in the pier may be incorporated into the required dead load.

It is recommended that the bottoms of all piers be thoroughly cleaned prior to the placement of concrete. The amount of reinforcing in each pier will depend on the magnitude and nature of loads involved. As a rule of thumb, reinforcing equal to approximately 1/2 of 1% of the gross cross-sectional concrete area should be used. Additional reinforcing should be used if structural conditions warrant. We recommend that reinforcing extend through the full length of pier.

To minimize the possibility of voids developing in the drilled piers, concrete with a slump of 5 to 6 inches is recommended. We recommend that piers be dewatered and thoroughly cleaned of all loose material prior to placing the steel cage and concrete. The pier excavation should contain no more than 2 inches of free water unless the concrete is placed by means of a tremie extending to the bottom of the pier. A free fall in excess of 5 feet is not recommended when placing concrete in drilled piers. We recommend that casing be pulled as the concrete is being placed and that a 5 foot head of concrete be maintained while pulling the casing. It is recommended that drilled piers be plumb with 2% of their length and that the shaft maintain a constant diameter for the full length of the pier and not allowed to "mushroom" at the top.

DRILLED PIER OBSERVATION:

The foundation installation for drilled piers should be continuously observed by a representative of Lincoln DeVore to determine that the recommended bearing material has been adequately penetrated and that soil conditions are as anticipated by the exploration. This observation will aid in attaining an adequate foundation system. In addition, abnormalities in the subsurface conditions encountered during foundation installation can be identified and corrective measures taken as required. Lincoln DeVore requires a minimum of one working day's notice, and a copy of the foundation plan, to schedule any field observation.

GRADE BEAMS:

A reinforced concrete grade beam is recommended to carry the exterior wall loads in conjunction with the deep foundation system. We recommend that this grade beam be designed to span from bearing point to bearing point and not be calculated to rest on the ground surface between these points.

CONCRETE SLABS ON GRADE

Slabs could be placed directly on the natural soils or on a structural fill. We recommend that all slabs on grade be constructed to act independently of the other structural portions of the building. One method of allowing the slabs to float freely is to use expansion material at the slab-structure interface.

It is recommended that slabs on grade be constructed over a capillary break of approximately 6 inches in thickness. We recommend that the material used to form the capillary break be free draining, granular material and not contain significant fines. A free draining outlet is also recommended for this break so that it will not trap water beneath the slab. A vapor barrier is recommended beneath the floor slab and above the capillary break. To prevent difficulty in finishing concrete, a 2 inch sand layer should be placed above the break. An alternate method of reducing finishing problems would be to place the vapor barrier beneath approximately 6 inches of a minus 3/4 inch gravel fill. This method must be very carefully accomplished to minimize excessive puncturing and tearing of the vapor barrier.

It is recommended that floor slabs on grade be constructed with control joints placed to divide the floor into sections not exceeding 360 to 400 square feet, maximum. Also, additional control joints are recommended at all inside corners and at all columns to control cracking in these areas.

EARTH RETAINING STRUCTURES

The active soil pressure for the design of earth retaining structures may be based on an equivalent fluid pressure of 51 pounds per cubic foot. The active pressure should be used for retaining structures which are free to move at the top (unrestrained walls). For earth retaining structures which are fixed at the top, such as basement walls, an equivalent fluid pressure of 63 pounds per cubic foot may be used. It should be noted that the above values should be modified to take into account any surcharge loads, sloping backfill or other externally applied forces. The above equivalent fluid pressures should also be modified for the effect of free water, if any.

The passive pressure for resistance to lateral movement may be considered to be 183 pcf per foot of depth. The coefficient of friction for concrete to soil may be assumed to be .24 for resistance to lateral movement. When combining frictional and passive resistance, the latter must be reduced by approximately 1/3.

We recommend that the backfill behind any retaining wall be compacted to a minimum of 85% of its maximum modified Proctor dry density, ASTM D-1557. The backfill material should be approved by the Soils Engineer prior to placing and a sufficient amount of field observation and density tests should be performed during placement. Placing backfill behind retaining walls before the wall has gained sufficient strength to resist the applied lateral earth pressures is <u>not</u> recommended.

REACTIVE SOILS

Since groundwater in the Grand Junction area typically contains sulfates in quantities detrimental to a Type I cement, a Type II or Type I-II or Type II-V cement is recommended for all concrete which is in contact with the subsurface soils and bedrock. Calcium chloride should not be added to a Type II, Type I-II or Type II-V cement under any circumstances.

FOUNDATIONS

Footing and Stemwall

Assuming that some amount of differential movement can be tolerated, then a conventional shallow foundation system, either resting on the native alluvial soils or underlain by a structural fill, placed in accordance with the recommendations contained within this report may be utilized. The foundation would consist of continuous spread footings beneath all bearing walls and isolated spread footings beneath all columns and other points of concentrated load. Such a shallow foundation system, resting on the native alluvial soils may be designed on the basis of an allowable bearing capacity of 800 psf maximum. If the shallow foundation system is founded on a properly constructed structural fill at least two feet thick below the foundation, the foundation system may be designed on the basis of an allowable bearing capacity of 1600 psf maximum. Recommendations pertaining to balancing, reinforcing, drainage, and inspection are considered extremely important and must be followed. Contact stresses beneath all continuous walls should be balanced to within + or - 200 psf at all points. Isolated interior column footings should be designed for contact stresses of about 150 psf less than the average used to balance the continuous walls. The criteria for balancing will depend somewhat on the nature of the structure. Single-story, slab-on-grade structures may be balanced on the basis of dead load only. Multi story structures may be balanced on the basis of dead load plus one half live load, for up to three stories.

Stem walls for a shallow foundation

PAVEMENTS

Samples of the surficial native soils at this property that may be required to support pavements have been evaluated using the Hveem-Carmany method (ASTM D-2844) to determine their support characteristics. The results of the laboratory testing are as follows:

AASHTO Classification - A-4(8) Unified Classification - CL

R = 11
Expansion @ 300 psi = 1.3
Displacement @ 300 psi = 4.28

Displacement values higher than 4.00 generally indicate the soil is unstable and may require confinement for proper performance.

No estimates of traffic volumes have been provided to Lincoln DeVore. However, we assume that the roads will be classified as residential. The design procedures utilized are those recognized by the Colorado Department of Highways and the 1986 AASHTO design procedure.

Based upon the existing topography, the anticipated final road grades and the anticipated future irrigation practices in the local area, a Drainage Factor of 0.6 (1986 AASHTO procedure) has been utilized for the section analysis.

PROPOSED PAVEMENT SECTIONS

Based on the soil support characteristics outlined above, the following pavement sections are recommended:

Residential Roadway, 18k EAL = 5 :

The terminal Serviceability Index of 2.0, a Reliability of 70 and a design life of 20 years have been utilized, based on recommendations by the Highway Department. An 18 kip EAL of 5, also recommended by the Highway Department, was used for the analysis.

Asphalt-Base Coarse

3 inches of asphaltic concrete pavement
on 8 inches of aggregate base coarse
on 8 inches of recompacted native material

Full Depth Asphalt:

5 inches of asphaltic concrete pavement
on 12 inches of recompacted native material

Due to anticipated problems of compacting the native subgrade soils and probable soil 'pumping' the use of a Full Depth Asphalt Section is NOT Recommended.

Rigid Concrete:

Doweled, not tied to shoulder slabs or curbing

6 inches of portland cement pavement
on 4 inches of aggregate base coarse
on 8 inches of recompacted native material

Collector Roadway, 18k EAL = 25 :

The terminal Serviceability Index of 2.5, a Reliability of 70 and a design life of 20 years have been utilized, based on recommendations by the Highway Department. An 18 kip EAL of 25, also recommended by the Highway Department, was used for the analysis.

Asphalt-Base Coarse

3 inches of asphaltic concrete pavement
on 18 inches of aggregate base coarse
on 8 inches of recompacted native material

OR

4 inches of asphaltic concrete pavement
on 12 inches of aggregate base coarse
on 8 inches of recompacted native material

Full Depth Asphalt:

6 inches of asphaltic concrete pavement
on 12 inches of recompacted native material

Due to anticipated problems of compacting the native subgrade soils and probable soil 'pumping' the use of a Full Depth Asphalt Section is <u>NOT</u> Recommended.

Rigid Concrete:

Doweled, not tied to shoulder slabs or curbing

6 inches of portland cement pavement
on 4 inches of aggregate base coarse
on 8 inches of recompacted native material

<u>Due to the possibility of very high soil moisture in the subgrade soils, the use of a Geotextile Fabric for separation and minor reinforcement (such as Mirafi 500-X or 140-N), placed beneath the Aggregate Base Course, may be required in some areas on this site.</u>

PAVEMENT SECTION CONSTRUCTION

We recommend that any asphaltic concrete pavement meet the State of Colorado requirements for a Grade C mix. In addition, the asphaltic concrete pavement should be compacted to a minimum of 95% of its maximum Hveem density. The aggregate base coarse should meet the requirements of State of Colorado Class 5 or Class 6 material, and have a minimum R value of 78. We recommend that the base coarse be compacted to a minimum of 95% of its maximum Modified Proctor dry density (ASTM D-1557), at a moisture content within + or -2% of optimum moisture. The native subgrade shall be scarified and recompacted to a minimum of 90% of their maximum Modified Proctor day density (ASTM D-1557) at a moisture content within + or -2% of optimum moisture.

All pavement should be protected from moisture migrating beneath the pavement structure. If surface drainage is allowed to pond behind curbs, islands or other areas of the site and allowed to seep beneath pavement, premature deterioration or possibly pavement failure could result.

Concrete Pavement

We recommend that any rigid concrete pavement have a minimum flexural strength (F_t) of 650 psi at 28 days. This strength requirement can be met using Class P or AX or A or B Concrete as defined in Section 600 of the Standard Specifications for Road and Bridge Construction, Colorado DOT. It is recommended that field control of the concrete mix be made utilizing compressive strength criteria.

Flexural Strength should **only** be used for the design process. Concrete with a lower flexural strength may be allowed by the agency having jurisdiction however, the design section thicknesses should be confirmed. In addition, the final durability of the pavement should be carefully considered.

Control joints should be placed at a minimum distance of 12 feet in all directions. If it is desired to increase the spacing of control joints, then 66-66 welded wire fabric should be placed in the mid-point of the slab. If the welded wire fabric is used, the control joint spacing can be increased to 40 feet. Construction joints designed so that positive joint transfer is maintained by the use of dowels is recommended.

The concrete should be placed at the lowest slump practical for the method of placement. In all circumstances, the maximum slump should be limited to 4 inches. Proper consolidation of the plastic concrete is important. The placed concrete must be properly protected and cured.

LIMITATIONS

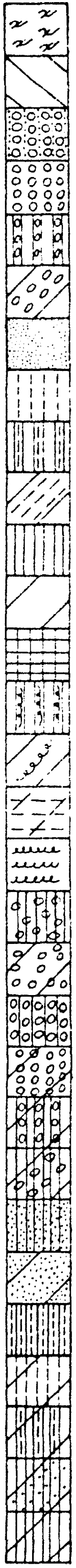
This report is issued with the understanding that it is the responsibility of the owner, or his representative to ensure that the information and recommendations contained herein are brought to the attention of the individual lot purchasers for the subdivision. In addition, it is the responsibility of the individual lot owners that the information and recommendations contained herein are brought to the attention of the architect and engineer for the individual projects and the necessary steps are taken to see that the contractor and his subcontractors carry out the appropriate recommendations during construction.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in acceptable or appropriate standards may occur or may result from legislation or the broadening of engineering knowledge. Accordingly, the findings of this report may be invalid, wholly or partially, by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of 3 years.

The recommendations of this report pertain only to the site investigated and are based on the assumption that the soil conditions do not deviate from those described in this report. If any variations or undesirable conditions are encountered during construction or the proposed construction will differ from that planned on the day of this report, Lincoln DeVore should be notified so that supplemental recommendations can be provided, if appropriate.

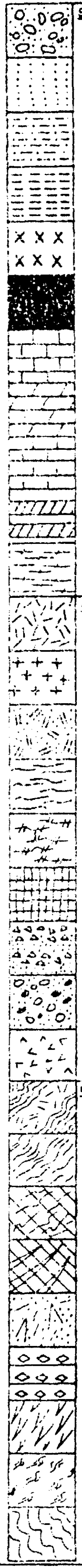
Lincoln DeVore makes no warranty, either expressed or implied, as to the findings, recommendations, specifications or professional advice, except that they were prepared in accordance with generally accepted professional engineering practice in the field of geotechnical engineering.

SOILS DESCRIPTIONS:



SYMBOL	USCS	DESCRIPTION
		Topsoil
		Man-made Fill
	GW	Well-graded Gravel
	GP	Poorly-graded Gravel
	GM	Silty Gravel
	GC	Clayey Gravel
	SW	Well-graded Sand
	SP	Poorly-graded Sand
	SM	Silty Sand
	SC	Clayey Sand
	ML	Low-plasticity Silt
	CL	Low-plasticity Clay
	OL	Low-plasticity Organic Silt and Clay
	MH	High-plasticity Silt
	CH	High-plasticity Clay
	OH	High-plasticity Organic Clay
	Pt	Peat
	GW/GM	Well-graded Gravel, Silty
	GW/GC	Well-graded Gravel, Clayey
	GP/GM	Poorly-graded Gravel, Silty
	GP/GC	Poorly-graded Gravel, Clayey
	GM/GC	Silty Gravel, Clayey
	GC/GM	Clayey Gravel, Silty
	SW/SM	Well-graded Sand, Silty
	SW/SC	Well-graded Sand, Clayey
	SP/SM	Poorly-graded Sand, Silty
	SP/SC	Poorly-graded Sand, Clayey
	SM/SC	Silty Sand, Clayey
	SC/SM	Clayey Sand, Silty
	CL/ML	Silty Clay

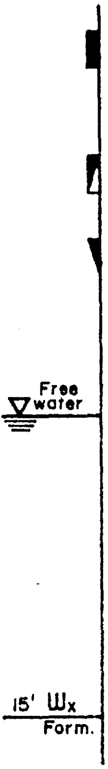
ROCK DESCRIPTIONS:



SYMBOL	DESCRIPTION
	SEDIMENTARY ROCKS
	CONGLOMERATE
	SANDSTONE
	SILTSTONE
	SHALE
	CLAYSTONE
	COAL
	LIMESTONE
	DOLOMITE
	MARLSTONE
	GYPSUM
	Other Sedimentary Rocks
	IGNEOUS ROCKS
	GRANITIC ROCKS
	DIORITIC ROCKS
	GABBRO
	RHYOLITE
	ANDESITE
	BASALT
	TUFF & ASH FLOWS
	BRECCIA & Other Volcanics
	Other Igneous Rocks
	METAMORPHIC ROCKS
	GNEISS
	SCHIST
	PHYLLITE
	SLATE
	METAQUARTZITE
	MARBLE
	HORNFELS
	SERPENTINE
	Other Metamorphic Rocks

SYMBOLS & NOTES:

SYMBOL DESCRIPTION



9/12 Standard penetration drive Numbers indicate 9 blows to drive the spoon 12" into ground.

ST 2-1/2" Shelby thin wall sample

W_0 Natural Moisture Content

W_x Weathered Material

Free water table

γ^0 Natural dry density

T.B. – Disturbed Bulk Sample

② Soil type related to samples in report

Top of formation

Test Boring Location

Test Pit Location

Seismic or Resistivity Station. Lineation indicates approx. length & orientation of spread (S = Seismic, R = Resistivity)

Standard Penetration Drives are made by driving a standard 1.4" split spoon sampler into the ground by dropping a 140 lb. weight 30". ASTM test des. D-1586.

Samples may be bulk, standard split spoon (both disturbed) or 2-1/2" I.D. thin wall ("undisturbed") Shelby tube samples. See log for type.

The boring logs show subsurface conditions at the dates and locations shown, and it is not warranted that they are representative of subsurface conditions at other locations and times.

LINCOLN DeVORE TESTING LABORATORY

COLORADO: Colorado Springs, Pueblo, Glenwood Springs, Montrose, Gunnison, Grand Junction.– WYO.– Rock Springs

EXPLANATION OF BOREHOLE LOGS AND LOCATION DIAGRAMS

SUMMARY SHEET

Soil Sample SILTY CLAY (CL)
Test No. 81273-J
Location GRAND VIEW SUB. G.J.
Date 6-16-94
Boring No. 1 Depth 3'
Sample No. I
Test by LRS

Natural Water Content (w) 22.0 %
Specific Gravity (Gs)
In Place Density (γ_o) 98.6 pcf

SIEVE ANALYSIS:

Sieve No.	% Passing
1 1/2"	
1"	
3/4"	
1/2"	
4	
10	100
20	99
40	99
100	94
200	81

HYDROMETER ANALYSIS:

Grain size (mm)	%
.02	53
.005	32

Plastic Limit P.L. 16 %
Liquid Limit L. L. 24 %
Plasticity Index P.I. 8 %
Shrinkage Limit %
Flow Index
Shrinkage Ratio %
Volumetric Change %
Lineal Shrinkage %

MOISTURE DENSITY: ASTM METHOD

Optimum Moisture Content - w_o %
Maximum Dry Density - γ_d pcf
California Bearing Ratio (av) %
Swell: Days %
Swell against psf Wo gain %

BEARING:

Housel Penetrometer (av) 800 psf
Unconfined Compression (qu) psf
Plate Bearing: psf
Inches Settlement
Consolidation 2.4% under 930 psf

PERMEABILITY:

K (at 20°C)
Void Ratio

Sulfates 1000 ppm.

SOIL ANALYSIS

LINCOLN-DeVORE TESTING LABORATORY
COLORADO SPRINGS, COLORADO

SAMPLE: AASHTO A-4 (8) UCS (CL)

TEST SPECIMAN		A	B	C	D	E
DATE TESTED		4/17	4/17	4/17		
SPECIMEN FABRICATION	Compactor Air Pressure psi					
	Initial Moisture %	8.2%	8.2	8.2		
	Moisture at Compaction %	18.2	17.2	16.2		
	Briquette Height in.	2.58	2.53	2.51		
	Density pcf	107.9	109.0	111.1		
EXUDATION PRESSURE psi		84	135	318		
EXPANSION PRESSURE DIAL		0.8	0.6	1.4		
STABIL-OMETER	P_h at 1000 pounds psi	66	64	60		
	P_h at 2000 pounds psi	138	147	132		
	Displacement turns	4.85	4.14	4.30		
	"R" Value	9	5	11		
CORRECTED "R" VALUE		8				

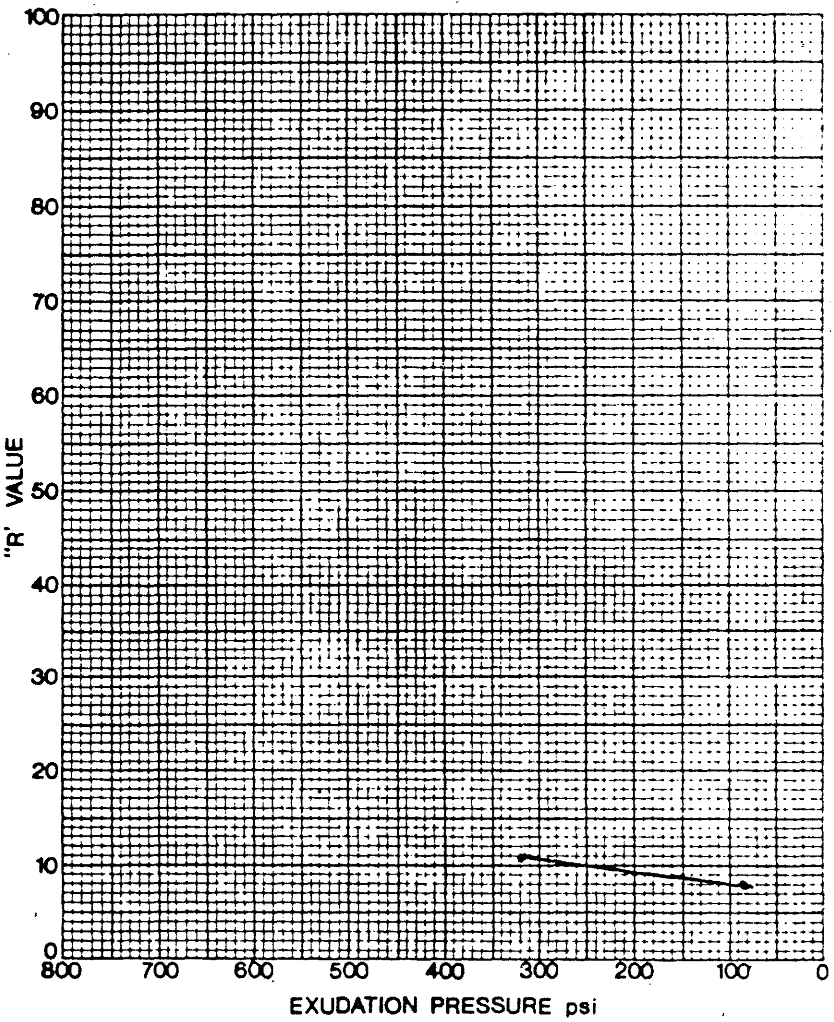
EXPANSION @ 300 PSI EXUDATION PRESSURE 1.3

DISPLACEMENT @ 300 PSI EXUDATION PRESSURE 4.28

"R: VALUE @ 300 PSI EXUDATION PRESSURE 11

1½"	
1"	
3/4"	
1/2"	
3/8"	
4	100
10	99
20	99
40	99
100	94
200	82
.02 mm	50
.005 mm	32

LIQUID LIMIT	24
PLASTIC LIMIT	17
PLASTICITY INDEX	7
SAND EQUIVALENT	



Lincoln DeVore, Inc.
Geotechnical Consultants

GRAND VIEW SUB FIL #1 G.J.

DON DELA MOTTE

DATE 7-1-94

JOB NO. 81273-J

DRAWN EMM

BORING NO. 1

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION		BLOW COUNT	SOIL DENSITY pcf	WATER %
		Surface Soils reworked by Agriculture				
		Surface is dessicated				
		Debris Fan Deposits Increasing Moisture				
	CL	Low Plastic, Silty Clay Sulfates	ST		95.2	19.8%
5		Sandy Strata Gray-brown compressible	5		98.6	22.0%
		Saturated, capillary frings				
		Free Water ∇				
		Very Soft				
	CL	Silty Clay	SPT	1/6		
10		Some silt and sand strata Compressible	10	2/12		23.5%
				3/18		
		Hole is squeezing shut				
		Silty Clay				
15		Very Soft	15			
20			20			
			BULK			22.1%
25		Very Soft Silty Clay alluvial/Debris Fan deposits	25			
		TD @ 25'				
30			30			
		Blow Counts are cumulative for each 6 inches of sampler penetration.				

Free Water @ 7'
During Drilling 6-14-94

LOG OF SUBSURFACE EXPLORATION

GRAND VIEW SUBDIVISION
Grand Junction, Colorado

Mr. Don Dela Motte

Date 7-1-94

Job No. 81273-J

Drawn EMM

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

BORING NO. 2

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION			BLOW COUNT	SOIL DENSITY pcf	WATER %
		Surface Soils reworked by Agriculture					
		Surface is dessicated	Debris Fan Deposits				
		Sulfates	Increasing Moisture				
		CL Low Plastic, Silty Clay	Gray-brown	ST		105.1	17.9%
5		Saturated, capillary frings		5			
		Free Water ∇	compressible				
		Some silt and sand strata					
		Very Soft					
		CL Silty Clay		SPT	1/6		
10		Very Stratified	Compressible	10	2/12		21.4%
					4/18		
		Very Soft	Hole is squeezing shut				
		Silty Clay					
15		TD @ 13'		15			
20				20			
25				25			
30				30			

Blow Counts are cumulative for each
6 inches of sampler penetration.

Free Water @ 6'
During Drilling 6-14-94

LOG OF SUBSURFACE EXPLORATION

GRAND VIEW SUBDIVISION
Grand Junction, Colorado

LINCOLN - DeVORE, Inc.
Grand Junction, Colorado

Mr. Don Dela Motte

Date 7-1-94

Job No. 81273-J

Drawn EMM

BORING NO. 3

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION			BLOW COUNT	SOIL DENSITY pcf	WATER %
		Surface Soils reworked by Agriculture					
		Surface is dessicated	Debris Fan Deposits				
			Sulfates Increasing Moisture				
		CL Low Plastic, Silty Clay	Saturated, capillary frings	ST		99.0	18.8%
5		Free Water ∇	Gray-brown	5		99.3	20.1%
		compressible					
		Very Soft					
		CL Silty Clay		SPT	1/6		
10		Some silt and sand strata	Compressible	10	2/12		24.7%
					3/18		
			Hole is squeezing shut				
		Silty Clay					
15			Very Soft	15			
20				20			
			BULK				23.9%
25		Very Soft Silty Clay	alluvial/Debris Fan deposits	25			
		TD @ 25'					
30				30			

Blow Counts are cumulative for each
6 inches of sampler penetration.

Free Water @ 5'
During Drilling 6-14-94

LOG OF SUBSURFACE EXPLORATION

GRAND VIEW SUBDIVISION
Grand Junction, Colorado

LINCOLN - DeVORE, Inc.
Grand Junction, Colorado

Mr. Don Dela Motte

Date 7-1-94

Job No. 81273-J

Drawn EMM

85 94-2

MASTER DRAINAGE STUDY
OF
GRAND VIEW SUBDIVISION

Original
Do NOT Remove
From Office

Prepared For:

DONADA INC, c/o DON DELA MOTTE
634 Avalon Drive
Grand Junction, Colorado 81501
(303)-434-6224

Prepared By:

LANDesign LTD.
200 N. 6th. Street, Suite 102
Grand Junction, Colorado 81501
(303)-245-4099

Prepared by: 07/29/94
Monty D. Stroup

"I hereby certify that this Master Drainage Study of Grand View Subdivision was prepared under my direct supervision".

Reviewed by:
Philip M. Hart P.E.
State of Colorado, # 19346

NOTICE: The information contained herein is the sole property of LANDesign LTD. and Donada Inc.. It may not be reused or referenced without the expressed written consent of Philip M. Hart P.E. and Don Dela Motte.

I. PURPOSE AND SCOPE OF STUDY

The purpose of this study is to evaluate the affects of development of the Grand View Subdivision and to provide a basis for subsequent analysis and design of proposed phases of the development. A hydrologic analysis of the project's tributary watersheds for historic and developed conditions has been preformed and is presented in this report.

II. PROJECT LOCATION AND DESCRIPTION

Location:

Grand View Subdivision is located West 1/2 of Section 6, T.1 S., R.1 E., of the Ute Meridian.

Streets in the vicinity include 28 Road running from the south to the north defining the west boundary line. Approximately 1/4 mile south is Patterson Road running from the east to the west.

Development in the vicinity includes Spring Valley to the west a single family development of moderate density. Additionally some acreage sized parcels with single family dwellings adjoin the parcel adjacent to 28 Road. To the north lies undeveloped agricultural lands. To the east is Matchett Village a new development which is currently in the County Subdivision process. The Matchett Village area is planned for mixed use consisting of single family, multifamily and non-residential uses. To the south lies undeveloped agricultural lands.

Description:

The project contains approximately 64.9 acres of land and is planned for 200 single family building sites. Lots range in size from 8,000 to 10,000 square feet.

Presently there is one single family dwelling and two out-buildings on the subject property. Agricultural production has occurred on the property for a number of years and is presently readied for seasonal production.

III. HYDROLOGIC CALCULATIONS

References and Constraints:

The policies outlined in the "Interim Outline of Grading and Drainage Criteria, City of Grand Junction" were used as a basis to determine the study methodologies, techniques and hydrologic data presented herein.

The US Army Corps of Engineers "HEC1 Flood Hydrograph Package" was used to estimate the flowrates within the tributary watershed as a result of development of the property.

Watershed Description:

The tributary watershed contains an estimated 91.31 acres or 0.1426 square miles being entirely located east of 28 Road. The watershed length is approximately 3,200 feet or 0.61 miles. The elevation at the headwater is approximately 4,760 and the elevation at the southwest corner of the project is approximately 4,711. This results in a average slope of approximately 1.53%. Hydrologic conditions are considered "good".

Lands within the watershed are best described as flat agricultural and pasture lands tilled to support straight row crops.

Watershed Vegetation:

Vegetation consists primarily of row crops and pockets of grass ground cover. Isolated pockets of wetland vegetation is found to exist within the existing irrigation and drainage channel along the south boundary line of the project.

Watershed Soils:

The "Soil Survey, Grand Junction Area" defines soils within the watershed as being (Bc), Billings silty clay loam, 0 to 2 percent slopes, hydrological soils group "C", (Rf), Ravola very fine sandy loam, 0 to 2 percent slopes, hydrological soils group "B" and (Fc) Fruita and Ravola loams, 2 to 5 percent slopes, hydrological soils group "B".

As indicated on the "Area Soils Map" the watershed soils are classified as being in the Hydrologic Soils Group "B" and "C". Based on this information (CN) Curve Numbers assigned to sub-areas within the watershed range from 88 to 96 based on existing and proposed land use and are tabulated on the Sub-Basin Summary forms contained in the appendix of this report. These (CN)s represent a soil Antecedent Moisture Condition III for use with the "24 Hour Storm" (DDF) Depth-Duration-Frequency data. Runoff Curve Number Tables 408 and 409 for Mesa County are provided in the appendix of this report show relative changes in curve numbers based on site specific conditions.

Watershed Geometry:

Historic topography divides the watershed into 6 distinct sub-basins defined as offsite sub-basins OF1, OF2 and OF3 and onsite sub-basins A, B and C as shown on the "Historic Watershed and Routing Map" contained in the Appendix of this report.

Runoff from all of these sub-basins is conveyed via well defined irrigation and drainage ditches from the north to the south directly to the southwest corner of the site at 28 Road. From this point runoff is directed south along 28 Road within a deep drainage ditch to an existing drainage infrastructure within Spring Valley Ranch and subsequently underground west to an existing major drainageway west of 28 1/2 Road.

The propose land plan divides the onsite watershed into 16 sub-basins defined as A1 thru A3, B1 thru B5, C1 thru C3, D1 thru D4 and E1.

Runoff from these sub-basins will continue to be directed to the southwest corner of the site via proposed lot grading, roadways, swales and storm sewer as shown on the "Master Drainage Study Grading, Basin and Routing Plan".

IV. HEC1 METHODOLOGY

Precipitation Method:

2 Year and 100 Year Synthetic Storms were simulated based on rainfall (DDF) Depth-Duration-Frequency data for the Grand Junction Urbanized, Area (Table 403b, Reference 2).

Loss Rate Method:

The effects of interception and infiltration were analyzed using the SCS Curve Number Method.

Basin Model:

Flow from each of the sub-basins is analyzed as it converges with southwest corner of the site using the Muskingum-Cunge Routing Method.

Runoff Transformation Method:

Based on watershed geometry the SCS Dimensionless Unit Hydrograph method was used.

Element Application:

Each sub-basin was analyzed using 3 elements, overland flow, shallow concentrated flow and channel flow. Travel times (Tt) for each of these elements were calculated individually and combined to define the Time of Concentration (Tc) for each sub-basin. The Lag Time (TLAG) for each basin was calculated based on the relationship of TLAG = 0.6 * Tc as defined in Reference 3.

V. HEC1 RESULTS

Historic Condition:

The resultant runoff hydrograph for the historic condition at southwest corner of the site (CP4) indicates a Peak Flow (Q2) of 8 CFS and a (Q100) of 87 CFS as shown on the computer printouts labeled Run #1 and Run #2.

Developed Condition:

The resultant runoff hydrograph for the developed condition at same location (CP11) indicates a Peak Flow (Q2) of 7 CFS and a (Q100) of 84 CFS as shown on the computer printouts labeled Run #3 thru Run #6.

Detention Requirements:

The proposed outflow hydrograph is obtained by routing runoff through a series of detention ponds defined as Res1 thru Res5 on the printouts. Res1 thru Res3 are located adjacent to 28 Road within sub-basins B1, B2 and B3 respectively and combine to form "System 1". Res4 is to be located in the southeast corner of the site within sub-basin D4. Res5 is located along the south boundary line of the site within sub-basin E1. Res4 and Res5 combine to form "System 2".

Detention Summary

I.D.	2 YEAR C.F.	*W.S. ELEV.	100 YEAR C.F.	**W.S. ELEV.	TYPE OF DISCHARGE ELEMENT
Res1	N/A	N/A	19,940	23.60	Spillway crest
Res2	N/A	N/A	12,704	21.00	Spillway crest
Res3	14,374	15.75	28,889	17.20	Outlet structure-dual stage
	14,374		61,533		Ex. Channel 28 Road
System 1 Totals					

*Water surface elevation at maximum stage prior to 100 Year discharge.
**Maximum water surface elevation including head above outlet element.

Detention Summary

I.D.	2 YEAR C.F.	*W.S. ELEV.	100 YEAR C.F.	**W.S. ELEV.	TYPE OF DISCHARGE ELEMENT
Res4	39,640	23.50	47,189	24.00	Outlet structure-dual stage
Res5	22,651	16.00	34,365	17.00	Outlet structure-dual stage
	62,291		81,554		Ex. Channel 28 Road
System 2 Totals					
	76,665 C.F.		143,087 C.F.		Ex. Channel 28 Road
	=1.76 Ac.Ft.		=3.28 Ac.Ft.		
Site Totals					

*Water surface elevation at maximum stage prior to 100 Year discharge.
**Maximum water surface elevation including head above outlet element.

VI. DETENTION ELEMENT ALTERNATIVES:

As requested by the City of Grand Junction the potential use of a "Infiltrator" underground retention storage system has be evaluated as an alternative to above ground detention as follows:

Cost

The estimated cost for construction of Res1, Res2 and Res3 = $30,000 including landscaping.

Total Required Storage Volume System 1 = 61,533 C.F.
Number of "Infiltrator" Units = 61,533 C.F. / 21.75 C.F./ Unit = 2,829 Units
Estimated Construction Cost = 2,829 Units X $64.00 / Unit = $181,056.00

The use of underground retention versus surface detention increase construction cost by a factor of 6.

Maintenance

Underground retention systems are prone to clogging due to sedimentation and other debris. Manufacture recommendations are that storm water delivered to the underground system be free of suspended solids. This would require the installation of sedimentation basins upstream of the infiltration system. Sedimentation basins would in effect emulate the above ground detention ponds resulting in redundancy. Further, the manufacture recommends that the system be inspected after each storm event to assure functional reliability.

Ground Water

The "Subsurface Soils Exploration" report for the site indicates the presence of ground water at depths of 5 to 6 feet. This would eliminate the effectiveness of a underground infiltration system below these depths. The result is a net increase in the infiltration bed area by 30% which equates to loss of buildable land and yet additional cost.

In summary the use of underground storage as a viable option is not feasible and is not recommended for future consideration.

VII. IRRIGATION IMPACTS AND THE 2 YEAR STORM EVENT

Historic Conditions:

The site is bound along it's west and east lines by irrigation ditches originating at the Highline Canal. These ditches flow from the north to the south and are the source of irrigation water for lands surrounding the project as well as the project itself. The existing drainage ditch adjacent to the south boundary line of the site is the sole conveyance element for tailwater from these ditches. The ditch is currently owned and maintained by the Grand Valley Water Users Association (GVWUA). The association has agreed to grant to Grand View Subdivision the right to detain water within this ditch (aka Res5), with the stipulation that the conveyance of irrigation tailwater by the ditch continue perpetually.

The 2 Year Storm:

Analysis of the minor storm event presented herein is based on attenuation and release at historic levels excluding irrigation water. Maintaining the historic release rate during the 2 Year event from Res3, Res4 and Res5 will require the construction of a 3-inch by 3-inch square orifice blockout in each of the pond's dual stage release structures. This extremely small orifice creates the potential for continual maintenance problems due to clogging. The practical application of screening devices or filters capable of maintaining continuous flow through such a small conveyance element is in itself marginal.

For the reasons indicated above the proposed detention ponds, lowflow conveyance elements and release structures shall be designed to accommodate the aforementioned irrigation tailwater. The ultimate size of the lowflow discharge elements shall be based on the sum of 2 year historic release rates and calculated irrigation flow rates.

VIII. CONCLUSIONS

The calculated developed runoff hydrographs and required minimum detention volumes presented herein are to be used as the basis for design of individual phases within the total development. The proposed detention elements defined herein will attenuate developed flows to historic rates. The final size and configuration of individual detention and conveyance elements shall be verified by hydrologic and hydraulic design for each phase as development proceeds.

References

1. Interim Outline of Grading and Drainage Criteria, City of Grand Junction, July, 1992.

2. Mesa County Storm Drainage Criteria Manual, Final Draft, Mesa County, Colorado, March 1992.

3. HEC1 Flood Hydrograph Package, Hydrologic Engineering Center, US Army Corps of Engineers, Davis, CA., September, 1990.

4. Soil Survey, Grand Junction Area, Colorado, Series 1940, No. 19, U.S. Department of Agriculture, Issued November, 1955.

5. Concrete Pipe Design Manual, American Concrete Pipe Association, Fifth Printing (revised) June, 1980.

6. Flowmaster I, Version 3.16, Haestad Methods, Inc., Copyright 1990.

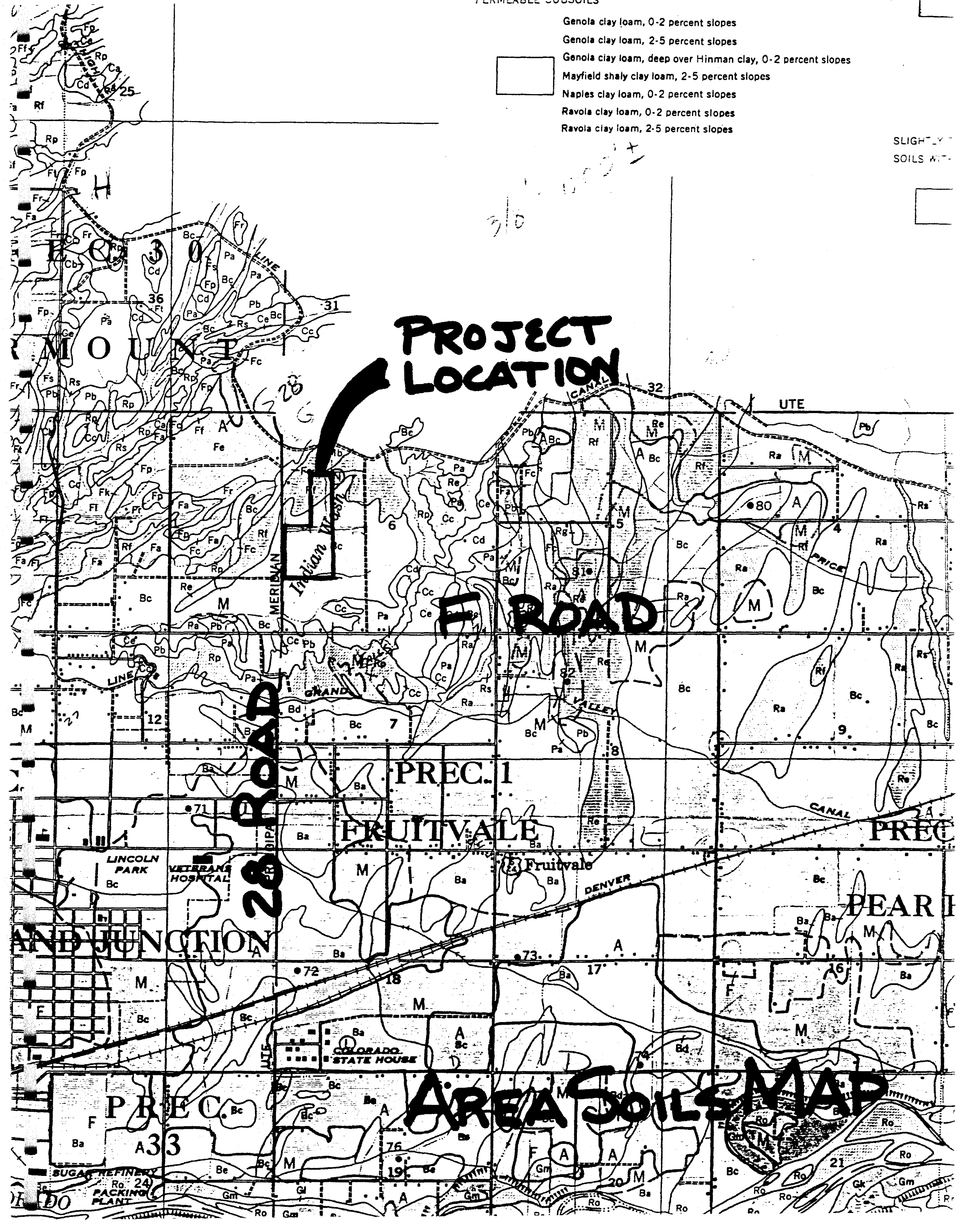
7. Subsurface Soils Exploration, Grand View Subdivision, Filing 1, Lincoln-DeVORE, Inc., Grand Junction, CO., June 29, 1994.

APPENDIX

PERMEABLE SUBSOILS

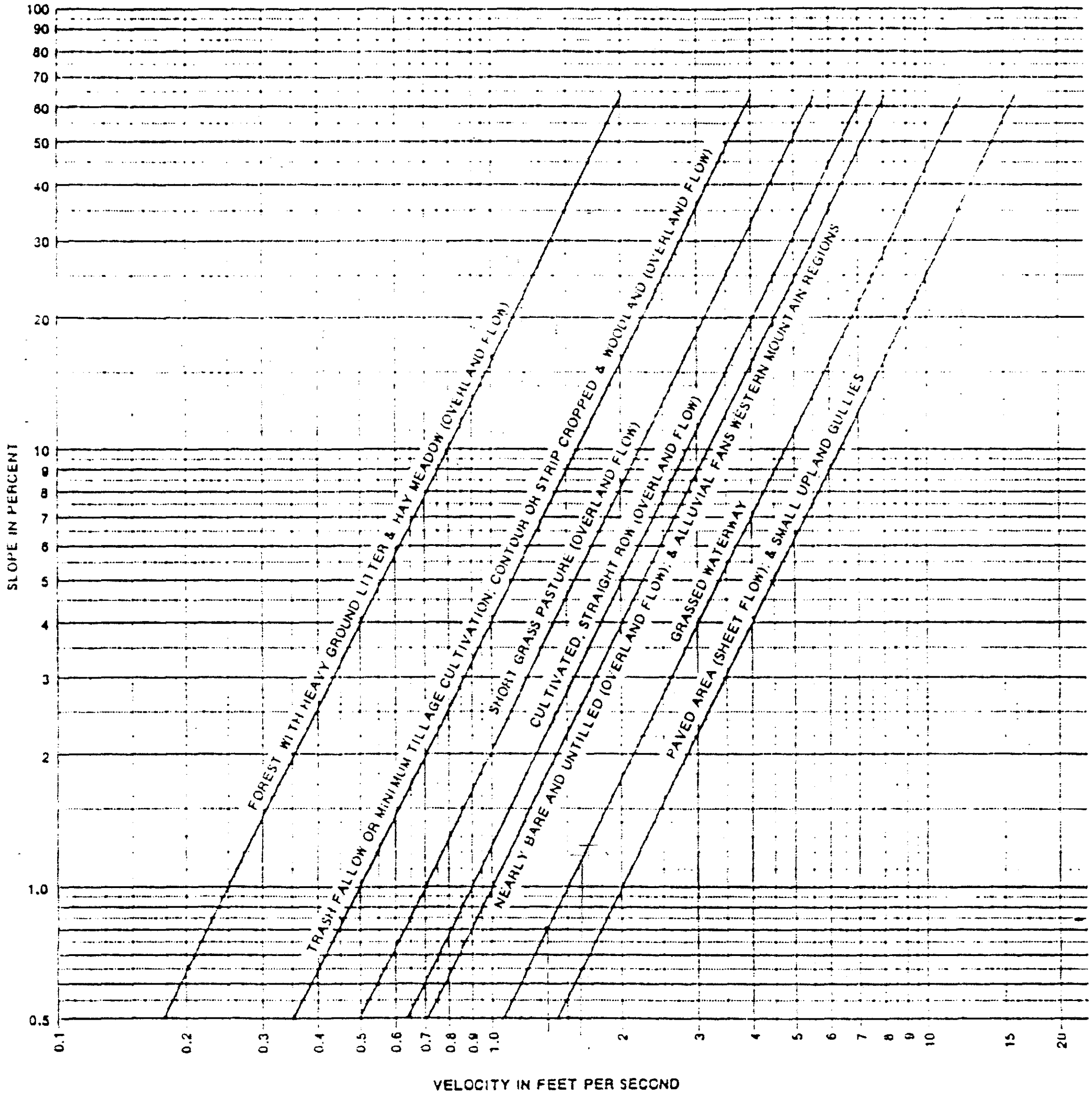
Genola clay loam, 0-2 percent slopes
Genola clay loam, 2-5 percent slopes
Genola clay loam, deep over Hinman clay, 0-2 percent slopes
Mayfield shaly clay loam, 2-5 percent slopes
Naples clay loam, 0-2 percent slopes
Ravola clay loam, 0-2 percent slopes
Ravola clay loam, 2-5 percent slopes

SLIGH
SOILS W



MESA COUNTY
STORM DRAINAGE CRITERIAL MANUAL

FIGURE 402



AVERAGE VELOCITIES
FOR OVERLAND FLOW

TABLE 403 b

DEPTH-DURATION-FREQUENCY TABLE FOR GRAND JUNCTION URBANIZED AREA

(REFERENCE: Sabol 1991, TM-1)

DURATION	2-YR	10-YR	100-YR
5-MIN	0.10	0.18	0.39
10-MIN	0.15	0.28	0.60
15-MIN	0.19	0.36	0.76
30-MIN	0.27	0.50	1.06
1-HR	0.34	0.63	1.34
2-HR	0.42	0.72	1.40
3-HR	0.47	0.77	1.44
6-HR	0.55	0.87	1.56
12-HR	0.64	0.98	1.69
24-HR	0.70	1.12	2.01

INTENSITY-DURATION-FREQUENCY TABLE FOR GRAND JUNCTION URBANIZED AREA

(REFERENCE: Sabol 1991, TM-1)

DURATION	2-YR	10-YR	100-YR
5-MIN	1.20	2.16	4.68
10-MIN	0.90	1.68	3.60
15-MIN	0.76	1.44	3.04
30-MIN	0.54	1.00	2.12
1-HR	0.34	0.63	1.34
2-HR	0.21	0.36	0.70
3-HR	0.16	0.26	0.48
6-HR	0.09	0.15	0.26
12-HR	0.05	0.08	0.14
24-HR	0.03	0.05	0.08

HISTORIC CONDITIONS

USE ONLY FOR 2 HOUR STORM

RUNOFF CURVE NUMBERS FOR HYDROLOGIC SOIL COVER COMPLEXES - RURAL CONDITIONS

(Antecedent Moisture Condition III, and Ia = 0.2S)
(FROM: USDA SCS 1977)

LAND USE	COVER	HYDROLOGIC CONDITION	RUNOFF CURVE NUMBER BY HYDROLOGIC SOIL GROUP A	B	C	D
Fallow	Straight Row	----	89	94	97	98
Row crops	Straight Row	Poor	86	92	95	97
	Straight Row	Good	83	90	94	96
	Contoured	Poor	85	91	93	95
	Contoured	Good	82	88	92	94
	Cont and Terraced	Poor	82	88	91	92
	Cont and Terraced	Good	79	86	90	92
Small grain	Straight Row	Poor	82	89	93	95
	Straight Row	Good	80	88	93	95
	Contoured	Poor	80	88	92	94
	Contoured	Good	78	87	92	93
	Cont and Terraced	Poor	78	86	91	92
	Cont and Terraced	Good	77	85	91	92
Close seeded	Straight Row	Poor	82	89	94	96
legumes 1/	Straight Row	Good	76	86	92	94
or rotation	Contoured	Poor	81	88	93	94
meadow	Contoured	Good	74	84	90	93
	Cont and Terraced	Poor	80	87	91	93
	Cont and Terraced	Good	70	83	89	91
Pasture or		Poor	84	91	94	96
Range		Fair	69	84	91	93
		Good	59	78	88	91
	Contoured	Poor	67	83	92	95
	Contoured	Fair	64	77	88	93
	Contoured	Good	15	55	85	91
Meadow		Good	50	76	86	90
Woods		Poor	65	82	89	93
		Fair	56	78	87	91
		Good	43	74	85	89
Farmsteads		----	77	88	92	94
Roads (dirt) 2/		----	86	92	95	96
(hard surface) 2/		----	88	93	96	97

PART OF A

B-C PART OF A

1 OF 2

1/ Close drilled or broadcast
2/ Including right-of-way

DEVELOPed CONDITION

USE ONLY FOR 2 HOUR STORM

RUNOFF CURVE NUMBERS FOR HYDROLOGIC SOIL COVER COMPLEXES URBAN AND SUBURBAN CONDITIONS 1/

(Antecedent Moisture Condition III)
(FROM: USDA SCS 1977)

LAND USE		RUNOFF CURVE NUMBER BY HYDROLOGIC SOIL GROUP A	B	C	D
OPEN SPACES, LAWNS, PARKS, GOLF COURSES, CEMETERIES, ETC.					
Good condition:	grass cover on 75% or more of the area	59*	78	88	91
Fair condition:	grass cover on 50% to 75% of area	69*	84	91	93
Commercial and Business Areas (85% impervious)		96*	97	98	98
Industrial districts (72% impervious)		92*	95	97	98
RESIDENTIAL 2/					
Acres per Dwelling Unit	Average % Impervious 3/				
1/8 acre or less	65	89*	94	96	97
1/4 acre	38	78*	88	93	95
1/3 acre	30	75*	86	92	94
1/2 acre	25	73*	85	91	94
1 acre	20	70*	84	91	93
Paved parking lots, roofs, driveways, etc.		99	99	99	99
STREETS AND ROADS:					
Paved with curbs and storm drains		99	99	99	99
Gravel		89*	94	96	97
Dirt		86*	92	95	96

PART OF A

OF 3

B: C PART OF A

1/ For a more detailed description of agricultural land use curve numbers, refer to the National Engineering Handbook, U.S. Department of Agriculture, Soil Conservation Service, 1972.

2/ Curve numbers are computed assuming the runoff from the house and driveway is directed towards the street with a minimum of roof water directed to lawns where additional infiltration could occur.

3/ The remaining pervious areas (lawn) are considered to be in good pasture condition for these curve numbers.

* Not to be used wherever over-lot grading or filling is to occur.

Worksheet 2: Runoff curve number and runoff

Project GRAND VIEW SUBDIVISION By MS Date 06/25/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: [✓ Present] Developed SUB-BASIN A

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/			Area ☒ acres ☐ mi² ☐ %	Product of CN x area
		Table ~~2-2~~ 408	Fig. 2-3	Fig. 2-4		
(Rf) Ravola very fine sandy loam "B"	Row crops straight, condition good.	90			8.60	774.00
(Bc) Billings silty clay loam "C"	Row crops straight, condition good	94			17.47	1642.18
				Totals =	26.07	2416.18

1/ Use only one CN source per line.

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{2416.18}{26.07} = 92.68;$$

Use CN = 93

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	N/A		
Rainfall, P (24-hour)	in	N/A		
Runoff, Q (Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)	in	N/A		

GRAND VIEW ESTATES

Table 3.5

Resistance Factor for Overland Flow

Surface	N value	Source
Asphalt/Concrete*	0.05 - 0.15	a
Bare Packed Soil Free of Stone	0.10	c
Fallow - No Residue	0.008 - 0.012	b
Convential Tillage - No Residue	0.06 - 0.12	b
Convential Tillage - With Residue	0.16 - 0.22	b
Chisel Plow - No Residue	0.06 - 0.12	b
Chisel Plow - With Residue	0.10 - 0.16	b
Fall Disking - With Residue	0.30 - 0.50	b
No Till - No Residue	0.04 - 0.10	b
No Till (20-40 percent residue cover)	0.07 - 0.17	b
No Till (60-100 percent residue cover)	0.17 - 0.47	b
Sparse Rangeland with Debris:		
0 Percent Cover	0.09 - 0.34	b
20 Percent Cover	0.05 - 0.25	b
Sparse Vegetation	0.053 - 0.13	f
Short Grass Prairie	0.10 - 0.20	f
Poor Grass Cover On Moderately Rough	0.30	c
Bare Surface		
Light Turf	0.20	a
Average Grass Cover	0.4	c
Dense Turf	0.17 - 0.80	a,c,e,f
Dense Grass	0.17 - 0.30	d
Bermuda Grass	0.30 - 0.48	d
Dense Shrubbery and Forest Litter	0.4	a

Legend: a) Harley (1975), b) Engman (1986), c) Hathaway (1945), d) Palmer (1946), e) Ragan and Duru (1972), f) Woolhiser (1975). (See Hjemfelt, 1986)

*Asphalt/Concrete n value for open channel flow 0.01 - 0.016

ONSITE FARM LAND USE 0.22

OFFSITE PASTURE USE 0.35

APPENDIX "D"

1 of 5

Appendix A.—TABLES

Design Charts for Open Channel Flow HDS No 3 US Dept of Transportation

Aug 1961, Reprinted 1977

Table 1.—Manning roughness coefficients, n [1]

	Manning's n range [3]
I. Closed conduits:	
A. Concrete pipe	0.011–0.013
B. Corrugated-metal pipe or pipe-arch:	
1. 2⅔ by ½-in. corrugation (riveted pipe):[5]	
a. Plain or fully coated	0.024
b. Paved invert (range values are for 25 and 50 percent of circumference paved):	
(1) Flow full depth	0.021–0.018
(2) Flow 0.8 depth	0.021–0.016
(3) Flow 0.6 depth	0.019–0.013
2. 6 by 2-in. corrugation (field bolted)	0.03
C. Vitrified clay pipe	0.012–0.014
D. Cast-iron pipe, uncoated	0.013
E. Steel pipe	0.009–0.011
F. Brick	0.014–0.017
G. Monolithic concrete:	
1. Wood forms, rough	0.015–0.017
2. Wood forms, smooth	0.012–0.014
3. Steel forms	0.012–0.013
H. Cemented rubble masonry walls:	
1. Concrete floor and top	0.017–0.022
2. Natural floor	0.019–0.025
I. Laminated treated wood	0.015–0.017
J. Vitrified clay liner plates	0.015
II. Open channels, lined[4] (straight alinement):[5]	
A. Concrete, with surfaces as indicated:	
1. Formed, no finish	0.013–0.017
2. Trowel finish	0.012–0.014
3. Float finish	0.013–0.015
4. Float finish, some gravel on bottom	0.015–0.017
5. Gunite, good section	0.016–0.019
6. Gunite, wavy section	0.018–0.022
B. Concrete, bottom float finished, sides as indicated:	
1. Dressed stone in mortar	0.015–0.017
2. Random stone in mortar	0.017–0.020
3. Cement rubble masonry	0.020–0.025
4. Cement rubble masonry, plastered	0.016–0.020
5. Dry rubble (riprap)	0.020–0.030
C. Gravel bottom, sides as indicated:	
1. Formed concrete	0.017–0.020
2. Random stone in mortar	0.020–0.023
3. Dry rubble (riprap)	0.023–0.033
D. Brick	0.014–0.017
E. Asphalt:	
1. Smooth	0.013
2. Rough	0.016
F. Wood, planed, clean	0.011–0.013
G. Concrete-lined excavated rock:	
1. Good section	0.017–0.020
2. Irregular section	0.022–0.027
III. Open channels, excavated[4] (straight alinement,[5] natural lining):	
A. Earth, uniform section:	
1. Clean, recently completed	0.016–0.018
2. Clean, after weathering	0.018–0.020
3. With short grass, few weeds	0.022–0.027
4. In gravelly soil, uniform section, clean	0.022–0.025
B. Earth, fairly uniform section:	
1. No vegetation	0.022–0.025
2. Grass, some weeds	0.025–0.030
3. Dense weeds or aquatic plants in deep channels	0.030–0.035
4. Sides clean, gravel bottom	0.025–0.030
5. Sides clean, cobble bottom	0.030–0.040
C. Dragline excavated or dredged:	
1. No vegetation	0.028–0.033
2. Light brush on banks	0.035–0.050
D. Rock:	
1. Based on design section	0.035
2. Based on actual mean section:	
a. Smooth and uniform	0.035–0.040
b. Jagged and irregular	0.040–0.045
E. Channels not maintained, weeds and brush uncut:	
1. Dense weeds, high as flow depth	0.08–0.12
2. Clean bottom, brush on sides	0.05–0.08
3. Clean bottom, brush on sides, highest stage of flow	0.07–0.11
4. Dense brush, high stage	0.10–0.14

	Manning's n range [2]
IV. Highway channels and swales with maintained vegetation[6, 7] (values shown are for velocities of 2 and 6 f.p.s.):	
A. Depth of flow up to 0.7 foot:	
1. Bermudagrass, Kentucky bluegrass, buffalograss:	
a. Mowed to 2 inches	0.07–0.045
b. Length 4–6 inches	0.09–0.05
2. Good stand, any grass:	
a. Length about 12 inches	0.18–0.09
b. Length about 24 inches	0.30–0.15
3. Fair stand, any grass:	
a. Length about 12 inches	0.14–0.08
b. Length about 24 inches	0.25–0.13
B. Depth of flow 0.7–1.5 feet:	
1. Bermudagrass, Kentucky bluegrass, buffalograss:	
a. Mowed to 2 inches	0.05–0.035
b. Length 4 to 6 inches	0.06–0.04
2. Good stand, any grass:	
a. Length about 12 inches	0.12–0.07
b. Length about 24 inches	0.20–0.10
3. Fair stand, any grass:	
a. Length about 12 inches	0.10–0.06
b. Length about 24 inches	0.17–0.09
V. Street and expressway gutters:	
A. Concrete gutter, troweled finish	0.012
B. Asphalt pavement:	
1. Smooth texture	0.013
2. Rough texture	0.016
C. Concrete gutter with asphalt pavement:	
1. Smooth	0.013
2. Rough	0.015
D. Concrete pavement:	
1. Float finish	0.014
2. Broom finish	0.016
E. For gutters with small slope, where sediment may accumulate, increase above values of n by	*0.002*
VI. Natural stream channels:[8]	
A. Minor streams[9] (surface width at flood stage less than 100 ft.):	
1. Fairly regular section:	
a. Some grass and weeds, little or no brush	0.030–0.035
b. Dense growth of weeds, depth of flow materially greater than weed height	0.035–0.05
c. Some weeds, light brush on banks	0.035–0.05
d. Some weeds, heavy brush on banks	0.05–0.07
e. Some weeds, dense willows on banks	0.06–0.08
f. For trees within channel, with branches submerged at high stage, increase all above values by	*0.01–0.02*
2. Irregular sections, with pools, slight channel meander; increase values given in 1a–e about	*0.01–0.02*
3. Mountain streams, no vegetation in channel, banks usually steep, trees and brush along banks submerged at high stage:	
a. Bottom of gravel, cobbles, and few boulders	0.04–0.05
b. Bottom of cobbles, with large boulders	0.05–0.07
B. Flood plains (adjacent to natural streams):	
1. Pasture, no brush:	
a. Short grass	0.030–0.035
b. High grass	0.035–0.05
2. Cultivated areas:	
a. No crop	0.03–0.04
b. Mature row crops	0.035–0.045
c. Mature field crops	0.04–0.05
3. Heavy weeds, scattered brush	0.05–0.07
4. Light brush and trees:[10]	
a. Winter	0.05–0.06
b. Summer	0.06–0.08
5. Medium to dense brush:[10]	
a. Winter	0.07–0.11
b. Summer	0.10–0.16
6. Dense willows, summer, not bent over by current	0.15–0.20
7. Cleared land with tree stumps, 100–150 per acre:	
a. No sprouts	0.04–0.05
b. With heavy growth of sprouts	0.06–0.08
8. Heavy stand of timber, a few down trees, little undergrowth:	
a. Flood depth below branches	0.10–0.12
b. Flood depth reaches branches	0.12–0.16
C. Major streams (surface width at flood stage more than 100 ft.): Roughness coefficient is usually less than for minor streams of similar description on account of less effective resistance offered by irregular banks or vegetation on banks. Values of n may be somewhat reduced. Follow recommendation in publication cited[8] if possible. The value of n for larger streams of most regular section, with no boulders or brush, may be in the range of	0.028–0.033

Footnotes to table 1 appear at the top of page 101.

HDS 3

APPENDIX 'D'
2 of 5

Table 13-3
MANNING'S ROUGHNESS COEFFICIENTS

Lining Category	Lining Type	Depth Ranges 0 - 0.5 (ft)	 0.5 - 2.0 (ft)	 > 2.0 (ft)
Rigid	Concrete	0.015	0.013	0.013
	Grouted Riprap	0.040	0.030	0.028
	Stone Masonry	0.042	0.032	0.030
	Soil Cement	0.025	0.022	0.020
	Asphalt	0.018	0.016	0.016
Temporary	Woven Paper Net	0.016	0.015	0.015
	Jute Net	0.028	0.022	0.019
	Fiberglass Roving	0.028	0.021	0.019
	Straw and Erosion Net	0.065	0.033	0.025
	Curled Wood Mat	0.066	0.035	0.028
	Nylon Mat	0.036	0.025	0.021
Gravel	1-inch, D_{50}	0.044	0.033	0.030
	2-inch, D_{50}	0.066	0.041	0.034
Rock Riprap	6-inch, D_{50}	0.104	0.069	0.035
	12-inch, D_{50}	---	0.078	0.040

Streets .016 - .015

ARAPAHOE CO., COLORADO
1985
EROSION & SEDIMENTATION CONTROL

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APPENDIX "D"
5 of 5

Ref 2

Table 2-1 Values of n to be used with the Manning equation [2]

Surface	Best	Good	Fair	Bad
Uncoated cast-iron pipe	0.012	0.013	0.014	0.015
Coated cast-iron pipe	0.011	0.012^a	0.013^a	
Commercial wrought-iron pipe, black	0.012	0.013	0.014	0.015
Commercial wrought-iron pipe, galvanized	0.013	0.014	0.015	0.017
Smooth brass and glass pipe	0.009	0.010	0.011	0.013
Smooth lockbar and welded "OD" pipe	0.010	0.011^a	0.013^a	
Riveted and spiral steel pipe	0.013	0.015^a	0.017^a	
Vitrified sewer pipe	0.010 0.011	0.013^a	0.015	0.017
Common clay drainage tile	0.011	0.012^a	0.014^a	0.017
Glazed brickwork	0.011	0.012	0.013^a	0.015
Brick in cement mortar; brick sewers	0.012	0.013	0.015^a	0.017
Neat cement surfaces	0.010	0.011	0.012	0.013
Cement mortar surfaces	0.011	0.012	0.013^a	0.015
Concrete pipe	0.012	0.013	0.015^a	0.016
Wood stave pipe	0.010	0.011	0.012	0.013
Plank flumes				
Planed	0.010	0.012^a	0.013	0.014
Unplaned	0.011	0.013^a	0.014	0.015
With battens	0.012	0.015^a	0.016	
Concrete-lined channels	0.012	0.014^a	0.016^a	0.018
Cement-rubble surface	0.017	0.020	0.025	0.030
Dry-rubble surface	0.025	0.030	0.033	0.035
Dressed-ashlar surface	0.013	0.014	0.015	0.017
Semicircular metal flumes, smooth	0.011	0.012	0.013	0.015
Semicircular metal flumes, corrugated	0.0225	0.025	0.0275	0.030
Canals and ditches				
Earth, straight and uniform	0.017	0.020	0.0225^a	0.025
Rock cuts, smooth and uniform	0.025	0.030	0.033^a	0.035
Rock cuts, jagged and irregular	0.035	0.040	0.045	
Winding sluggish canals	0.0225	0.025^a	0.0275	0.030
Dredged-earth channels	0.025	0.0275^a	0.030	0.033
Canals with rough stony beds, weeds on earth banks	0.025	0.030	0.035^a	0.040
Earth bottom, rubble sides	0.028	0.030^a	0.033^a	0.035
Natural-stream channels				
1. Clean, straight bank, full stage, no rifts or deep pools	0.025	0.0275	0.030	0.033
2. Same as (1), but some weeds and stones	0.030	0.033	0.035	0.040
3. Winding, some pools and shoals, clean	0.033	0.035	0.040	0.045
4. Same as (3), lower stages, more ineffective slope and sections	0.040	0.045	0.050	0.055
5. Same as (3), some weeds and stones	0.035	0.040	0.045	0.050
6. Same as (4), stony sections	0.045	0.050	0.055	0.060
7. Sluggish river reaches, rather weedy or with very deep pools	0.050	0.060	0.070	0.080
8. Very weedy reaches	0.075	0.100	0.125	0.150

^{a}Values commonly used in designing.

WASTEWATER ENGR : COLLECTION & PUMPING OF WASTEWATER, METCALF & EDDY, 1981

HISTORIC

SUB-BASIN SUMMARY

SUB-BASIN HISTORIC	AREA AC.	AREA SM.	HYDRO. SOIL GROUP	SCS CN
OF1	11.22	0.0175	B	91
OF2	12.00	0.0187	B	91
OF3	3.09	0.0048	B	88
A	26.07	0.0407	B & C	93
B	23.25	0.0363	C	94
C	15.68	0.0245	C	94
TOTAL	91.31	0.1426		

HISTORIC

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: [✓ Present] Developed 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN OF1

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		A-B			
1. Surface description (table 3-1)		PASTURE			
2. Manning's roughness coeff., n (table 3-1) ..		0.35			
3. Flow length, L (total L $\leq$ 300 ft)	ft	150			
4. Two-yr 24-hr rainfall, P_2	in	0.70			
5. Land slope, s	ft/ft	0.055			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr	0.635	+	=	0.635
Shallow concentrated flow Segment ID		B-B1			
7. Surface description (paved or unpaved)		PASTURE			
8. Flow length, L	ft	510			
9. Watercourse slope, s	ft/ft	0.008			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	1.3			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.109	+	=	0.109
Channel flow Segment ID		B1-C			
12. Cross sectional flow area, a	ft^2	SEE			
13. Wetted perimeter, p_w	ft	CALC.			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET.			
15. Channel slope, s	ft/ft	0.014			
16. Manning's roughness coeff., n		0.025			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	3.14			
18. Flow length, L	ft	360			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.032	+	=	0.032
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr				0.776

TLAG = 0.60 (0.776) = 0.466 HOURS

CHECK COMPUTATION INTERVAL 0.29 * TLAG = 8.11 MINUTES

SET CI @ 5 MIN.

HISTORIC

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: [✓ Present] Developed 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN OF1

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)	Segment ID	A-B		
1. Surface description (table 3-1)		PASTURE		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	150		
4. 100- ~~two~~-yr 24-hr rainfall, $\cancel{P_2}$ 100	in	2.01		
5. Land slope, s	ft/ft	0.055		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{\cancel{P_2}^{0.5}\, s^{0.4}}$ 100 Compute T_t	hr	0.375	+	= 0.375
Shallow concentrated flow	Segment ID	B-B1		
7. Surface description (paved or unpaved)		PASTURE		
8. Flow length, L	ft	510		
9. Watercourse slope, s	ft/ft	0.008		
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	1.3		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.109	+	= 0.109
Channel flow	Segment ID	B1-C		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET		
15. Channel slope, s	ft/ft	0.014		
16. Manning's roughness coeff., n		0.025		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	4.45		
18. Flow length, L	ft	360		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.023	+	= 0.023

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) .... hr 0.507

TLAG = 0.60 (0.507) = 0.304 HOURS

HISTORIC

```
                 Triangular Channel Analysis & Design
                    Open Channel - Uniform flow

Worksheet Name: DITCH B1 TO C

Comment: 2 YEAR DITCH FLOW

Solve For Depth

Given Input Data:
        Left Side Slope..     1.00:1 (H:V)
        Right Side Slope.     1.00:1 (H:V)
        Manning's n......     0.025
        Channel Slope....     0.0140 ft/ft
        Discharge........     2.24 cfs  ≈ 0.20 CFS/AC. OF BASIN AREA

Computed Results:
        Depth............     0.84 ft
        Velocity.........     3.14 fps - INITIAL EST.
        Flow Area........     0.71 sf
        Flow Top Width...     1.69 ft
        Wetted Perimeter.     2.39 ft
        Critical Depth...     0.79 ft
        Critical Slope...     0.0197 ft/ft
        Froude Number....     0.85 (flow is Subcritical)



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```

HISTORIC

```
                Triangular Channel Analysis & Design
                   Open Channel - Uniform flow


Worksheet Name: DITCH B1 TO C

Comment: 100 YEAR DITCH FLOW

Solve For Depth

Given Input Data:
        Left Side Slope..      1.00:1 (H:V)
        Right Side Slope.      1.00:1 (H:V)
        Manning's n......      0.025
        Channel Slope....      0.0140 ft/ft
        Discharge........      8.98 cfs   ~ 0.80 CFS/AC. OF BASIN AREA

Computed Results:
        Depth............      1.42 ft
        Velocity.........      4.45 fps  ← INITIAL EST.
        Flow Area........      2.02 sf
        Flow Top Width...      2.84 ft
        Wetted Perimeter.      4.02 ft
        Critical Depth...      1.38 ft
        Critical Slope...      0.0164 ft/ft
        Froude Number....      0.93 (flow is Subcritical)




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HISTORIC

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94

Location GRAND JUNCTION Checked _____ Date _____

Circle one: [✓ Present] Developed 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN OF2

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

Segment ID		D-E				
1. Surface description (table 3-1)		PASTURE				
2. Manning's roughness coeff., n (table 3-1) ..		0.35				
3. Flow length, L (total L ≤ 300 ft)	ft	250				
4. Two-yr 24-hr rainfall, P_2	in	0.70				
5. Land slope, s	ft/ft	0.032				
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr	1.186	+		=	1.186

Shallow concentrated flow

Segment ID		E-F				
7. Surface description (paved or unpaved)		PASTURE				
8. Flow length, L	ft	210				
9. Watercourse slope, s	ft/ft	0.005				
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	1.10				
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.053	+		=	0.053

Channel flow

Segment ID		F-G				
12. Cross sectional flow area, a	ft^2	SEE				
13. Wetted perimeter, p_w	ft	CALC				
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	Sheet				
15. Channel slope, s	ft/ft	0.024				
16. Manning's roughness coeff., n		0.025				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	3.91				
18. Flow length, L	ft	895				
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.064	+		=	0.064
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr					1.303

TLAG = 0.60 (1.303) = 0.781 HOURS

(210-VI-TR-55, Second Ed., June 1986)

HISTORIC

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: [✓ Present] Developed 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN OF Z

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		D-E		
1. Surface description (table 3-1)		PASTURE		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\le$ 300 ft)	ft	250		
4. ~~2-yr~~ 100-yr 24-hr rainfall, $P_{\cancel{2}\,100}$	in	2.01		
5. Land slope, s	ft/ft	0.032		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_{\cancel{2}\,100}^{\;0.5}\,s^{0.4}}$ Compute T_t	hr	0.699	+	= 0.699
Shallow concentrated flow Segment ID		E-F		
7. Surface description (paved or unpaved)		PASTURE		
8. Flow length, L	ft	210		
9. Watercourse slope, s	ft/ft	0.005		
10. Average velocity, V (figure ~~3-1~~ 4-2)	ft/s	1.10		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.053	+	= 0.053
Channel flow Segment ID		F-G		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET		
15. Channel slope, s	ft/ft	0.024		
16. Manning's roughness coeff., n		0.025		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	5.53		
18. Flow length, L	ft	895		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.045	+	= 0.045
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.797

$T_{LAG} = 0.60\ (0.797) = 0.478$ HOURS

HISTORIC

```
            Triangular Channel Analysis & Design
               Open Channel - Uniform flow

Worksheet Name: DITCH F TO G

Comment: 2 YEAR DITCH FLOW

Solve For Depth

Given Input Data:
        Left Side Slope..     1.00:1 (H:V)
        Right Side Slope.     1.00:1 (H:V)
        Manning's n......     0.025
        Channel Slope....     0.0240 ft/ft
        Discharge........     2.40 cfs ≈ 0.20 CFS/AC. OF BASIN AREA

Computed Results:
        Depth............     0.78 ft
        Velocity.........     3.91 fps - INITIAL EST.
        Flow Area........     0.61 sf
        Flow Top Width...     1.57 ft
        Wetted Perimeter.     2.22 ft
        Critical Depth...     0.81 ft
        Critical Slope...     0.0195 ft/ft
        Froude Number....     1.10 (flow is Supercritical)




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HISTORIC

```
              Triangular Channel Analysis & Design
                 Open Channel - Uniform flow

Worksheet Name: DITCH F TO G

Comment: 100 YEAR DITCH FLOW

Solve For Depth

Given Input Data:
        Left Side Slope..      1.00:1 (H:V)
        Right Side Slope.      1.00:1 (H:V)
        Manning's n......      0.025
        Channel Slope....      0.0240 ft/ft
        Discharge........      9.60 cfs ~ 0.80 CFS/AC. OF BASIN AREA

Computed Results:
        Depth............      1.32 ft
        Velocity.........      5.53 fps - INITIAL EST.
        Flow Area........      1.74 sf
        Flow Top Width...      2.63 ft
        Wetted Perimeter.      3.73 ft
        Critical Depth...      1.42 ft
        Critical Slope...      0.0162 ft/ft
        Froude Number....      1.20 (flow is Supercritical)



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Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: [✓ Present] Developed 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN OF3

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		R-S		
1. Surface description (table 3-1)		RESIDENTIAL LAWNS		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L ≤ 300 ft)	ft	150		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.010		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr	1.255	+	= 1.255

Shallow concentrated flow Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+	= N/A

Channel flow Segment ID		S-K		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET		
15. Channel slope, s	ft/ft	0.012		
16. Manning's roughness coeff., n		0.025		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.30		
18. Flow length, L	ft	640		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.077	+	= 0.077

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) .... hr 1.332

TLAG = 0.60 (1.332) = 0.799 HOURS

HISTORIC

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: [✓ Present] Developed 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN OF3

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		R-S		
1. Surface description (table 3-1)		RESIDENTIAL LAWNS		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	150		
4. 100- ~~Two-~~yr 24-hr rainfall, ~~P_2~~ P_{100}	in	2.01		
5. Land slope, s	ft/ft	0.010		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{\cancel{P_2}^{0.5}_{100}\, s^{0.4}}$ Compute T_t	hr	0.741	+	= 0.741

Shallow concentrated flow Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+	= N/A

Channel flow Segment ID		S-K		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET		
15. Channel slope, s	ft/ft	0.012		
16. Manning's roughness coeff., n		0.025		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	3.25		
18. Flow length, L	ft	640		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.055	+	= 0.055

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) .... hr 0.796

$T_{LAG} = 0.60\,(0.796) = 0.478$ HOURS

HISTORIC

```
                 Triangular Channel Analysis & Design
                    Open Channel - Uniform flow


Worksheet Name: DITCH S TO K

Comment: 2 YEAR DITCH FLOW

Solve For Depth

Given Input Data:
        Left Side Slope..      1.00:1 (H:V)
        Right Side Slope.      1.00:1 (H:V)
        Manning's n......      0.025
        Channel Slope....      0.0050 ft/ft
        Discharge........      3.02 cfs    0.20 CFS/AC. OF BASIN AREA

Computed Results:
        Depth............      1.15 ft
        Velocity.........      2.30 fps  - INITIAL EST.
        Flow Area........      1.31 sf
        Flow Top Width...      2.29 ft
        Wetted Perimeter.      3.24 ft
        Critical Depth...      0.89 ft
        Critical Slope...      0.0189 ft/ft
        Froude Number....      0.54 (flow is Subcritical)
```

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```

HISTORIC

```
              Triangular Channel Analysis & Design
                 Open Channel - Uniform flow

Worksheet Name: DITCH S TO K

Comment: 100 YEAR DITCH FLOW

Solve For Depth

Given Input Data:
        Left Side Slope..      1.00:1 (H:V)
        Right Side Slope.      1.00:1 (H:V)
        Manning's n......      0.025
        Channel Slope....      0.0050 ft/ft
        Discharge........     12.07 cfs    ≈ 0.80 CFS/AC. OF BASIN AREA

Computed Results:
        Depth............      1.93 ft
        Velocity.........      3.25 fps  - INITIAL EST.
        Flow Area........      3.71 sf
        Flow Top Width...      3.85 ft
        Wetted Perimeter.      5.45 ft
        Critical Depth...      1.55 ft
        Critical Slope...      0.0157 ft/ft
        Froude Number....      0.58 (flow is Subcritical)
```

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HISTORIC

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94
Location GRAND JUNCTION Checked ____ Date ______
Circle one: [✓ Present] Developed 2 YEAR STORM
Circle one: T_c T_t through subarea SUB-BASIN A

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		H-I		
1. Surface description (table 3-1)		CULTIVATED		
2. Manning's roughness coeff., n (table 3-1) ..		0.22		
3. Flow length, L (total L $\leq$ 300 ft)	ft	300		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.008		
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t	hr	1.648 +		= 1.648
Shallow concentrated flow Segment ID		I-J		
7. Surface description (paved or unpaved)		CULTIVATED		
8. Flow length, L	ft	460		
9. Watercourse slope, s	ft/ft	0.012		
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	1.70		
11. $T_t = \frac{L}{3600 V}$ Compute T_t	hr	0.075 +		= 0.075
Channel flow Segment ID		J-K		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	Sheet		
15. Channel slope, s	ft/ft	0.010		
16. Manning's roughness coeff., n		0.025		
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V	ft/s	3.74		
18. Flow length, L	ft	1,390		
19. $T_t = \frac{L}{3600 V}$ Compute T_t	hr	0.103 +		= 0.103
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			1.826

TLAG = 0.60 (1.826) = 1.096 HOURS

HISTORIC

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: [✓ Present] Developed 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN A

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)	Segment ID	H-I		
1. Surface description (table 3-1)		CULTIVATED		
2. Manning's roughness coeff., n (table 3-1) ..		0.22		
3. Flow length, L (total L ≤ 300 ft)	ft	300		
4. 100- ~~Two-yr~~ 24-hr rainfall, ~~P_2~~ 100	in	2.01		
5. Land slope, s	ft/ft	0.008		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{\cancel{P_2}^{0.5}\ s^{0.4}}$ 100 Compute T_t	hr	0.973 +		- 0.973
Shallow concentrated flow	Segment ID	I-J		
7. Surface description (paved or unpaved)		CULTIVATED		
8. Flow length, L	ft	460		
9. Watercourse slope, s	ft/ft	0.012		
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	1.70		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.075 +		- 0.075
Channel flow	Segment ID	J-K		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET		
15. Channel slope, s	ft/ft	0.010		
16. Manning's roughness coeff., n		0.025		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	5.29		
18. Flow length, L	ft	1,390		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.073 +		- 0.073
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			1.121

$T_{LAG} = 0.60\ (1.121\ ) = 0.673$ HOURS

(210-VI-TR-55, Second Ed., June 1986)

MCSDCM

HISTORIC

```
                  Triangular Channel Analysis & Design
                     Open Channel - Uniform flow


Worksheet Name: DITCH J TO K

Comment: 2 YEAR DITCH FLOW

Solve For Depth

Given Input Data:
        Left Side Slope..      1.00:1 (H:V)
        Right Side Slope.      1.00:1 (H:V)
        Manning's n......      0.025
        Channel Slope....      0.0100 ft/ft
        Discharge........      7.46 cfs   ≈ 0.20 CFS/AC. OF BASIN AREA

Computed Results:
        Depth............      1.41 ft
        Velocity.........      3.74 fps  ← INITIAL EST.
        Flow Area........      1.99 sf
        Flow Top Width...      2.82 ft
        Wetted Perimeter.      3.99 ft
        Critical Depth...      1.28 ft
        Critical Slope...      0.0168 ft/ft
        Froude Number....      0.78 (flow is Subcritical)
```

```
  Open Channel Flow Module, Version 3.16 (c) 1990
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```

HISTORIC

```
                 Triangular Channel Analysis & Design
                    Open Channel - Uniform flow

Worksheet Name: DITCH J TO K

Comment: 100 YEAR DITCH FLOW

Solve For Depth

Given Input Data:
        Left Side Slope..      1.00:1 (H:V)
        Right Side Slope.      1.00:1 (H:V)
        Manning's n......      0.025
        Channel Slope....      0.0100 ft/ft
        Discharge........     29.83 cfs   ≈ 0.80 CFS/AC. OF BASIN AREA

Computed Results:
        Depth............      2.37 ft
        Velocity.........      5.29 fps - INITIAL EST.
        Flow Area........      5.64 sf
        Flow Top Width...      4.75 ft
        Wetted Perimeter.      6.72 ft
        Critical Depth...      2.23 ft
        Critical Slope...      0.0139 ft/ft
        Froude Number....      0.86 (flow is Subcritical)




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```

HISTORIC

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: [✓ Present] Developed 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN B

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)	Segment ID	L-M			
1. Surface description (table 3-1)		CULTIVATED			
2. Manning's roughness coeff., n (table 3-1) ..		0.22			
3. Flow length, L (total L $\leq$ 300 ft)	ft	300			
4. Two-yr 24-hr rainfall, P_2	in	0.70			
5. Land slope, s	ft/ft	0.009			
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t	hr	1.572	+	=	1.572
Shallow concentrated flow	Segment ID	M-N			
7. Surface description (paved or unpaved)		CULTIVATED			
8. Flow length, L	ft	1,060			
9. Watercourse slope, s	ft/ft	0.012			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	1.66			
11. $T_t = \frac{L}{3600 V}$ Compute T_t	hr	0.178	+	=	0.178
Channel flow	Segment ID	N-O			
12. Cross sectional flow area, a	ft^2	SEE			
13. Wetted perimeter, p_w	ft	CALC.			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET			
15. Channel slope, s	ft/ft	0.005			
16. Manning's roughness coeff., n		0.025			
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V	ft/s	2.56			
18. Flow length, L	ft	400			
19. $T_t = \frac{L}{3600 V}$ Compute T_t	hr	0.043	+	=	0.043
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr				1.793

TLAG = 0.60 (1.793) = 1.076 HOURS

HISTORIC

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94

Location GRAND JUNCTION Checked ______ Date ______

Circle one: [✓ Present] Developed 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN B

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		L-M		
1. Surface description (table 3-1)		CULTIVATED		
2. Manning's roughness coeff., n (table 3-1) ..		0.22		
3. Flow length, L (total L $\le$ 300 ft)	ft	300		
4. 100- ~~2-~~yr 24-hr rainfall, $P_{\cancel{2}}$ 100	in	2.01		
5. Land slope, s	ft/ft	0.009		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_{\cancel{2}\,100}^{0.5}\ s^{0.4}}$ Compute T_t	hr	0.928	+	= 0.928
Shallow concentrated flow Segment ID		M-N		
7. Surface description (paved or unpaved)		CULTIVATED		
8. Flow length, L	ft	1,060		
9. Watercourse slope, s	ft/ft	0.012		
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	1.66		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.178	+	= 0.178
Channel flow Segment ID		N-O		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET		
15. Channel slope, s	ft/ft	0.005		
16. Manning's roughness coeff., n		0.025		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	3.62		
18. Flow length, L	ft	400		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.031	+	= 0.031
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			1.137

TLAG = 0.60 (1.137) = 0.682 HOURS

(210-VI-TR-55, Second Ed., June 1986)

MCSDCM

HISTORIC

```
                 Triangular Channel Analysis & Design
                    Open Channel - Uniform flow

Worksheet Name: DITCH N TO O

Comment: 2 YEAR DITCH FLOW

Solve For Depth

Given Input Data:
        Left Side Slope..      1.00:1 (H:V)
        Right Side Slope.      1.00:1 (H:V)
        Manning's n......      0.025
        Channel Slope....      0.0050 ft/ft
        Discharge........      4.65 cfs ≈ 0.20 CFS/AC. OF BASIN AREA

Computed Results:
        Depth............      1.35 ft
        Velocity.........      2.56 fps — INITIAL EST.
        Flow Area........      1.81 sf
        Flow Top Width...      2.69 ft
        Wetted Perimeter.      3.81 ft
        Critical Depth...      1.06 ft
        Critical Slope...      0.0179 ft/ft
        Froude Number....      0.55 (flow is Subcritical)




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HISTORIC

```
                Triangular Channel Analysis & Design
                   Open Channel - Uniform flow

     Worksheet Name: DITCH N TO O

     Comment: 100 YEAR DITCH FLOW

     Solve For Depth

     Given Input Data:
             Left Side Slope..      1.00:1 (H:V)
             Right Side Slope.      1.00:1 (H:V)
             Manning's n......      0.025
             Channel Slope....      0.0050 ft/ft
             Discharge........     18.60 cfs   ~ 0.80 CFS/AC. OF BASIN AREA

     Computed Results:
             Depth............      2.27 ft
             Velocity.........      3.62 fps - INITIAL EST.
             Flow Area........      5.13 sf
             Flow Top Width...      4.53 ft
             Wetted Perimeter.      6.41 ft
             Critical Depth...      1.85 ft
             Critical Slope...      0.0149 ft/ft
             Froude Number....      0.60 (flow is Subcritical)




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```

HISTORIC

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ______

Circle one: [✓ Present] Developed 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN C

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		P-Q		
1. Surface description (table 3-1)		CULTIVATED		
2. Manning's roughness coeff., n (table 3-1) ..		0.22		
3. Flow length, L (total L $\leq$ 300 ft)	ft	300		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.011		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr	1.451	+	= 1.451
Shallow concentrated flow Segment ID		Q-O		
7. Surface description (paved or unpaved)		CULTIVATED		
8. Flow length, L	ft	1,640		
9. Watercourse slope, s	ft/ft	0.010		
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	1.50		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.304	+	= 0.304
Channel flow Segment ID		N/A		
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s			
18. Flow length, L	ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	N/A	+	= N/A
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			1.755

TLAG = 0.60 (1.755) = 1.053 HOURS

HISTORIC

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW ESTATES By MS Date 06/94

Location GRAND JUNCTION Checked _____ Date _____

Circle one: [✓ Present] Developed 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN C

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		P-Q		
1. Surface description (table 3-1)		CULTIVATED		
2. Manning's roughness coeff., n (table 3-1) ..		0.22		
3. Flow length, L (total L $\leq$ 300 ft)	ft	300		
4. ~~Two-yr~~ 100-yr 24-hr rainfall, ~~P_2~~ P_{100}	in	2.01		
5. Land slope, s	ft/ft	0.011		
6. $T_t = \frac{0.007 (nL)^{0.8}}{\cancel{P_2}_{100}^{0.5} s^{0.4}}$ Compute T_t	hr	0.856	+	= 0.856

Shallow concentrated flow Segment ID		Q-O		
7. Surface description (paved or unpaved)		CULTIVATED		
8. Flow length, L	ft	1,640		
9. Watercourse slope, s	ft/ft	0.010		
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	1.50		
11. $T_t = \frac{L}{3600 V}$ Compute T_t	hr	0.304	+	= 0.304

Channel flow Segment ID		N/A		
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V	ft/s			
18. Flow length, L	ft			
19. $T_t = \frac{L}{3600 V}$ Compute T_t	hr	N/A	+	= N/A
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			1.160

$T_{LAG} = 0.60 (1.160) = 0.696$ HOURS

(210-VI-TR-55, Second Ed., June 1986)

MCSDCM

```
               Trapezoidal Channel Analysis & Design
                   Open Channel - Uniform flow

Worksheet Name: DITCH K TO O

Comment: 2 YEAR DITCH FLOW - ALONG 28 ROAD

Solve For Depth

Given Input Data:

        Bottom Width.....      1.00 ft
        Left Side Slope..      1.50:1 (H:V)
        Right Side Slope.      1.50:1 (H:V)
        Manning's n......      0.025
        Channel Slope....      0.0070 ft/ft
        Discharge........     10.48 cfs     0.20 CFS/AC. BASIN AREA.

Computed Results:

        Depth............      1.12 ft
        Velocity.........      3.51 fps   INITIAL EST.
        Flow Area........      2.98 sf
        Flow Top Width...      4.35 ft
        Wetted Perimeter.      5.02 ft
        Critical Depth...      0.97 ft
        Critical Slope...      0.0130 ft/ft
        Froude Number....      0.75 (flow is Subcritical)


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```
                Trapezoidal Channel Analysis & Design
                    Open Channel - Uniform flow

Worksheet Name: DITCH K TO O

Comment: 100 YEAR DITCH FLOW - ALONG 28 ROAD

Solve For Depth

Given Input Data:

        Bottom Width.....      1.00 ft
        Left Side Slope..      1.50:1 (H:V)
        Right Side Slope.      1.50:1 (H:V)
        Manning's n......      0.025
        Channel Slope....      0.0070 ft/ft
        Discharge........     41.90 cfs  ~ 0.80 CFS/AC. OF BASIN AREA

Computed Results:

        Depth............      2.06 ft
        Velocity.........      4.97 fps - INITIAL EST.
        Flow Area........      8.43 sf
        Flow Top Width...      7.18 ft
        Wetted Perimeter.      8.43 ft
        Critical Depth...      1.87 ft
        Critical Slope...      0.0110 ft/ft
        Froude Number....      0.81 (flow is Subcritical)
```

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```

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****************************************                                                   ***************************************
*                                      *                                                   *                                     *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                   *   U.S. ARMY CORPS OF ENGINEERS      *
*           SEPTEMBER 1990             *                                                   *   HYDROLOGIC ENGINEERING CENTER     *
*             VERSION 4.0              *                                                   *          609 SECOND STREET          *
*                                      *                                                   *        DAVIS, CALIFORNIA 95616      *
* RUN DATE  06/27/1994  TIME  19:03:59 *                                                   *            (916) 756-1104           *
*                                      *                                                   *                                     *
****************************************                                                   ***************************************




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




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

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

HISTORIC 2 YEAR STORM

RUN #1

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

   1            ID   GRAND VIEW SUBDIVISION
   2            ID   HISTORIC CONDITION
   3            ID   2 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)
   4            IT       5 22JUN94    1200     300
   5            IO       5       2       0
                * **********

   6            KK     OF1
   7            KM   Basin runoff calculation for    OF1
   8            KO       3       1       0       1      21     110     300
   9            BA  0.0175
  10            PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  11            LS              91
  12            UD   0.466
                * **********

  13            KK  DITCH2
  14            KM   Muskingum-Cunge channel routing from      CP1 to      CP3
  15            KO       3       1       0       1      21     110     300
  16            RD
  17            RC   0.035   0.025   0.035    1770   0.010
  18            RX     100     110     111     113   113.5   115.5   116.5   126.5
  19            RY    4742    4742  4741.5  4739.5  4739.5  4741.5    4742    4742
                * **********

  20            KK       A
  21            KM   Basin runoff calculation for      A
  22            KO       3       1       0       1      21     110     300
  23            BA  0.0407
  24            PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  25            LS              93
  26            UD   1.096
                * **********

  27            KK       A
  28            KM   Combining two hydrographs at control point      CP3
  29            KO       3       1       0       1      21     110     300
  30            HC       2
                * **********

  31            KK     OF2
  32            KM   Basin runoff calculation for    OF2
  33            KO       3       1       0       1      21     110     300
  34            BA  0.0187
  35            PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  36            LS              91
  37            UD   0.781
                * **********

  38            KK  DITCH1
  39            KM   Muskingum-Cunge channel routing from      CP2 to      CP3
  40            KO       3       1       0       1      21     110     300
  41            RD
  42            RC   0.035   0.025   0.035     700   0.012
  43            RX     100     110     111     113   113.5   115.5   116.5   126.5
```

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

 44         RY    4734    4734  4733.5  4731.5  4731.5  4733.5    4734    4734
            * **********

 45         KK     OF3
 46         KM   Basin runoff calculation for    OF3
 47         KO       3       1       0       1      21     110     300
 48         BA  0.0048
 49         PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
 50         LS              88
 51         UD   0.799
            * **********

 52         KK     OF3
 53         KM   Combining two hydrographs at control point      CP3
 54         KO       3       1       0       1      21     110     300
 55         HC       2
            * **********

 56         KK     OF3
 57         KM   Combining two hydrographs at control point      CP3
 58         KO       3       1       0       1      21     110     300
 59         HC       2
            * **********

 60         KK  DITCH3
 61         KM   Muskingum-Cunge channel routing from      CP3 to      CP4
 62         KO       3       1       0       1      21     110     300
 63         RD
 64         RC   0.035   0.025   0.035    1480   0.007
 65         RX     100     105     110     113     114     117     122     127
 66         RY    4726    4726  4725.5  4723.5  4723.5  4725.5    4726    4726
            * **********

 67         KK       B
 68         KM   Basin runoff calculation for      B
 69         KO       3       1       0       1      21     110     300
 70         BA  0.0363
 71         PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
 72         LS              94
 73         UD   1.076
            * **********

 74         KK       B
 75         KM   Combining two hydrographs at control point      CP4
 76         KO       3       1       0       1      21     110     300
 77         HC       2
            * **********

 78         KK       C
 79         KM   Basin runoff calculation for      C
 80         KO       3       1       0       1      21     110     300
 81         BA  0.0245
 82         PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
 83         LS              94
 84         UD   1.053
            * **********
```

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

  85          KK       C
  86          KM   Combining two hydrographs at control point      CP4
  87          KO       1       2       0       1      21     110     300
  88          HC       2
              * **********
  89          ZZ
```

R1-4

```
*****************************************                              ***************************************
*                                       *                              *                                     *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                              *   U.S. ARMY CORPS OF ENGINEERS      *
*            SEPTEMBER 1990             *                              *   HYDROLOGIC ENGINEERING CENTER     *
*             VERSION 4.0               *                              *         609 SECOND STREET           *
*                                       *                              *      DAVIS, CALIFORNIA 95616        *
*  RUN DATE  06/27/1994  TIME  19:03:59 *                              *          (916) 756-1104             *
*                                       *                              *                                     *
*****************************************                              ***************************************




                       GRAND VIEW SUBDIVISION
                       HISTORIC CONDITION
                       2 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)

   5 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           2  PLOT CONTROL
                       OSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN           5  MINUTES IN COMPUTATION INTERVAL
                       IDATE     22JUN94  STARTING DATE
                       ITIME        1200  STARTING TIME
                          NO         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE     23JUN94  ENDING DATE
                      NDTIME        1255  ENDING TIME
                       ICENT          19  CENTURY MARK

                   COMPUTATION INTERVAL     .08 HOURS
                        TOTAL TIME BASE   24.92 HOURS

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


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


            **************
            *            *
   6 KK     *      OF1   *
            *            *
            **************

   8 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           1  PLOT CONTROL
                       OSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


                 SUBBASIN RUNOFF DATA

   9 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  10 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............  ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                      STORM AREA =      .02

  11 LS          SCS LOSS RATE
```

R1-5

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                   CRVNBR       91.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

12 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .47  LAG

                                                             ***

                                                       UNIT HYDROGRAPH
                                                  30 END-OF-PERIOD ORDINATES
               1.         4.         8.        13.        16.        17.        16.        14.        12.         9.
               6.         5.         4.         3.         2.         2.         1.         1.         1.         1.
               0.         0.         0.         0.         0.         0.         0.         0.         0.         0.

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

                       HYDROGRAPH AT STATION      OF1

  TOTAL RAINFALL =     .70, TOTAL LOSS =     .53, TOTAL EXCESS =     .17

PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
  (CFS)        (HR)                 6-HR        24-HR        72-HR      24.92-HR
      1.      12.58      (CFS)        0.           0.           0.            0.
                       (INCHES)     .148         .169         .169          .169
                        (AC-FT)       0.           0.           0.            0.
```

↑

SUB-BASIN "OF1 INTO PROJECT SITE

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                      CUMULATIVE AREA =     .02 SQ MI

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

           **************
           *            *
13 KK      *   DITCH2   *
           *            *
           **************

15 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          1  PLOT CONTROL
                     OSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1        110  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .083  TIME INTERVAL IN HOURS


             HYDROGRAPH ROUTING DATA

16 RD          MUSKINGUM-CUNGE CHANNEL ROUTING

17 RC          NORMAL DEPTH CHANNEL
                       ANL       .035  LEFT OVERBANK N-VALUE
                      ANCH       .025  MAIN CHANNEL N-VALUE
                       ANR       .035  RIGHT OVERBANK N-VALUE
                     RLNTH      1770.  REACH LENGTH
                       SEL      .0100  ENERGY SLOPE
                     ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                                CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
19 RY        ELEVATION  4742.00   4742.00   4741.50   4739.50   4739.50   4741.50   4742.00   4742.00
18 RX        DISTANCE    100.00    110.00    111.00    113.00    113.50    115.50    116.50    126.50

                                                             ***

                                                  COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

         STORAGE        .00        .00        .01        .01        .02        .03        .04        .05        .07        .08
         OUTFLOW        .00        .10        .35        .76       1.35       2.13       3.13       4.37       5.87       7.64
       ELEVATION    4739.50    4739.63    4739.76    4739.89    4740.03    4740.16    4740.29    4740.42    4740.55    4740.68

         STORAGE        .10        .11        .13        .15        .17        .20        .22        .25        .28        .31
         OUTFLOW       9.70      12.08      14.78      17.83      21.24      25.03      30.02      35.72      41.95      48.73
       ELEVATION    4740.81    4740.94    4741.08    4741.21    4741.34    4741.47    4741.60    4741.73    4741.86    4742.00

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

                  MAIN                            3.00     221.25       1.10    765.00         .17       2.40
```

R1-6

```
                                          INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                      MAIN                            5.00                1.10    765.00       .17


CONTINUITY SUMMARY (AC-FT) - INFLOW= .1577E+00 EXCESS= .0000E+00 OUTFLOW= .1577E+00 BASIN STORAGE= .5110E-03 PERCENT ERROR=   -.3



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

                         HYDROGRAPH AT STATION   DITCH2

 PEAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                  6-HR        24-HR       72-HR      24.92-HR
       1.     12.75      (CFS)         0.          0.          0.           0.
                       (INCHES)      .149        .169        .169         .169
                        (AC-FT)        0.          0.          0.           0.

                        CUMULATIVE AREA =      .02 SQ MI



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


            **************
            *            *
  20 KK     *         A  *
            *            *
            **************

  22 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           1  PLOT CONTROL
                       OSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


               SUBBASIN RUNOFF DATA

  23 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .04  SUBBASIN AREA

                 PRECIPITATION DATA

  24 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                   STORM AREA =      .04

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

  26 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG        1.10  LAG

                                                                ***

                                                            UNIT HYDROGRAPH
                                                     68 END-OF-PERIOD ORDINATES
                0.         1.         2.         3.         5.         6.         9.        11.        13.        15.
               16.        17.        17.        17.        17.        16.        16.        15.        14.        12.
               11.         9.         8.         7.         6.         6.         5.         5.         4.         4.
                3.         3.         2.         2.         2.         2.         2.         1.         1.         1.
                1.         1.         1.         1.         1.         1.         0.         0.         0.         0.
                0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                0.         0.         0.         0.         0.         0.         0.         0.
      ***             ***             ***             ***             ***

                         HYDROGRAPH AT STATION         A

    TOTAL RAINFALL =     .70, TOTAL LOSS =     .47, TOTAL EXCESS =     .23

 PEAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
```

R1-7

```
     2.     13.33      (CFS)       1.          0.          0.            0.
                     (INCHES)    .200        .230        .230          .230
                      (AC-FT)      0.          0.          0.            0.
```

↑

Sub-Basin "A"

```
                         CUMULATIVE AREA =      .04 SQ MI


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


              **************
              *            *
   27 KK      *         A  *
              *            *
              **************

   29 KO           OUTPUT CONTROL VARIABLES
                         IPRNT            3  PRINT CONTROL
                         IPLOT            1  PLOT CONTROL
                         QSCAL           0.  HYDROGRAPH PLOT SCALE
                         IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                          IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                         ISAV1          110  FIRST ORDINATE PUNCHED OR SAVED
                         ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                        TIMINT         .083  TIME INTERVAL IN HOURS


   30 HC           HYDROGRAPH COMBINATION
                         ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                      ***

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

                              HYDROGRAPH AT STATION        A

  PEAK FLOW     TIME                             MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                     6-HR        24-HR       72-HR      24.92-HR
       3.     13.08      (CFS)             1.          0.          0.            0.
                       (INCHES)          .185        .212        .212          .212
                        (AC-FT)            1.          1.          1.            1.
```

↑

Sum of "OF1" and "A"

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                         CUMULATIVE AREA =      .06 SQ MI


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


              **************
              *            *
   31 KK      *       OF2  *
              *            *
              **************

   33 KO           OUTPUT CONTROL VARIABLES
                         IPRNT            3  PRINT CONTROL
                         IPLOT            1  PLOT CONTROL
                         QSCAL           0.  HYDROGRAPH PLOT SCALE
                         IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                          IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                         ISAV1          110  FIRST ORDINATE PUNCHED OR SAVED
                         ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                        TIMINT         .083  TIME INTERVAL IN HOURS


                 SUBBASIN RUNOFF DATA

   34 BA           SUBBASIN CHARACTERISTICS
                         TAREA          .02  SUBBASIN AREA

                   PRECIPITATION DATA

   35 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                   ..... HYDRO-35 ......   .............. TP-40 ...............   ........... TP-49 ...........
                   5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                     .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                        STORM AREA =      .02

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

R1-8

```
 37 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG          .78  LAG

                                                                        ***

                                                                 UNIT HYDROGRAPH
                                                           49 END-OF-PERIOD ORDINATES
                     0.         1.         2.         3.         5.         7.         9.        10.        11.        11.
                    11.        10.         9.         8.         7.         6.         5.         4.         3.         3.
                     3.         2.         2.         2.         1.         1.         1.         1.         1.         1.
                     0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                     0.         0.         0.         0.         0.         0.         0.         0.         0.

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

                               HYDROGRAPH AT STATION      OF2

          TOTAL RAINFALL =      .70, TOTAL LOSS =      .53, TOTAL EXCESS =      .17

       PEAK FLOW      TIME                            MAXIMUM AVERAGE FLOW
         (CFS)        (HR)                   6-HR          24-HR         72-HR       24.92-HR
            1.       13.00         (CFS)        0.            0.            0.             0.
                                 (INCHES)     .146          .169          .169           .169
                                  (AC-FT)       0.            0.            0.             0.
```

↑

"OF2" INTO
PROJECT SITE

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                              CUMULATIVE AREA =      .02 SQ MI

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


                ***************
                *             *
 38 KK          *    DITCH1   *
                *             *
                ***************

 40 KO              OUTPUT CONTROL VARIABLES
                          IPRNT           3  PRINT CONTROL
                          IPLOT           1  PLOT CONTROL
                          QSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                           IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT        .083  TIME INTERVAL IN HOURS


                    HYDROGRAPH ROUTING DATA

 41 RD                MUSKINGUM-CUNGE CHANNEL ROUTING

 42 RC                NORMAL DEPTH CHANNEL
                            ANL        .035  LEFT OVERBANK N-VALUE
                           ANCH        .025  MAIN CHANNEL N-VALUE
                            ANR        .035  RIGHT OVERBANK N-VALUE
                          RLNTH        700.  REACH LENGTH
                            SEL       .0120  ENERGY SLOPE
                          ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                                 CROSS-SECTION DATA
                                 --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 44 RY          ELEVATION   4734.00   4734.00   4733.50   4731.50   4731.50   4733.50   4734.00   4734.00
 43 RX           DISTANCE    100.00    110.00    111.00    113.00    113.50    115.50    116.50    126.50
                                                                        ***

                                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                STORAGE         .00        .00        .00        .01        .01        .01        .02        .02        .03        .03
                OUTFLOW         .00        .11        .39        .83       1.47       2.33       3.43       4.79       6.43       8.37
              ELEVATION     4731.50    4731.63    4731.76    4731.89    4732.03    4732.16    4732.29    4732.42    4732.55    4732.68

                STORAGE         .04        .05        .05        .06        .07        .08        .09        .10        .11        .12
                OUTFLOW       10.63      13.23      16.20      19.54      23.27      27.42      32.89      39.13      45.95      53.38
              ELEVATION     4732.81    4732.94    4733.08    4733.21    4733.34    4733.47    4733.60    4733.73    4733.86    4734.00

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

                           MAIN                            4.25      350.00        .86     786.25         .17        2.39
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R1-9

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                                  INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                      MAIN                          5.00               .86    785.00       .17

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1681E+00 EXCESS= .0000E+00 OUTFLOW= .1679E+00 BASIN STORAGE= .2035E-03 PERCENT ERROR=    .0


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

                        HYDROGRAPH AT STATION   DITCH1

  PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                   6-HR        24-HR        72-HR      24.92-HR
      1.       13.08          (CFS)      0.           0.           0.            0.
                           (INCHES)    .146         .168         .168          .168
                            (AC-FT)      0.           0.           0.            0.

                       CUMULATIVE AREA =      .02 SQ MI


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


             **************
             *            *
   45 KK     *      OF3   *
             *            *
             **************

   47 KO          OUTPUT CONTROL VARIABLES
                        IPRNT            3  PRINT CONTROL
                        IPLOT            1  PLOT CONTROL
                       OSCAL            0.  HYDROGRAPH PLOT SCALE
                        IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                         IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1          110  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT         .083  TIME INTERVAL IN HOURS


                SUBBASIN RUNOFF DATA

   48 BA          SUBBASIN CHARACTERISTICS
                        TAREA          .00  SUBBASIN AREA

                  PRECIPITATION DATA

   49 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ..............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                       STORM AREA =      .00

   50 LS          SCS LOSS RATE
                        STRTL          .27  INITIAL ABSTRACTION
                       CRVNBR        88.00  CURVE NUMBER
                        RTIMP          .00  PERCENT IMPERVIOUS AREA

   51 UD          SCS DIMENSIONLESS UNITGRAPH
                         TLAG          .80  LAG
                                                                      ***

                                                              UNIT HYDROGRAPH
                                                         50 END-OF-PERIOD ORDINATES
                    0.         0.         1.         1.         1.         2.         2.         3.         3.         3.
                    3.         3.         2.         2.         2.         2.         1.         1.         1.         1.
                    1.         1.         1.         0.         0.         0.         0.         0.         0.         0.
                    0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                    0.         0.         0.         0.         0.         0.         0.         0.         0.         0.

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

"OF3" INTO PROJECT SITE

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                        HYDROGRAPH AT STATION      OF3

        TOTAL RAINFALL =      .70, TOTAL LOSS =      .60, TOTAL EXCESS =      .10

  PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                   6-HR        24-HR        72-HR      24.92-HR
      0.       13.08          (CFS)      0.           0.           0.            0.
                           (INCHES)    .085         .101         .101          .101
```

```
                              CUMULATIVE AREA =     .00 SQ MI


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

                  **************
                  *            *
   52 KK          *      OF3   *
                  *            *
                  **************

   54 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .083  TIME INTERVAL IN HOURS

   55 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                       ***

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

                               HYDROGRAPH AT STATION      OF3

   PEAK FLOW     TIME                                 MAXIMUM AVERAGE FLOW
     (CFS)       (HR)                         6-HR         24-HR        72-HR      24.92-HR
          1.     13.08           (CFS)          0.            0.           0.            0.
                               (INCHES)       .134          .155         .155          .155
                                (AC-FT)         0.            0.           0.            0.

                              CUMULATIVE AREA =     .02 SQ MI
```

Sum of "OF2" And "OF3" INTO PROJECT SITE

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

                  **************
                  *            *
   56 KK          *      OF3   *
                  *            *
                  **************

   58 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .083  TIME INTERVAL IN HOURS

   59 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                       ***

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

                               HYDROGRAPH AT STATION      OF3

   PEAK FLOW     TIME                                 MAXIMUM AVERAGE FLOW
     (CFS)       (HR)                         6-HR         24-HR        72-HR      24.92-HR
          4.     13.08           (CFS)          1.            0.           0.            0.
                               (INCHES)       .170          .196         .196          .196
                                (AC-FT)         1.            1.           1.            1.

                              CUMULATIVE AREA =     .08 SQ MI
```

Sum of "OF1, OF2, OF3 And A"

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 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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               **************
               *            *
 60 KK         *   DITCH3   *
               *            *
               **************

 62 KO              OUTPUT CONTROL VARIABLES
                          IPRNT          3  PRINT CONTROL
                          IPLOT          1  PLOT CONTROL
                          OSCAL         0.  HYDROGRAPH PLOT SCALE
                          IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                           IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1        110  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT       .083  TIME INTERVAL IN HOURS


                  HYDROGRAPH ROUTING DATA

 63 RD              MUSKINGUM-CUNGE CHANNEL ROUTING

 64 RC              NORMAL DEPTH CHANNEL
                            ANL       .035  LEFT OVERBANK N-VALUE
                           ANCH       .025  MAIN CHANNEL N-VALUE
                            ANR       .035  RIGHT OVERBANK N-VALUE
                          RLNTH      1480.  REACH LENGTH
                            SEL      .0070  ENERGY SLOPE
                          ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                                 CROSS-SECTION DATA
                                 --- LEFT OVERBANK --- + ------ MAIN CHANNEL -------- + --- RIGHT OVERBANK ---
 66 RY            ELEVATION   4726.00   4726.00   4725.50   4723.50   4723.50   4725.50   4726.00   4726.00
 65 RX             DISTANCE    100.00    105.00    110.00    113.00    114.00    117.00    122.00    127.00
                                                                     ***

                                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

               STORAGE         .00       .01       .01       .02       .03       .04       .06       .07       .09       .11
               OUTFLOW         .00       .18       .60      1.27      2.21      3.45      5.02      6.93      9.23     11.92
             ELEVATION     4723.50   4723.63   4723.76   4723.89   4724.03   4724.16   4724.29   4724.42   4724.55   4724.68

               STORAGE         .13       .16       .18       .21       .23       .26       .30       .35       .40       .47
               OUTFLOW       15.05     18.62     22.66     27.20     32.26     37.86     45.23     53.87     63.69     74.90
             ELEVATION     4724.81   4724.94   4725.08   4725.21   4725.34   4725.47   4725.60   4725.73   4725.86   4726.00

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

                      MAIN                           5.00    493.33      3.88    790.00        .20       2.89


                                               INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                      MAIN                           5.00                3.88    790.00        .20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8523E+00 EXCESS= .0000E+00 OUTFLOW= .8502E+00 BASIN STORAGE= .3213E-02 PERCENT ERROR=   -.1


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

                        HYDROGRAPH AT STATION    DITCH3

  PEAK FLOW      TIME                         MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                  6-HR       24-HR       72-HR       24.92-HR
       4.       13.17        (CFS)       1.          0.          0.             0.
                           (INCHES)    .170        .195        .195           .195
                            (AC-FT)      1.          1.          1.             1.

                         CUMULATIVE AREA =     .08 SQ MI


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

               **************
               *            *
 67 KK         *        B   *
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              **************

 69 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


                SUBBASIN RUNOFF DATA

 70 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .04  SUBBASIN AREA

                PRECIPITATION DATA

 71 PH                               DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                    STORM AREA =      .04

 72 LS          SCS LOSS RATE
                      STRTL         .13  INITIAL ABSTRACTION
                     CRVNBR       94.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 73 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG        1.08  LAG

                                                               ***

                                                        UNIT HYDROGRAPH
                                                   67 END-OF-PERIOD ORDINATES
                 0.         1.         2.         3.         4.         6.         8.        10.        12.        14.
                15.        15.        16.        16.        15.        15.        14.        13.        12.        11.
                 9.         8.         7.         6.         6.         5.         4.         4.         3.         3.
                 3.         2.         2.         2.         2.         1.         1.         1.         1.         1.
                 1.         1.         1.         1.         0.         0.         0.         0.         0.         0.
                 0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                 0.         0.         0.         0.         0.         0.         0.

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

                          HYDROGRAPH AT STATION        B

  TOTAL RAINFALL =      .70, TOTAL LOSS =      .43, TOTAL EXCESS =      .27

 PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                      6-HR         24-HR        72-HR        24.92-HR
                          (CFS)
      2.      13.25                        1.            0.           0.              0.
      ↑                  (INCHES)        .235          .269         .269            .269
                          (AC-FT)          0.            1.           1.              1.

 SUB-BASIN           CUMULATIVE AREA =      .04 SQ MI
    "B"

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


              **************
              *            *
 74 KK        *       B    *
              *            *
              **************

 76 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS

 77 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
```

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

                              HYDROGRAPH AT STATION        B

     PEAK FLOW      TIME                             MAXIMUM AVERAGE FLOW
       (CFS)        (HR)                    6-HR         24-HR         72-HR        24.92-HR
          6.       13.25           (CFS)      2.            1.            1.              1.
                                 (INCHES)   .189          .218          .218            .218
                                  (AC-FT)     1.            1.            1.              1.

                              CUMULATIVE AREA =      .12 SQ MI
```

Sum of Sub-Basins "OF1, OF2, OF3, A and B"

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


                **************
                *            *
  78 KK         *        C   *
                *            *
                **************

  80 KO             OUTPUT CONTROL VARIABLES
                          IPRNT             3  PRINT CONTROL
                          IPLOT             1  PLOT CONTROL
                          QSCAL            0.  HYDROGRAPH PLOT SCALE
                          IPNCH             1  PUNCH COMPUTED HYDROGRAPH
                           IOUT            21  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1           110  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2           300  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT          .083  TIME INTERVAL IN HOURS


                  SUBBASIN RUNOFF DATA

  81 BA             SUBBASIN CHARACTERISTICS
                          TAREA           .02  SUBBASIN AREA

                    PRECIPITATION DATA

  82 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                    ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                    5-MIN  15-MIN  60-MIN    2-HR     3-HR     6-HR    12-HR    24-HR    2-DAY    4-DAY    7-DAY   10-DAY
                      .10     .19     .34     .42      .47      .55      .64      .70      .00      .00      .00      .00

                                                       STORM AREA =      .02

  83 LS             SCS LOSS RATE
                          STRTL           .13  INITIAL ABSTRACTION
                         CRVNBR         94.00  CURVE NUMBER
                          RTIMP           .00  PERCENT IMPERVIOUS AREA

  84 UD             SCS DIMENSIONLESS UNITGRAPH
                           TLAG          1.05  LAG

                                                                     ***

                                                              UNIT HYDROGRAPH
                                                         65 END-OF-PERIOD ORDINATES
                      0.          1.          1.          2.          3.          4.          6.          7.          9.         10.
                     10.         11.         11.         11.         10.         10.          9.          9.          8.          7.
                      6.          5.          5.          4.          4.          3.          3.          3.          2.          2.
                      2.          2.          1.          1.          1.          1.          1.          1.          1.          1.
                      0.          0.          0.          0.          0.          0.          0.          0.          0.          0.
                      0.          0.          0.          0.          0.          0.          0.          0.          0.          0.
                      0.          0.          0.          0.          0.

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

                              HYDROGRAPH AT STATION        C

        TOTAL RAINFALL =      .70, TOTAL LOSS =      .43, TOTAL EXCESS =      .27

     PEAK FLOW      TIME                             MAXIMUM AVERAGE FLOW
       (CFS)        (HR)                    6-HR         24-HR         72-HR        24.92-HR
          2.       13.25           (CFS)      1.            0.            0.              0.
                                 (INCHES)   .236          .269          .269            .269
                                  (AC-FT)     0.            0.            0.              0.

                              CUMULATIVE AREA =      .02 SQ MI
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Sub-Basin "C"

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               **************
               *            *
   85 KK       *         C  *
               *            *
               **************

   87 KO          OUTPUT CONTROL VARIABLES
                        IPRNT          1  PRINT CONTROL
                        IPLOT          2  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE
                        IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                         IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1        110  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT       .083  TIME INTERVAL IN HOURS


   88 HC          HYDROGRAPH COMBINATION
                        ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                        ***

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

                                                         HYDROGRAPH AT STATION        C
                                                              SUM OF  2 HYDROGRAPHS

 ***********************************************************************************************************************************
                                    *                                  *                                  *
   DA MON HRMN  ORD        FLOW     *  DA MON HRMN  ORD        FLOW    *  DA MON HRMN  ORD        FLOW    *  DA MON HRMN  ORD        FLOW
                                    *                                  *                                  *
   22 JUN 1200    1          0.     *  22 JUN 1815   76          0.    *  23 JUN 0030  151          2.    *  23 JUN 0645  226          1.
   22 JUN 1205    2          0.     *  22 JUN 1820   77          0.    *  23 JUN 0035  152          3.    *  23 JUN 0650  227          1.
   22 JUN 1210    3          0.     *  22 JUN 1825   78          0.    *  23 JUN 0040  153          4.    *  23 JUN 0655  228          1.
   22 JUN 1215    4          0.     *  22 JUN 1830   79          0.    *  23 JUN 0045  154          5.    *  23 JUN 0700  229          1.
   22 JUN 1220    5          0.     *  22 JUN 1835   80          0.    *  23 JUN 0050  155          6.    *  23 JUN 0705  230          1.
   22 JUN 1225    6          0.     *  22 JUN 1840   81          0.    *  23 JUN 0055  156          7.    *  23 JUN 0710  231          1.
   22 JUN 1230    7          0.     *  22 JUN 1845   82          0.    *  23 JUN 0100  157          7.    *  23 JUN 0715  232          1.
   22 JUN 1235    8          0.     *  22 JUN 1850   83          0.    *  23 JUN 0105  158          8.    *  23 JUN 0720  233          1.
   22 JUN 1240    9          0.     *  22 JUN 1855   84          0.    *  23 JUN 0110  159          8.    *  23 JUN 0725  234          1.
   22 JUN 1245   10          0.     *  22 JUN 1900   85          0.    *  23 JUN 0115  160          8.    *  23 JUN 0730  235          1.
   22 JUN 1250   11          0.     *  22 JUN 1905   86          0.    *  23 JUN 0120  161          8.    *  23 JUN 0735  236          1.
   22 JUN 1255   12          0.     *  22 JUN 1910   87          0.    *  23 JUN 0125  162          8.    *  23 JUN 0740  237          0.
   22 JUN 1300   13          0.     *  22 JUN 1915   88          0.    *  23 JUN 0130  163          7.    *  23 JUN 0745  238          0.
   22 JUN 1305   14          0.     *  22 JUN 1920   89          0.    *  23 JUN 0135  164          7.    *  23 JUN 0750  239          0.
   22 JUN 1310   15          0.     *  22 JUN 1925   90          0.    *  23 JUN 0140  165          7.    *  23 JUN 0755  240          0.
   22 JUN 1315   16          0.     *  22 JUN 1930   91          0.    *  23 JUN 0145  166          6.    *  23 JUN 0800  241          0.
   22 JUN 1320   17          0.     *  22 JUN 1935   92          0.    *  23 JUN 0150  167          6.    *  23 JUN 0805  242          0.
   22 JUN 1325   18          0.     *  22 JUN 1940   93          0.    *  23 JUN 0155  168          6.    *  23 JUN 0810  243          0.
   22 JUN 1330   19          0.     *  22 JUN 1945   94          0.    *  23 JUN 0200  169          5.    *  23 JUN 0815  244          0.
   22 JUN 1335   20          0.     *  22 JUN 1950   95          0.    *  23 JUN 0205  170          5.    *  23 JUN 0820  245          0.
   22 JUN 1340   21          0.     *  22 JUN 1955   96          0.    *  23 JUN 0210  171          5.    *  23 JUN 0825  246          0.
   22 JUN 1345   22          0.     *  22 JUN 2000   97          0.    *  23 JUN 0215  172          4.    *  23 JUN 0830  247          0.
   22 JUN 1350   23          0.     *  22 JUN 2005   98          0.    *  23 JUN 0220  173          4.    *  23 JUN 0835  248          0.
   22 JUN 1355   24          0.     *  22 JUN 2010   99          0.    *  23 JUN 0225  174          4.    *  23 JUN 0840  249          0.
   22 JUN 1400   25          0.     *  22 JUN 2015  100          0.    *  23 JUN 0230  175          4.    *  23 JUN 0845  250          0.
   22 JUN 1405   26          0.     *  22 JUN 2020  101          0.    *  23 JUN 0235  176          3.    *  23 JUN 0850  251          0.
   22 JUN 1410   27          0.     *  22 JUN 2025  102          0.    *  23 JUN 0240  177          3.    *  23 JUN 0855  252          0.
   22 JUN 1415   28          0.     *  22 JUN 2030  103          0.    *  23 JUN 0245  178          3.    *  23 JUN 0900  253          0.
   22 JUN 1420   29          0.     *  22 JUN 2035  104          0.    *  23 JUN 0250  179          3.    *  23 JUN 0905  254          0.
   22 JUN 1425   30          0.     *  22 JUN 2040  105          0.    *  23 JUN 0255  180          3.    *  23 JUN 0910  255          0.
   22 JUN 1430   31          0.     *  22 JUN 2045  106          0.    *  23 JUN 0300  181          3.    *  23 JUN 0915  256          0.
   22 JUN 1435   32          0.     *  22 JUN 2050  107          0.    *  23 JUN 0305  182          2.    *  23 JUN 0920  257          0.
   22 JUN 1440   33          0.     *  22 JUN 2055  108          0.    *  23 JUN 0310  183          2.    *  23 JUN 0925  258          0.
   22 JUN 1445   34          0.     *  22 JUN 2100  109          0.    *  23 JUN 0315  184          2.    *  23 JUN 0930  259          0.
   22 JUN 1450   35          0.     *  22 JUN 2105  110          0.    *  23 JUN 0320  185          2.    *  23 JUN 0935  260          0.
   22 JUN 1455   36          0.     *  22 JUN 2110  111          0.    *  23 JUN 0325  186          2.    *  23 JUN 0940  261          0.
   22 JUN 1500   37          0.     *  22 JUN 2115  112          0.    *  23 JUN 0330  187          2.    *  23 JUN 0945  262          0.
   22 JUN 1505   38          0.     *  22 JUN 2120  113          0.    *  23 JUN 0335  188          2.    *  23 JUN 0950  263          0.
   22 JUN 1510   39          0.     *  22 JUN 2125  114          0.    *  23 JUN 0340  189          2.    *  23 JUN 0955  264          0.
   22 JUN 1515   40          0.     *  22 JUN 2130  115          0.    *  23 JUN 0345  190          2.    *  23 JUN 1000  265          0.
   22 JUN 1520   41          0.     *  22 JUN 2135  116          0.    *  23 JUN 0350  191          2.    *  23 JUN 1005  266          0.
   22 JUN 1525   42          0.     *  22 JUN 2140  117          0.    *  23 JUN 0355  192          2.    *  23 JUN 1010  267          0.
   22 JUN 1530   43          0.     *  22 JUN 2145  118          0.    *  23 JUN 0400  193          2.    *  23 JUN 1015  268          0.
   22 JUN 1535   44          0.     *  22 JUN 2150  119          0.    *  23 JUN 0405  194          1.    *  23 JUN 1020  269          0.
   22 JUN 1540   45          0.     *  22 JUN 2155  120          0.    *  23 JUN 0410  195          1.    *  23 JUN 1025  270          0.
   22 JUN 1545   46          0.     *  22 JUN 2200  121          0.    *  23 JUN 0415  196          1.    *  23 JUN 1030  271          0.
   22 JUN 1550   47          0.     *  22 JUN 2205  122          0.    *  23 JUN 0420  197          1.    *  23 JUN 1035  272          0.
   22 JUN 1555   48          0.     *  22 JUN 2210  123          0.    *  23 JUN 0425  198          1.    *  23 JUN 1040  273          0.
   22 JUN 1600   49          0.     *  22 JUN 2215  124          0.    *  23 JUN 0430  199          1.    *  23 JUN 1045  274          0.
   22 JUN 1605   50          0.     *  22 JUN 2220  125          0.    *  23 JUN 0435  200          1.    *  23 JUN 1050  275          0.
   22 JUN 1610   51          0.     *  22 JUN 2225  126          0.    *  23 JUN 0440  201          1.    *  23 JUN 1055  276          0.
   22 JUN 1615   52          0.     *  22 JUN 2230  127          0.    *  23 JUN 0445  202          1.    *  23 JUN 1100  277          0.
   22 JUN 1620   53          0.     *  22 JUN 2235  128          0.    *  23 JUN 0450  203          1.    *  23 JUN 1105  278          0.
   22 JUN 1625   54          0.     *  22 JUN 2240  129          0.    *  23 JUN 0455  204          1.    *  23 JUN 1110  279          0.
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RH15

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 22 JUN 1635   56        0.   *  22 JUN 2250  131        0.   *  23 JUN 0505  206        1.   *  23 JUN 1120  281        0.
 22 JUN 1640   57        0.   *  22 JUN 2255  132        0.   *  23 JUN 0510  207        1.   *  23 JUN 1125  282        0.
 22 JUN 1645   58        0.   *  22 JUN 2300  133        0.   *  23 JUN 0515  208        1.   *  23 JUN 1130  283        0.
 22 JUN 1650   59        0.   *  22 JUN 2305  134        0.   *  23 JUN 0520  209        1.   *  23 JUN 1135  284        0.
 22 JUN 1655   60        0.   *  22 JUN 2310  135        0.   *  23 JUN 0525  210        1.   *  23 JUN 1140  285        0.
 22 JUN 1700   61        0.   *  22 JUN 2315  136        0.   *  23 JUN 0530  211        1.   *  23 JUN 1145  286        0.
 22 JUN 1705   62        0.   *  22 JUN 2320  137        0.   *  23 JUN 0535  212        1.   *  23 JUN 1150  287        0.
 22 JUN 1710   63        0.   *  22 JUN 2325  138        0.   *  23 JUN 0540  213        1.   *  23 JUN 1155  288        0.
 22 JUN 1715   64        0.   *  22 JUN 2330  139        0.   *  23 JUN 0545  214        1.   *  23 JUN 1200  289        0.
 22 JUN 1720   65        0.   *  22 JUN 2335  140        0.   *  23 JUN 0550  215        1.   *  23 JUN 1205  290        0.
 22 JUN 1725   66        0.   *  22 JUN 2340  141        0.   *  23 JUN 0555  216        1.   *  23 JUN 1210  291        0.
 22 JUN 1730   67        0.   *  22 JUN 2345  142        0.   *  23 JUN 0600  217        1.   *  23 JUN 1215  292        0.
 22 JUN 1735   68        0.   *  22 JUN 2350  143        0.   *  23 JUN 0605  218        1.   *  23 JUN 1220  293        0.
 22 JUN 1740   69        0.   *  22 JUN 2355  144        0.   *  23 JUN 0610  219        1.   *  23 JUN 1225  294        0.
 22 JUN 1745   70        0.   *  23 JUN 0000  145        0.   *  23 JUN 0615  220        1.   *  23 JUN 1230  295        0.
 22 JUN 1750   71        0.   *  23 JUN 0005  146        0.   *  23 JUN 0620  221        1.   *  23 JUN 1235  296        0.
 22 JUN 1755   72        0.   *  23 JUN 0010  147        0.   *  23 JUN 0625  222        1.   *  23 JUN 1240  297        0.
 22 JUN 1800   73        0.   *  23 JUN 0015  148        1.   *  23 JUN 0630  223        1.   *  23 JUN 1245  298        0.
 22 JUN 1805   74        0.   *  23 JUN 0020  149        1.   *  23 JUN 0635  224        1.   *  23 JUN 1250  299        0.
 22 JUN 1810   75        0.   *  23 JUN 0025  150        1.   *  23 JUN 0640  225        1.   *  23 JUN 1255  300        0.
                              *                                 *                                 *
*******************************************************************************************************************************

  PEAK FLOW      TIME                             MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                     6-HR         24-HR         72-HR         24.92-HR
        8.      13.25         (CFS)         3.            1.            1.               1.
                           (INCHES)       .197          .227          .227             .227
                            (AC-FT)         1.            2.            2.               2.

                         CUMULATIVE AREA =       .14 SQ MI
```

Sum of ALL Sub-Basins

"OF1, OF2, OF3, A, B and C"

Flow Discharged at Southwest Corner of Project into Drainage and irrigation Ditch along 28 Road.

```
                                                  STATION        C

                             (O) OUTFLOW
          0.        1.        2.        3.        4.        5.        6.        7.        8.        0.        0.        0.        0.
DAHRMN PER
221200  10---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
221205  20         .         .         .         .         .         .         .         .         .         .         .         .
221210  30         .         .         .         .         .         .         .         .         .         .         .         .
221215  40         .         .         .         .         .         .         .         .         .         .         .         .
221220  50         .         .         .         .         .         .         .         .         .         .         .         .
221225  60         .         .         .         .         .         .         .         .         .         .         .         .
221230  70         .         .         .         .         .         .         .         .         .         .         .         .
221235  80         .         .         .         .         .         .         .         .         .         .         .         .
221240  90         .         .         .         .         .         .         .         .         .         .         .         .
221245 100         .         .         .         .         .         .         .         .         .         .         .         .
221250 110 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221255 120         .         .         .         .         .         .         .         .         .         .         .         .
221300 130         .         .         .         .         .         .         .         .         .         .         .         .
221305 140         .         .         .         .         .         .         .         .         .         .         .         .
221310 150         .         .         .         .         .         .         .         .         .         .         .         .
221315 160         .         .         .         .         .         .         .         .         .         .         .         .
221320 170         .         .         .         .         .         .         .         .         .         .         .         .
221325 180         .         .         .         .         .         .         .         .         .         .         .         .
221330 190         .         .         .         .         .         .         .         .         .         .         .         .
221335 200         .         .         .         .         .         .         .         .         .         .         .         .
221340 210 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221345 220         .         .         .         .         .         .         .         .         .         .         .         .
221350 230         .         .         .         .         .         .         .         .         .         .         .         .
221355 240         .         .         .         .         .         .         .         .         .         .         .         .
221400 250         .         .         .         .         .         .         .         .         .         .         .         .
221405 260         .         .         .         .         .         .         .         .         .         .         .         .
221410 270         .         .         .         .         .         .         .         .         .         .         .         .
221415 280         .         .         .         .         .         .         .         .         .         .         .         .
221420 290         .         .         .         .         .         .         .         .         .         .         .         .
221425 300         .         .         .         .         .         .         .         .         .         .         .         .
221430 310 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221435 320         .         .         .         .         .         .         .         .         .         .         .         .
221440 330         .         .         .         .         .         .         .         .         .         .         .         .
221445 340         .         .         .         .         .         .         .         .         .         .         .         .
221450 350         .         .         .         .         .         .         .         .         .         .         .         .
221455 360         .         .         .         .         .         .         .         .         .         .         .         .
221500 370         .         .         .         .         .         .         .         .         .         .         .         .
221505 380         .         .         .         .         .         .         .         .         .         .         .         .
221510 390         .         .         .         .         .         .         .         .         .         .         .         .
221515 400         .         .         .         .         .         .         .         .         .         .         .         .
221520 410 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221525 420         .         .         .         .         .         .         .         .         .         .         .         .
221530 430         .         .         .         .         .         .         .         .         .         .         .         .
221535 440         .         .         .         .         .         .         .         .         .         .         .         .
221540 450         .         .         .         .         .         .         .         .         .         .         .         .
221545 460         .         .         .         .         .         .         .         .         .         .         .         .
221550 470         .         .         .         .         .         .         .         .         .         .         .         .
221555 480         .         .         .         .         .         .         .         .         .         .         .         .
221600 490         .         .         .         .         .         .         .         .         .         .         .         .
221605 500         .         .         .         .         .         .         .         .         .         .         .         .
221610 510 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221615 520         .         .         .         .         .         .         .         .         .         .         .         .
221620 530         .         .         .         .         .         .         .         .         .         .         .         .
221625 540         .         .         .         .         .         .         .         .         .         .         .         .
221630 550         .         .         .         .         .         .         .         .         .         .         .         .
221635 560         .         .         .         .         .         .         .         .         .         .         .         .
221640 570         .         .         .         .         .         .         .         .         .         .         .         .
221645 580         .         .         .         .         .         .         .         .         .         .         .         .
221650 590         .         .         .         .         .         .         .         .         .         .         .         .
221655 600         .         .         .         .         .         .         .         .         .         .         .         .
221700 610 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221705 620         .         .         .         .         .         .         .         .         .         .         .         .
221710 630         .         .         .         .         .         .         .         .         .         .         .         .
221715 640         .         .         .         .         .         .         .         .         .         .         .         .
221720 650         .         .         .         .         .         .         .         .         .         .         .         .
221725 660         .         .         .         .         .         .         .         .         .         .         .         .
221730 670         .         .         .         .         .         .         .         .         .         .         .         .
221735 680         .         .         .         .         .         .         .         .         .         .         .         .
221740 690         .         .         .         .         .         .         .         .         .         .         .         .
221745 700         .         .         .         .         .         .         .         .         .         .         .         .
221750 710 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221755 720         .         .         .         .         .         .         .         .         .         .         .         .
221800 730         .         .         .         .         .         .         .         .         .         .         .         .
221805 740         .         .         .         .         .         .         .         .         .         .         .         .
221810 750         .         .         .         .         .         .         .         .         .         .         .         .
221815 760
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221825  780         .         .         .         .         .         .         .         .         .         .         .         .
221830  790         .         .         .         .         .         .         .         .         .         .         .         .
221835  800         .         .         .         .         .         .         .         .         .         .         .         .
221840  810........................................................................................................................
221845  820         .         .         .         .         .         .         .         .         .         .         .         .
221850  830         .         .         .         .         .         .         .         .         .         .         .         .
221855  840         .         .         .         .         .         .         .         .         .         .         .         .
221900  850         .         .         .         .         .         .         .         .         .         .         .         .
221905  860         .         .         .         .         .         .         .         .         .         .         .         .
221910  870         .         .         .         .         .         .         .         .         .         .         .         .
221915  880         .         .         .         .         .         .         .         .         .         .         .         .
221920  890         .         .         .         .         .         .         .         .         .         .         .         .
221925  900         .         .         .         .         .         .         .         .         .         .         .         .
221930  910........................................................................................................................
221935  920         .         .         .         .         .         .         .         .         .         .         .         .
221940  930         .         .         .         .         .         .         .         .         .         .         .         .
221945  940         .         .         .         .         .         .         .         .         .         .         .         .
221950  950         .         .         .         .         .         .         .         .         .         .         .         .
221955  960         .         .         .         .         .         .         .         .         .         .         .         .
222000  970         .         .         .         .         .         .         .         .         .         .         .         .
222005  980         .         .         .         .         .         .         .         .         .         .         .         .
222010  990         .         .         .         .         .         .         .         .         .         .         .         .
222015 1000         .         .         .         .         .         .         .         .         .         .         .         .
222020 1010........................................................................................................................
222025 1020         .         .         .         .         .         .         .         .         .         .         .         .
222030 1030         .         .         .         .         .         .         .         .         .         .         .         .
222035 1040         .         .         .         .         .         .         .         .         .         .         .         .
222040 1050         .         .         .         .         .         .         .         .         .         .         .         .
222045 1060         .         .         .         .         .         .         .         .         .         .         .         .
222050 1070         .         .         .         .         .         .         .         .         .         .         .         .
222055 1080         .         .         .         .         .         .         .         .         .         .         .         .
222100 1090         .         .         .         .         .         .         .         .         .         .         .         .
222105 1100         .         .         .         .         .         .         .         .         .         .         .         .
222110 1110........................................................................................................................
222115 1120         .         .         .         .         .         .         .         .         .         .         .         .
222120 1130         .         .         .         .         .         .         .         .         .         .         .         .
222125 1140         .         .         .         .         .         .         .         .         .         .         .         .
222130 1150         .         .         .         .         .         .         .         .         .         .         .         .
222135 1160         .         .         .         .         .         .         .         .         .         .         .         .
222140 1170         .         .         .         .         .         .         .         .         .         .         .         .
222145 1180         .         .         .         .         .         .         .         .         .         .         .         .
222150 1190         .         .         .         .         .         .         .         .         .         .         .         .
222155 1200         .         .         .         .         .         .         .         .         .         .         .         .
222200 1210........................................................................................................................
222205 1220         .         .         .         .         .         .         .         .         .         .         .         .
222210 1230         .         .         .         .         .         .         .         .         .         .         .         .
222215 1240         .         .         .         .         .         .         .         .         .         .         .         .
222220 1250         .         .         .         .         .         .         .         .         .         .         .         .
222225 1260         .         .         .         .         .         .         .         .         .         .         .         .
222230 1270         .         .         .         .         .         .         .         .         .         .         .         .
222235 1280         .         .         .         .         .         .         .         .         .         .         .         .
222240 1290         .         .         .         .         .         .         .         .         .         .         .         .
222245 1300         .         .         .         .         .         .         .         .         .         .         .         .
222250 1310........................................................................................................................
222255 1320         .         .         .         .         .         .         .         .         .         .         .         .
222300 1330         .         .         .         .         .         .         .         .         .         .         .         .
222305 1340         .         .         .         .         .         .         .         .         .         .         .         .
222310 1350         .         .         .         .         .         .         .         .         .         .         .         .
222315 1360         .         .         .         .         .         .         .         .         .         .         .         .
222320 1370         .         .         .         .         .         .         .         .         .         .         .         .
222325 1380         .         .         .         .         .         .         .         .         .         .         .         .
222330 1390         .         .         .         .         .         .         .         .         .         .         .         .
222335 1400         .         .         .         .         .         .         .         .         .         .         .         .
222340 1410........................................................................................................................
222345 142.0        .         .         .         .         .         .         .         .         .         .         .         .
222350 143.0        .         .         .         .         .         .         .         .         .         .         .         .
222355 144.0        .         .         .         .         .         .         .         .         .         .         .         .
230000 145. 0       .         .         .         .         .         .         .         .         .         .         .         .
230005 146.  0      .         .         .         .         .         .         .         .         .         .         .         .
230010 147.   0     .         .         .         .         .         .         .         .         .         .         .         .
230015 148.      0  .         .         .         .         .         .         .         .         .         .         .         .
230020 149.        0.         .         .         .         .         .         .         .         .         .         .         .
230025 150.         .  0      .         .         .         .         .         .         .         .         .         .         .
230030 151.................0......................................................................................................
230035 152.         .         .      0  .         .         .         .         .         .         .         .         .
230040 153.         .         .         .         .0        .         .         .         .         .         .         .
230045 154.         .         .         .         .         .   0     .         .         .         .         .         .
230050 155.         .         .         .         .         .         . 0       .         .         .         .         .
230055 156.         .         .         .         .         .         .        0.         .         .         .         .
230100 157.         .         .         .         .         .         .         .   0     .         .         .         .
230105 158.         .         .         .         .         .         .         .      0  .         .         .         .
230110 159.         .         .         .         .         .         .         .       0 .         .         .         .
230115 160.         .         .         .         .         .         .         .        0.         .         .         .
230120 161.............................................................................0..........................................
230125 162.         .         .         .         .         .         .         .      0  .         .         .         .
230130 163.         .         .         .         .         .         .         .    0    .         .         .         .
230135 164.         .         .         .         .         .         .         . 0
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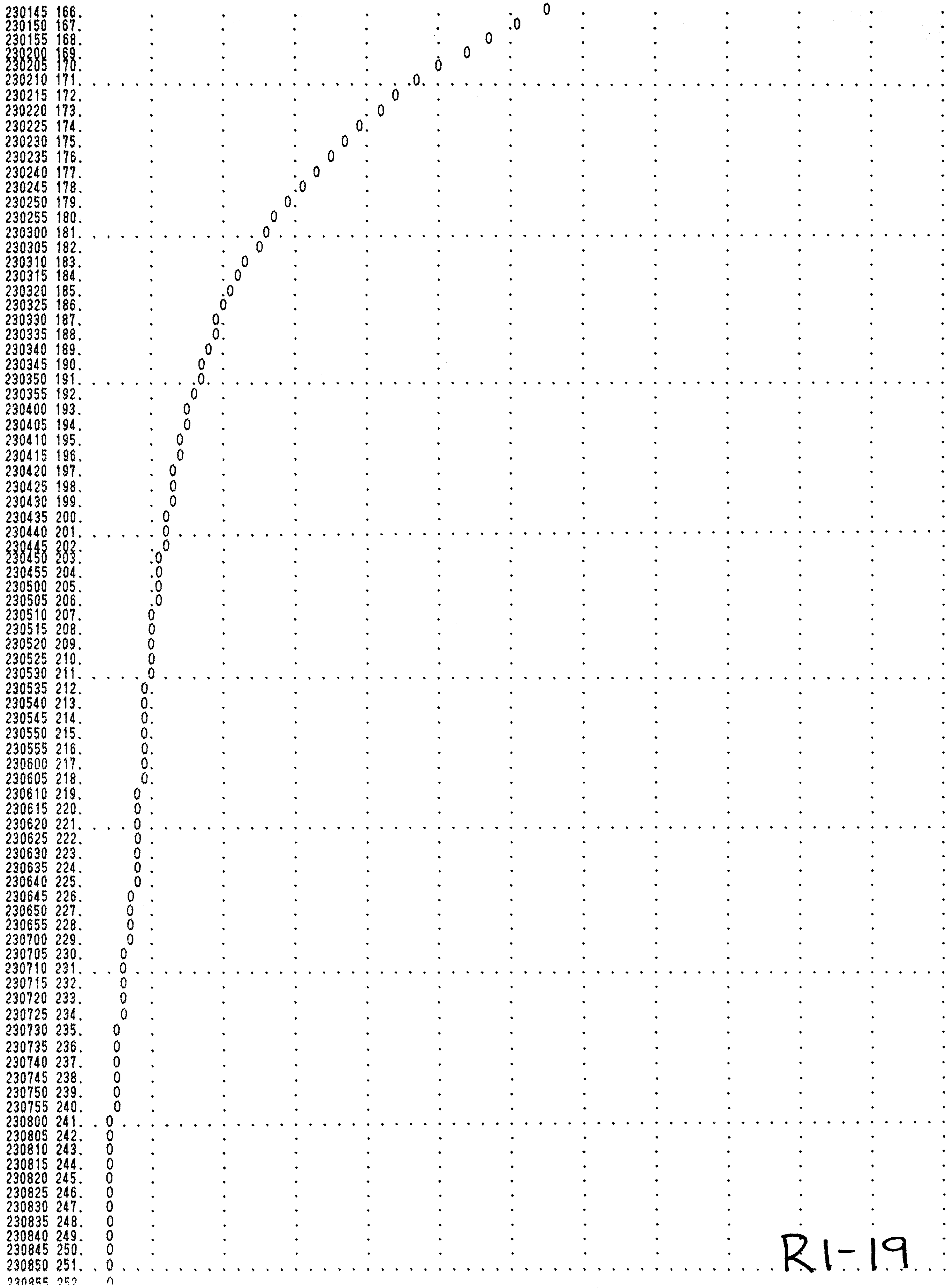
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230220 173.
230225 174.
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230235 176.
230240 177.
230245 178.
230250 179.
230255 180.
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230305 182.
230310 183.
230315 184.
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230725 234.
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230740 237.
230745 238.
230750 239.
230755 240.
230800 241.
230805 242.
230810 243.
230815 244.
230820 245.
230825 246.
230830 247.
230835 248.
230840 249.
230845 250.
230850 251.
230855 252.

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230905 254.  0      .         .         .         .         .         .         .         .         .         .         .         .
230910 255.  0      .         .         .         .         .         .         .         .         .         .         .         .
230915 256.  0      .         .         .         .         .         .         .         .         .         .         .         .
230920 257.  0      .         .         .         .         .         .         .         .         .         .         .         .
230925 258.  0      .         .         .         .         .         .         .         .         .         .         .         .
230930 259.  0      .         .         .         .         .         .         .         .         .         .         .         .
230935 260.  0      .         .         .         .         .         .         .         .         .         .         .         .
230940 261. .0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
230945 262.  0      .         .         .         .         .         .         .         .         .         .         .         .
230950 263.  0      .         .         .         .         .         .         .         .         .         .         .         .
230955 264.  0      .         .         .         .         .         .         .         .         .         .         .         .
231000 265.  0      .         .         .         .         .         .         .         .         .         .         .         .
231005 266.  0      .         .         .         .         .         .         .         .         .         .         .         .
231010 267.  0      .         .         .         .         .         .         .         .         .         .         .         .
231015 268.  0      .         .         .         .         .         .         .         .         .         .         .         .
231020 269.  0      .         .         .         .         .         .         .         .         .         .         .         .
231025 270.  0      .         .         .         .         .         .         .         .         .         .         .         .
231030 271. .0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
231035 272.  0      .         .         .         .         .         .         .         .         .         .         .         .
231040 273.  0      .         .         .         .         .         .         .         .         .         .         .         .
231045 274.  0      .         .         .         .         .         .         .         .         .         .         .         .
231050 275.  0      .         .         .         .         .         .         .         .         .         .         .         .
231055 276.  0      .         .         .         .         .         .         .         .         .         .         .         .
231100 277.  0      .         .         .         .         .         .         .         .         .         .         .         .
231105 278.  0      .         .         .         .         .         .         .         .         .         .         .         .
231110 279.  0      .         .         .         .         .         .         .         .         .         .         .         .
231115 280.  0      .         .         .         .         .         .         .         .         .         .         .         .
231120 281. .0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
231125 282.  0      .         .         .         .         .         .         .         .         .         .         .         .
231130 283.  0      .         .         .         .         .         .         .         .         .         .         .         .
231135 284.  0      .         .         .         .         .         .         .         .         .         .         .         .
231140 285.  0      .         .         .         .         .         .         .         .         .         .         .         .
231145 286.  0      .         .         .         .         .         .         .         .         .         .         .         .
231150 287.  0      .         .         .         .         .         .         .         .         .         .         .         .
231155 288.  0      .         .         .         .         .         .         .         .         .         .         .         .
231200 289.  0      .         .         .         .         .         .         .         .         .         .         .         .
231205 290.  0      .         .         .         .         .         .         .         .         .         .         .         .
231210 291. .0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
231215 292. 0       .         .         .         .         .         .         .         .         .         .         .         .
231220 293. 0       .         .         .         .         .         .         .         .         .         .         .         .
231225 294. 0       .         .         .         .         .         .         .         .         .         .         .         .
231230 295. 0       .         .         .         .         .         .         .         .         .         .         .         .
231235 296. 0       .         .         .         .         .         .         .         .         .         .         .         .
231240 297. 0       .         .         .         .         .         .         .         .         .         .         .         .
231245 298. 0       .         .         .         .         .         .         .         .         .         .         .         .
231250 299. 0       .         .         .         .         .         .         .         .         .         .         .         .
231255 300.-0-------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
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                                        RUNOFF SUMMARY
                                  FLOW IN CUBIC FEET PER SECOND
                                TIME IN HOURS,  AREA IN SQUARE MILES

                                 PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD       BASIN    MAXIMUM     TIME OF
OPERATION       STATION          FLOW    PEAK        6-HOUR      24-HOUR      72-HOUR      AREA     STAGE     MAX STAGE

HYDROGRAPH AT       OF1            1.    12.58          0.          0.           0.         .02

ROUTED TO        DITCH2            1.    12.75          0.          0.           0.         .02

HYDROGRAPH AT         A            2.    13.33          1.          0.           0.         .04

2 COMBINED AT         A            3.    13.08          1.          0.           0.         .06

HYDROGRAPH AT       OF2            1.    13.00          0.          0.           0.         .02

ROUTED TO        DITCH1            1.    13.08          0.          0.           0.         .02

HYDROGRAPH AT       OF3            0.    13.08          0.          0.           0.         .00

2 COMBINED AT       OF3            1.    13.08          0.          0.           0.         .02

2 COMBINED AT       OF3            4.    13.08          1.          0.           0.         .08

ROUTED TO        DITCH3            4.    13.17          1.          0.           0.         .08

HYDROGRAPH AT         B            2.    13.25          1.          0.           0.         .04

2 COMBINED AT         B            6.    13.25          2.          1.           1.         .12

HYDROGRAPH AT         C            2.    13.25          1.          0.           0.         .02

2 COMBINED AT         C            8.    13.25          3.          1.           1.         .14
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                                     SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                         (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                            INTERPOLATED TO
                                                                        COMPUTATION INTERVAL
            ISTAQ    ELEMENT      DT        PEAK     TIME TO     VOLUME       DT        PEAK     TIME TO      VOLUME
                                                       PEAK                                        PEAK

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

             DITCH2  MANE         3.00       1.10    765.00        .17       5.00       1.10    765.00         .17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1577E+00 EXCESS= .0000E+00 OUTFLOW= .1577E+00 BASIN STORAGE= .5110E-03 PERCENT ERROR=   -.3

             DITCH1  MANE         4.25        .86    786.25        .17       5.00        .86    785.00         .17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1681E+00 EXCESS= .0000E+00 OUTFLOW= .1679E+00 BASIN STORAGE= .2035E-03 PERCENT ERROR=    .0

             DITCH3  MANE         5.00       3.88    790.00        .20       5.00       3.88    790.00         .20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8523E+00 EXCESS= .0000E+00 OUTFLOW= .8502E+00 BASIN STORAGE= .3213E-02 PERCENT ERROR=   -.1


*** NORMAL END OF HEC-1 ***
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****************************************                                                ****************************************
*                                      *                                                *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                *   U.S. ARMY CORPS OF ENGINEERS       *
*            SEPTEMBER 1990            *                                                *   HYDROLOGIC ENGINEERING CENTER      *
*             VERSION 4.0              *                                                *        609 SECOND STREET             *
*                                      *                                                *     DAVIS, CALIFORNIA 95616          *
*  RUN DATE  06/27/1994  TIME  16:01:49 *                                               *        (916) 756-1104                *
*                                      *                                                *                                      *
****************************************                                                ****************************************




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




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

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

HISTORIC 100YEAR STORM

RUN#2

```
                                            HEC-1 INPUT                                                     PAGE  1

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

   1           ID   GRAND VIEW SUBDIVISION
   2           ID   HISTORIC CONDITION
   3           ID   100 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)
   4           IT       5 22JUN94    1200     300
   5           IO       5       2       0
               * **********

   6           KK     OF1
   7           KM   Basin runoff calculation for     OF1
   8           KO       3       1       0       1      21     110     300
   9           BA  0.0175
  10           PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
  11           LS              91
  12           UD   0.304
               * **********

  13           KK  DITCH2
  14           KM   Muskingum-Cunge channel routing from      CP1 to      CP3
  15           KO       3       1       0       1      21     110     300
  16           RD
  17           RC   0.035   0.025   0.035    1770   0.010
  18           RX     100     110     111     113   113.5   115.5   116.5   126.5
  19           RY    4742    4742  4741.5  4739.5  4739.5  4741.5    4742    4742
               * **********

  20           KK       A
  21           KM   Basin runoff calculation for       A
  22           KO       3       1       0       1      21     110     300
  23           BA  0.0407
  24           PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
  25           LS              93
  26           UD   0.673
               * **********

  27           KK       A
  28           KM   Combining two hydrographs at control point     CP3
  29           KO       3       1       0       1      21     110     300
  30           HC       2
               * **********

  31           KK     OF2
  32           KM   Basin runoff calculation for     OF2
  33           KO       3       1       0       1      21     110     300
  34           BA  0.0187
  35           PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
  36           LS              91
  37           UD   0.478
               * **********

  38           KK  DITCH1
  39           KM   Muskingum-Cunge channel routing from      CP2 to      CP3
  40           KO       3       1       0       1      21     110     300
  41           RD
  42           RC   0.035   0.025   0.035     700   0.012
  43           RX     100     110     111     113   113.5   115.5   116.5   126.5
```

RZ-2

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

  44           RY   4734    4734  4733.5  4731.5  4731.5  4733.5    4734    4734
               * **********

  45           KK     OF3
  46           KM   Basin runoff calculation for    OF3
  47           KO       3       1       0       1      21     110     300
  48           BA  0.0048
  49           PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
  50           LS              88
  51           UD   0.478
               * **********

  52           KK     OF3
  53           KM   Combining two hydrographs at control point      CP3
  54           KO       3       1       0       1      21     110     300
  55           HC       2
               * **********

  56           KK     OF3
  57           KM   Combining two hydrographs at control point      CP3
  58           KO       3       1       0       1      21     110     300
  59           HC       2
               * **********

  60           KK  DITCH3
  61           KM   Muskingum-Cunge channel routing from      CP3 to      CP4
  62           KO       3       1       0       1      21     110     300
  63           RD
  64           RC   0.035   0.025   0.035    1480   0.007
  65           RX     100     105     110     113     114     117     122     127
  66           RY    4726    4726  4725.5  4723.5  4723.5  4725.5    4726    4726
               * **********

  67           KK       B
  68           KM   Basin runoff calculation for      B
  69           KO       3       1       0       1      21     110     300
  70           BA  0.0363
  71           PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
  72           LS              94
  73           UD   0.682
               * **********

  74           KK       B
  75           KM   Combining two hydrographs at control point      CP4
  76           KO       3       1       0       1      21     110     300
  77           HC       2
               * **********

  78           KK       C
  79           KM   Basin runoff calculation for      C
  80           KO       3       1       0       1      21     110     300
  81           BA  0.0245
  82           PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
  83           LS              94
  84           UD   0.696
               * **********
```

R2-3

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


  85            KK       C
  86            KM   Combining two hydrographs at control point      CP4
  87            KO       1       2       0       1      21     110     300
  88            HC       2
                * **********
  89            ZZ
```

R2-4

```
*****************************************                                                 ***************************************
*                                       *                                                 *                                     *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                 *   U.S. ARMY CORPS OF ENGINEERS      *
*            SEPTEMBER 1990             *                                                 *   HYDROLOGIC ENGINEERING CENTER     *
*              VERSION 4.0              *                                                 *        609 SECOND STREET            *
*                                       *                                                 *     DAVIS, CALIFORNIA 95616         *
*  RUN DATE  06/27/1994  TIME  16:01:49 *                                                 *        (916) 756-1104               *
*                                       *                                                 *                                     *
*****************************************                                                 ***************************************




                           GRAND VIEW SUBDIVISION
                           HISTORIC CONDITION
                           100 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)

   5 IO         OUTPUT CONTROL VARIABLES
                      IPRNT          5  PRINT CONTROL
                      IPLOT          2  PLOT CONTROL
                      OSCAL         0.  HYDROGRAPH PLOT SCALE

     IT         HYDROGRAPH TIME DATA
                       NMIN          5  MINUTES IN COMPUTATION INTERVAL
                      IDATE    22JUN94  STARTING DATE
                      ITIME       1200  STARTING TIME
                         NO        300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE    23JUN94  ENDING DATE
                     NDTIME       1255  ENDING TIME
                     ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 HOURS

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

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

            **************
            *            *
   6 KK     *      OF1   *
            *            *
            **************

   8 KO         OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          1  PLOT CONTROL
                      OSCAL         0.  HYDROGRAPH PLOT SCALE
                      IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                       IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1        110  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT       .083  TIME INTERVAL IN HOURS

               SUBBASIN RUNOFF DATA

   9 BA         SUBBASIN CHARACTERISTICS
                      TAREA        .02  SUBBASIN AREA

                PRECIPITATION DATA

  10 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .39     .76    1.34    1.40    1.44    1.56    1.69    2.01     .00     .00     .00     .00

                                                  STORM AREA =      .02

  11 LS         SCS LOSS RATE
```

R2-S

```
                      CRVNBR       91.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  12 UD         SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .30  LAG

                                                       ***

                                                 UNIT HYDROGRAPH
                                            20 END-OF-PERIOD ORDINATES
                3.        11.        21.        24.        23.        18.        12.         8.         5.         4.
                2.         2.         1.         1.         1.         0.         0.         0.         0.         0.

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

                          HYDROGRAPH AT STATION      OF1

    TOTAL RAINFALL =    2.01, TOTAL LOSS =     .84, TOTAL EXCESS =    1.17

  PEAK FLOW      TIME                            MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                    6-HR        24-HR        72-HR      24.92-HR
                                (CFS)
      15.       12.42                      2.           1.           1.           1.
                             (INCHES)   1.009        1.172        1.172        1.172
                              (AC-FT)      1.           1.           1.           1.

                         CUMULATIVE AREA =     .02 SQ MI
```

↑

SUB-BASIN
"OF1 INTO PROJECT

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


             **************
             *            *
  13 KK      *   DITCH2   *
             *            *
             **************

  15 KO         OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           1  PLOT CONTROL
                       OSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


              HYDROGRAPH ROUTING DATA

  16 RD         MUSKINGUM-CUNGE CHANNEL ROUTING

  17 RC         NORMAL DEPTH CHANNEL
                         ANL        .035  LEFT OVERBANK N-VALUE
                        ANCH        .025  MAIN CHANNEL N-VALUE
                         ANR        .035  RIGHT OVERBANK N-VALUE
                       RLNTH       1770.  REACH LENGTH
                         SEL       .0100  ENERGY SLOPE
                       ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                              CROSS-SECTION DATA
                              --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  19 RY       ELEVATION   4742.00    4742.00    4741.50    4739.50    4739.50    4741.50    4742.00    4742.00
  18 RX       DISTANCE     100.00     110.00     111.00     113.00     113.50     115.50     116.50     126.50

                                                       ***

                                                COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE        .00        .00        .01        .01        .02        .03        .04        .05        .07        .08
            OUTFLOW        .00        .10        .35        .76       1.35       2.13       3.13       4.37       5.87       7.64
          ELEVATION    4739.50    4739.63    4739.76    4739.89    4740.03    4740.16    4740.29    4740.42    4740.55    4740.68

            STORAGE        .10        .11        .13        .15        .17        .20        .22        .25        .28        .31
            OUTFLOW       9.70      12.08      14.78      17.83      21.24      25.03      30.02      35.72      41.95      48.73
          ELEVATION    4740.81    4740.94    4741.08    4741.21    4741.34    4741.47    4741.60    4741.73    4741.86    4742.00

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

                      MAIN                            5.00     885.00     14.95    745.00       1.17      4.91
```

R2-6

```
                                   INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                    MAIN                          5.00              14.95    745.00       1.17

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1094E+01 EXCESS= .0000E+00 OUTFLOW= .1094E+01 BASIN STORAGE= .6151E-03 PERCENT ERROR=   -.1


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

                        HYDROGRAPH AT STATION   DITCH2

  PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                   6-HR        24-HR       72-HR        24.92-HR
      15.      12.42         (CFS)       2.           1.          1.              1.
                          (INCHES)    1.009        1.173       1.173           1.173
                           (AC-FT)       1.           1.          1.              1.

                       CUMULATIVE AREA =      .02 SQ MI


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

                 **************
                 *            *
  20 KK          *      A     *
                 *            *
                 **************

  22 KO           OUTPUT CONTROL VARIABLES
                        IPRNT          3  PRINT CONTROL
                        IPLOT          1  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE
                        IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                         IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1        110  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT       .083  TIME INTERVAL IN HOURS


                SUBBASIN RUNOFF DATA

  23 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .04  SUBBASIN AREA

                  PRECIPITATION DATA

  24 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
                    .39     .76    1.34    1.40    1.44    1.56    1.69    2.01      .00     .00     .00     .00

                                                         STORM AREA =      .04

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

  26 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .67  LAG

                                                                  ***

                                                            UNIT HYDROGRAPH
                                                       42 END-OF-PERIOD ORDINATES
                    1.         4.         7.        11.        17.        23.        26.        27.        27.        26.
                   24.        21.        18.        15.        12.        10.         8.         7.         6.         5.
                    4.         3.         3.         2.         2.         1.         1.         1.         1.         1.
                    1.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                    0.         0.

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

Sub-Basin "A"

```
                        HYDROGRAPH AT STATION          A

    TOTAL RAINFALL =     2.01, TOTAL LOSS =      .69, TOTAL EXCESS =     1.32

  PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                   6-HR        24-HR       72-HR        24.92-HR
      24.      12.75         (CFS)       5.           1.          1.              1.
                          (INCHES)    1.133        1.320       1.320           1.320
```

R2-7

```
                              CUMULATIVE AREA =      .04 SQ MI


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


                 **************
                 *            *
  27 KK          *         A  *
                 *            *
                 **************

  29 KO                OUTPUT CONTROL VARIABLES
                             IPRNT             3  PRINT CONTROL
                             IPLOT             1  PLOT CONTROL
                             QSCAL            0.  HYDROGRAPH PLOT SCALE
                             IPNCH             1  PUNCH COMPUTED HYDROGRAPH
                              IOUT            21  SAVE HYDROGRAPH ON THIS UNIT
                             ISAV1           110  FIRST ORDINATE PUNCHED OR SAVED
                             ISAV2           300  LAST ORDINATE PUNCHED OR SAVED
                            TIMINT          .083  TIME INTERVAL IN HOURS


  30 HC                HYDROGRAPH COMBINATION
                             ICOMP             2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                      ***

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

                              HYDROGRAPH AT STATION         A

  PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                      6-HR          24-HR         72-HR       24.92-HR
      36.       12.58         (CFS)          7.             2.            2.             2.
                            (INCHES)     1.096          1.276         1.276          1.276
                             (AC-FT)        3.             4.            4.             4.
```

Sum of "OF1" and "A"

```
                              CUMULATIVE AREA =      .06 SQ MI


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


                 **************
                 *            *
  31 KK          *       OF2  *
                 *            *
                 **************

  33 KO                OUTPUT CONTROL VARIABLES
                             IPRNT             3  PRINT CONTROL
                             IPLOT             1  PLOT CONTROL
                             QSCAL            0.  HYDROGRAPH PLOT SCALE
                             IPNCH             1  PUNCH COMPUTED HYDROGRAPH
                              IOUT            21  SAVE HYDROGRAPH ON THIS UNIT
                             ISAV1           110  FIRST ORDINATE PUNCHED OR SAVED
                             ISAV2           300  LAST ORDINATE PUNCHED OR SAVED
                            TIMINT          .083  TIME INTERVAL IN HOURS


                     SUBBASIN RUNOFF DATA

  34 BA                SUBBASIN CHARACTERISTICS
                             TAREA           .02  SUBBASIN AREA

                       PRECIPITATION DATA

  35 PH                                         DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                       ..... HYDRO-35 ......    ............... TP-40 ...............     ........... TP-49 ...........
                       5-MIN  15-MIN  60-MIN     2-HR     3-HR     6-HR    12-HR    24-HR    2-DAY    4-DAY    7-DAY   10-DAY
                         .39     .76    1.34     1.40     1.44     1.56     1.69     2.01      .00      .00      .00      .00

                                                          STORM AREA =      .02

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

  37 UD                SCS DIMENSIONLESS UNITGRAPH
                             TLAG            .48  LAG
```

R2-8

```
                                                  ***

                                         UNIT HYDROGRAPH
                                     31 END-OF-PERIOD ORDINATES
                 1.        4.        8.       13.       16.       17.       17.       15.       13.       10.
                 7.        6.        4.        3.        3.        2.        2.        1.        1.        1.
                 1.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                 0.

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

                      HYDROGRAPH AT STATION      OF2

       TOTAL RAINFALL =    2.01, TOTAL LOSS =     .84, TOTAL EXCESS =    1.17

     PEAK FLOW      TIME                           MAXIMUM AVERAGE FLOW
       (CFS)        (HR)                  6-HR        24-HR       72-HR      24.92-HR
         12.       12.58       (CFS)        2.          1.          1.          1.
                             (INCHES)     1.007       1.171       1.171       1.171
                              (AC-FT)       1.          1.          1.          1.

                            CUMULATIVE AREA =     .02 SQ MI
```

↑

"OFZ" INTO PROJECT

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


             **************
             *            *
   38 KK     *   DITCH1   *
             *            *
             **************


   40 KO        OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          1  PLOT CONTROL
                      OSCAL         0.  HYDROGRAPH PLOT SCALE
                      IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                       IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1        110  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT       .083  TIME INTERVAL IN HOURS


              HYDROGRAPH ROUTING DATA

   41 RD        MUSKINGUM-CUNGE CHANNEL ROUTING

   42 RC        NORMAL DEPTH CHANNEL
                        ANL       .035  LEFT OVERBANK N-VALUE
                       ANCH       .025  MAIN CHANNEL N-VALUE
                        ANR       .035  RIGHT OVERBANK N-VALUE
                      RLNTH       700.  REACH LENGTH
                        SEL      .0120  ENERGY SLOPE
                      ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                             CROSS-SECTION DATA
                              --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
   44 RY       ELEVATION   4734.00   4734.00   4733.50   4731.50   4731.50   4733.50   4734.00   4734.00
   43 RX        DISTANCE    100.00    110.00    111.00    113.00    113.50    115.50    116.50    126.50
                                                  ***

                                      COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE         .00       .00       .00       .01       .01       .01       .02       .02       .03       .03
           OUTFLOW         .00       .11       .39       .83      1.47      2.33      3.43      4.79      6.43      8.37
         ELEVATION     4731.50   4731.63   4731.76   4731.89   4732.03   4732.16   4732.29   4732.42   4732.55   4732.68

           STORAGE         .04       .05       .05       .06       .07       .08       .09       .10       .11       .12
           OUTFLOW       10.63     13.23     16.20     19.54     23.27     27.42     32.89     39.13     45.95     53.38
         ELEVATION     4732.81   4732.94   4733.08   4733.21   4733.34   4733.47   4733.60   4733.73   4733.86   4734.00

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

                  MAIN                           2.33     350.00     12.36     755.35        1.17        5.00


                                          INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL
```

R2-9

```
CONTINUITY SUMMARY (AC-FT) - INFLOW= .1168E+01 EXCESS= .0000E+00 OUTFLOW= .1168E+01 BASIN STORAGE= .5788E-03 PERCENT ERROR=    .0


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

                              HYDROGRAPH AT STATION   DITCH1

  PEAK FLOW    TIME                                 MAXIMUM AVERAGE FLOW
    (CFS)      (HR)                         6-HR        24-HR        72-HR      24.92-HR
       12.     12.58          (CFS)           2.           1.           1.            1.
                            (INCHES)       1.007        1.171        1.171         1.171
                             (AC-FT)          1.           1.           1.            1.

                             CUMULATIVE AREA =     .02 SQ MI



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


                **************
                *            *
   45 KK        *       OF3  *
                *            *
                **************

   47 KO              OUTPUT CONTROL VARIABLES
                            IPRNT          3  PRINT CONTROL
                            IPLOT          1  PLOT CONTROL
                            QSCAL         0.  HYDROGRAPH PLOT SCALE
                            IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                             IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                            ISAV1        110  FIRST ORDINATE PUNCHED OR SAVED
                            ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                           TIMINT       .083  TIME INTERVAL IN HOURS


                    SUBBASIN RUNOFF DATA

   48 BA              SUBBASIN CHARACTERISTICS
                            TAREA        .00  SUBBASIN AREA

                      PRECIPITATION DATA

   49 PH                                    DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                      ..... HYDRO-35 ......   ................ TP-40 ................   ........... TP-49 ...........
                      5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                        .39     .76    1.34    1.40    1.44    1.56    1.69    2.01     .00     .00     .00     .00

                                                         STORM AREA =      .00

   50 LS              SCS LOSS RATE
                            STRTL        .27  INITIAL ABSTRACTION
                           CRVNBR      88.00  CURVE NUMBER
                            RTIMP        .00  PERCENT IMPERVIOUS AREA

   51 UD              SCS DIMENSIONLESS UNITGRAPH
                             TLAG        .48  LAG

                                                                     ***

                                                               UNIT HYDROGRAPH
                                                          31 END-OF-PERIOD ORDINATES
                      0.         1.         2.         3.         4.         4.         4.         4.         3.         2.
                      2.         1.         1.         1.         1.         1.         0.         0.         0.         0.
                      0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                      0.
      ***            ***            ***            ***            ***

                              HYDROGRAPH AT STATION      OF3

         TOTAL RAINFALL =    2.01, TOTAL LOSS =    1.04, TOTAL EXCESS =      .97

  PEAK FLOW    TIME                                 MAXIMUM AVERAGE FLOW
    (CFS)      (HR)                         6-HR        24-HR        72-HR      24.92-HR
        3.     12.58          (CFS)           0.           0.           0.            0.
                            (INCHES)        .832         .972         .972          .972
                             (AC-FT)          0.           0.           0.            0.

                             CUMULATIVE AREA =     .00 SQ MI
```

↑ "OF3" INTO PROJECT SITE

R2-10

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


            **************
            *            *
  52 KK     *      OF3   *
            *            *
            **************

  54 KO          OUTPUT CONTROL VARIABLES
                        IPRNT          3  PRINT CONTROL
                        IPLOT          1  PLOT CONTROL
                        OSCAL         0.  HYDROGRAPH PLOT SCALE
                        IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                         IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1        110  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT       .083  TIME INTERVAL IN HOURS


  55 HC          HYDROGRAPH COMBINATION
                        ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                       ***

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

                           HYDROGRAPH AT STATION      OF3

  PEAK FLOW     TIME                                 MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                        6-HR         24-HR        72-HR      24.92-HR
       15.     12.58          (CFS)           2.            1.           1.            1.
                           (INCHES)         .971         1.130        1.130         1.130
                            (AC-FT)           1.            1.           1.            1.

                           CUMULATIVE AREA =      .02 SQ MI
```

Sum of "OF2" AND "OF3" INTO PROJECT SITE

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


            **************
            *            *
  56 KK     *      OF3   *
            *            *
            **************

  58 KO          OUTPUT CONTROL VARIABLES
                        IPRNT          3  PRINT CONTROL
                        IPLOT          1  PLOT CONTROL
                        OSCAL         0.  HYDROGRAPH PLOT SCALE
                        IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                         IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1        110  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT       .083  TIME INTERVAL IN HOURS


  59 HC          HYDROGRAPH COMBINATION
                        ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                       ***

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

                           HYDROGRAPH AT STATION      OF3

  PEAK FLOW     TIME                                 MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                        6-HR         24-HR        72-HR      24.92-HR
       51.     12.58          (CFS)           9.            3.           3.            3.
                           (INCHES)        1.060         1.234        1.234         1.234
                            (AC-FT)           5.            5.           5.            5.

                           CUMULATIVE AREA =      .08 SQ MI
```

Sum of "OF1, OF2, OF3 AND A"

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


            **************
            *            *
  60 KK     *    DITCH3  *
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              **************

  62 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           1  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


                HYDROGRAPH ROUTING DATA

  63 RD          MUSKINGUM-CUNGE CHANNEL ROUTING

  64 RC          NORMAL DEPTH CHANNEL
                         ANL        .035  LEFT OVERBANK N-VALUE
                        ANCH        .025  MAIN CHANNEL N-VALUE
                         ANR        .035  RIGHT OVERBANK N-VALUE
                       RLNTH       1480.  REACH LENGTH
                         SEL       .0070  ENERGY SLOPE
                       ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                            CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  66 RY         ELEVATION  4726.00   4726.00   4725.50   4723.50   4723.50   4725.50   4726.00   4726.00
  65 RX         DISTANCE    100.00    105.00    110.00    113.00    114.00    117.00    122.00    127.00

                                                             ***

                                              COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

              STORAGE        .00       .01       .01       .02       .03       .04       .06       .07       .09       .11
              OUTFLOW        .00       .18       .60      1.27      2.21      3.45      5.02      6.93      9.23     11.92
            ELEVATION    4723.50   4723.63   4723.76   4723.89   4724.03   4724.16   4724.29   4724.42   4724.55   4724.68

              STORAGE        .13       .16       .18       .21       .23       .26       .30       .35       .40       .47
              OUTFLOW      15.05     18.62     22.66     27.20     32.26     37.86     45.23     53.87     63.69     74.90
            ELEVATION    4724.81   4724.94   4725.08   4725.21   4725.34   4725.47   4725.60   4725.73   4725.86   4726.00

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

                       MAIN                           4.31    740.00     50.34    759.08       1.23       5.72


                                          INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                       MAIN                           5.00               50.18    760.00       1.23

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5376E+01 EXCESS= .0000E+00 OUTFLOW= .5371E+01 BASIN STORAGE= .9706E-02 PERCENT ERROR=   -.1


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

                          HYDROGRAPH AT STATION   DITCH3

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                  6-HR         24-HR        72-HR       24.92-HR
      50.      12.67        (CFS)       9.            3.           3.            3.
                         (INCHES)    1.061         1.233        1.233         1.233
                           (AC-FT)      5.            5.           5.            5.

                         CUMULATIVE AREA =     .08 SQ MI


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

              **************
              *            *
  67 KK       *       B    *
              *            *
              **************

  69 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
```

```
                    OSCAL          0.  HYDROGRAPH PLOT SCALE
                    IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                     IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT        .083  TIME INTERVAL IN HOURS


              SUBBASIN RUNOFF DATA

  70 BA         SUBBASIN CHARACTERISTICS
                     TAREA         .04  SUBBASIN AREA

                PRECIPITATION DATA

  71 PH                             DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .39     .76    1.34    1.40    1.44    1.56    1.69    2.01     .00     .00     .00     .00

                                                     STORM AREA =      .04

  72 LS         SCS LOSS RATE
                     STRTL          .13  INITIAL ABSTRACTION
                    CRVNBR        94.00  CURVE NUMBER
                     RTIMP          .00  PERCENT IMPERVIOUS AREA

  73 UD         SCS DIMENSIONLESS UNITGRAPH
                      TLAG          .68  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                     43 END-OF-PERIOD ORDINATES
                  1.        3.        6.       10.       15.       20.       23.       24.       24.       23.
                 21.       19.       17.       13.       11.        9.        7.        6.        5.        4.
                  3.        3.        2.        2.        2.        1.        1.        1.        1.        1.
                  1.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                  0.        0.        0.

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

                         HYDROGRAPH AT STATION         B

    TOTAL RAINFALL =    2.01, TOTAL LOSS =     .60, TOTAL EXCESS =    1.41

   PEAK FLOW      TIME                        MAXIMUM AVERAGE FLOW
     (CFS)        (HR)                  6-HR        24-HR        72-HR      24.92-HR
        23.      12.75      (CFS)         5.           1.           1.           1.
                          (INCHES)     1.200        1.402        1.402        1.402
                           (AC-FT)        2.           3.           3.           3.
```

↑ SUB-BASIN "B"

```
                        CUMULATIVE AREA =      .04 SQ MI


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

            **************
            *            *
  74 KK     *          B *
            *            *
            **************

  76 KO         OUTPUT CONTROL VARIABLES
                     IPRNT           3  PRINT CONTROL
                     IPLOT           1  PLOT CONTROL
                     OSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                      IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT        .083  TIME INTERVAL IN HOURS

  77 HC         HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                ***

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

                         HYDROGRAPH AT STATION         B

   PEAK FLOW      TIME                        MAXIMUM AVERAGE FLOW
```

```
      72.      12.67          (CFS)        14.          4.          4.           4.
                            (INCHES)      1.103       1.285       1.285        1.285
                             (AC-FT)        7.          8.          8.           8.

                            CUMULATIVE AREA =      .12 SQ MI
```

Sum of Sub-Basins "OF1, OF2, OF3, A and B"

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


              **************
              *            *
   78 KK      *       C    *
              *            *
              **************

   80 KO          OUTPUT CONTROL VARIABLES
                        IPRNT          3  PRINT CONTROL
                        IPLOT          1  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE
                        IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                         IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1        110  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT       .083  TIME INTERVAL IN HOURS


                SUBBASIN RUNOFF DATA

   81 BA          SUBBASIN CHARACTERISTICS
                        TAREA        .02  SUBBASIN AREA

                  PRECIPITATION DATA

   82 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR     3-HR     6-HR    12-HR    24-HR    2-DAY    4-DAY    7-DAY   10-DAY
                    .39     .76    1.34    1.40     1.44     1.56     1.69     2.01      .00      .00      .00      .00

                                                        STORM AREA =      .02

   83 LS          SCS LOSS RATE
                        STRTL        .13  INITIAL ABSTRACTION
                       CRVNBR      94.00  CURVE NUMBER
                        RTIMP        .00  PERCENT IMPERVIOUS AREA

   84 UD          SCS DIMENSIONLESS UNITGRAPH
                         TLAG        .70  LAG

                                                                      ***

                                                              UNIT HYDROGRAPH
                                                         44 END-OF-PERIOD ORDINATES
                      1.         2.         4.         6.        10.        13.        15.        16.        16.        16.
                     14.        13.        11.         9.         7.         6.         5.         4.         4.         3.
                      2.         2.         2.         1.         1.         1.         1.         1.         1.         0.
                      0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                      0.         0.         0.         0.

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

                              HYDROGRAPH AT STATION        C

       TOTAL RAINFALL =     2.01, TOTAL LOSS =      .60, TOTAL EXCESS =     1.41

     PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
       (CFS)       (HR)                   6-HR        24-HR       72-HR       24.92-HR
                                  (CFS)
         15.      12.75                     3.          1.          1.           1.
                               (INCHES)   1.200       1.402       1.402        1.402
                                (AC-FT)     2.          2.          2.           2.

                            CUMULATIVE AREA =      .02 SQ MI
```

↑ Sub-Basin "C"

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


              **************
              *            *
   85 KK      *       C    *
              *            *
              **************
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```
                                 IPRNT           1  PRINT CONTROL
                                 IPLOT           2  PLOT CONTROL
                                 QSCAL          0.  HYDROGRAPH PLOT SCALE
                                 IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                                  IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                                 ISAV1         110  FIRST ORDINATE PUNCHED OR SAVED
                                 ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                                TIMINT        .083  TIME INTERVAL IN HOURS


   88 HC          HYDROGRAPH COMBINATION
                        ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                       ***

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

                                                       HYDROGRAPH AT STATION        C
                                                            SUM OF  2 HYDROGRAPHS

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

PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR         24-HR        72-HR       24.92-HR
     87.     12.67       (CFS)       17.            5.           5.            5.
                       (INCHES)    1.120         1.305        1.305         1.305
                        (AC-FT)       9.           10.          10.           10.

                         CUMULATIVE AREA =      .14 SQ MI
```

Sum of Sub-Basins "OF1, OF2, OF3, A, B and C"
Flow Discharged at Southwest Corner of
Project Site into Drainage and Irrigation
Ditch along 28 Road.

```
                                                       STATION        C

                         (O) OUTFLOW
            0.       10.       20.       30.       40.       50.       60.       70.       80.       90.        0.        0.        0.
DAHRMN PER
221200   10.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
221205   20          .         .         .         .         .         .         .         .         .         .         .         .
221210   30          .         .         .         .         .         .         .         .         .         .         .         .
221215   40          .         .         .         .         .         .         .         .         .         .         .         .
221220   50          .         .         .         .         .         .         .         .         .         .         .         .
221225   60          .         .         .         .         .         .         .         .         .         .         .         .
221230   70          .         .         .         .         .         .         .         .         .         .         .         .
221235   80          .         .         .         .         .         .         .         .         .         .         .         .
221240   90          .         .         .         .         .         .         .         .         .         .         .         .
221245  100          .         .         .         .         .         .         .         .         .         .         .         .
221250  110 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221255  120          .         .         .         .         .         .         .         .         .         .         .         .
221300  130          .         .         .         .         .         .         .         .         .         .         .         .
221305  140          .         .         .         .         .         .         .         .         .         .         .         .
221310  150          .         .         .         .         .         .         .         .         .         .         .         .
221315  160          .         .         .         .         .         .         .         .         .         .         .         .
221320  170          .         .         .         .         .         .         .         .         .         .         .         .
221325  180          .         .         .         .         .         .         .         .         .         .         .         .
221330  190          .         .         .         .         .         .         .         .         .         .         .         .
221335  200          .         .         .         .         .         .         .         .         .         .         .         .
221340  210 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221345  220          .         .         .         .         .         .         .         .         .         .         .         .
221350  230          .         .         .         .         .         .         .         .         .         .         .         .
221355  240          .         .         .         .         .         .         .         .         .         .         .         .
221400  250          .         .         .         .         .         .         .         .         .         .         .         .
221405  260          .         .         .         .         .         .         .         .         .         .         .         .
221410  270          .         .         .         .         .         .         .         .         .         .         .         .
221415  280          .         .         .         .         .         .         .         .         .         .         .         .
221420  290          .         .         .         .         .         .         .         .         .         .         .         .
221425  300          .         .         .         .         .         .         .         .         .         .         .         .
221430  310 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221435  320          .         .         .         .         .         .         .         .         .         .         .         .
221440  330          .         .         .         .         .         .         .         .         .         .         .         .
221445  340          .         .         .         .         .         .         .         .         .         .         .         .
221450  350          .         .         .         .         .         .         .         .         .         .         .         .
221455  360          .         .         .         .         .         .         .         .         .         .         .         .
221500  370          .         .         .         .         .         .         .         .         .         .         .         .
221505  380          .         .         .         .         .         .         .         .         .         .         .         .
221510  390          .         .         .         .         .         .         .         .         .         .         .         .
221515  400          .         .         .         .         .         .         .         .         .         .         .         .
221520  410 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221525  420          .         .         .         .         .         .         .         .         .         .         .         .
221530  430          .         .         .         .         .         .         .         .         .         .         .         .
221535  440          .         .         .         .         .         .         .         .         .         .         .         .
221540  450          .         .         .         .         .         .         .         .         .         .         .         .
221545  460          .         .         .         .         .         .         .         .         .         .         .         .
221550  470          .         .         .         .         .         .         .         .         .         .         .         .
221555  480          .         .         .         .         .         .         .         .         .         .         .         .
221600  490          .         .         .         .         .         .         .         .         .         .         .         .
221605  500          .         .         .         .         .         .         .         .         .         .         .         .
221610  510 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221615  520          .         .         .         .         .         .         .         .         .         .         .         .
221620  530          .         .         .         .         .         .         .         .         .         .         .         .
221625  540          .         .         .         .         .         .         .         .         .         .         .         .
221630  550          .         .         .         .         .         .         .         .         .         .         .         .
221635  560          .         .         .         .         .         .         .         .         .         .         .         .
221640  570          .         .         .         .         .         .         .         .         .         .         .         .
221645  580          .         .         .         .         .         .         .         .         .         .         .         .
221650  590          .         .         .         .         .         .         .         .         .         .         .         .
221655  600          .         .         .         .         .         .         .         .         .         .         .         .
221700  610 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221705  620          .         .         .         .         .         .         .         .         .         .         .         .
221710  630          .         .         .         .         .         .         .         .         .         .         .         .
221715  640          .         .         .         .         .         .         .         .         .         .         .         .
221720  650          .         .         .         .         .         .         .         .         .         .         .         .
221725  660          .         .         .         .         .         .         .         .         .         .         .         .
221730  670          .         .         .         .         .         .         .         .         .         .         .         .
221735  680          .         .         .         .         .         .         .         .         .         .         .         .
221740  690          .         .         .         .         .         .         .         .         .         .         .         .
221745  700          .         .         .         .         .         .         .         .         .         .         .         .
221750  710 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
221755  720          .         .         .         .         .         .         .         .         .         .         .         .
221800  730          .         .         .         .         .         .         .         .         .         .         .         .
221805  740          .         .         .         .         .         .         .         .         .         .         .         .
221810  750          .         .         .         .         .         .         .         .         .         .         .         .
221815  760          .         .         .         .         .         .         .         .         .         .         .         .
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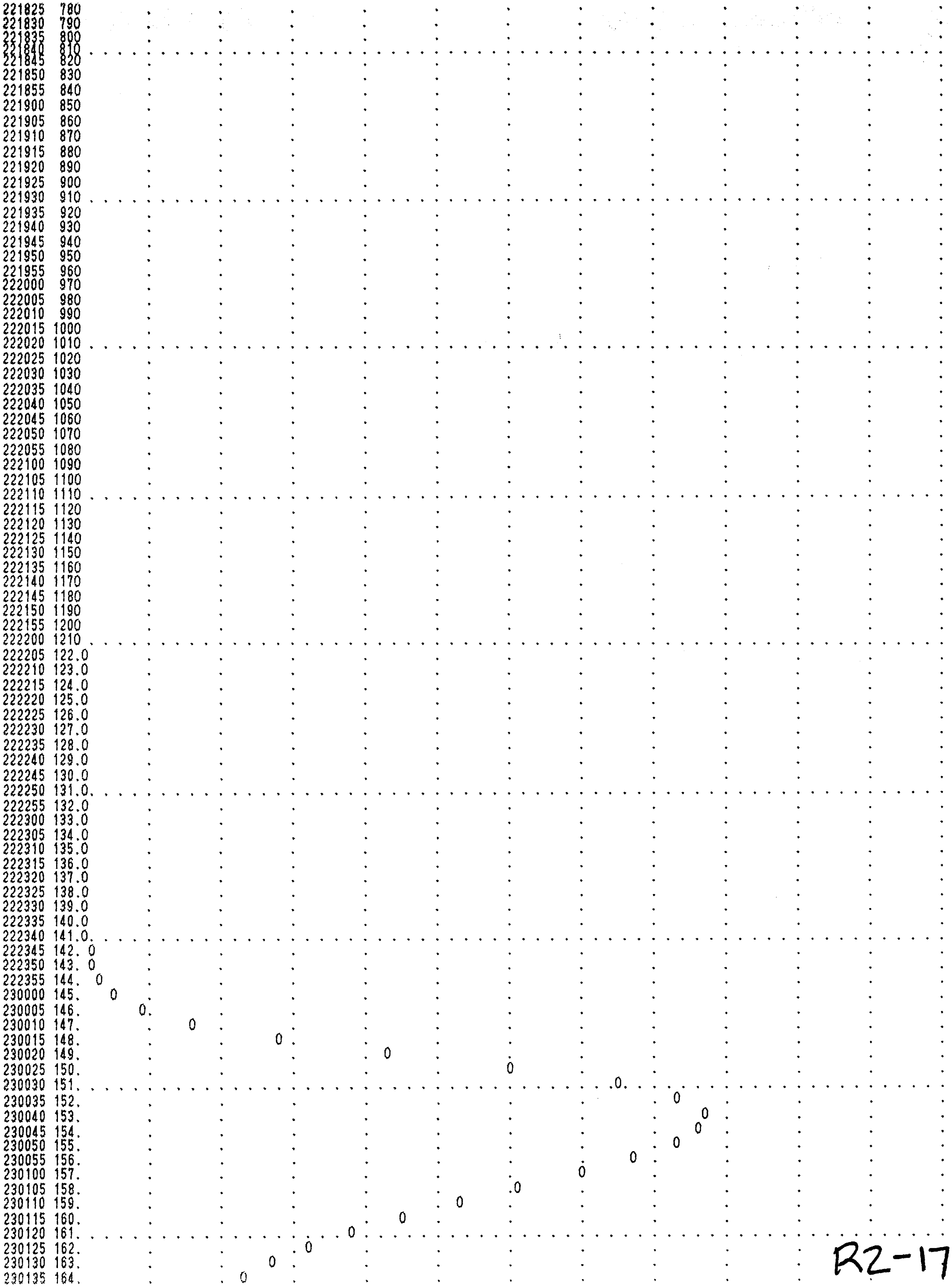
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221835 800
221840 810
221845 820
221850 830
221855 840
221900 850
221905 860
221910 870
221915 880
221920 890
221925 900
221930 910
221935 920
221940 930
221945 940
221950 950
221955 960
222000 970
222005 980
222010 990
222015 1000
222020 1010
222025 1020
222030 1030
222035 1040
222040 1050
222045 1060
222050 1070
222055 1080
222100 1090
222105 1100
222110 1110
222115 1120
222120 1130
222125 1140
222130 1150
222135 1160
222140 1170
222145 1180
222150 1190
222155 1200
222200 1210
222205 122.0
222210 123.0
222215 124.0
222220 125.0
222225 126.0
222230 127.0
222235 128.0
222240 129.0
222245 130.0
222250 131.0
222255 132.0
222300 133.0
222305 134.0
222310 135.0
222315 136.0
222320 137.0
222325 138.0
222330 139.0
222335 140.0
222340 141.0
222345 142.
222350 143.
222355 144.
230000 145.
230005 146.
230010 147.
230015 148.
230020 149.
230025 150.
230030 151.
230035 152.
230040 153.
230045 154.
230050 155.
230055 156.
230100 157.
230105 158.
230110 159.
230115 160.
230120 161.
230125 162.
230130 163.
230135 164.

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```
230145 166.         .      0  .         .         .         .         .         .         .         .         .         .         .
230150 167.         .   0     .         .         .         .         .         .         .         .         .         .         .
230155 168.         .  0      .         .         .         .         .         .         .         .         .         .         .
230200 169.         .0        .         .         .         .         .         .         .         .         .         .         .
230205 170.         0         .         .         .         .         .         .         .         .         .         .         .
230210 171.........0...............................................................................................................
230215 172.       0 .         .         .         .         .         .         .         .         .         .         .         .
230220 173.      0  .         .         .         .         .         .         .         .         .         .         .         .
230225 174.      0  .         .         .         .         .         .         .         .         .         .         .         .
230230 175.     0   .         .         .         .         .         .         .         .         .         .         .         .
230235 176.     0   .         .         .         .         .         .         .         .         .         .         .         .
230240 177.    0    .         .         .         .         .         .         .         .         .         .         .         .
230245 178.    0    .         .         .         .         .         .         .         .         .         .         .         .
230250 179.    0    .         .         .         .         .         .         .         .         .         .         .         .
230255 180.   0     .         .         .         .         .         .         .         .         .         .         .         .
230300 181....0....................................................................................................................
230305 182.   0     .         .         .         .         .         .         .         .         .         .         .         .
230310 183.   0     .         .         .         .         .         .         .         .         .         .         .         .
230315 184.   0     .         .         .         .         .         .         .         .         .         .         .         .
230320 185.  0      .         .         .         .         .         .         .         .         .         .         .         .
230325 186.  0      .         .         .         .         .         .         .         .         .         .         .         .
230330 187.  0      .         .         .         .         .         .         .         .         .         .         .         .
230335 188.  0      .         .         .         .         .         .         .         .         .         .         .         .
230340 189.  0      .         .         .         .         .         .         .         .         .         .         .         .
230345 190.  0      .         .         .         .         .         .         .         .         .         .         .         .
230350 191...0.....................................................................................................................
230355 192.  0      .         .         .         .         .         .         .         .         .         .         .         .
230400 193. 0       .         .         .         .         .         .         .         .         .         .         .         .
230405 194. 0       .         .         .         .         .         .         .         .         .         .         .         .
230410 195. 0       .         .         .         .         .         .         .         .         .         .         .         .
230415 196. 0       .         .         .         .         .         .         .         .         .         .         .         .
230420 197. 0       .         .         .         .         .         .         .         .         .         .         .         .
230425 198. 0       .         .         .         .         .         .         .         .         .         .         .         .
230430 199. 0       .         .         .         .         .         .         .         .         .         .         .         .
230435 200. 0       .         .         .         .         .         .         .         .         .         .         .         .
230440 201..0......................................................................................................................
230445 202. 0       .         .         .         .         .         .         .         .         .         .         .         .
230450 203. 0       .         .         .         .         .         .         .         .         .         .         .         .
230455 204. 0       .         .         .         .         .         .         .         .         .         .         .         .
230500 205. 0       .         .         .         .         .         .         .         .         .         .         .         .
230505 206. 0       .         .         .         .         .         .         .         .         .         .         .         .
230510 207. 0       .         .         .         .         .         .         .         .         .         .         .         .
230515 208. 0       .         .         .         .         .         .         .         .         .         .         .         .
230520 209. 0       .         .         .         .         .         .         .         .         .         .         .         .
230525 210. 0       .         .         .         .         .         .         .         .         .         .         .         .
230530 211..0......................................................................................................................
230535 212. 0       .         .         .         .         .         .         .         .         .         .         .         .
230540 213. 0       .         .         .         .         .         .         .         .         .         .         .         .
230545 214. 0       .         .         .         .         .         .         .         .         .         .         .         .
230550 215. 0       .         .         .         .         .         .         .         .         .         .         .         .
230555 216. 0       .         .         .         .         .         .         .         .         .         .         .         .
230600 217. 0       .         .         .         .         .         .         .         .         .         .         .         .
230605 218. 0       .         .         .         .         .         .         .         .         .         .         .         .
230610 219. 0       .         .         .         .         .         .         .         .         .         .         .         .
230615 220. 0       .         .         .         .         .         .         .         .         .         .         .         .
230620 221..0......................................................................................................................
230625 222. 0       .         .         .         .         .         .         .         .         .         .         .         .
230630 223. 0       .         .         .         .         .         .         .         .         .         .         .         .
230635 224. 0       .         .         .         .         .         .         .         .         .         .         .         .
230640 225. 0       .         .         .         .         .         .         .         .         .         .         .         .
230645 226. 0       .         .         .         .         .         .         .         .         .         .         .         .
230650 227. 0       .         .         .         .         .         .         .         .         .         .         .         .
230655 228. 0       .         .         .         .         .         .         .         .         .         .         .         .
230700 229. 0       .         .         .         .         .         .         .         .         .         .         .         .
230705 230. 0       .         .         .         .         .         .         .         .         .         .         .         .
230710 231..0......................................................................................................................
230715 232.  0      .         .         .         .         .         .         .         .         .         .         .         .
230720 233.  0      .         .         .         .         .         .         .         .         .         .         .         .
230725 234.  0      .         .         .         .         .         .         .         .         .         .         .         .
230730 235.  0      .         .         .         .         .         .         .         .         .         .         .         .
230735 236.  0      .         .         .         .         .         .         .         .         .         .         .         .
230740 237.  0      .         .         .         .         .         .         .         .         .         .         .         .
230745 238.  0      .         .         .         .         .         .         .         .         .         .         .         .
230750 239.  0      .         .         .         .         .         .         .         .         .         .         .         .
230755 240.  0      .         .         .         .         .         .         .         .         .         .         .         .
230800 241...0.....................................................................................................................
230805 242.  0      .         .         .         .         .         .         .         .         .         .         .         .
230810 243.  0      .         .         .         .         .         .         .         .         .         .         .         .
230815 244.  0      .         .         .         .         .         .         .         .         .         .         .         .
230820 245. 0       .         .         .         .         .         .         .         .         .         .         .         .
230825 246. 0       .         .         .         .         .         .         .         .         .         .         .         .
230830 247. 0       .         .         .         .         .         .         .         .         .         .         .         .
230835 248. 0       .         .         .         .         .         .         .         .         .         .         .         .
230840 249. 0       .         .         .         .         .         .         .         .         .         .         .         .
230845 250. 0       .         .         .         .         .         .         .         .         .         .         .         .
230850 251..0......................................................................................................................
230855 252. 0       .         .         .         .         .         .         .         .         .         .         .         .
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230905 254. 0      .         .         .         .         .         .         .         .         .         .         .         .
230910 255. 0      .         .         .         .         .         .         .         .         .         .         .         .
230915 256. 0      .         .         .         .         .         .         .         .         .         .         .         .
230920 257. 0      .         .         .         .         .         .         .         .         .         .         .         .
230925 258. 0      .         .         .         .         .         .         .         .         .         .         .         .
230930 259. 0      .         .         .         .         .         .         .         .         .         .         .         .
230935 260. 0      .         .         .         .         .         .         .         .         .         .         .         .
230940 261. 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
230945 262. 0      .         .         .         .         .         .         .         .         .         .         .         .
230950 263. 0      .         .         .         .         .         .         .         .         .         .         .         .
230955 264. 0      .         .         .         .         .         .         .         .         .         .         .         .
231000 265. 0      .         .         .         .         .         .         .         .         .         .         .         .
231005 266. 0      .         .         .         .         .         .         .         .         .         .         .         .
231010 267. 0      .         .         .         .         .         .         .         .         .         .         .         .
231015 268. 0      .         .         .         .         .         .         .         .         .         .         .         .
231020 269. 0      .         .         .         .         .         .         .         .         .         .         .         .
231025 270. 0      .         .         .         .         .         .         .         .         .         .         .         .
231030 271. 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
231035 272. 0      .         .         .         .         .         .         .         .         .         .         .         .
231040 273. 0      .         .         .         .         .         .         .         .         .         .         .         .
231045 274. 0      .         .         .         .         .         .         .         .         .         .         .         .
231050 275. 0      .         .         .         .         .         .         .         .         .         .         .         .
231055 276. 0      .         .         .         .         .         .         .         .         .         .         .         .
231100 277. 0      .         .         .         .         .         .         .         .         .         .         .         .
231105 278. 0      .         .         .         .         .         .         .         .         .         .         .         .
231110 279. 0      .         .         .         .         .         .         .         .         .         .         .         .
231115 280. 0      .         .         .         .         .         .         .         .         .         .         .         .
231120 281. 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
231125 282. 0      .         .         .         .         .         .         .         .         .         .         .         .
231130 283. 0      .         .         .         .         .         .         .         .         .         .         .         .
231135 284. 0      .         .         .         .         .         .         .         .         .         .         .         .
231140 285. 0      .         .         .         .         .         .         .         .         .         .         .         .
231145 286. 0      .         .         .         .         .         .         .         .         .         .         .         .
231150 287. 0      .         .         .         .         .         .         .         .         .         .         .         .
231155 288. 0      .         .         .         .         .         .         .         .         .         .         .         .
231200 289. 0      .         .         .         .         .         .         .         .         .         .         .         .
231205 290. 0      .         .         .         .         .         .         .         .         .         .         .         .
231210 291. 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
231215 292. 0      .         .         .         .         .         .         .         .         .         .         .         .
231220 293. 0      .         .         .         .         .         .         .         .         .         .         .         .
231225 294. 0      .         .         .         .         .         .         .         .         .         .         .         .
231230 295. 0      .         .         .         .         .         .         .         .         .         .         .         .
231235 296.0       .         .         .         .         .         .         .         .         .         .         .         .
231240 297.0       .         .         .         .         .         .         .         .         .         .         .         .
231245 298.0       .         .         .         .         .         .         .         .         .         .         .         .
231250 299.0       .         .         .         .         .         .         .         .         .         .         .         .
231255 300.0-------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
```

R2-19

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

                                PEAK    TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM     TIME OF
OPERATION        STATION        FLOW     PEAK       6-HOUR      24-HOUR      72-HOUR    AREA     STAGE     MAX STAGE

HYDROGRAPH AT        OF1         15.    12.42          2.          1.          1.       .02

ROUTED TO         DITCH2         15.    12.42          2.          1.          1.       .02

HYDROGRAPH AT          A         24.    12.75          5.          1.          1.       .04

2 COMBINED AT          A         36.    12.58          7.          2.          2.       .06

HYDROGRAPH AT        OF2         12.    12.58          2.          1.          1.       .02

ROUTED TO         DITCH1         12.    12.58          2.          1.          1.       .02

HYDROGRAPH AT        OF3          3.    12.58          0.          0.          0.       .00

2 COMBINED AT        OF3         15.    12.58          2.          1.          1.       .02

2 COMBINED AT        OF3         51.    12.58          9.          3.          3.       .08

ROUTED TO         DITCH3         50.    12.67          9.          3.          3.       .08

HYDROGRAPH AT          B         23.    12.75          5.          1.          1.       .04

2 COMBINED AT          B         72.    12.67         14.          4.          4.       .12

HYDROGRAPH AT          C         15.    12.75          3.          1.          1.       .02

2 COMBINED AT          C         87.    12.67         17.          5.          5.       .14
```

```
                                       SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                          (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                              INTERPOLATED TO
                                                                           COMPUTATION INTERVAL
          ISTAQ    ELEMENT       DT        PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO       VOLUME
                                                     PEAK                                     PEAK

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

           DITCH2  MANE          5.00     14.95     745.00      1.17      5.00     14.95    745.00         1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1094E+01 EXCESS= .0000E+00 OUTFLOW= .1094E+01 BASIN STORAGE= .6151E-03 PERCENT ERROR=    -.1

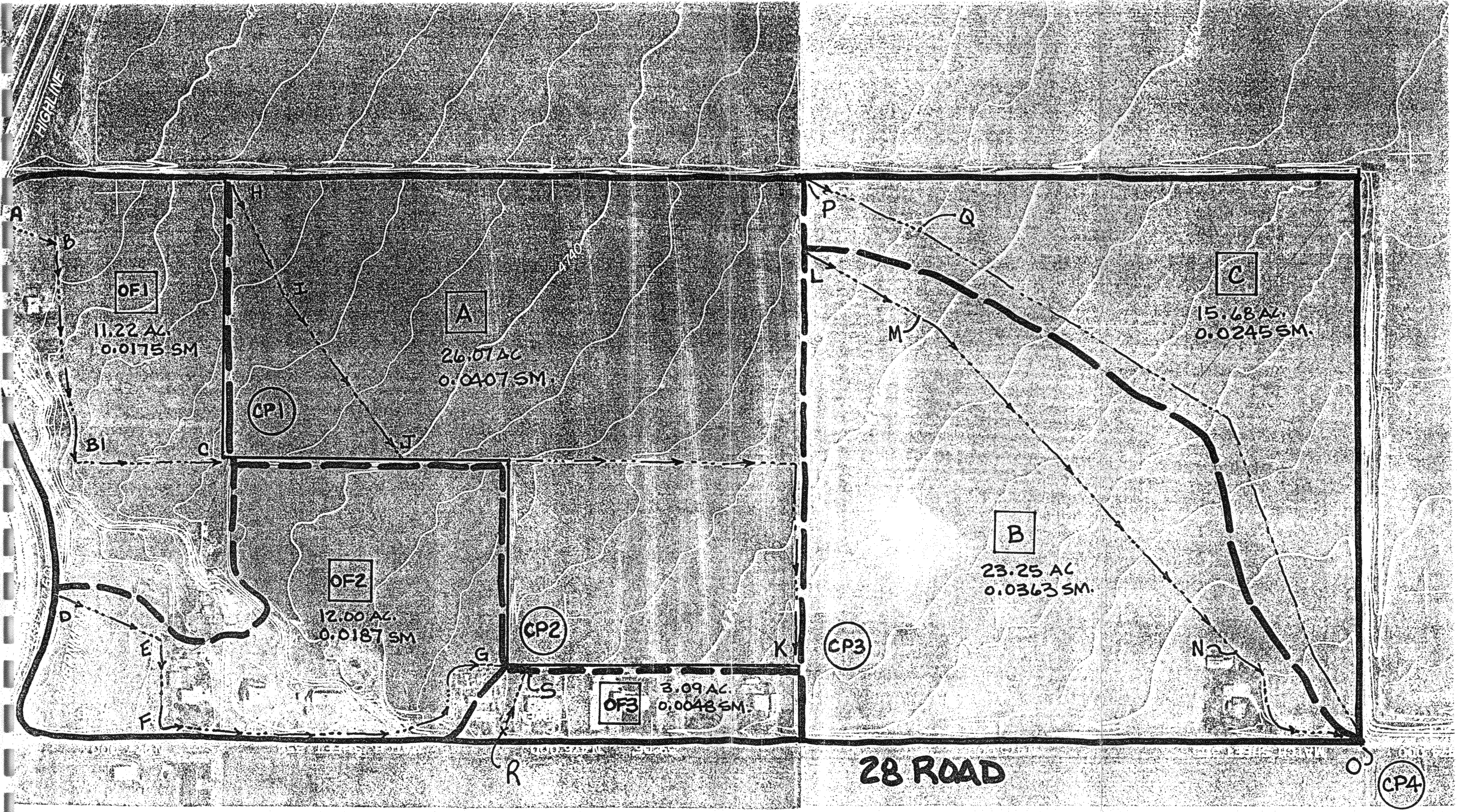
           DITCH1  MANE          2.33     12.36     755.35      1.17      5.00     12.34    755.00         1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1168E+01 EXCESS= .0000E+00 OUTFLOW= .1168E+01 BASIN STORAGE= .5788E-03 PERCENT ERROR=     .0

           DITCH3  MANE          4.31     50.34     759.08      1.23      5.00     50.18    760.00         1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5376E+01 EXCESS= .0000E+00 OUTFLOW= .5371E+01 BASIN STORAGE= .9706E-02 PERCENT ERROR=    -.1


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



N

1" = 200'

HISTORIC WATERSHED & ROUTING MAP

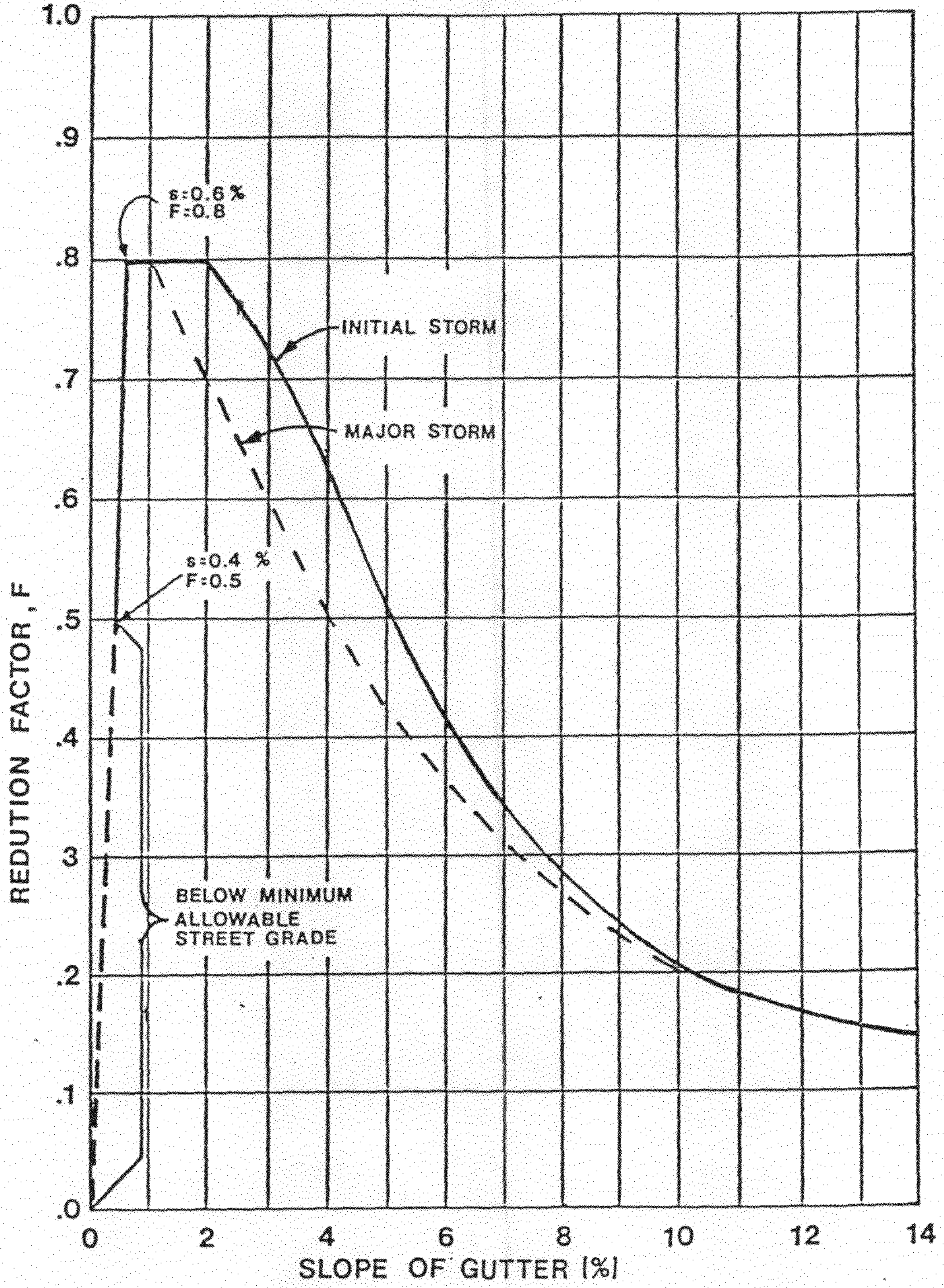


FIGURE 6-2 REDUCTION FACTOR FOR ALLOWABLE GUTTER CAPACITY LOCAL AND COLLECTOR STREETS

APPLY REDUCTION FACTOR FOR APPLICABLE SLOPE TO THE THEORETICAL GUTTER CAPACITY TO OBTAIN ALLOWABLE GUTTER CAPACITY APPROACHING ARTERIAL STREET

ALLOWABLE USE OF ROADS AND OF CROSS ROAD FLOW AS PART OF DRAINAGE SYSTEM DURING MINOR AND MAJOR STORM RUNOFF

STREET CLASSIFICATION	MINOR STORM (maximum roadway encroachment)	MAJOR STORM (allowable depth and inundation)
Local, Lane and Place (Residential or Subcollector)	Flow may spread to crown of street.	Residential dwellings, public, commercial, and industrial buildings. Access shall not be inundated at ground line, unless buildings are flood-proofed. Depth of water over gutter flow line shall not exceed 18".
URBAN SECTION	No curb overtopping.	
RURAL SECTION	Encroachment shall not extend over property line.	
Collector (Residential Collector, and Collector)	One traffic lane must remain free of inundation for both URBAN and RURAL SECTIONS	(same as above)
Arterial	One traffic lane in each direction must remain free of inundation for both URBAN and RURAL SECTIONS	(same as above) Depth of water at street crown shall not exceed 6", to allow for operation of emergency vehicles.

ALLOWABLE CROSS STREET FLOW

STREET CLASSIFICATION	MINOR STORM	MAJOR STORM
Local, Lane, Place and Collector (Residential Access, Subcollector, Residential Collector and Collector)	Where cross pan exists allowed depth of flow shall not exceed 6"	Depth of water over gutter flow line shall not exceed 18"
Arterial	None	Depth of water at crown shall not exceed 6"

STREET CARRING CAPACITY (2 YEAR)

PROJECT: GRAND VIEW SUBDIVISION
LOCATION: CITY OF GRAND JUNCTION, COLORADO
DATE: Jun-94

Street Information:
R.O.W. Width = 44.00 FT. Flow Area = 2.77 SF.
Flowline Width = 31.00 FT.
Classification = URBAN RES.
Mannings = 0.015
Max. Depth = 0.41 FT. To Top Back Of Curb
Str/ X-Slope = 2.00 %
Gutter Slope = 8.33 % Drive Over Curb, Gutter and
Sidewalk Slope = 2.08 % 1/4" / FT.
Roadside Slope = 2.08 % 1/4" / FT.

SLOPE OF STREET %	REDUCTION FACTOR FOR SLOPE	ALLOWABLE CAPACITY C.F.S.	VELOCITY F.P.S.
0.60	0.80	5.15	1.86
0.65	0.80	5.36	1.94
0.70	0.80	5.56	2.01
0.75	0.80	5.76	2.08
0.77	0.80	5.84	2.11
0.80	0.80	5.95	2.15
0.81	0.80	5.99	2.16
0.83	0.80	6.06	2.19
0.86	0.80	6.17	2.23
0.94	0.80	6.45	2.33
1.00	0.80	6.65	2.40
1.05	0.80	6.81	2.46
1.09	0.80	6.94	2.51
1.18	0.80	7.22	2.61
1.24	0.80	7.41	2.67
1.65	0.80	8.54	3.08
2.50	0.76	9.99	3.61

Formula: $Oa = F \times (1.49/N) \times R^{2/3} \times S^{1/2} \times A$
F = Reduction Factor For Slope
N = Mannings Coefficient = 0.0150
R = Hydraulic Radius = A/WP =0.1661
A = Cross Sectional Area Sq.Ft. = 2.770
WP = Wetted Perimeter Ft. = 16.679
S = Street Slope FT./FT.

NOTE: USE this sheet to CALLULATE TRAVEL TIME Tt FOR INPUT INTO WORKSHEET 3. DEVELOPED CONDITION.

STREET CARRING CAPACITY (100 YEAR)

PROJECT: GRAND VIEW SUBDIVISION
LOCATION: CITY OF GRAND JUNCTION, COLORADO
DATE: Jun-94

Street Information:
R.O.W. Width = 44.00 FT. Flow Area = 25.45 SF.
Flowline Width = 31.00 FT.
Classification = URBAN
Mannings = 0.015
Max. Depth = 1.5 FT. Above Flowline
Str/ X-Slope = 2.00 %
Gutter Slope = 8.33 % Drive Over Curb, Gutter and
Sidewalk Slope = 2.08 % 1/4" / FT.
Roadside Slope = 2.08 % 1/4" / FT.

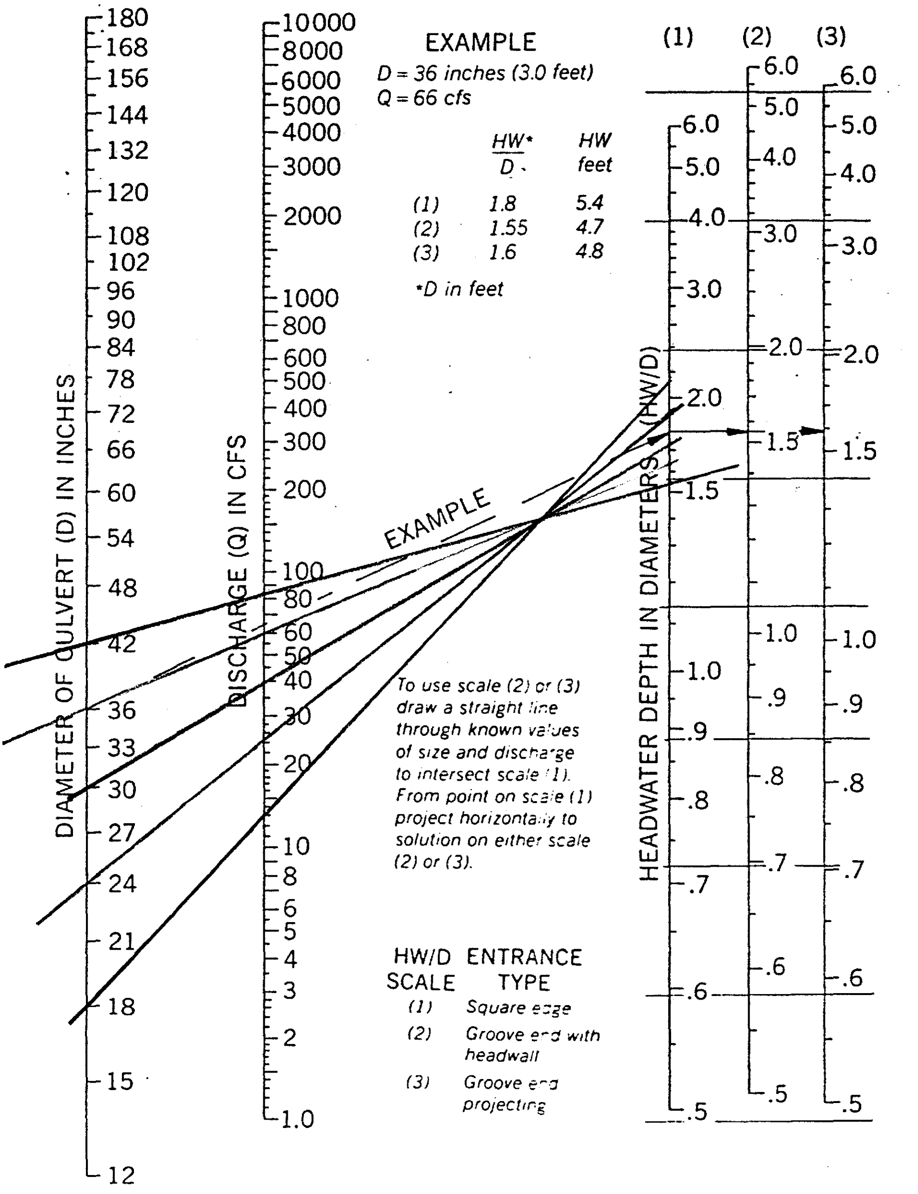
SLOPE OF STREET %	REDUCTION FACTOR FOR SLOPE	ALLOWABLE CAPACITY C.F.S.	VELOCITY F.P.S.
0.60	0.80	161.82	6.36
0.65	0.80	168.43	6.62
0.70	0.80	174.79	6.87
0.75	0.80	180.92	7.11
0.77	0.80	183.32	7.20
0.80	0.80	186.86	7.34
0.81	0.80	188.02	7.39
0.83	0.80	190.33	7.48
0.86	0.80	193.74	7.61
0.94	0.80	202.55	7.96
1.00	0.80	208.91	8.21
1.05	0.80	214.07	8.41
1.09	0.80	218.11	8.57
1.18	0.80	226.94	8.92
1.24	0.80	232.64	9.14
1.65	0.80	268.35	10.54
2.50	0.76	313.81	12.33

Formula: $Oa = F \times (1.49/N) \times R^{2/3} \times S^{1/2} \times A$
F = Reduction Factor For Slope
N = Mannings Coefficient = 0.0150
R = Hydraulic Radius = A/WP =1.0497
A = Cross Sectional Area Sq.Ft. = 25.453
WP = Wetted Perimeter Ft. = 24.248
S = Street Slope FT./FT.

GRAND VIEW SUBDIVISION

FIGURE 33

HEADWATER DEPTH FOR CIRCULAR CONCRETE PIPE CULVERTS WITH INLET CONTROL



EXAMPLE

D = 36 inches (3.0 feet)
Q = 66 cfs

	HW / D*	*HW feet*
(1)	*1.8*	*5.4*
(2)	*1.55*	*4.7*
(3)	*1.6*	*4.8*

**D in feet*

To use scale (2) or (3) draw a straight line through known values of size and discharge to intersect scale (1). From point on scale (1) project horizontally to solution on either scale (2) or (3).

HW/D SCALE	ENTRANCE TYPE
(1)	*Square edge*
(2)	*Groove end with headwall*
(3)	*Groove end projecting*

BUREAU OF PUBLIC ROADS JAN. 1963

HEADWATER SCALES 2&3
REVISED MAY 1964

SIZE	HW/D =	Q CFS
24"	3.81/2.0 = 1.91	24.5 CFS
30"	4.35/2.5 = 1.74	39.5 CFS
36"	4.90/3.0 = 1.63	60.0 CFS
42"	5.44/3.5= 1.55	84.0 CFS
18"	3.25/1.5= 2.17	13.0 CFS

```
                Circular Channel Analysis & Design
                  Solved with Manning's Equation

                     Open Channel - Uniform flow


Worksheet Name: STORM SEWER B1

Comment: INLET NO.1 TO INLET NO. 2

Solve For Full Flow Capacity

Given Input Data:
         Diameter..........     1.50 ft     PRELIMINARY SIZE
         Slope.............     0.0100 ft/ft
         Manning's n.......     0.013
         Discharge.........    10.50 cfs

Computed Results:
    Full Flow Capacity.....    10.50 cfs   INLET CONTROL = 13.0 CFS
    Full Flow Depth........     1.50 ft
         Velocity..........     5.94 fps
         Flow Area.........     1.77 sf
         Critical Depth....     1.25 ft
         Critical Slope....     0.0098 ft/ft
         Percent Full......   100.00 %
         Full Capacity.....    10.50 cfs
         QMAX @.94D........    11.30 cfs
         Froude Number.....     FULL
```

```
  Open Channel Flow Module, Version 3.16 (c) 1990
  Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708
```

```
                  Circular Channel Analysis & Design
                    Solved with Manning's Equation

                     Open Channel - Uniform flow

Worksheet Name: STORM SEWER A-1

Comment: INLET NO. 2 TO NO. 3 AND OUTFALL

Solve For Full Flow Capacity

Given Input Data:
         Diameter..........     3.00 ft     PRELIMINARY SIZE
         Slope.............     0.0060 ft/ft
         Manning's n.......     0.013
         Discharge.........    51.66 cfs

Computed Results:
     Full Flow Capacity.....    51.66 cfs   INLET CONTROL = 60.0 CFS
     Full Flow Depth........     3.00 ft
         Velocity..........      7.31 fps
         Flow Area.........      7.07 sf
         Critical Depth....      2.34 ft
         Critical Slope....      0.0066 ft/ft
         Percent Full......    100.00 %
         Full Capacity.....     51.66 cfs
         QMAX @.94D........     55.58 cfs
         Froude Number.....      FULL




  Open Channel Flow Module, Version 3.16 (c) 1990
  Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708
```

Worksheet 2: Runoff curve number and runoff

Project GRAND VIEW SUB By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ______

Circle one: Present [✓ Developed] SUB-BASINS A1, A2 AND A3

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/			Area ☐ acres ☐ mi² ☒ %	Product of CN x area
		Table ~~2-2~~ 408	Fig. 2-3	Fig. 2-4		
(Rf) RAVOLA VERY FINE SANDY LOAM "B"	RES. LOTS, ROADWAYS	94			33	3102
(Bc) BILLINGS SILTY CLAY LOAM "C"	RES. LOTS, ROADWAYS	96			67	6432
				Totals =	100	9534

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = $\frac{9534}{100}$ = 95.34 ; Use CN = $\boxed{95}$

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	N/A		
Rainfall, P (24-hour)	in	N/A		
Runoff, Q .... (Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)	in	N/A		

DEVELOPED

SUB-BASIN SUMMARY

SUB-BASIN HISTORIC	AREA AC.	AREA SM.	HYDRO. SOIL GROUP	SCS CN
OF1	11.22	0.0175	B	91
OF2	12.00	0.0187	B	91
OF3	3.09	0.0048	B	88
A1	18.62	0.0291	B & C	95
A2	3.27	0.0051	B & C	95
A3	3.38	0.0053	B & C	95
B1	0.31	0.0005	C	96
B2	0.29	0.0005	C	96
B3	4.36	0.0068	C	96
B4	3.73	0.0058	C	96
B5	0.40	0.0006	C	96
C1	11.99	0.0187	C	96
C2	3.15	0.0049	C	96
C3	1.24	0.0019	C	96
D1	1.58	0.0025	C	96
D2	9.60	0.0150	C	96
D3	0.75	0.0012	C	96
D4	2.33	0.0036	C	96
E1	0.55	0.0009	C	91
TOTAL	91.86	0.1435		

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN A1

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		A-B		
1. Surface description (table 3-1)		RES LOT		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	165		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.02		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr	1.027	+	= 1.027

Shallow concentrated flow Segment ID		B-C	C-D	
7. Surface description (paved or unpaved)		PAVED	ROAD	
8. Flow length, L	ft	689	687	
9. Watercourse slope, s	ft/ft	0.01	0.007	
10. Average velocity, V (figure ~~3-1~~) 402	ft/s	2.40	2.01	
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.080	+ 0.095	= 0.175

Channel flow Segment ID		D-E	E-F	
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET	FOR STREETS	
15. Channel slope, s	ft/ft	0.012	0.006	
16. Manning's roughness coeff., n		0.015	0.015	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.67	1.86	
18. Flow length, L	ft	376	202	
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.039	+ 0.030	= 0.069
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			1.271

$T_{LAG} = 0.60\ (1.271) = 0.763$ HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN A1

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		A-B				
1. Surface description (table 3-1)		RES. LOT				
2. Manning's roughness coeff., n (table 3-1) ..		0.35				
3. Flow length, L (total L ≤ 300 ft)	ft	165				
4. 100 ~~Two-yr~~ 24-hr rainfall, ~~P_2~~ P_{100}	in	2.01				
5. Land slope, s	ft/ft	0.02				
6. $T_t = \frac{0.007\,(nL)^{0.8}}{\cancel{P_2}_{100}^{0.5}\, s^{0.4}}$ Compute T_t	hr	0.606	+		=	0.606
Shallow concentrated flow Segment ID		B-C		C-D		
7. Surface description (paved or unpaved)		PAVED		ROAD		
8. Flow length, L	ft	689		687		
9. Watercourse slope, s	ft/ft	0.01		0.007		
10. Average velocity, V (figure ~~3-1~~ 402	ft/s	2.40		2.01		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.080	+	0.095	=	0.175
Channel flow Segment ID		D-E		E-F		
12. Cross sectional flow area, a	ft^2	SEE				
13. Wetted perimeter, p_w	ft	CALC.				
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEETS		FOR STREETS		
15. Channel slope, s	ft/ft	0.012		0.006		
16. Manning's roughness coeff., n		0.015		0.015		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.67		1.86		
18. Flow length, L	ft	376		202		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.039	+	0.030	=	0.069
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr					0.850

TLAG = 0.60 (0.850) = 0.510 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked _____ Date _____

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN A2

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		6-H				
1. Surface description (table 3-1)		RES. LOT				
2. Manning's roughness coeff., n (table 3-1) ..		0.35				
3. Flow length, L (total L ≤ 300 ft)	ft	115				
4. Two-yr 24-hr rainfall, P_2	in	0.70				
5. Land slope, s	ft/ft	0.030				
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr	0.654	+		=	0.654
Shallow concentrated flow Segment ID		H-I		I-J		
7. Surface description (paved or unpaved)		PAVED		ROAD		
8. Flow length, L	ft	514		244		
9. Watercourse slope, s	ft/ft	0.010		0.0075		
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	2.40		2.08		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.059	+	0.033	=	0.092
Channel flow Segment ID		I-J2				
12. Cross sectional flow area, a	ft^2	SEE				
13. Wetted perimeter, p_w	ft	CALC.				
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET FOR STREETS				
15. Channel slope, s	ft/ft	0.0118				
16. Manning's roughness coeff., n		0.015				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.61				
18. Flow length, L	ft	90				
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.010	+		=	0.010
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr					0.756

TLAG = 0.60 (0.756) = 0.454 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN A2

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

Segment ID		G-H		
1. Surface description (table 3-1)		RES LOT		
2. Manning's roughness coeff., n (table 3-1)		0.35		
3. Flow length, L (total L ≤ 300 ft)	ft	115		
4. 100 ~~Two-yr~~ 24-hr rainfall, $P_{\cancel{2}\,100}$	in	2.01		
5. Land slope, s	ft/ft	0.030		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_{\cancel{2}\,100}^{0.5}\,s^{0.4}}$ Compute T_t	hr	0.386	+	= 0.386

Shallow concentrated flow

Segment ID		H-I	I-J	
7. Surface description (paved or unpaved)		PAVED ROAD		
8. Flow length, L	ft	514	244	
9. Watercourse slope, s	ft/ft	0.010	0.0075	
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	2.40	2.08	
11. $T_t = \frac{L}{3600\,V}$ Compute T_t	hr	0.059	+ 0.033	= 0.092

Channel flow

Segment ID		J-J2		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	Sheets FOR STREETS		
15. Channel slope, s	ft/ft	0.0118		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ Compute V	ft/s	2.61		
18. Flow length, L	ft	90		
19. $T_t = \frac{L}{3600\,V}$ Compute T_t	hr	0.010	+	= 0.010

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) .... hr 0.488

TLAG = 0.60 (0.488) = 0.293 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN A3

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		J1-J2		
1. Surface description (table 3-1)		Res. Lot		
2. Manning's roughness coeff., n (table 3-1)		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	100		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.02		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$ Compute T_t	hr	0.688	+	= 0.688
Shallow concentrated flow Segment ID		J2-K	K-L	
7. Surface description (paved or unpaved)		Paved	Road	
8. Flow length, L	ft	352	439	
9. Watercourse slope, s	ft/ft	0.0118	0.0077	
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	2.61	2.11	
11. $T_t = \frac{L}{3600\,V}$ Compute T_t	hr	0.037	+ 0.058	= 0.095
Channel flow Segment ID		L-L1		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	Sheet	FOR STREETS	
15. Channel slope, s	ft/ft	0.0060		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ Compute V	ft/s	1.86		
18. Flow length, L	ft	175		
19. $T_t = \frac{L}{3600\,V}$ Compute T_t	hr	0.026	+	= 0.026
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.809

TLAG = 0.60 (0.809) = 0.485 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ______ Date ______

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN A3

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)	Segment ID		J1-J2		
1. Surface description (table 3-1)			RES LOT		
2. Manning's roughness coeff., n (table 3-1)			0.35		
3. Flow length, L (total L $\leq$ 300 ft)		ft	100		
4. ~~Two-yr~~ 100 24-hr rainfall, $P_{\cancel{2}\,100}$		in	2.01		
5. Land slope, s		ft/ft	0.02		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_{\cancel{2}\,100}^{0.5}\ s^{0.4}}$	Compute T_t	hr	0.406	+	= 0.406

Shallow concentrated flow	Segment ID		J2-K	K-L	
7. Surface description (paved or unpaved)			PAVED	ROAD	
8. Flow length, L		ft	352	439	
9. Watercourse slope, s		ft/ft	0.0118	0.0077	
10. Average velocity, V (figure ~~3-1~~ 402)		ft/s	2.61	2.11	
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	0.037	+ 0.058	= 0.095

Channel flow	Segment ID		L-L1		
12. Cross sectional flow area, a		ft^2	SEE		
13. Wetted perimeter, p_w		ft	CALC		
14. Hydraulic radius, $r = \frac{a}{p_w}$	Compute r	ft	SHEETS	FOR STREETS	
15. Channel slope, s		ft/ft	0.0060		
16. Manning's roughness coeff., n			0.015		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s	1.86		
18. Flow length, L		ft	175		
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	0.026	+	= 0.026

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) .... hr 0.527

TLAG = 0.60 (0.527) = 0.316 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed]

2 YEAR STORM

Circle one: T_c T_t through subarea

SUB-BASIN B1, B2 & B5

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		M-N		
1. Surface description (table 3-1)		TURF AREA		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	20		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.33		
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t	hr	0.062	+	= 0.062

Shallow concentrated flow Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~) 402	ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+	=

Channel flow Segment ID		N-O		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET		
15. Channel slope, s	ft/ft	0.0051		
16. Manning's roughness coeff., n		0.030		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.39		
18. Flow length, L	ft	305		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.036	+	= 0.036
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.098

TLAG = 0.60 (0.098) = 0.059 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN B1, B2 & B5

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		M-N		
1. Surface description (table 3-1)		TURF AREA		
2. Manning's roughness coeff., n (table 3-1)		0.35		
3. Flow length, L (total L ≤ 300 ft)	ft	20		
4. ~~Two-yr~~ 100 24-hr rainfall, ~~P_2~~ P_{100}	in	2.01		
5. Land slope, s	ft/ft	0.33		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_{100}^{0.5}\,s^{0.4}}$ Compute T_t	hr	0.037	+	= 0.037

Shallow concentrated flow Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \frac{L}{3600\,V}$ Compute T_t	hr		+	=

Channel flow Segment ID		N-O		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	sheet		
15. Channel slope, s	ft/ft	0.0051		
16. Manning's roughness coeff., n		0.030		
17. $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ Compute V	ft/s	3.43		
18. Flow length, L	ft	305		
19. $T_t = \frac{L}{3600\,V}$ Compute T_t	hr	0.025	+	= 0.025

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) .... hr 0.062

TLAG = 0.60 (0.062) = 0.037 HOURS

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                Trapezoidal Channel Analysis & Design
                    Open Channel - Uniform flow

Worksheet Name: 28 ROAD

Comment: DETENTION CHANNEL ALONG 28 ROAD - 2 YEAR

Solve For Depth

Given Input Data:

        Bottom Width.....      2.00 ft
        Left Side Slope..      3.00:1 (H:V)
        Right Side Slope.      3.00:1 (H:V)
        Manning's n......      0.030
        Channel Slope....      0.0051 ft/ft
        Discharge........     10.32 cfs  2 — 0.20 CFS/AC

Computed Results:

        Depth............      0.91 ft
        Velocity.........      2.39 fps — INITIAL ESTIMATE
        Flow Area........      4.32 sf
        Flow Top Width...      7.47 ft
        Wetted Perimeter.      7.77 ft
        Critical Depth...      0.67 ft
        Critical Slope...      0.0180 ft/ft
        Froude Number....      0.55 (flow is Subcritical)




  Open Channel Flow Module, Version 3.16 (c) 1990
  Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708
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                 Trapezoidal Channel Analysis & Design
                     Open Channel - Uniform flow

         Worksheet Name: 28 ROAD

         Comment: DETENTION CHANNEL ALONG 28 ROAD - 100 YEAR

         Solve For Depth

         Given Input Data:

                 Bottom Width.....      2.00 ft
                 Left Side Slope..      3.00:1 (H:V)
                 Right Side Slope.      3.00:1 (H:V)
                 Manning's n......      0.030
                 Channel Slope....      0.0051 ft/ft
                 Discharge........     42.00 cfs ≈ 0.80 CFS/AC.

         Computed Results:

                 Depth............      1.71 ft
                 Velocity.........      3.43 fps - INITIAL EST.
                 Flow Area........     12.25 sf
                 Flow Top Width...     12.29 ft
                 Wetted Perimeter.     12.85 ft
                 Critical Depth...      1.35 ft
                 Critical Slope...      0.0149 ft/ft
                 Froude Number....      0.60 (flow is Subcritical)




           Open Channel Flow Module, Version 3.16 (c) 1990
           Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708
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DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN B3

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		S-T		
1. Surface description (table 3-1)		RES. LOT		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	55		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.020		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr	0.426 +		= 0.426
Shallow concentrated flow Segment ID		T-U		
7. Surface description (paved or unpaved)		PAVED ROAD		
8. Flow length, L	ft	600		
9. Watercourse slope, s	ft/ft	0.0081		
10. Average velocity, V (figure ~~3-1~~) 402	ft/s	2.16		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.077 +		= 0.077
Channel flow Segment ID		U-V		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET FOR STREETS		
15. Channel slope, s	ft/ft	0.0065		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	1.94		
18. Flow length, L	ft	264		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.038 +		= 0.038
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.541

TLAG = 0.60 (0.541) = 0.325 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94
Location GRAND JUNCTION Checked ____ Date ____
Circle one: Present [✓ Developed] 100 YEAR STORM
Circle one: T_c T_t through subarea SUB-BASIN B3

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		S-T		
1. Surface description (table 3-1)		RES. LOT		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	55		
4. ~~Two-yr~~ 100 24-hr rainfall, $P_{\cancel{2}}$ 100	in	2.01		
5. Land slope, s	ft/ft	0.020		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_{\cancel{2}}^{0.5}\ s^{0.4}}$ 100 Compute T_t	hr	0.252 +		= 0.252

Shallow concentrated flow Segment ID		T-U		
7. Surface description (paved or unpaved)		PAVED	ROAD	
8. Flow length, L	ft	600		
9. Watercourse slope, s	ft/ft	0.0081		
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	2.16		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.077 +		= 0.077

Channel flow Segment ID		U-V		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET	FOR STREETS	
15. Channel slope, s	ft/ft	0.0065		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	1.94		
18. Flow length, L	ft	264		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.038 +		= 0.038
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.367

TLAG = 0.60 (0.367) = 0.220 HOURS

(210-VI-TR-55, Second Ed., June 1986)

MCSDCM

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN B4

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

Segment ID		P-Q		
1. Surface description (table 3-1)		RES. LOT		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\le$ 300 ft)	ft	110		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.020		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$ Compute T_t	hr	0.742 +		= 0.742

Shallow concentrated flow

Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	+		=

Channel flow

Segment ID		Q-R		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET FOR STREETS		
15. Channel slope, s	ft/ft	0.0086		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.23		
18. Flow length, L	ft	801		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.100 +		= 0.100
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.842

TLAG = 0.60 (0.842) = 0.505 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN B4

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)	Segment ID	P-Q		
1. Surface description (table 3-1)		Res. Lot		
2. Manning's roughness coeff., n (table 3-1)		0.35		
3. Flow length, L (total L ≤ 300 ft)	ft	110		
4. ~~Two-yr~~ 100 24-hr rainfall, $P_{\cancel{2}}$ 100	in	2.01		
5. Land slope, s	ft/ft	0.020		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_{\cancel{2}}^{0.5}\, s^{0.4}}$ 100 Compute T_t	hr	0.438 +		= 0.438
Shallow concentrated flow	Segment ID	N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	+		=
Channel flow	Segment ID	Q-R		
12. Cross sectional flow area, a	ft^2	See		
13. Wetted perimeter, p_w	ft	Coll.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	Sheets For Streets		
15. Channel slope, s	ft/ft	0.0086		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.23		
18. Flow length, L	ft	801		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.100 +		= 0.100
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.538

TLAG = 0.60 (0.538) = 0.323 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ______ Date ______

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN C1

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		W-X				
1. Surface description (table 3-1)		Res, Lot				
2. Manning's roughness coeff., n (table 3-1) ..		0.35				
3. Flow length, L (total L $\le$ 300 ft)	ft	160				
4. Two-yr 24-hr rainfall, P_2	in	0.70				
5. Land slope, s	ft/ft	0.020				
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr	1.002	+		=	1.002
Shallow concentrated flow Segment ID		X-Y		Y-Z		
7. Surface description (paved or unpaved)		PAVED ROAD				
8. Flow length, L	ft	375		786		
9. Watercourse slope, s	ft/ft	0.0105		0.0070		
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	2.46		2.01		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.042	+	0.109	=	0.151
Channel flow Segment ID		Z-AA				
12. Cross sectional flow area, a	ft^2	SEE				
13. Wetted perimeter, p_w	ft	CALC.				
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEETS FOR STREETS				
15. Channel slope, s	ft/ft	0.0063				
16. Manning's roughness coeff., n		0.015				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	1.94				
18. Flow length, L	ft	312				
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.045	+		=	0.045
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr					1.198

TLAG = 0.60 (1.198) = 0.719 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN C1

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		W-X		
1. Surface description (table 3-1)		RES. LOT		
2. Manning's roughness coeff., n (table 3-1)		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	160		
4. ~~Two-yr~~ 100 24-hr rainfall, $P_{\cancel{2}}$ 100	in	2.01		
5. Land slope, s	ft/ft	0.020		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_{\cancel{2}\,100}^{0.5}\,s^{0.4}}$ Compute T_t	hr	0.591	+	= 0.591
Shallow concentrated flow Segment ID		X-Y	Y-Z	
7. Surface description (paved or unpaved)		PAVED	ROAD	
8. Flow length, L	ft	375	786	
9. Watercourse slope, s	ft/ft	0.0105	0.0070	
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	2.46	2.01	
11. $T_t = \frac{L}{3600\,V}$ Compute T_t	hr	0.042	+ 0.109	= 0.151
Channel flow Segment ID		Z-AA		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEETS FOR STREETS		
15. Channel slope, s	ft/ft	0.0063		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ Compute V	ft/s	1.94		
18. Flow length, L	ft	312		
19. $T_t = \frac{L}{3600\,V}$ Compute T_t	hr	0.045	+	= 0.045
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.787

TLAG = 0.60 (0.787) = 0.472 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN C2

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		AB-AC		
1. Surface description (table 3-1)		RES. LOT		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L ≤ 300 ft)	ft	230		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.0128		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr	1.600	+	= 1.600
Shallow concentrated flow Segment ID		AC-AD		
7. Surface description (paved or unpaved)		PAVED ROAD		
8. Flow length, L	ft	110		
9. Watercourse slope, s	ft/ft	0.025		
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	3.61		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.009	+	= 0.009
Channel flow Segment ID		AD-AE		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEETS FOR STREETS		
15. Channel slope, s	ft/ft	0.0064		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	1.94		
18. Flow length, L	ft	410		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.059	+	= 0.059
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			1.668

TLAG = 0.60 (1.668) = 1.000 HOURS

(210-VI-TR-55, Second Ed., June 1986)

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DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94
Location GRAND JUNCTION Checked ____ Date ____
Circle one: Present [✓ Developed] 100 YEAR STORM
Circle one: T_c T_t through subarea SUB-BASIN C2

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)	Segment ID	AB-AC			
1. Surface description (table 3-1)		RES LOT			
2. Manning's roughness coeff., n (table 3-1)		0.35			
3. Flow length, L (total L ≤ 300 ft)	ft	230			
4. ~~Two-yr~~ 100 24-hr rainfall, $P_{\cancel{2}\,100}$	in	2.01			
5. Land slope, s	ft/ft	0.0128			
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_{\cancel{2}\,100}^{0.5}\,s^{0.4}}$ Compute T_t	hr	0.945	+		= 0.945
Shallow concentrated flow	Segment ID	AC-AD			
7. Surface description (paved or unpaved)		PAVED	ROAD		
8. Flow length, L	ft	110			
9. Watercourse slope, s	ft/ft	0.025			
10. Average velocity, V (figure ~~[illegible]~~ 402)	ft/s	3.61			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.009	+		= 0.009
Channel flow	Segment ID	AD-AE			
12. Cross sectional flow area, a	ft^2	SEE			
13. Wetted perimeter, p_w	ft	CALL.			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEETS	FOR STREETS		
15. Channel slope, s	ft/ft	0.0064			
16. Manning's roughness coeff., n		0.015			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	1.94			
18. Flow length, L	ft	410			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.059	+		= 0.059
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr				1.013

TLAG = 0.60 (1.013) = 0.608 HOURS

(210-VI-TR-55, Second Ed., June 1986)

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN C3

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		AI-AJ		
1. Surface description (table 3-1)		Res. Lot		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	50		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.020		
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t	hr	0.395	+	= 0.395
Shallow concentrated flow Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1)~~ 402	ft/s			
11. $T_t = \frac{L}{3600 V}$ Compute T_t	hr		+	=
Channel flow Segment ID		AJ-AK		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEETS FOR STREETS		
15. Channel slope, s	ft/ft	0.007		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V	ft/s	2.01		
18. Flow length, L	ft	180		
19. $T_t = \frac{L}{3600 V}$ Compute T_t	hr	0.025	+	= 0.025
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.420

TLAG = 0.60 (0.420) = 0.252 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN C3

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		AI-AJ		
1. Surface description (table 3-1)		Res. Lot		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	50		
4. ~~Two-yr~~ 100 24-hr rainfall, $P_{\cancel{2}}$ 100	in	2.01		
5. Land slope, s	ft/ft	0.020		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_{\cancel{2}\ 100}^{0.5}\ s^{0.4}}$ Compute T_t	hr	0.233	+	= 0.233

Shallow concentrated flow Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+	=

Channel flow Segment ID		AJ-AK		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	Sheets For STREETS		
15. Channel slope, s	ft/ft	0.007		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.01		
18. Flow length, L	ft	180		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.025	+	= 0.025

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) .... hr 0.258

TLAG = 0.60 (0.258) = 0.155 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ______ Date ______

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN D1

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		AF-AG		
1. Surface description (table 3-1)		Res. Lot		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	50		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.020		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr	0.395 +		= 0.395

Shallow concentrated flow Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	+		=

Channel flow Segment ID		AG-AH		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALL.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET FOR STREETS		
15. Channel slope, s	ft/ft	0.0094		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.33		
18. Flow length, L	ft	687		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.082 +		= 0.082
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.477

TLAG = 0.60 (0.477) = 0.286 HOURS

(210-VI-TR-55, Second Ed., June 1986)

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ______ Date ______

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN D1

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		AF-AG		
1. Surface description (table 3-1)		Res. Lot		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	50		
4. ~~Two-yr~~ 100 24-hr rainfall, ~~P_2~~ P_{100}	in	2.01		
5. Land slope, s	ft/ft	0.020		
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_{100}^{0.5} s^{0.4}}$ Compute T_t	hr	0.233	+	= 0.233
Shallow concentrated flow Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \frac{L}{3600 V}$ Compute T_t	hr		+	=
Channel flow Segment ID		AG-AH		
12. Cross sectional flow area, a	ft^2	See		
13. Wetted perimeter, p_w	ft	Calc.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	Sheets	For Streets	
15. Channel slope, s	ft/ft	0.0094		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V	ft/s	2.33		
18. Flow length, L	ft	687		
19. $T_t = \frac{L}{3600 V}$ Compute T_t	hr	0.082	+	= 0.082
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.315

TLAG = 0.60 (0.315) = 0.189 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN D2

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		AL-AM		
1. Surface description (table 3-1)		Res. Lot		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	150		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.0167		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$ Compute T_t	hr	1.022	+	= 1.022

Shallow concentrated flow Segment ID		AM-AN	AN-AO	
7. Surface description (paved or unpaved)		Paved	Road	
8. Flow length, L	ft	189	869	
9. Watercourse slope, s	ft/ft	0.0165	0.0076	
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	3.08	2.11	
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.017	+ 0.114	= 0.131

Channel flow Segment ID		AO-AP		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	Sheets	For Streets	
15. Channel slope, s	ft/ft	0.0083		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.19		
18. Flow length, L	ft	220		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.028	+	= 0.028

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) .... hr 1.181

TLAG = 0.60 (1.181) = 0.709 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN D2

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

Segment ID		AL-AM		
1. Surface description (table 3-1)		Res. Lot		
2. Manning's roughness coeff., n (table 3-1)		0.35		
3. Flow length, L (total $L \le 300$ ft)	ft	150		
4. 100 ~~Two-yr~~ 24-hr rainfall, $P_{\cancel{2}}$ 100	in	2.01		
5. Land slope, s	ft/ft	0.0167		
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_{\cancel{2}}^{0.5} s^{0.4}}$ 100 Compute T_t	hr	0.603	+	= 0.603

Shallow concentrated flow

Segment ID		AM-AN	AN-AO	
7. Surface description (paved or unpaved)		PAVED	ROAD	
8. Flow length, L	ft	189		
9. Watercourse slope, s	ft/ft	0.0165		
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s	3.08		
11. $T_t = \frac{L}{3600 V}$ Compute T_t	hr	0.017	+ 0.114	= 0.131

Channel flow

Segment ID		AO-AP		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALC.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET FOR STREETS		
15. Channel slope, s	ft/ft	0.0083		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V	ft/s	2.19		
18. Flow length, L	ft	220		
19. $T_t = \frac{L}{3600 V}$ Compute T_t	hr	0.028	+	= 0.028

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) .... hr 0.762

TLAG = 0.60 (0.762) = 0.457 HOURS

(210-VI-TR-55, Second Ed., June 1986)

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN D3

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

Segment ID		AQ-AR		
1. Surface description (table 3-1)		Res lot		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	50		
4. Two-yr 24-hr rainfall, P_2	in	2.01		
5. Land slope, s	ft/ft	0.020		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr	0.395	+	= 0.395

Shallow concentrated flow

Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+	= ~~0~~

Channel flow

Segment ID		AR-AS		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALL.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	Sheet	For Streets	
15. Channel slope, s	ft/ft	0.0083		
16. Manning's roughness coeff., n		0.015		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.19		
18. Flow length, L	ft	330		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.042	+	= 0.042
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.437

TLAG = 0.60 (0.437) = 0.262 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN D3

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		AQ-AR				
1. Surface description (table 3-1)		RES LOT				
2. Manning's roughness coeff., n (table 3-1) ..		0.35				
3. Flow length, L (total L ≤ 300 ft)	ft	50				
4. 100 ~~Two-yr~~ 24-hr rainfall, $P_{\cancel{2}}$ 100	in	2.01				
5. Land slope, s	ft/ft	0.020				
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_{\cancel{2}\,100}^{0.5} s^{0.4}}$ Compute T_t	hr	0.233	+		=	0.233
Shallow concentrated flow Segment ID		N/A				
7. Surface description (paved or unpaved)						
8. Flow length, L	ft					
9. Watercourse slope, s	ft/ft					
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s					
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+		=	~~0~~
Channel flow Segment ID		AR-AS				
12. Cross sectional flow area, a	ft^2	SEE				
13. Wetted perimeter, p_w	ft	CALC.				
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEETS		FOR STREETS		
15. Channel slope, s	ft/ft	0.0083				
16. Manning's roughness coeff., n		0.015				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	2.19				
18. Flow length, L	ft	330				
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.042	+		=	0.042
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr					0.275

$T_{LAG} = 0.60\ (0.275) = 0.165$ HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ______ Date ______

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN D4

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		AT-AU		
1. Surface description (table 3-1)		TURF AREA		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	300		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.0323		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr		+	= 1.367
Shallow concentrated flow Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+	= 0
Channel flow Segment ID		N/A		
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s			
18. Flow length, L	ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+	= 0
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			1.367

TLAG = 0.60 (1.367) = 0.820 HOURS

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN D4

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		AT-AU		
1. Surface description (table 3-1)		TURF AREA		
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	300		
4. ~~Two-yr~~ 100 24-hr rainfall, $P_{\cancel{2}\,100}$	in	2.01		
5. Land slope, s	ft/ft	0.0323		
6. $T_t = \dfrac{0.007\,(nL)^{0.8}}{P_{\cancel{2}\,100}^{0.5}\ s^{0.4}}$ Compute T_t	hr	0.807	+	= 0.807

Shallow concentrated flow Segment ID				
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \dfrac{L}{3600\ V}$ Compute T_t	hr		+	= 0

Channel flow Segment ID				
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, $r = \dfrac{a}{p_w}$ Compute r	ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \dfrac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s			
18. Flow length, L	ft			
19. $T_t = \dfrac{L}{3600\ V}$ Compute T_t	hr		+	= 0

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) .... hr 0.807

TLAG = 0.60 (0.807) = 0.484 HOURS

(210-VI-TR-55, Second Ed., June 1986)

MCSDCM

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 2 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN E1

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only) Segment ID		AV-AW		
1. Surface description (table 3-1)		GRASS	SLOPE	
2. Manning's roughness coeff., n (table 3-1) ..		0.35		
3. Flow length, L (total L $\leq$ 300 ft)	ft	20		
4. Two-yr 24-hr rainfall, P_2	in	0.70		
5. Land slope, s	ft/ft	0.25		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$ Compute T_t	hr	0.069	+	= 0.069
Shallow concentrated flow Segment ID		N/A		
7. Surface description (paved or unpaved)				
8. Flow length, L	ft			
9. Watercourse slope, s	ft/ft			
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s			
11. $T_t = \frac{L}{3600\,V}$ Compute T_t	hr		+	= 0
Channel flow Segment ID		AW-AX		
12. Cross sectional flow area, a	ft^2	SEE		
13. Wetted perimeter, p_w	ft	CALL.		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET		
15. Channel slope, s	ft/ft	0.01		
16. Manning's roughness coeff., n		0.025		
17. $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ Compute V	ft/s	1.88		
18. Flow length, L	ft	1,180		
19. $T_t = \frac{L}{3600\,V}$ Compute T_t	hr	0.174	+	= 0.174
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			0.243

TLAG = 0.60 (0.243) = 0.146 HOURS

CHECK COMPUTATION TIME INTERVAL 0.29 * TLAG = 2.54 MINUTES

USE 2 MINUTES

DEVELOPED

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project GRAND VIEW SUB. By MS Date 06/94

Location GRAND JUNCTION Checked ____ Date ____

Circle one: Present [✓ Developed] 100 YEAR STORM

Circle one: T_c T_t through subarea SUB-BASIN E1

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

Segment ID		AV-AW				
1. Surface description (table 3-1)		GRASS SLOPE				
2. Manning's roughness coeff., n (table 3-1) ..		0.35				
3. Flow length, L (total L ≤ 300 ft)	ft	20				
4. ~~Two-yr~~ 100 24-hr rainfall, ~~P_2~~ 100	in	2.01				
5. Land slope, s	ft/ft	0.25				
6. $T_t = \frac{0.007\,(nL)^{0.8}}{~~P_2~~ 100^{0.5}\, s^{0.4}}$ Compute T_t	hr	0.041	+		=	0.041

Shallow concentrated flow

Segment ID		N/A				
7. Surface description (paved or unpaved)						
8. Flow length, L	ft					
9. Watercourse slope, s	ft/ft					
10. Average velocity, V (figure ~~3-1~~ 402)	ft/s					
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+		=	0

Channel flow

Segment ID		AW-AX				
12. Cross sectional flow area, a	ft^2	SEE				
13. Wetted perimeter, p_w	ft	CALC.				
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft	SHEET				
15. Channel slope, s	ft/ft	0.01				
16. Manning's roughness coeff., n		0.025				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s	1.88				
18. Flow length, L	ft	1,180				
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.174	+		=	0.174
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr					0.215

TLAG = 0.60 (0.215) = 0.129 HOURS

CHECK COMPUTATION TIME INTERVAL 0.29 * T_{LAG} = 2.25 MINUTES

USE 2 MINUTES

```
                 Trapezoidal Channel Analysis & Design
                     Open Channel - Uniform flow

Worksheet Name: EXISITING DITCH

Comment: EXISTING DITCH ALONG SOUTH BOUNDARY LINE

Solve For Depth

Given Input Data:

        Bottom Width.....      2.00 ft
        Left Side Slope..      2.00:1 (H:V)
        Right Side Slope.      2.00:1 (H:V)
        Manning's n......      0.025
        Channel Slope....      0.0100 ft/ft
        Discharge........      1.00 cfs

Computed Results:

        Depth............      0.22 ft
        Velocity.........      1.88 fps
        Flow Area........      0.53 sf
        Flow Top Width...      2.87 ft
        Wetted Perimeter.      2.97 ft
        Critical Depth...      0.19 ft
        Critical Slope...      0.0175 ft/ft
        Froude Number....      0.77 (flow is Subcritical)




  Open Channel Flow Module, Version 3.16 (c) 1990
  Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708
```

```
*****************************************                              ***************************************
*                                       *                              *                                     *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                              *   U.S. ARMY CORPS OF ENGINEERS      *
*            SEPTEMBER 1990             *                              *   HYDROLOGIC ENGINEERING CENTER     *
*             VERSION 4.0               *                              *         609 SECOND STREET           *
*                                       *                              *      DAVIS, CALIFORNIA 95616        *
*  RUN DATE  07/01/1994  TIME  16:35:56 *                              *          (916) 756-1104             *
*                                       *                              *                                     *
*****************************************                              ***************************************




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



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

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

DEVELOPED 2 YEAR STORM

SUB-BASINS "OF1, OF2, OF3, A and B"

RUN #3

R3-1

```
                                     HEC-1 INPUT                                           PAGE  1

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

    1          ID   GRAND VIEW SUBDIVISION
    2          ID   DEVELOPED CONDITION
    3          ID   2 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)
    4          IT       2 29JUN94    1200     300
    5          IO       5       2       0
               * **********

    6          KK     OF1
    7          KM   Basin runoff calculation for    OF1
    8          KO       3       1       0       1      21
    9          BA  0.0175
   10          PH                       0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
   11          LS                      91
   12          UD   0.466
               * **********

   13          KK     CH1
   14          KM   Muskingum-Cunge channel routing from      CP1 to      CP3
   15          KO       3       1       0       1      21
   16          RD     760  0.0118   0.025            TRAP       2       3
               * **********

   17          KK      A2
   18          KM   Basin runoff calculation for     A2
   19          KO       3       1       0       1      21
   20          BA  0.0051
   21          PH                       0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
   22          LS                      95
   23          UD   0.454
               * **********

   24          KK      A2
   25          KM   Combining two hydrographs at control point      CP3
   26          KO       3       1       0       1      21
   27          HC       2
               * **********

   28          KK     ST1
   29          KM   Muskingum-Cunge channel routing from      CP3 to      CP4
   30          KO       3       1       0       1      21
   31          RD
   32          RC   0.020   0.020   0.020     966  0.0084
   33          RX     100     104     105     105   106.5   112.5   118.5   120.5
   34          RY   34.86   34.78   34.53   34.40   34.53   34.65   34.77   34.81
               * **********

   35          KK      A3
   36          KM   Basin runoff calculation for     A3
   37          KO       3       1       0       1      21
   38          BA  0.0053
   39          PH                       0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
   40          LS                      95
   41          UD   0.485
               * **********
```

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


  42            KK      A3
  43            KM   Combining two hydrographs at control point      CP4
  44            KO       3       1       0       1      21
  45            HC       2
                * **********

  46            KK     OF2
  47            KM   Basin runoff calculation for    OF2
  48            KO       3       1       0       1      21
  49            BA  0.0187
  50            PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  51            LS              91
  52            UD   0.781
                * **********

  53            KK     CH2
  54            KM   Muskingum-Cunge channel routing from      CP2 to      CP4
  55            KO       3       1       0       1      21
  56            RD     630   0.013   0.025            TRAP       2       3
                * **********

  57            KK     OF3
  58            KM   Basin runoff calculation for    OF3
  59            KO       3       1       0       1      21
  60            BA  0.0048
  61            PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  62            LS              88
  63            UD   0.799
                * **********

  64            KK     OF3
  65            KM   Combining two hydrographs at control point      CP4
  66            KO       3       1       0       1      21
  67            HC       2
                * **********

  68            KK     OF3
  69            KM   Combining two hydrographs at control point      CP4
  70            KO       3       1       0       1      21
  71            HC       2
                * **********

  72            KK      A1
  73            KM   Basin runoff calculation for     A1
  74            KO       3       1       0       1      21
  75            BA  0.0291
  76            PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  77            LS              95
  78            UD   0.763
                * **********
```

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


  79           KK      A1
  80           KM   Combining two hydrographs at control point      CP4
  81           KO       3       1       0       1      21
  82           HC       2
               * **********

  83           KK      P1
  84           KM   Muskingum-Cunge channel routing from      CP4 to      CP5
  85           KO       3       1       0       1      21
  86           RD     525  0.0060   0.015             CIRC     3.0
               * **********

  87           KK      B1
  88           KM   Basin runoff calculation for      B1
  89           KO       3       1       0       1      21
  90           BA  0.0005
  91           PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  92           LS              96
  93           UD   0.059
               * **********

  94           KK      B1
  95           KM   Combining two hydrographs at control point      CP5
  96           KO       3       1       0       1      21
  97           HC       2
               * **********

  98           KK    RES1
  99           KM   Reservoir routing operation
 100           KO       1       2       0       1      21
 101           RS       1    ELEV    18.6
 102           SV  0.0092  0.0613  0.1637  0.3107  0.4578
 103           SE    19.6    20.6    21.6    22.6    23.6
 104           SL    18.6    0.79     0.6     0.5
 105           SS    22.6    19.0     2.7     1.5
               * **********

 106           KK     CH3
 107           KM   Muskingum-Cunge channel routing from      CP5 to      CP6
 108           KO       3       1       0       1      21
 109           RD     310  0.0052   0.025             TRAP       2       3
               * **********

 110           KK      B2
 111           KM   Basin runoff calculation for      B2
 112           KO       3       1       0       1      21
 113           BA  0.0005
 114           PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
 115           LS              96
 116           UD   0.059
               * **********
```

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

         117           KK     B2
         118           KM   Combining two hydrographs at control point      CP6
         119           KO      3       1       0       1      21
         120           HC      2
                       * **********

         121           KK   RES2
         122           KM   Reservoir routing operation
         123           KO      1       2       0       1      21
         124           RS      1    ELEV    17.0
         125           SV 0.0150  0.0768   0.184  0.2916
         126           SE   18.0    19.0    20.0    21.0
         127           SL   17.0    0.79     0.6     0.5
         128           SS   20.0    19.0     2.7     1.5
                       * **********

         129           KK    CH4
         130           KM   Muskingum-Cunge channel routing from      CP6 to      CP7
         131           KO      3       1       0       1      21
         132           RD    400  0.0079   0.025            TRAP       2       3
                       * **********

         133           KK   B345
         134           KM   Basin runoff calculation for   B345
         135           KO      3       1       0       1      21
         136           BA 0.0132
         137           PH              0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
         138           LS             96
         139           UD  0.505
                       * **********

         140           KK   B345
         141           KM   Combining two hydrographs at control point      CP7
         142           KO      3       1       0       1      21
         143           HC      2
                       * **********

         144           KK   RES3
         145           KM   Reservoir routing operation
         146           KO      1       2       0       1      21
         147           RS      1    ELEV   12.83
         148           SV 0.0817  0.2218  0.4160  0.6632
         149           SE   14.2    15.2    16.2    17.2
         150           SL  13.83  0.0625     0.6     0.5
         151           SS  15.75    12.3     2.7     1.5
                       * **********
         152           ZZ
```

R3-5

```
****************************************                                                               ****************************************
*                                      *                                                               *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                               *   U.S. ARMY CORPS OF ENGINEERS       *
*            SEPTEMBER 1990            *                                                               *   HYDROLOGIC ENGINEERING CENTER      *
*             VERSION 4.0              *                                                               *        609 SECOND STREET             *
*                                      *                                                               *     DAVIS, CALIFORNIA 95616          *
*  RUN DATE  07/01/1994  TIME  16:35:56 *                                                              *         (916) 756-1104               *
*                                      *                                                               *                                      *
****************************************                                                               ****************************************




                          GRAND VIEW SUBDIVISION
                          DEVELOPED CONDITION
                          2 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)

   5 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          2  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN          2  MINUTES IN COMPUTATION INTERVAL
                       IDATE    29JUN94  STARTING DATE
                       ITIME       1200  STARTING TIME
                          NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE    29JUN94  ENDING DATE
                      NDTIME       2158  ENDING TIME
                       ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .03 HOURS
                      TOTAL TIME BASE    9.97 HOURS

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


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

              **************
              *            *
   6 KK       *      OF1   *
              *            *
              **************

   8 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          3  PRINT CONTROL
                       IPLOT          1  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE
                       IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                        IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       .033  TIME INTERVAL IN HOURS


              SUBBASIN RUNOFF DATA

   9 BA          SUBBASIN CHARACTERISTICS
                       TAREA        .02  SUBBASIN AREA

                 PRECIPITATION DATA

  10 PH                               DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......  ............... TP-40 ...............  ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                 STORM AREA =      .02

  11 LS          SCS LOSS RATE
```

R3-6

```
                    CRVNBR       91.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

   12 UD         SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .47  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                     72 END-OF-PERIOD ORDINATES
                0.         1.         2.         3.         4.         6.         8.        10.        12.        14.
               16.        17.        17.        17.        17.        17.        17.        16.        15.        14.
               13.        12.        10.         9.         8.         7.         6.         5.         5.         4.
                4.         4.         3.         3.         3.         2.         2.         2.         2.         1.
                1.         1.         1.         1.         1.         1.         1.         1.         1.         0.
                0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                0.         0.

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

                          HYDROGRAPH AT STATION      OF1

    TOTAL RAINFALL =     .61, TOTAL LOSS =     .49, TOTAL EXCESS =     .12

  PEAK FLOW      TIME                             MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                       6-HR         24-HR        72-HR      9.97-HR
                                (CFS)
        1.        5.60                        0.           0.           0.           0.
                              (INCHES)       .119         .119         .119         .119
                               (AC-FT)        0.           0.           0.           0.

                          CUMULATIVE AREA =      .02 SQ MI


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

            **************
            *            *
   13 KK    *      CH1   *
            *            *
            **************

   15 KO         OUTPUT CONTROL VARIABLES
                       IPRNT            3  PRINT CONTROL
                       IPLOT            1  PLOT CONTROL
                       OSCAL           0.  HYDROGRAPH PLOT SCALE
                       IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                        IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1            1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT         .033  TIME INTERVAL IN HOURS


               HYDROGRAPH ROUTING DATA

   16 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                           L         760.  CHANNEL LENGTH
                           S        .0118  SLOPE
                           N         .025  CHANNEL ROUGHNESS COEFFICIENT
                          CA          .00  CONTRIBUTING AREA
                       SHAPE         TRAP  CHANNEL SHAPE
                          WD         2.00  BOTTOM WIDTH OR DIAMETER
                           Z         3.00  SIDE SLOPE

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

                         MAIN       2.60      1.34       2.00     126.67        .90    342.00         .12        2.23

                                                INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                         MAIN       2.60      1.34       2.00                   .90    342.00         .12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1113E+00 EXCESS= .0000E+00 OUTFLOW= .1101E+00 BASIN STORAGE= .1379E-02 PERCENT ERROR=   -.1
```

```
                          HYDROGRAPH AT STATION      CH1

    PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
      (CFS)       (HR)                  6-HR        24-HR       72-HR       9.97-HR
          1.      5.67       (CFS)        0.          0.          0.            0.
                          (INCHES)      .118        .118        .118          .118
                           (AC-FT)        0.          0.          0.            0.

                         CUMULATIVE AREA =      .02 SQ MI



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


               **************
               *            *
     17 KK     *        A2  *
               *            *
               **************

     19 KO          OUTPUT CONTROL VARIABLES
                         IPRNT          3   PRINT CONTROL
                         IPLOT          1   PLOT CONTROL
                         OSCAL         0.   HYDROGRAPH PLOT SCALE
                         IPNCH          1   PUNCH COMPUTED HYDROGRAPH
                          IOUT         21   SAVE HYDROGRAPH ON THIS UNIT
                         ISAV1          1   FIRST ORDINATE PUNCHED OR SAVED
                         ISAV2        300   LAST ORDINATE PUNCHED OR SAVED
                        TIMINT       .033   TIME INTERVAL IN HOURS


                  SUBBASIN RUNOFF DATA

     20 BA          SUBBASIN CHARACTERISTICS
                         TAREA        .01   SUBBASIN AREA

                    PRECIPITATION DATA

     21 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                    ..... HYDRO-35 ......    ................ TP-40 ................   ........... TP-49 ...........
                    5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
                     .10     .19     .34      .42     .47     .55     .64     .70      .00     .00     .00     .00

                                                         STORM AREA =      .01

     22 LS          SCS LOSS RATE
                        STRTL         .11   INITIAL ABSTRACTION
                       CRVNBR       95.00   CURVE NUMBER
                        RTIMP         .00   PERCENT IMPERVIOUS AREA

     23 UD          SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .45   LAG

                                                                  ***

                                                            UNIT HYDROGRAPH
                                                       70 END-OF-PERIOD ORDINATES
                    0.        0.        1.        1.        1.        2.        2.        3.        4.        4.
                    5.        5.        5.        5.        5.        5.        5.        5.        4.        4.
                    4.        3.        3.        2.        2.        2.        2.        2.        1.        1.
                    1.        1.        1.        1.        1.        1.        1.        0.        0.        0.
                    0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                    0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                    0.        0.        0.        0.        0.        0.        0.        0.        0.        0.

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

                          HYDROGRAPH AT STATION       A2

       TOTAL RAINFALL =      .61, TOTAL LOSS =      .36, TOTAL EXCESS =      .25

    PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
      (CFS)       (HR)                  6-HR        24-HR       72-HR       9.97-HR
          1.      5.50       (CFS)        0.          0.          0.            0.
                          (INCHES)      .244        .244        .244          .244
                           (AC-FT)        0.          0.          0.            0.

                         CUMULATIVE AREA =      .01 SQ MI


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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             **************
             *            *
   24 KK     *       A2   *
             *            *
             **************

   26 KO          OUTPUT CONTROL VARIABLES
                        IPRNT          3  PRINT CONTROL
                        IPLOT          1  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE
                        IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                         IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT       .033  TIME INTERVAL IN HOURS


   27 HC          HYDROGRAPH COMBINATION
                        ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                       ***

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

                              HYDROGRAPH AT STATION       A2

  PEAK FLOW      TIME                                MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                        6-HR        24-HR        72-HR       9.97-HR
        1.       5.63           (CFS)          0.           0.           0.            0.
                              (INCHES)       .146         .146         .146          .146
                               (AC-FT)         0.           0.           0.            0.

                             CUMULATIVE AREA =      .02 SQ MI



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


             **************
             *            *
   28 KK     *      ST1   *
             *            *
             **************

   30 KO          OUTPUT CONTROL VARIABLES
                        IPRNT          3  PRINT CONTROL
                        IPLOT          1  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE
                        IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                         IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT       .033  TIME INTERVAL IN HOURS


                HYDROGRAPH ROUTING DATA

   31 RD          MUSKINGUM-CUNGE CHANNEL ROUTING

   32 RC          NORMAL DEPTH CHANNEL
                          ANL       .020  LEFT OVERBANK N-VALUE
                         ANCH       .020  MAIN CHANNEL N-VALUE
                          ANR       .020  RIGHT OVERBANK N-VALUE
                        RLNTH       966.  REACH LENGTH
                          SEL      .0084  ENERGY SLOPE
                        ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                                   CROSS-SECTION DATA
                                  --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
   34 RY        ELEVATION      34.86        34.78        34.53        34.40        34.53        34.65        34.77        34.81
   33 RX        DISTANCE      100.00       104.00       105.00       105.00       106.50       112.50       118.50       120.50

                                                                       ***

                                                     COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

              STORAGE        .00          .00          .00          .00          .00          .00          .00          .00          .01          .01
              OUTFLOW        .00          .00          .01          .02          .05          .08          .12          .19          .32          .50
            ELEVATION      34.40        34.42        34.45        34.47        34.50        34.52        34.55        34.57        34.59        34.62

              STORAGE        .01          .02          .02          .03          .04          .04          .05          .06          .07          .08
              OUTFLOW        .76         1.16         1.68         2.30         3.04         3.90         4.86         5.95         7.32         8.87
            ELEVATION      34.64        34.67        34.69        34.71        34.74        34.76        34.79        34.81        34.84        34.86

                                           COMPUTED MUSKINGUM-CUNGE PARAMETERS
```

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                     ELEMENT    ALPHA       M          DT         DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                    PEAK                 CELERITY
                                                      (MIN)      (FT)     (CFS)     (MIN)       (IN)      (FPS)

                       MAIN                            2.00      96.60      1.48    346.00        .14      1.53

                                                INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                       MAIN                            2.00                 1.48    346.00        .14

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1766E+00 EXCESS= .0000E+00 OUTFLOW= .1737E+00 BASIN STORAGE= .2918E-02 PERCENT ERROR=    .0


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

                            HYDROGRAPH AT STATION      ST1

  PEAK FLOW      TIME                                 MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                       6-HR        24-HR        72-HR       9.97-HR
        1.       5.77         (CFS)           0.           0.           0.            0.
                            (INCHES)        .144         .144         .144          .144
                             (AC-FT)          0.           0.           0.            0.

                           CUMULATIVE AREA =      .02 SQ MI


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

                 **************
                 *            *
  35 KK          *        A3  *
                 *            *
                 **************

  37 KO             OUTPUT CONTROL VARIABLES
                          IPRNT           3  PRINT CONTROL
                          IPLOT           1  PLOT CONTROL
                          QSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                           IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT        .033  TIME INTERVAL IN HOURS


                  SUBBASIN RUNOFF DATA

  38 BA             SUBBASIN CHARACTERISTICS
                          TAREA         .01  SUBBASIN AREA

                    PRECIPITATION DATA

  39 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                    ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                    5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                      .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                        STORM AREA =      .01

  40 LS             SCS LOSS RATE
                         STRTL          .11  INITIAL ABSTRACTION
                        CRVNBR        95.00  CURVE NUMBER
                         RTIMP          .00  PERCENT IMPERVIOUS AREA

  41 UD             SCS DIMENSIONLESS UNITGRAPH
                          TLAG          .49  LAG

                                                              ***

                                                        UNIT HYDROGRAPH
                                                   75 END-OF-PERIOD ORDINATES
                    0.        0.        1.        1.        1.        2.        2.        3.        3.        4.
                    4.        5.        5.        5.        5.        5.        5.        5.        5.        4.
                    4.        4.        3.        3.        3.        2.        2.        2.        2.        1.
                    1.        1.        1.        1.        1.        1.        1.        1.        1.        1.
                    0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                    0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                    0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                    0.        0.        0.        0.        0.
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R3-10

```
                         HYDROGRAPH AT STATION      A3

     TOTAL RAINFALL =     .61, TOTAL LOSS =     .36, TOTAL EXCESS =     .25

   PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
     (CFS)       (HR)                   6-HR         24-HR        72-HR        9.97-HR
        1.       5.53        (CFS)        0.           0.           0.             0.
                          (INCHES)      .244         .244         .244           .244
                           (AC-FT)        0.           0.           0.             0.

                        CUMULATIVE AREA =     .01 SQ MI


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


             **************
             *            *
   42 KK     *       A3   *
             *            *
             **************

   44 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        OSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .033  TIME INTERVAL IN HOURS

   45 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                ***

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

                         HYDROGRAPH AT STATION      A3

   PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
     (CFS)       (HR)                   6-HR         24-HR        72-HR        9.97-HR
        2.       5.70        (CFS)        0.           0.           0.             0.
                          (INCHES)      .163         .163         .163           .163
                           (AC-FT)        0.           0.           0.             0.

                        CUMULATIVE AREA =     .03 SQ MI


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


             **************
             *            *
   46 KK     *      OF2   *
             *            *
             **************

   48 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        OSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .033  TIME INTERVAL IN HOURS

                SUBBASIN RUNOFF DATA

   49 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .02  SUBBASIN AREA

                  PRECIPITATION DATA

   50 PH                               DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ................ TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR     3-HR     6-HR    12-HR    24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                     10      19      34      42       47       55       64       70      00      00      00      00
```

R3-11

```
                                                          STORM AREA =     .02

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

  52 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .78  LAG

                                                                        ***

                                                                UNIT HYDROGRAPH
                                                          119 END-OF-PERIOD ORDINATES
                0.        0.        1.        1.        1.        2.        2.        3.        3.        4.
                5.        5.        6.        7.        8.        9.        9.       10.       10.       11.
               11.       11.       11.       11.       11.       11.       11.       11.       10.       10.
               10.        9.        9.        9.        8.        8.        7.        7.        6.        6.
                5.        5.        4.        4.        4.        4.        3.        3.        3.        3.
                3.        2.        2.        2.        2.        2.        2.        2.        2.        1.
                1.        1.        1.        1.        1.        1.        1.        1.        1.        1.
                1.        1.        1.        1.        1.        0.        0.        0.        0.        0.
                0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                0.        0.        0.        0.        0.        0.        0.        0.        0.

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

                              HYDROGRAPH AT STATION      OF2

   TOTAL RAINFALL =     .61, TOTAL LOSS =     .49, TOTAL EXCESS =     .12

  PEAK FLOW      TIME                             MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                      6-HR        24-HR       72-HR       9.97-HR
        1.       6.00          (CFS)         0.           0.          0.            0.
                             (INCHES)      .116         .116        .116          .116
                              (AC-FT)        0.           0.          0.            0.

                             CUMULATIVE AREA =     .02 SQ MI


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


           **************
           *            *
  53 KK    *      CH2   *
           *            *
           **************

  55 KO         OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .033  TIME INTERVAL IN HOURS


              HYDROGRAPH ROUTING DATA

  56 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                          L        630.  CHANNEL LENGTH
                          S       .0130  SLOPE
                          N        .025  CHANNEL ROUGHNESS COEFFICIENT
                         CA         .00  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD        2.00  BOTTOM WIDTH OR DIAMETER
                          Z        3.00  SIDE SLOPE

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

                     MAIN       2.72       1.34        2.00      126.00         .70      364.00          .11         2.17

                                               INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL
```

R3-12

```
                      MAIN       2.72       1.34       2.00                   .70    364.00        .11

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1157E+00 EXCESS= .0000E+00 OUTFLOW= .1146E+00 BASIN STORAGE= .1229E-02 PERCENT ERROR=    -.1


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

                        HYDROGRAPH AT STATION      CH2

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                  6-HR         24-HR        72-HR        9.97-HR
                                                                                   
        1.      6.07        (CFS)       0.            0.           0.            0.
                          (INCHES)    .115          .115         .115          .115
                           (AC-FT)      0.            0.           0.            0.

                       CUMULATIVE AREA =      .02 SQ MI



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


              **************
              *            *
   57 KK      *      OF3   *
              *            *
              **************

   59 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .033  TIME INTERVAL IN HOURS


                SUBBASIN RUNOFF DATA

   60 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .00  SUBBASIN AREA

                  PRECIPITATION DATA

   61 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......    ............... TP-40 ...............    ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
                    .10     .19     .34     .42     .47     .55     .64     .70      .00     .00     .00     .00

                                                       STORM AREA =      .00

   62 LS          SCS LOSS RATE
                        STRTL         .27  INITIAL ABSTRACTION
                       CRVNBR       88.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

   63 UD          SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .80  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                    122 END-OF-PERIOD ORDINATES
                  0.         0.         0.         0.         0.         0.         1.         1.         1.         1.
                  1.         1.         2.         2.         2.         2.         2.         2.         3.         3.
                  3.         3.         3.         3.         3.         3.         3.         3.         3.         3.
                  3.         2.         2.         2.         2.         2.         2.         2.         2.         1.
                  1.         1.         1.         1.         1.         1.         1.         1.         1.         1.
                  1.         1.         1.         1.         1.         1.         0.         0.         0.         0.
                  0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                  0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                  0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                  0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                  0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                  0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                  0.         0.

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

                        HYDROGRAPH AT STATION      OF3

     TOTAL RAINFALL =       .61   TOTAL LOSS =       .55   TOTAL EXCESS =       .07
```

```
 PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                   6-HR        24-HR       72-HR       9.97-HR
      0.       6.10          (CFS)     0.          0.          0.           0.
                          (INCHES)   .063        .063        .063         .063
                           (AC-FT)     0.          0.          0.           0.

                        CUMULATIVE AREA =     .00 SQ MI


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


            **************
            *            *
  64 KK     *      OF3   *
            *            *
            **************

  66 KO          OUTPUT CONTROL VARIABLES
                       IPRNT            3  PRINT CONTROL
                       IPLOT            1  PLOT CONTROL
                       QSCAL           0.  HYDROGRAPH PLOT SCALE
                       IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                        IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1            1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT         .033  TIME INTERVAL IN HOURS

  67 HC          HYDROGRAPH COMBINATION
                       ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                       ***

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

                         HYDROGRAPH AT STATION      OF3

 PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                   6-HR        24-HR       72-HR       9.97-HR
      1.       6.07          (CFS)     0.          0.          0.           0.
                          (INCHES)   .104        .104        .104         .104
                           (AC-FT)     0.          0.          0.           0.

                        CUMULATIVE AREA =     .02 SQ MI


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


            **************
            *            *
  68 KK     *      OF3   *
            *            *
            **************

  70 KO          OUTPUT CONTROL VARIABLES
                       IPRNT            3  PRINT CONTROL
                       IPLOT            1  PLOT CONTROL
                       QSCAL           0.  HYDROGRAPH PLOT SCALE
                       IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                        IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1            1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT         .033  TIME INTERVAL IN HOURS

  71 HC          HYDROGRAPH COMBINATION
                       ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                       ***

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

                         HYDROGRAPH AT STATION      OF3

 PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                   6-HR        24-HR       72-HR       9.97-HR
      3.       5.77          (CFS)     1.          0.          0.           0.
                          (INCHES)   .136        .136        .136         .136
                           (AC-FT)     0.          0.          0.           0.

                        CUMULATIVE AREA =     .05 SQ MI
```

R3-14

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

               **************
               *            *
  72 KK        *        A1  *
               *            *
               **************

  74 KO             OUTPUT CONTROL VARIABLES
                          IPRNT           3  PRINT CONTROL
                          IPLOT           1  PLOT CONTROL
                          QSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                           IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT        .033  TIME INTERVAL IN HOURS


                  SUBBASIN RUNOFF DATA

  75 BA             SUBBASIN CHARACTERISTICS
                          TAREA         .03  SUBBASIN AREA

                    PRECIPITATION DATA

  76 PH                                   DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                    ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                    5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                      .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                          STORM AREA =      .03

  77 LS             SCS LOSS RATE
                         STRTL          .11  INITIAL ABSTRACTION
                        CRVNBR        95.00  CURVE NUMBER
                         RTIMP          .00  PERCENT IMPERVIOUS AREA

  78 UD             SCS DIMENSIONLESS UNITGRAPH
                          TLAG          .76  LAG

                                                                   ***

                                                            UNIT HYDROGRAPH
                                                      116 END-OF-PERIOD ORDINATES
                   0.        0.        1.        1.        2.        3.        3.        4.        5.        6.
                   8.        9.       10.       12.       13.       14.       15.       16.       17.       17.
                  18.       18.       18.       18.       18.       18.       17.       17.       16.       16.
                  15.       15.       14.       13.       12.       11.       10.       10.        9.        8.
                   8.        7.        7.        6.        6.        5.        5.        5.        4.        4.
                   4.        4.        3.        3.        3.        3.        3.        2.        2.        2.
                   2.        2.        2.        2.        1.        1.        1.        1.        1.        1.
                   1.        1.        1.        1.        1.        1.        1.        1.        1.        1.
                   0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                   0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                   0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                   0.        0.        0.        0.        0.        0.

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

                            HYDROGRAPH AT STATION        A1

     TOTAL RAINFALL =      .61, TOTAL LOSS =      .36, TOTAL EXCESS =      .25

    PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
      (CFS)        (HR)                  6-HR        24-HR        72-HR        9.97-HR
          3.       5.87        (CFS)       1.           0.           0.            0.
                             (INCHES)    .239         .239         .239          .239
                              (AC-FT)      0.           0.           0.            0.

                           CUMULATIVE AREA =      .03 SQ MI


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

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               *            *
  79 KK        *        A1  *
               *            *
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```
 81 KO         OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          1  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS


 82 HC         HYDROGRAPH COMBINATION
                     ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                       ***

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

                          HYDROGRAPH AT STATION       A1

  PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                      6-HR         24-HR        72-HR        9.97-HR
        5.       5.80          (CFS)         2.            1.           1.             1.
                            (INCHES)       .173          .173         .173           .173
                             (AC-FT)         1.            1.           1.             1.

                         CUMULATIVE AREA =     .08 SQ MI


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


             **************
             *            *
 83 KK       *       P1   *
             *            *
             **************

 85 KO         OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          1  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS


             HYDROGRAPH ROUTING DATA

 86 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                         L       525.  CHANNEL LENGTH
                         S      .0060  SLOPE
                         N       .015  CHANNEL ROUGHNESS COEFFICIENT
                        CA        .00  CONTRIBUTING AREA
                     SHAPE       CIRC  CHANNEL SHAPE
                        WD       3.00  BOTTOM WIDTH OR DIAMETER
                         Z        .00  SIDE SLOPE

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

                    MAIN        4.99      1.25        1.60      262.50        5.18     350.47          .17        5.47

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                    MAIN        4.99      1.25        2.00                    5.18     350.00          .17

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .7442E+00 EXCESS= .0000E+00 OUTFLOW= .7423E+00 BASIN STORAGE= .1955E-02 PERCENT ERROR=     .0


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

                          HYDROGRAPH AT STATION       P1

  PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
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     5.      5.83       (CFS)        1.           1.           1.            1.
                     (INCHES)      .173         .173         .173          .173
                      (AC-FT)        1.           1.           1.            1.

                    CUMULATIVE AREA =      .08 SQ MI



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


               **************
               *            *
  87 KK        *      B1    *
               *            *
               **************

  89 KO             OUTPUT CONTROL VARIABLES
                          IPRNT             3  PRINT CONTROL
                          IPLOT             1  PLOT CONTROL
                          QSCAL            0.  HYDROGRAPH PLOT SCALE
                          IPNCH             1  PUNCH COMPUTED HYDROGRAPH
                           IOUT            21  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1             1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2           300  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT          .033  TIME INTERVAL IN HOURS


                  SUBBASIN RUNOFF DATA

  90 BA             SUBBASIN CHARACTERISTICS
                          TAREA           .00  SUBBASIN AREA

                    PRECIPITATION DATA

  91 PH                                    DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                    ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                    5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                      .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                   STORM AREA =      .00

  92 LS             SCS LOSS RATE
                         STRTL            .08  INITIAL ABSTRACTION
                        CRVNBR          96.00  CURVE NUMBER
                         RTIMP            .00  PERCENT IMPERVIOUS AREA

  93 UD             SCS DIMENSIONLESS UNITGRAPH
                          TLAG            .06  LAG
                                                                       ***

                                                             UNIT HYDROGRAPH
                                                        11 END-OF-PERIOD ORDINATES
                    1.         3.         3.         1.         1.         0.         0.         0.         0.         0.
                    0.

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

                          HYDROGRAPH AT STATION       B1

    TOTAL RAINFALL =      .61, TOTAL LOSS =      .32, TOTAL EXCESS =      .30

  PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                   6-HR          24-HR         72-HR        9.97-HR
       0.        5.07       (CFS)        0.            0.            0.            0.
                         (INCHES)      .297          .297          .297          .297
                          (AC-FT)        0.            0.            0.            0.

                         CUMULATIVE AREA =      .00 SQ MI



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


               **************
               *            *
  94 KK        *      B1    *
               *            *
               **************

  96 KO             OUTPUT CONTROL VARIABLES
                          IPRNT             3  PRINT CONTROL
                          IPLOT             1  PLOT CONTROL
```

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                          IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                           IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1            1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT         .033  TIME INTERVAL IN HOURS


  97 HC           HYDROGRAPH COMBINATION
                          ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                     ***

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

                            HYDROGRAPH AT STATION       B1

  PEAK FLOW     TIME                               MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                        6-HR        24-HR       72-HR       9.97-HR
        5.      5.83               (CFS)      2.           1.          1.            1.
                                 (INCHES)   .174         .174        .174          .174
                                  (AC-FT)     1.           1.          1.            1.

                           CUMULATIVE AREA =      .08 SQ MI



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


                 **************
                 *            *
  98 KK          *     RES1   *
                 *            *
                 **************

 100 KO           OUTPUT CONTROL VARIABLES
                          IPRNT            1  PRINT CONTROL
                          IPLOT            2  PLOT CONTROL
                          QSCAL           0.  HYDROGRAPH PLOT SCALE
                          IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                           IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1            1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT         .033  TIME INTERVAL IN HOURS


                HYDROGRAPH ROUTING DATA

 101 RS           STORAGE ROUTING
                          NSTPS            1  NUMBER OF SUBREACHES
                           ITYP         ELEV  TYPE OF INITIAL CONDITION
                         RSVRIC        18.60  INITIAL CONDITION
                              X          .00 WORKING R AND D COEFFICIENT

 102 SV             STORAGE          .0          .1          .2          .3          .5

 103 SE           ELEVATION      19.60       20.60       21.60       22.60       23.60

 104 SL           LOW-LEVEL OUTLET
                          ELEVL        18.60  ELEVATION AT CENTER OF OUTLET
                          CAREA          .79  CROSS-SECTIONAL AREA
                           COQL          .60  COEFFICIENT
                           EXPL          .50  EXPONENT OF HEAD

 105 SS           SPILLWAY
                           CREL        22.60  SPILLWAY CREST ELEVATION
                          SPWID        19.00  SPILLWAY WIDTH
                           COQW         2.70  WEIR COEFFICIENT
                           EXPW         1.50  EXPONENT OF HEAD

                                                                     ***

                                                      COMPUTED OUTFLOW-ELEVATION DATA

                 OUTFLOW        .00       4.03       4.28       4.56       4.89       5.26       5.70       6.22       6.84       7.60
               ELEVATION      19.60      19.72      19.87      20.04      20.25      20.52      20.85      21.28      21.84      22.60

                 OUTFLOW       7.69       8.12       9.20      11.23      14.50      19.30      25.94      34.70      45.89      59.80
               ELEVATION      22.61      22.64      22.70      22.77      22.86      22.97      23.10      23.24      23.41      23.60

                                                  COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                 STORAGE        .01        .02        .02        .03        .04        .06        .06        .09        .13        .16
                 OUTFLOW       3.80       4.03       4.28       4.56       4.89       5.26       5.38       5.70       6.22       6.58
               ELEVATION      19.60      19.72      19.87      20.04      20.25      20.52      20.60      20.85      21.28      21.60
```

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           STORAGE       .20       .31       .31       .32       .32       .34       .35       .36       .38       .41
           OUTFLOW      6.84      7.60      7.69      8.12      9.20     11.23     14.50     19.30     25.94     34.70
         ELEVATION     21.84     22.60     22.61     22.64     22.70     22.77     22.86     22.97     23.10     23.24

           STORAGE       .43       .46
           OUTFLOW     45.89     59.80
         ELEVATION     23.41     23.60

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

                                                 HYDROGRAPH AT STATION     RES1

***************************************************************************************************************************
                                             *                                             *
 DA MON HRMN ORD   OUTFLOW   STORAGE    STAGE * DA MON HRMN ORD   OUTFLOW   STORAGE    STAGE * DA MON HRMN ORD   OUTFLOW   STORAGE     STAGE
                                             *                                             *
 29 JUN 1200   1       0.        .0     19.6 * 29 JUN 1520 101       4.        .0     19.6 * 29 JUN 1840 201       4.        .0      19.6
 29 JUN 1202   2       4.        .0     19.6 * 29 JUN 1522 102       4.        .0     19.6 * 29 JUN 1842 202       4.        .0      19.6
 29 JUN 1204   3       4.        .0     19.6 * 29 JUN 1524 103       4.        .0     19.6 * 29 JUN 1844 203       4.        .0      19.6
 29 JUN 1206   4       4.        .0     19.6 * 29 JUN 1526 104       4.        .0     19.6 * 29 JUN 1846 204       4.        .0      19.6
 29 JUN 1208   5       4.        .0     19.6 * 29 JUN 1528 105       4.        .0     19.6 * 29 JUN 1848 205       4.        .0      19.6
 29 JUN 1210   6       4.        .0     19.6 * 29 JUN 1530 106       4.        .0     19.6 * 29 JUN 1850 206       4.        .0      19.6
 29 JUN 1212   7       4.        .0     19.6 * 29 JUN 1532 107       4.        .0     19.6 * 29 JUN 1852 207       4.        .0      19.6
 29 JUN 1214   8       4.        .0     19.6 * 29 JUN 1534 108       4.        .0     19.6 * 29 JUN 1854 208       4.        .0      19.6
 29 JUN 1216   9       4.        .0     19.6 * 29 JUN 1536 109       4.        .0     19.6 * 29 JUN 1856 209       4.        .0      19.6
 29 JUN 1218  10       4.        .0     19.6 * 29 JUN 1538 110       4.        .0     19.6 * 29 JUN 1858 210       4.        .0      19.6
 29 JUN 1220  11       4.        .0     19.6 * 29 JUN 1540 111       4.        .0     19.6 * 29 JUN 1900 211       4.        .0      19.6
 29 JUN 1222  12       4.        .0     19.6 * 29 JUN 1542 112       4.        .0     19.6 * 29 JUN 1902 212       4.        .0      19.6
 29 JUN 1224  13       4.        .0     19.6 * 29 JUN 1544 113       4.        .0     19.6 * 29 JUN 1904 213       4.        .0      19.6
 29 JUN 1226  14       4.        .0     19.6 * 29 JUN 1546 114       4.        .0     19.6 * 29 JUN 1906 214       4.        .0      19.6
 29 JUN 1228  15       4.        .0     19.6 * 29 JUN 1548 115       4.        .0     19.6 * 29 JUN 1908 215       4.        .0      19.6
 29 JUN 1230  16       4.        .0     19.6 * 29 JUN 1550 116       4.        .0     19.6 * 29 JUN 1910 216       4.        .0      19.6
 29 JUN 1232  17       4.        .0     19.6 * 29 JUN 1552 117       4.        .0     19.6 * 29 JUN 1912 217       4.        .0      19.6
 29 JUN 1234  18       4.        .0     19.6 * 29 JUN 1554 118       4.        .0     19.6 * 29 JUN 1914 218       4.        .0      19.6
 29 JUN 1236  19       4.        .0     19.6 * 29 JUN 1556 119       4.        .0     19.6 * 29 JUN 1916 219       4.        .0      19.6
 29 JUN 1238  20       4.        .0     19.6 * 29 JUN 1558 120       4.        .0     19.6 * 29 JUN 1918 220       4.        .0      19.6
 29 JUN 1240  21       4.        .0     19.6 * 29 JUN 1600 121       4.        .0     19.6 * 29 JUN 1920 221       4.        .0      19.6
 29 JUN 1242  22       4.        .0     19.6 * 29 JUN 1602 122       4.        .0     19.6 * 29 JUN 1922 222       4.        .0      19.6
 29 JUN 1244  23       4.        .0     19.6 * 29 JUN 1604 123       4.        .0     19.6 * 29 JUN 1924 223       4.        .0      19.6
 29 JUN 1246  24       4.        .0     19.6 * 29 JUN 1606 124       4.        .0     19.6 * 29 JUN 1926 224       4.        .0      19.6
 29 JUN 1248  25       4.        .0     19.6 * 29 JUN 1608 125       4.        .0     19.6 * 29 JUN 1928 225       4.        .0      19.6
 29 JUN 1250  26       4.        .0     19.6 * 29 JUN 1610 126       4.        .0     19.6 * 29 JUN 1930 226       4.        .0      19.6
 29 JUN 1252  27       4.        .0     19.6 * 29 JUN 1612 127       4.        .0     19.6 * 29 JUN 1932 227       4.        .0      19.6
 29 JUN 1254  28       4.        .0     19.6 * 29 JUN 1614 128       4.        .0     19.6 * 29 JUN 1934 228       4.        .0      19.6
 29 JUN 1256  29       4.        .0     19.6 * 29 JUN 1616 129       4.        .0     19.6 * 29 JUN 1936 229       4.        .0      19.6
 29 JUN 1258  30       4.        .0     19.6 * 29 JUN 1618 130       4.        .0     19.6 * 29 JUN 1938 230       4.        .0      19.6
 29 JUN 1300  31       4.        .0     19.6 * 29 JUN 1620 131       4.        .0     19.6 * 29 JUN 1940 231       4.        .0      19.6
 29 JUN 1302  32       4.        .0     19.6 * 29 JUN 1622 132       4.        .0     19.6 * 29 JUN 1942 232       4.        .0      19.6
 29 JUN 1304  33       4.        .0     19.6 * 29 JUN 1624 133       4.        .0     19.6 * 29 JUN 1944 233       4.        .0      19.6
 29 JUN 1306  34       4.        .0     19.6 * 29 JUN 1626 134       4.        .0     19.6 * 29 JUN 1946 234       4.        .0      19.6
 29 JUN 1308  35       4.        .0     19.6 * 29 JUN 1628 135       4.        .0     19.6 * 29 JUN 1948 235       4.        .0      19.6
 29 JUN 1310  36       4.        .0     19.6 * 29 JUN 1630 136       4.        .0     19.6 * 29 JUN 1950 236       4.        .0      19.6
 29 JUN 1312  37       4.        .0     19.6 * 29 JUN 1632 137       4.        .0     19.6 * 29 JUN 1952 237       4.        .0      19.6
 29 JUN 1314  38       4.        .0     19.6 * 29 JUN 1634 138       4.        .0     19.6 * 29 JUN 1954 238       4.        .0      19.6
 29 JUN 1316  39       4.        .0     19.6 * 29 JUN 1636 139       4.        .0     19.6 * 29 JUN 1956 239       4.        .0      19.6
 29 JUN 1318  40       4.        .0     19.6 * 29 JUN 1638 140       4.        .0     19.6 * 29 JUN 1958 240       4.        .0      19.6
 29 JUN 1320  41       4.        .0     19.6 * 29 JUN 1640 141       4.        .0     19.6 * 29 JUN 2000 241       4.        .0      19.6
 29 JUN 1322  42       4.        .0     19.6 * 29 JUN 1642 142       4.        .0     19.6 * 29 JUN 2002 242       4.        .0      19.6
 29 JUN 1324  43       4.        .0     19.6 * 29 JUN 1644 143       4.        .0     19.6 * 29 JUN 2004 243       4.        .0      19.6
 29 JUN 1326  44       4.        .0     19.6 * 29 JUN 1646 144       4.        .0     19.6 * 29 JUN 2006 244       4.        .0      19.6
 29 JUN 1328  45       4.        .0     19.6 * 29 JUN 1648 145       4.        .0     19.6 * 29 JUN 2008 245       4.        .0      19.6
 29 JUN 1330  46       4.        .0     19.6 * 29 JUN 1650 146       4.        .0     19.6 * 29 JUN 2010 246       4.        .0      19.6
 29 JUN 1332  47       4.        .0     19.6 * 29 JUN 1652 147       4.        .0     19.6 * 29 JUN 2012 247       4.        .0      19.6
 29 JUN 1334  48       4.        .0     19.6 * 29 JUN 1654 148       4.        .0     19.6 * 29 JUN 2014 248       4.        .0      19.6
 29 JUN 1336  49       4.        .0     19.6 * 29 JUN 1656 149       4.        .0     19.6 * 29 JUN 2016 249       4.        .0      19.6
 29 JUN 1338  50       4.        .0     19.6 * 29 JUN 1658 150       4.        .0     19.6 * 29 JUN 2018 250       4.        .0      19.6
 29 JUN 1340  51       4.        .0     19.6 * 29 JUN 1700 151       4.        .0     19.6 * 29 JUN 2020 251       4.        .0      19.6
 29 JUN 1342  52       4.        .0     19.6 * 29 JUN 1702 152       4.        .0     19.6 * 29 JUN 2022 252       4.        .0      19.6
 29 JUN 1344  53       4.        .0     19.6 * 29 JUN 1704 153       4.        .0     19.6 * 29 JUN 2024 253       4.        .0      19.6
 29 JUN 1346  54       4.        .0     19.6 * 29 JUN 1706 154       4.        .0     19.6 * 29 JUN 2026 254       4.        .0      19.6
 29 JUN 1348  55       4.        .0     19.6 * 29 JUN 1708 155       4.        .0     19.6 * 29 JUN 2028 255       4.        .0      19.6
 29 JUN 1350  56       4.        .0     19.6 * 29 JUN 1710 156       4.        .0     19.6 * 29 JUN 2030 256       4.        .0      19.6
 29 JUN 1352  57       4.        .0     19.6 * 29 JUN 1712 157       4.        .0     19.6 * 29 JUN 2032 257       4.        .0      19.6
 29 JUN 1354  58       4.        .0     19.6 * 29 JUN 1714 158       4.        .0     19.6 * 29 JUN 2034 258       4.        .0      19.6
 29 JUN 1356  59       4.        .0     19.6 * 29 JUN 1716 159       4.        .0     19.6 * 29 JUN 2036 259       4.        .0      19.6
 29 JUN 1358  60       4.        .0     19.6 * 29 JUN 1718 160       4.        .0     19.6 * 29 JUN 2038 260       4.        .0      19.6
 29 JUN 1400  61       4.        .0     19.6 * 29 JUN 1720 161       4.        .0     19.6 * 29 JUN 2040 261       4.        .0      19.6
 29 JUN 1402  62       4.        .0     19.6 * 29 JUN 1722 162       4.        .0     19.6 * 29 JUN 2042 262       4.        .0      19.6
 29 JUN 1404  63       4.        .0     19.6 * 29 JUN 1724 163       4.        .0     19.6 * 29 JUN 2044 263       4.        .0      19.6
 29 JUN 1406  64       4.        .0     19.6 * 29 JUN 1726 164       4.        .0     19.6 * 29 JUN 2046 264       4.        .0      19.6
 29 JUN 1408  65       4.        .0     19.6 * 29 JUN 1728 165       4.        .0     19.6 * 29 JUN 2048 265       4.        .0      19.6
 29 JUN 1410  66       4.        .0     19.6 * 29 JUN 1730 166       4.        .0     19.6 * 29 JUN 2050 266       4.        .0      19.6
 29 JUN 1412  67       4.        .0     19.6 * 29 JUN 1732 167       4.        .0     19.6 * 29 JUN 2052 267       4.        .0      19.6
 29 JUN 1414  68       4.        .0     19.6 * 29 JUN 1734 168       4.        .0     19.6 * 29 JUN 2054 268       4.        .0      19.6
 29 JUN 1416  69       4.        .0     19.6 * 29 JUN 1736 169       4.        .0     19.6 * 29 JUN 2056 269       4.        .0      19.6
 29 JUN 1418  70       4.        .0     19.6 * 29 JUN 1738 170       4.        .0     19.6 * 29 JUN 2058 270       4.        .0      19.6
 29 JUN 1420  71       4.        .0     19.6 * 29 JUN 1740 171       4.        .0     19.6 * 29 JUN 2100 271       4.        .0      19.6
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   29 JUN 1424  73         4.        .0        19.6 * 29 JUN 1744 173        4.        .0        19.6 * 29 JUN 2104 273        4.        .0        19.6
   29 JUN 1426  74         4.        .0        19.6 * 29 JUN 1746 174        4.        .0        19.6 * 29 JUN 2106 274        4.        .0        19.6
   29 JUN 1428  75         4.        .0        19.6 * 29 JUN 1748 175        4.        .0        19.7 * 29 JUN 2108 275        4.        .0        19.6
   29 JUN 1430  76         4.        .0        19.6 * 29 JUN 1750 176        4.        .0        19.7 * 29 JUN 2110 276        4.        .0        19.6
   29 JUN 1432  77         4.        .0        19.6 * 29 JUN 1752 177        4.        .0        19.8 * 29 JUN 2112 277        4.        .0        19.6
   29 JUN 1434  78         4.        .0        19.6 * 29 JUN 1754 178        4.        .0        19.9 * 29 JUN 2114 278        4.        .0        19.6
   29 JUN 1436  79         4.        .0        19.6 * 29 JUN 1756 179        4.        .0        19.9 * 29 JUN 2116 279        4.        .0        19.6
   29 JUN 1438  80         4.        .0        19.6 * 29 JUN 1758 180        4.        .0        19.9 * 29 JUN 2118 280        4.        .0        19.6
   29 JUN 1440  81         4.        .0        19.6 * 29 JUN 1800 181        4.        .0        20.0 * 29 JUN 2120 281        4.        .0        19.6
   29 JUN 1442  82         4.        .0        19.6 * 29 JUN 1802 182        4.        .0        20.0 * 29 JUN 2122 282        4.        .0        19.6
   29 JUN 1444  83         4.        .0        19.6 * 29 JUN 1804 183        5.        .0        20.0 * 29 JUN 2124 283        4.        .0        19.6
   29 JUN 1446  84         4.        .0        19.6 * 29 JUN 1806 184        5.        .0        20.0 * 29 JUN 2126 284        4.        .0        19.6
   29 JUN 1448  85         4.        .0        19.6 * 29 JUN 1808 185        5.        .0        20.0 * 29 JUN 2128 285        4.        .0        19.6
   29 JUN 1450  86         4.        .0        19.6 * 29 JUN 1810 186        5.        .0        20.0 * 29 JUN 2130 286        4.        .0        19.6
   29 JUN 1452  87         4.        .0        19.6 * 29 JUN 1812 187        5.        .0        20.0 * 29 JUN 2132 287        4.        .0        19.6
   29 JUN 1454  88         4.        .0        19.6 * 29 JUN 1814 188        4.        .0        20.0 * 29 JUN 2134 288        4.        .0        19.6
   29 JUN 1456  89         4.        .0        19.6 * 29 JUN 1816 189        4.        .0        20.0 * 29 JUN 2136 289        4.        .0        19.6
   29 JUN 1458  90         4.        .0        19.6 * 29 JUN 1818 190        4.        .0        19.9 * 29 JUN 2138 290        4.        .0        19.6
   29 JUN 1500  91         4.        .0        19.6 * 29 JUN 1820 191        4.        .0        19.9 * 29 JUN 2140 291        4.        .0        19.6
   29 JUN 1502  92         4.        .0        19.6 * 29 JUN 1822 192        4.        .0        19.9 * 29 JUN 2142 292        4.        .0        19.6
   29 JUN 1504  93         4.        .0        19.6 * 29 JUN 1824 193        4.        .0        19.8 * 29 JUN 2144 293        4.        .0        19.6
   29 JUN 1506  94         4.        .0        19.6 * 29 JUN 1826 194        4.        .0        19.8 * 29 JUN 2146 294        4.        .0        19.6
   29 JUN 1508  95         4.        .0        19.6 * 29 JUN 1828 195        4.        .0        19.8 * 29 JUN 2148 295        4.        .0        19.6
   29 JUN 1510  96         4.        .0        19.6 * 29 JUN 1830 196        4.        .0        19.7 * 29 JUN 2150 296        4.        .0        19.6
   29 JUN 1512  97         4.        .0        19.6 * 29 JUN 1832 197        4.        .0        19.7 * 29 JUN 2152 297        4.        .0        19.6
   29 JUN 1514  98         4.        .0        19.6 * 29 JUN 1834 198        4.        .0        19.6 * 29 JUN 2154 298        4.        .0        19.6
   29 JUN 1516  99         4.        .0        19.6 * 29 JUN 1836 199        4.        .0        19.6 * 29 JUN 2156 299        4.        .0        19.6
   29 JUN 1518 100         4.        .0        19.6 * 29 JUN 1838 200        4.        .0        19.6 * 29 JUN 2158 300        4.        .0        19.6
                                                    *                                              *
  *****************************************************************************************************************************************

   PEAK FLOW      TIME                            MAXIMUM AVERAGE FLOW
     (CFS)        (HR)                    6-HR         24-HR         72-HR        9.97-HR
         5.       6.13          (CFS)       4.            4.            4.            4.
                             (INCHES)     .444          .731          .731          .731
                              (AC-FT)       2.            3.            3.            3.

  PEAK STORAGE    TIME                           MAXIMUM AVERAGE STORAGE
    (AC-FT)       (HR)                    6-HR         24-HR         72-HR        9.97-HR
         0.       6.10                      0.            0.            0.            0.

   PEAK STAGE     TIME                            MAXIMUM AVERAGE STAGE
     (FEET)       (HR)                    6-HR         24-HR         72-HR        9.97-HR
      20.02       6.13                   19.64         19.62         19.62         19.62

                          CUMULATIVE AREA =      .08 SQ MI
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                                                          STATION     RES1

                         (I) INFLOW,   (O) OUTFLOW
         0.        1.        2.        3.        4.        5.        6.        0.        0.        0.        0.        0.        0.
                                                                                (S) STORAGE
        .00       .00       .00       .00       .00       .00      -.01       .00       .01       .02       .03       .04       .00
DAHRMN PER
291200   1I---------.---------.---------.---------.---------.---------.---------.---------.---S-----.---------.---------.---------.
291202   2I         .         .         .       O .         .         .         .        S.         .         .         .         .
291204   3I         .         .         .       O .         .         .        S.         .         .         .         .         .
291206   4I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291208   5I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291210   6I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291212   7I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291214   8I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291216   9I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291218  10I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291220  11I.....................................O..........................S.......................................................
291222  12I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291224  13I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291226  14I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291228  15I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291230  16I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291232  17I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291234  18I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291236  19I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291238  20I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291240  21I.....................................O..........................S.......................................................
291242  22I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291244  23I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291246  24I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291248  25I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291250  26I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291252  27I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291254  28I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291256  29I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291258  30I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291300  31I.....................................O..........................S.......................................................
291302  32I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291304  33I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291306  34I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291308  35I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291310  36I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291312  37I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291314  38I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291316  39I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291318  40I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291320  41I.....................................O..........................S.......................................................
291322  42I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291324  43I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291326  44I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291328  45I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291330  46I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291332  47I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291334  48I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291336  49I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291338  50I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291340  51I.....................................O..........................S.......................................................
291342  52I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291344  53I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291346  54I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291348  55I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291350  56I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291352  57I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291354  58I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291356  59I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291358  60I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291400  61I.....................................O..........................S.......................................................
291402  62I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291404  63I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291406  64I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291408  65I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291410  66I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291412  67I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291414  68I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291416  69I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291418  70I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291420  71I.....................................O..........................S.......................................................
291422  72I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291424  73I         .         .         .       O .         .         .    S    .         .         .         .         .         .
291426  74I                                     O                          S
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291430  76I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291432  77I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291434  78I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291436  79I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291438  80I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291440  81I . . . . . . . . . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291442  82I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291444  83I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291446  84I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291448  85I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291450  86I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291452  87I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291454  88I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291456  89I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291458  90I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291500  91I . . . . . . . . . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291502  92I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291504  93I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291506  94I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291508  95I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291510  96I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291512  97I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291514  98I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291516  99I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291518 100I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291520 101I . . . . . . . . . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291522 102I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291524 103I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291526 104I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291528 105I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291530 106I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291532 107I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291534 108I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291536 109I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291538 110I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291540 111I . . . . . . . . . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291542 112I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291544 113I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291546 114I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291548 115I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291550 116I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291552 117I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291554 118I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291556 119I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291558 120I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291600 121I . . . . . . . . . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291602 122I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291604 123I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291606 124I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291608 125I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291610 126I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291612 127I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291614 128I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291616 129I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291618 130I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291620 131I . . . . . . . . . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291622 132I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291624 133I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291626 134I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291628 135I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291630 136I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291632 137I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291634 138I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291636 139I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291638 140I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291640 141I . . . . . . . . . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291642 142I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291644 143I         .         .         .       0 .         .         .    S    .         .         .         .         .         .
291646 144.I        .         .         .       0 .         .         .    S    .         .         .         .         .         .
291648 145.I        .         .         .       0 .         .         .    S    .         .         .         .         .         .
291650 146.I        .         .         .       0 .         .         .    S    .         .         .         .         .         .
291652 147.I        .         .         .       0 .         .         .    S    .         .         .         .         .         .
291654 148.I        .         .         .       0 .         .         .    S    .         .         .         .         .         .
291656 149. I       .         .         .       0 .         .         .    S    .         .         .         .         .         .
291658 150. I       .         .         .       0 .         .         .    S    .         .         .         .         .         .
291700 151. .I. . . . . . . . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291702 152.   I     .         .         .       0 .         .         .    S    .         .         .         .         .         .
291704 153.    I    .         .         .       0 .         .         .    S    .         .         .         .         .         .
291706 154.    I    .         .         .       0 .         .         .    S    .         .         .         .         .         .
291708 155.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
291710 156.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
291712 157.       I .         .         .       0 .         .         .    S    .         .         .         .         .         .
291714 158.         I         .         .       0 .         .         .    S    .         .         .         .         .         .
291716 159.         . I       .         .       0 .         .         .    S    .         .         .         .         .         .
291718 160.         .   I     .         .       0 .         .         .    S    .         .         .         .         .         .
291720 161. . . . . . . I . . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291722 162.         .       I .         .       0 .         .         .    S    .         .         .         .         .         .
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291726 164.         .         .   I     .       0 .         .         .    S    .         .         .         .         .         .
291728 165.         .         .       I .       0 .         .         .    S    .         .         .         .         .         .
291730 166.         .         .         . I     0 .         .         .    S    .         .         .         .         .         .
291732 167.         .         .         .     I 0 .         .         .    S    .         .         .         .         .         .
291734 168.         .         .         .       0 I         .         .    S    .         .         .         .         .         .
291736 169.         .         .         .       0 .   I     .         .     S   .         .         .         .         .         .
291738 170.         .         .         .       0 .     I   .         .       S .         .         .         .         .         .
291740 171. . . . . . . . . . . . . . . . . . . 0 . . . . I . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
291742 172.         .         .         .       0 .        I.         .         .  S      .         .         .         .         .
291744 173.         .         .         .       0 .         .I        .         .      S  .         .         .         .         .
291746 174.         .         .         .       0 .         .I        .         .         S         .         .         .         .
291748 175.         .         .         .         0         . I       .         .         .   S     .         .         .         .
291750 176.         .         .         .         .0        . I       .         .         .      S  .         .         .         .
291752 177.         .         .         .         . 0       . I       .         .         .         S         .         .         .
291754 178.         .         .         .         .  0      . I       .         .         .         . S       .         .         .
291756 179.         .         .         .         .  0      .I        .         .         .         .    S    .         .         .
291758 180.         .         .         .         .   0     I         .         .         .         .      S  .         .         .
291800 181. . . . . . . . . . . . . . . . . . . . . . 0 . .I. . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . .
291802 182.         .         .         .         .    0  I .         .         .         .         .        S.         .         .
291804 183.         .         .         .         .    0 I  .         .         .         .         .         S         .         .
291806 184.         .         .         .         .    0I   .         .         .         .         .         .S        .         .
291808 185.         .         .         .         .    I    .         .         .         .         .         .S        .         .
291810 186.         .         .         .         .   I0    .         .         .         .         .         .S        .         .
291812 187.         .         .         .         .  I 0    .         .         .         .         .         S         .         .
291814 188.         .         .         .         .I   0    .         .         .         .         .        S.         .         .
291816 189.         .         .         .         I   0     .         .         .         .         .       S .         .         .
291818 190.         .         .         .        I.   0     .         .         .         .         .      S  .         .         .
291820 191. . . . . . . . . . . . . . . . . . .I. . . 0 . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . .
291822 192.         .         .         .     I   .  0      .         .         .         .         .   S     .         .         .
291824 193.         .         .         .    I    . 0       .         .         .         .         . S       .         .         .
291826 194.         .         .         .   I     . 0       .         .         .         .         S         .         .         .
291828 195.         .         .         .  I      .0        .         .         .         .      S  .         .         .         .
291830 196.         .         .         . I       0         .         .         .         .    S    .         .         .         .
291832 197.         .         .         .I       0.         .         .         .         .  S      .         .         .         .
291834 198.         .         .         I       0 .         .         .         .         S         .         .         .         .
291836 199.         .         .        I.       0 .         .         .         .       S .         .         .         .         .
291838 200.         .         .       I .       0 .         .         .         .    S    .         .         .         .         .
291840 201. . . . . . . . . . . . . .I. . . . . 0 . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . .
291842 202.         .         .     I   .       0 .         .         .        S.         .         .         .         .         .
291844 203.         .         .    I    .       0 .         .         .     S   .         .         .         .         .         .
291846 204.         .         .    I    .       0 .         .         .    S    .         .         .         .         .         .
291848 205.         .         .   I     .       0 .         .         .    S    .         .         .         .         .         .
291850 206.         .         .  I      .       0 .         .         .    S    .         .         .         .         .         .
291852 207.         .         . I       .       0 .         .         .    S    .         .         .         .         .         .
291854 208.         .         . I       .       0 .         .         .    S    .         .         .         .         .         .
291856 209.         .         .I        .       0 .         .         .    S    .         .         .         .         .         .
291858 210.         .         .I        .       0 .         .         .    S    .         .         .         .         .         .
291900 211. . . . . . . . . . I . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291902 212.         .        I.         .       0 .         .         .    S    .         .         .         .         .         .
291904 213.         .        I.         .       0 .         .         .    S    .         .         .         .         .         .
291906 214.         .       I .         .       0 .         .         .    S    .         .         .         .         .         .
291908 215.         .       I .         .       0 .         .         .    S    .         .         .         .         .         .
291910 216.         .      I  .         .       0 .         .         .    S    .         .         .         .         .         .
291912 217.         .      I  .         .       0 .         .         .    S    .         .         .         .         .         .
291914 218.         .     I   .         .       0 .         .         .    S    .         .         .         .         .         .
291916 219.         .     I   .         .       0 .         .         .    S    .         .         .         .         .         .
291918 220.         .    I    .         .       0 .         .         .    S    .         .         .         .         .         .
291920 221. . . . . . . .I. . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291922 222.         .    I    .         .       0 .         .         .    S    .         .         .         .         .         .
291924 223.         .   I     .         .       0 .         .         .    S    .         .         .         .         .         .
291926 224.         .   I     .         .       0 .         .         .    S    .         .         .         .         .         .
291928 225.         .  I      .         .       0 .         .         .    S    .         .         .         .         .         .
291930 226.         .  I      .         .       0 .         .         .    S    .         .         .         .         .         .
291932 227.         .  I      .         .       0 .         .         .    S    .         .         .         .         .         .
291934 228.         .  I      .         .       0 .         .         .    S    .         .         .         .         .         .
291936 229.         . I       .         .       0 .         .         .    S    .         .         .         .         .         .
291938 230.         . I       .         .       0 .         .         .    S    .         .         .         .         .         .
291940 231. . . . . . I . . . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
291942 232.         .I        .         .       0 .         .         .    S    .         .         .         .         .         .
291944 233.         .I        .         .       0 .         .         .    S    .         .         .         .         .         .
291946 234.         .I        .         .       0 .         .         .    S    .         .         .         .         .         .
291948 235.         .I        .         .       0 .         .         .    S    .         .         .         .         .         .
291950 236.         .I        .         .       0 .         .         .    S    .         .         .         .         .         .
291952 237.         I         .         .       0 .         .         .    S    .         .         .         .         .         .
291954 238.         I         .         .       0 .         .         .    S    .         .         .         .         .         .
291956 239.         I         .         .       0 .         .         .    S    .         .         .         .         .         .
291958 240.         I         .         .       0 .         .         .    S    .         .         .         .         .         .
292000 241. . . . . I . . . . . . . . . . . . . 0 . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
292002 242.        I.         .         .       0 .         .         .    S    .         .         .         .         .         .
292004 243.        I.         .         .       0 .         .         .    S    .         .         .         .         .         .
292006 244.        I.         .         .       0 .         .         .    S    .         .         .         .         .         .
292008 245.        I.         .         .       0 .         .         .    S    .         .         .         .         .         .
292010 246.        I.         .         .       0 .         .         .    S    .         .         .         .         .         .
292012 247.        I.         .         .       0 .         .         .    S    .         .         .         .         .         .
292014 248.        I.         .         .       0 .         .         .    S    .         .         .         .         .         .
292016 249.        I.         .         .       0 .         .         .    S    .         .         .         .         .         .
292018 250.       I                             0                          S
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292022 252.       I .         .         .       0 .         .         .    S    .         .         .         .         .         .
292024 253.       I .         .         .       0 .         .         .    S    .         .         .         .         .         .
292026 254.       I .         .         .       0 .         .         .    S    .         .         .         .         .         .
292028 255.       I .         .         .       0 .         .         .    S    .         .         .         .         .         .
292030 256.       I .         .         .       0 .         .         .    S    .         .         .         .         .         .
292032 257.       I .         .         .       0 .         .         .    S    .         .         .         .         .         .
292034 258.       I .         .         .       0 .         .         .    S    .         .         .         .         .         .
292036 259.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
292038 260.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
292040 261.......I..............................0..........................S.......................................................
292042 262.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
292044 263.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
292046 264.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
292048 265.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
292050 266.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
292052 267.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
292054 268.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
292056 269.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
292058 270.      I  .         .         .       0 .         .         .    S    .         .         .         .         .         .
292100 271.......I..............................0..........................S.......................................................
292102 272.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292104 273.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292106 274.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292108 275.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292110 276.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292112 277.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292114 278.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292116 279.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292118 280.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292120 281......I...............................0..........................S.......................................................
292122 282.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292124 283.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292126 284.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292128 285.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292130 286.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292132 287.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292134 288.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292136 289.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292138 290.     I   .         .         .       0 .         .         .    S    .         .         .         .         .         .
292140 291.....I................................0..........................S.......................................................
292142 292.    I    .         .         .       0 .         .         .    S    .         .         .         .         .         .
292144 293.    I    .         .         .       0 .         .         .    S    .         .         .         .         .         .
292146 294.    I    .         .         .       0 .         .         .    S    .         .         .         .         .         .
292148 295.    I    .         .         .       0 .         .         .    S    .         .         .         .         .         .
292150 296.    I    .         .         .       0 .         .         .    S    .         .         .         .         .         .
292152 297.    I    .         .         .       0 .         .         .    S    .         .         .         .         .         .
292154 298.    I    .         .         .       0 .         .         .    S    .         .         .         .         .         .
292156 299.    I    .         .         .       0 .         .         .    S    .         .         .         .         .         .
292158 300.----I----.---------.---------.-------0-.---------.---------.----S----.---------.---------.---------.---------.---------.
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

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            *            *
 106 KK     *      CH3   *
            *            *
            **************

 108 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           1  PLOT CONTROL
                       OSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .033  TIME INTERVAL IN HOURS


               HYDROGRAPH ROUTING DATA

 109 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                           L        310.  CHANNEL LENGTH
                           S       .0052  SLOPE
                           N        .025  CHANNEL ROUGHNESS COEFFICIENT
                          CA         .00  CONTRIBUTING AREA
                       SHAPE        TRAP  CHANNEL SHAPE
                          WD        2.00  BOTTOM WIDTH OR DIAMETER
                           Z        3.00  SIDE SLOPE

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

                      MAIN       1.72      1.34       1.30     103.33      4.52     369.20        .73         2.48


                                          INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                      MAIN       1.72      1.34       2.00                 4.52     370.00        .73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3161E+01 EXCESS= .0000E+00 OUTFLOW= .3149E+01 BASIN STORAGE= .1282E-01 PERCENT ERROR=    .0


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

                          HYDROGRAPH AT STATION      CH3

 PEAK FLOW      TIME                             MAXIMUM AVERAGE FLOW
   (CFS)        (HR)                  6-HR        24-HR        72-HR        9.97-HR
       5.       6.17       (CFS)        4.           4.           4.            4.
                         (INCHES)     .444         .728         .728          .728
                          (AC-FT)       2.           3.           3.            3.

                         CUMULATIVE AREA =     .08 SQ MI


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

            **************
            *            *
 110 KK     *       B2   *
            *            *
            **************

 112 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
```

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                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                      IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT        .033  TIME INTERVAL IN HOURS


               SUBBASIN RUNOFF DATA

 113 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .00  SUBBASIN AREA

                 PRECIPITATION DATA

 114 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ................   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
                   .10     .19     .34     .42     .47     .55     .64     .70      .00     .00     .00     .00

                                                    STORM AREA =      .00

 115 LS          SCS LOSS RATE
                     STRTL         .08  INITIAL ABSTRACTION
                    CRVNBR       96.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

 116 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .06  LAG

                                                              ***

                                                        UNIT HYDROGRAPH
                                                   11 END-OF-PERIOD ORDINATES
                 1.         3.         3.         1.         1.         0.         0.         0.         0.         0.
                 0.

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

                      HYDROGRAPH AT STATION       B2

    TOTAL RAINFALL =      .61, TOTAL LOSS =      .32, TOTAL EXCESS =      .30

 PEAK FLOW       TIME                            MAXIMUM AVERAGE FLOW
   (CFS)         (HR)                   6-HR         24-HR        72-HR         9.97-HR
       0.        5.07        (CFS)        0.            0.           0.             0.
                           (INCHES)     .297          .297         .297           .297
                           (AC-FT)        0.            0.           0.             0.

                     CUMULATIVE AREA =      .00 SQ MI



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


              **************
              *            *
 117 KK       *      B2    *
              *            *
              **************

 119 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           3  PRINT CONTROL
                     IPLOT           1  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                      IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT        .033  TIME INTERVAL IN HOURS


 120 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                              ***

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

                      HYDROGRAPH AT STATION       B2

 PEAK FLOW       TIME                            MAXIMUM AVERAGE FLOW
   (CFS)         (HR)                   6-HR         24-HR        72-HR         9.97-HR
       5.        6.17        (CFS)        4.            4.           4.             4.
                           (INCHES)     .443          .725         .725           .725
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                            CUMULATIVE AREA =      .08 SQ MI


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


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                 *            *
 121 KK          *      RES2  *
                 *            *
                 **************

 123 KO               OUTPUT CONTROL VARIABLES
                            IPRNT           1  PRINT CONTROL
                            IPLOT           2  PLOT CONTROL
                            QSCAL          0.  HYDROGRAPH PLOT SCALE
                            IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                             IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                            ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                            ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                           TIMINT        .033  TIME INTERVAL IN HOURS


                    HYDROGRAPH ROUTING DATA

 124 RS               STORAGE ROUTING
                            NSTPS           1  NUMBER OF SUBREACHES
                             ITYP        ELEV  TYPE OF INITIAL CONDITION
                           RSVRIC       17.00  INITIAL CONDITION
                                X         .00 WORKING R AND D COEFFICIENT

 125 SV                 STORAGE           .0         .1         .2         .3

 126 SE               ELEVATION        18.00      19.00      20.00      21.00

 127 SL               LOW-LEVEL OUTLET
                            ELEVL       17.00  ELEVATION AT CENTER OF OUTLET
                            CAREA         .79  CROSS-SECTIONAL AREA
                             COOL         .60  COEFFICIENT
                             EXPL         .50  EXPONENT OF HEAD

 128 SS               SPILLWAY
                             CREL       20.00  SPILLWAY CREST ELEVATION
                            SPWID       19.00  SPILLWAY WIDTH
                             COQW        2.70  WEIR COEFFICIENT
                             EXPW        1.50  EXPONENT OF HEAD
                                                                      ***

                                                       COMPUTED OUTFLOW-ELEVATION DATA

                 OUTFLOW        .00       3.99       4.20       4.42       4.68       4.97       5.29       5.66       6.09       6.58
               ELEVATION      18.00      18.10      18.22      18.35      18.52      18.71      18.94      19.22      19.57      20.00

                 OUTFLOW       6.67       7.12       8.22      10.26      13.55      18.38      25.03      33.80      45.00      58.90
               ELEVATION      20.01      20.04      20.10      20.17      20.26      20.37      20.50      20.64      20.81      21.00

                                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                 STORAGE        .01        .02        .03        .04        .05        .06        .07        .08        .10        .14
                 OUTFLOW       3.80       3.99       4.20       4.42       4.68       4.97       5.29       5.38       5.66       6.09
               ELEVATION      18.00      18.10      18.22      18.35      18.52      18.71      18.94      19.00      19.22      19.57

                 STORAGE        .18        .19        .19        .19        .20        .21        .22        .24        .25        .27
                 OUTFLOW       6.58       6.67       7.12       8.22      10.26      13.55      18.38      25.03      33.80      45.00
               ELEVATION      20.00      20.01      20.04      20.10      20.17      20.26      20.37      20.50      20.64      20.81

                 STORAGE        .29
                 OUTFLOW      58.90
               ELEVATION      21.00
*****************************************************************************************************************************************

                                                        HYDROGRAPH AT STATION     RES2

*****************************************************************************************************************************************
                                                  *                                           *
 DA MON HRMN ORD  OUTFLOW  STORAGE     STAGE *  DA MON HRMN ORD  OUTFLOW  STORAGE     STAGE *  DA MON HRMN ORD  OUTFLOW  STORAGE     STAGE
                                                  *                                           *
 29 JUN 1200   1       0.       .0      18.0 * 29 JUN 1520 101       4.       .0      18.0 * 29 JUN 1840 201       4.       .0      18.2
 29 JUN 1202   2       4.       .0      18.0 * 29 JUN 1522 102       4.       .0      18.0 * 29 JUN 1842 202       4.       .0      18.2
 29 JUN 1204   3       4.       .0      18.0 * 29 JUN 1524 103       4.       .0      18.0 * 29 JUN 1844 203       4.       .0      18.2
 29 JUN 1206   4       4.       .0      18.0 * 29 JUN 1526 104       4.       .0      18.0 * 29 JUN 1846 204       4.       .0      18.1
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29 JUN 1210   6    4.    .0    18.0 * 29 JUN 1530 106    4.    .0    18.0 * 29 JUN 1850 206    4.    .0    18.1
29 JUN 1212   7    4.    .0    18.0 * 29 JUN 1532 107    4.    .0    18.0 * 29 JUN 1852 207    4.    .0    18.1
29 JUN 1214   8    4.    .0    18.0 * 29 JUN 1534 108    4.    .0    18.0 * 29 JUN 1854 208    4.    .0    18.1
29 JUN 1216   9    4.    .0    18.0 * 29 JUN 1536 109    4.    .0    18.0 * 29 JUN 1856 209    4.    .0    18.1
29 JUN 1218  10    4.    .0    18.0 * 29 JUN 1538 110    4.    .0    18.0 * 29 JUN 1858 210    4.    .0    18.1
29 JUN 1220  11    4.    .0    18.0 * 29 JUN 1540 111    4.    .0    18.0 * 29 JUN 1900 211    4.    .0    18.1
29 JUN 1222  12    4.    .0    18.0 * 29 JUN 1542 112    4.    .0    18.0 * 29 JUN 1902 212    4.    .0    18.1
29 JUN 1224  13    4.    .0    18.0 * 29 JUN 1544 113    4.    .0    18.0 * 29 JUN 1904 213    4.    .0    18.1
29 JUN 1226  14    4.    .0    18.0 * 29 JUN 1546 114    4.    .0    18.0 * 29 JUN 1906 214    4.    .0    18.1
29 JUN 1228  15    4.    .0    18.0 * 29 JUN 1548 115    4.    .0    18.0 * 29 JUN 1908 215    4.    .0    18.1
29 JUN 1230  16    4.    .0    18.0 * 29 JUN 1550 116    4.    .0    18.0 * 29 JUN 1910 216    4.    .0    18.1
29 JUN 1232  17    4.    .0    18.0 * 29 JUN 1552 117    4.    .0    18.0 * 29 JUN 1912 217    4.    .0    18.1
29 JUN 1234  18    4.    .0    18.0 * 29 JUN 1554 118    4.    .0    18.0 * 29 JUN 1914 218    4.    .0    18.0
29 JUN 1236  19    4.    .0    18.0 * 29 JUN 1556 119    4.    .0    18.0 * 29 JUN 1916 219    4.    .0    18.0
29 JUN 1238  20    4.    .0    18.0 * 29 JUN 1558 120    4.    .0    18.0 * 29 JUN 1918 220    4.    .0    18.0
29 JUN 1240  21    4.    .0    18.0 * 29 JUN 1600 121    4.    .0    18.0 * 29 JUN 1920 221    4.    .0    18.0
29 JUN 1242  22    4.    .0    18.0 * 29 JUN 1602 122    4.    .0    18.0 * 29 JUN 1922 222    4.    .0    18.0
29 JUN 1244  23    4.    .0    18.0 * 29 JUN 1604 123    4.    .0    18.0 * 29 JUN 1924 223    4.    .0    18.0
29 JUN 1246  24    4.    .0    18.0 * 29 JUN 1606 124    4.    .0    18.0 * 29 JUN 1926 224    4.    .0    18.0
29 JUN 1248  25    4.    .0    18.0 * 29 JUN 1608 125    4.    .0    18.0 * 29 JUN 1928 225    4.    .0    18.0
29 JUN 1250  26    4.    .0    18.0 * 29 JUN 1610 126    4.    .0    18.0 * 29 JUN 1930 226    4.    .0    18.0
29 JUN 1252  27    4.    .0    18.0 * 29 JUN 1612 127    4.    .0    18.0 * 29 JUN 1932 227    4.    .0    18.0
29 JUN 1254  28    4.    .0    18.0 * 29 JUN 1614 128    4.    .0    18.0 * 29 JUN 1934 228    4.    .0    18.0
29 JUN 1256  29    4.    .0    18.0 * 29 JUN 1616 129    4.    .0    18.0 * 29 JUN 1936 229    4.    .0    18.0
29 JUN 1258  30    4.    .0    18.0 * 29 JUN 1618 130    4.    .0    18.0 * 29 JUN 1938 230    4.    .0    18.0
29 JUN 1300  31    4.    .0    18.0 * 29 JUN 1620 131    4.    .0    18.0 * 29 JUN 1940 231    4.    .0    18.0
29 JUN 1302  32    4.    .0    18.0 * 29 JUN 1622 132    4.    .0    18.0 * 29 JUN 1942 232    4.    .0    18.0
29 JUN 1304  33    4.    .0    18.0 * 29 JUN 1624 133    4.    .0    18.0 * 29 JUN 1944 233    4.    .0    18.0
29 JUN 1306  34    4.    .0    18.0 * 29 JUN 1626 134    4.    .0    18.0 * 29 JUN 1946 234    4.    .0    18.0
29 JUN 1308  35    4.    .0    18.0 * 29 JUN 1628 135    4.    .0    18.0 * 29 JUN 1948 235    4.    .0    18.0
29 JUN 1310  36    4.    .0    18.0 * 29 JUN 1630 136    4.    .0    18.0 * 29 JUN 1950 236    4.    .0    18.0
29 JUN 1312  37    4.    .0    18.0 * 29 JUN 1632 137    4.    .0    18.0 * 29 JUN 1952 237    4.    .0    18.0
29 JUN 1314  38    4.    .0    18.0 * 29 JUN 1634 138    4.    .0    18.0 * 29 JUN 1954 238    4.    .0    18.0
29 JUN 1316  39    4.    .0    18.0 * 29 JUN 1636 139    4.    .0    18.0 * 29 JUN 1956 239    4.    .0    18.0
29 JUN 1318  40    4.    .0    18.0 * 29 JUN 1638 140    4.    .0    18.0 * 29 JUN 1958 240    4.    .0    18.0
29 JUN 1320  41    4.    .0    18.0 * 29 JUN 1640 141    4.    .0    18.0 * 29 JUN 2000 241    4.    .0    18.0
29 JUN 1322  42    4.    .0    18.0 * 29 JUN 1642 142    4.    .0    18.0 * 29 JUN 2002 242    4.    .0    18.0
29 JUN 1324  43    4.    .0    18.0 * 29 JUN 1644 143    4.    .0    18.0 * 29 JUN 2004 243    4.    .0    18.0
29 JUN 1326  44    4.    .0    18.0 * 29 JUN 1646 144    4.    .0    18.0 * 29 JUN 2006 244    4.    .0    18.0
29 JUN 1328  45    4.    .0    18.0 * 29 JUN 1648 145    4.    .0    18.0 * 29 JUN 2008 245    4.    .0    18.0
29 JUN 1330  46    4.    .0    18.0 * 29 JUN 1650 146    4.    .0    18.0 * 29 JUN 2010 246    4.    .0    18.0
29 JUN 1332  47    4.    .0    18.0 * 29 JUN 1652 147    4.    .0    18.0 * 29 JUN 2012 247    4.    .0    18.0
29 JUN 1334  48    4.    .0    18.0 * 29 JUN 1654 148    4.    .0    18.0 * 29 JUN 2014 248    4.    .0    18.0
29 JUN 1336  49    4.    .0    18.0 * 29 JUN 1656 149    4.    .0    18.0 * 29 JUN 2016 249    4.    .0    18.0
29 JUN 1338  50    4.    .0    18.0 * 29 JUN 1658 150    4.    .0    18.0 * 29 JUN 2018 250    4.    .0    18.0
29 JUN 1340  51    4.    .0    18.0 * 29 JUN 1700 151    4.    .0    18.0 * 29 JUN 2020 251    4.    .0    18.0
29 JUN 1342  52    4.    .0    18.0 * 29 JUN 1702 152    4.    .0    18.0 * 29 JUN 2022 252    4.    .0    18.0
29 JUN 1344  53    4.    .0    18.0 * 29 JUN 1704 153    4.    .0    18.0 * 29 JUN 2024 253    4.    .0    18.0
29 JUN 1346  54    4.    .0    18.0 * 29 JUN 1706 154    4.    .0    18.0 * 29 JUN 2026 254    4.    .0    18.0
29 JUN 1348  55    4.    .0    18.0 * 29 JUN 1708 155    4.    .0    18.0 * 29 JUN 2028 255    4.    .0    18.0
29 JUN 1350  56    4.    .0    18.0 * 29 JUN 1710 156    4.    .0    18.0 * 29 JUN 2030 256    4.    .0    18.0
29 JUN 1352  57    4.    .0    18.0 * 29 JUN 1712 157    4.    .0    18.0 * 29 JUN 2032 257    4.    .0    18.0
29 JUN 1354  58    4.    .0    18.0 * 29 JUN 1714 158    4.    .0    18.0 * 29 JUN 2034 258    4.    .0    18.0
29 JUN 1356  59    4.    .0    18.0 * 29 JUN 1716 159    4.    .0    18.0 * 29 JUN 2036 259    4.    .0    18.0
29 JUN 1358  60    4.    .0    18.0 * 29 JUN 1718 160    4.    .0    18.0 * 29 JUN 2038 260    4.    .0    18.0
29 JUN 1400  61    4.    .0    18.0 * 29 JUN 1720 161    4.    .0    18.0 * 29 JUN 2040 261    4.    .0    18.0
29 JUN 1402  62    4.    .0    18.0 * 29 JUN 1722 162    4.    .0    18.0 * 29 JUN 2042 262    4.    .0    18.0
29 JUN 1404  63    4.    .0    18.0 * 29 JUN 1724 163    4.    .0    18.0 * 29 JUN 2044 263    4.    .0    18.0
29 JUN 1406  64    4.    .0    18.0 * 29 JUN 1726 164    4.    .0    18.0 * 29 JUN 2046 264    4.    .0    18.0
29 JUN 1408  65    4.    .0    18.0 * 29 JUN 1728 165    4.    .0    18.0 * 29 JUN 2048 265    4.    .0    18.0
29 JUN 1410  66    4.    .0    18.0 * 29 JUN 1730 166    4.    .0    18.0 * 29 JUN 2050 266    4.    .0    18.0
29 JUN 1412  67    4.    .0    18.0 * 29 JUN 1732 167    4.    .0    18.0 * 29 JUN 2052 267    4.    .0    18.0
29 JUN 1414  68    4.    .0    18.0 * 29 JUN 1734 168    4.    .0    18.0 * 29 JUN 2054 268    4.    .0    18.0
29 JUN 1416  69    4.    .0    18.0 * 29 JUN 1736 169    4.    .0    18.0 * 29 JUN 2056 269    4.    .0    18.0
29 JUN 1418  70    4.    .0    18.0 * 29 JUN 1738 170    4.    .0    18.0 * 29 JUN 2058 270    4.    .0    18.0
29 JUN 1420  71    4.    .0    18.0 * 29 JUN 1740 171    4.    .0    18.0 * 29 JUN 2100 271    4.    .0    18.0
29 JUN 1422  72    4.    .0    18.0 * 29 JUN 1742 172    4.    .0    18.0 * 29 JUN 2102 272    4.    .0    18.0
29 JUN 1424  73    4.    .0    18.0 * 29 JUN 1744 173    4.    .0    18.0 * 29 JUN 2104 273    4.    .0    18.0
29 JUN 1426  74    4.    .0    18.0 * 29 JUN 1746 174    4.    .0    18.0 * 29 JUN 2106 274    4.    .0    18.0
29 JUN 1428  75    4.    .0    18.0 * 29 JUN 1748 175    4.    .0    18.0 * 29 JUN 2108 275    4.    .0    18.0
29 JUN 1430  76    4.    .0    18.0 * 29 JUN 1750 176    4.    .0    18.0 * 29 JUN 2110 276    4.    .0    18.0
29 JUN 1432  77    4.    .0    18.0 * 29 JUN 1752 177    4.    .0    18.0 * 29 JUN 2112 277    4.    .0    18.0
29 JUN 1434  78    4.    .0    18.0 * 29 JUN 1754 178    4.    .0    18.0 * 29 JUN 2114 278    4.    .0    18.0
29 JUN 1436  79    4.    .0    18.0 * 29 JUN 1756 179    4.    .0    18.0 * 29 JUN 2116 279    4.    .0    18.0
29 JUN 1438  80    4.    .0    18.0 * 29 JUN 1758 180    4.    .0    18.0 * 29 JUN 2118 280    4.    .0    18.0
29 JUN 1440  81    4.    .0    18.0 * 29 JUN 1800 181    4.    .0    18.1 * 29 JUN 2120 281    4.    .0    18.0
29 JUN 1442  82    4.    .0    18.0 * 29 JUN 1802 182    4.    .0    18.1 * 29 JUN 2122 282    4.    .0    18.0
29 JUN 1444  83    4.    .0    18.0 * 29 JUN 1804 183    4.    .0    18.1 * 29 JUN 2124 283    4.    .0    18.0
29 JUN 1446  84    4.    .0    18.0 * 29 JUN 1806 184    4.    .0    18.1 * 29 JUN 2126 284    4.    .0    18.0
29 JUN 1448  85    4.    .0    18.0 * 29 JUN 1808 185    4.    .0    18.1 * 29 JUN 2128 285    4.    .0    18.0
29 JUN 1450  86    4.    .0    18.0 * 29 JUN 1810 186    4.    .0    18.2 * 29 JUN 2130 286    4.    .0    18.0
29 JUN 1452  87    4.    .0    18.0 * 29 JUN 1812 187    4.    .0    18.2 * 29 JUN 2132 287    4.    .0    18.0
29 JUN 1454  88    4.    .0    18.0 * 29 JUN 1814 188    4.    .0    18.2 * 29 JUN 2134 288    4.    .0    18.0
29 JUN 1456  89    4.    .0    18.0 * 29 JUN 1816 189    4.    .0    18.2 * 29 JUN 2136 289    4.    .0    18.0
29 JUN 1458  90    4.    .0    18.0 * 29 JUN 1818 190    4.    .0    18.2 * 29 JUN 2138 290    4.    .0    18.0
29 JUN 1500  91    4.    .0    18.0 * 29 JUN 1820 191    4.    .0    18.2 * 29 JUN 2140 291    4.    .0    18.0
29 JUN 1502  92    4.    .0    18.0 * 29 JUN 1822 192    4.    .0    18.2 * 29 JUN 2142 292    4.    .0    18.0
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 29 JUN 1506  94      4.      .0    18.0 * 29 JUN 1826 194      4.      .0    18.2 * 29 JUN 2146 294      4.      .0    18.0
 29 JUN 1508  95      4.      .0    18.0 * 29 JUN 1828 195      4.      .0    18.2 * 29 JUN 2148 295      4.      .0    18.0
 29 JUN 1510  96      4.      .0    18.0 * 29 JUN 1830 196      4.      .0    18.2 * 29 JUN 2150 296      4.      .0    18.0
 29 JUN 1512  97      4.      .0    18.0 * 29 JUN 1832 197      4.      .0    18.2 * 29 JUN 2152 297      4.      .0    18.0
 29 JUN 1514  98      4.      .0    18.0 * 29 JUN 1834 198      4.      .0    18.2 * 29 JUN 2154 298      4.      .0    18.0
 29 JUN 1516  99      4.      .0    18.0 * 29 JUN 1836 199      4.      .0    18.2 * 29 JUN 2156 299      4.      .0    18.0
 29 JUN 1518 100      4.      .0    18.0 * 29 JUN 1838 200      4.      .0    18.2 * 29 JUN 2158 300      4.      .0    18.0
                                         *                                         *
************************************************************************************************************************************

 PEAK FLOW     TIME                                 MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                         6-HR         24-HR         72-HR        9.97-HR
      4.       6.43               (CFS)       4.            4.            4.             4.
                               (INCHES)     .441          .727          .727           .727
                                (AC-FT)       2.            3.            3.             3.

PEAK STORAGE   TIME                               MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                         6-HR         24-HR         72-HR        9.97-HR
      0.       6.40                           0.            0.            0.             0.

 PEAK STAGE    TIME                                 MAXIMUM AVERAGE STAGE
   (FEET)      (HR)                         6-HR         24-HR         72-HR        9.97-HR
    18.25      6.43                        18.04         18.02         18.02          18.02

                         CUMULATIVE AREA =      .08 SQ MI
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                                                          STATION     RES2

                         (I) INFLOW,   (O) OUTFLOW
         0.        1.        2.        3.        4.        5.        0.        0.        0.        0.        0.        0.        0.
                                                                                (S) STORAGE
        .00       .00       .00       .00       .00       .00       .00       .01       .02       .03       .04       .00       .00
DAHRMN PER
291200   1I---------.---------.---------.---------.---------.---------.---------.---------.---------S---------.---------.---------.---------.
291202   2. I       .         .         .       O .         .         .         .    S    .         .         .         .         .
291204   3.         .         .      I  .       O .         .         .        S.         .         .         .         .         .
291206   4.         .         .         .       OI.         .         .       S .         .         .         .         .         .
291208   5.         .         .         .       I .         .         .       S .         .         .         .         .         .
291210   6.         .         .         .       I .         .         .       S .         .         .         .         .         .
291212   7.         .         .         .       I .         .         .       S .         .         .         .         .         .
291214   8.         .         .         .       I .         .         .       S .         .         .         .         .         .
291216   9.         .         .         .       I .         .         .       S .         .         .         .         .         .
291218  10.         .         .         .       I .         .         .       S .         .         .         .         .         .
291220  11......................................I.............................S....................................................
291222  12.         .         .         .       I .         .         .       S .         .         .         .         .         .
291224  13.         .         .         .       I .         .         .       S .         .         .         .         .         .
291226  14.         .         .         .       I .         .         .       S .         .         .         .         .         .
291228  15.         .         .         .       I .         .         .       S .         .         .         .         .         .
291230  16.         .         .         .       I .         .         .       S .         .         .         .         .         .
291232  17.         .         .         .       I .         .         .       S .         .         .         .         .         .
291234  18.         .         .         .       I .         .         .       S .         .         .         .         .         .
291236  19.         .         .         .       I .         .         .       S .         .         .         .         .         .
291238  20.         .         .         .       I .         .         .       S .         .         .         .         .         .
291240  21......................................I.............................S....................................................
291242  22.         .         .         .       I .         .         .       S .         .         .         .         .         .
291244  23.         .         .         .       I .         .         .       S .         .         .         .         .         .
291246  24.         .         .         .       I .         .         .       S .         .         .         .         .         .
291248  25.         .         .         .       I .         .         .       S .         .         .         .         .         .
291250  26.         .         .         .       I .         .         .       S .         .         .         .         .         .
291252  27.         .         .         .       I .         .         .       S .         .         .         .         .         .
291254  28.         .         .         .       I .         .         .       S .         .         .         .         .         .
291256  29.         .         .         .       I .         .         .       S .         .         .         .         .         .
291258  30.         .         .         .       I .         .         .       S .         .         .         .         .         .
291300  31......................................I.............................S....................................................
291302  32.         .         .         .       I .         .         .       S .         .         .         .         .         .
291304  33.         .         .         .       I .         .         .       S .         .         .         .         .         .
291306  34.         .         .         .       I .         .         .       S .         .         .         .         .         .
291308  35.         .         .         .       I .         .         .       S .         .         .         .         .         .
291310  36.         .         .         .       I .         .         .       S .         .         .         .         .         .
291312  37.         .         .         .       I .         .         .       S .         .         .         .         .         .
291314  38.         .         .         .       I .         .         .       S .         .         .         .         .         .
291316  39.         .         .         .       I .         .         .       S .         .         .         .         .         .
291318  40.         .         .         .       I .         .         .       S .         .         .         .         .         .
291320  41......................................I.............................S....................................................
291322  42.         .         .         .       I .         .         .       S .         .         .         .         .         .
291324  43.         .         .         .       I .         .         .       S .         .         .         .         .         .
291326  44.         .         .         .       I .         .         .       S .         .         .         .         .         .
291328  45.         .         .         .       I .         .         .       S .         .         .         .         .         .
291330  46.         .         .         .       I .         .         .       S .         .         .         .         .         .
291332  47.         .         .         .       I .         .         .       S .         .         .         .         .         .
291334  48.         .         .         .       I .         .         .       S .         .         .         .         .         .
291336  49.         .         .         .       I .         .         .       S .         .         .         .         .         .
291338  50.         .         .         .       I .         .         .       S .         .         .         .         .         .
291340  51......................................I.............................S....................................................
291342  52.         .         .         .       I .         .         .       S .         .         .         .         .         .
291344  53.         .         .         .       I .         .         .       S .         .         .         .         .         .
291346  54.         .         .         .       I .         .         .       S .         .         .         .         .         .
291348  55.         .         .         .       I .         .         .       S .         .         .         .         .         .
291350  56.         .         .         .       I .         .         .       S .         .         .         .         .         .
291352  57.         .         .         .       I .         .         .       S .         .         .         .         .         .
291354  58.         .         .         .       I .         .         .       S .         .         .         .         .         .
291356  59.         .         .         .       I .         .         .       S .         .         .         .         .         .
291358  60.         .         .         .       I .         .         .       S .         .         .         .         .         .
291400  61......................................I.............................S....................................................
291402  62.         .         .         .       I .         .         .       S .         .         .         .         .         .
291404  63.         .         .         .       I .         .         .       S .         .         .         .         .         .
291406  64.         .         .         .       I .         .         .       S .         .         .         .         .         .
291408  65.         .         .         .       I .         .         .       S .         .         .         .         .         .
291410  66.         .         .         .       I .         .         .       S .         .         .         .         .         .
291412  67.         .         .         .       I .         .         .       S .         .         .         .         .         .
291414  68.         .         .         .       I .         .         .       S .         .         .         .         .         .
291416  69.         .         .         .       I .         .         .       S .         .         .         .         .         .
291418  70.         .         .         .       I .         .         .       S .         .         .         .         .         .
291420  71......................................I.............................S....................................................
291422  72.         .         .         .       I .         .         .       S .         .         .         .         .         .
291424  73.         .         .         .       I .         .         .       S .         .         .         .         .         .
291426  74.                                     I                             S
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291430  76.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291432  77.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291434  78.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291436  79.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291438  80.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291440  81. . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
291442  82.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291444  83.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291446  84.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291448  85.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291450  86.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291452  87.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291454  88.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291456  89.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291458  90.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291500  91. . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
291502  92.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291504  93.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291506  94.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291508  95.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291510  96.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291512  97.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291514  98.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291516  99.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291518 100.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291520 101. . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
291522 102.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291524 103.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291526 104.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291528 105.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291530 106.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291532 107.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291534 108.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291536 109.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291538 110.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291540 111. . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
291542 112.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291544 113.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291546 114.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291548 115.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291550 116.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291552 117.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291554 118.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291556 119.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291558 120.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291600 121. . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
291602 122.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291604 123.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291606 124.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291608 125.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291610 126.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291612 127.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291614 128.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291616 129.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291618 130.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291620 131. . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
291622 132.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291624 133.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291626 134.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291628 135.         .         .         .       I .         .         .      S  .         .         .         .         .         .
291630 136.         .         .         .       I .         .         .       S .         .         .         .         .         .
291632 137.         .         .         .       I .         .         .       S .         .         .         .         .         .
291634 138.         .         .         .       I .         .         .       S .         .         .         .         .         .
291636 139.         .         .         .       I .         .         .       S .         .         .         .         .         .
291638 140.         .         .         .       I .         .         .       S .         .         .         .         .         .
291640 141. . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . .
291642 142.         .         .         .       I .         .         .       S .         .         .         .         .         .
291644 143.         .         .         .       I .         .         .       S .         .         .         .         .         .
291646 144.         .         .         .       I .         .         .       S .         .         .         .         .         .
291648 145.         .         .         .       I .         .         .       S .         .         .         .         .         .
291650 146.         .         .         .       I .         .         .       S .         .         .         .         .         .
291652 147.         .         .         .       I .         .         .       S .         .         .         .         .         .
291654 148.         .         .         .       I .         .         .       S .         .         .         .         .         .
291656 149.         .         .         .      OI .         .         .       S .         .         .         .         .         .
291658 150.         .         .         .      OI .         .         .       S .         .         .         .         .         .
291700 151. . . . . . . . . . . . . . . . . .OI . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . .
291702 152.         .         .         .       O I         .         .        S.         .         .         .         .         .
291704 153.         .         .         .       O I         .         .         S         .         .         .         .         .
291706 154.         .         .         .       O I         .         .         S         .         .         .         .         .
291708 155.         .         .         .      OI .         .         .         .S        .         .         .         .         .
291710 156.         .         .         .      OI .         .         .         .S        .         .         .         .         .
291712 157.         .         .         .      OI .         .         .         .S        .         .         .         .         .
291714 158.         .         .         .      OI .         .         .         .S        .         .         .         .         .
291716 159.         .         .         .      OI .         .         .         . S       .         .         .         .         .
291718 160.         .         .         .      OI .         .         .         . S       .         .         .         .         .
291720 161. . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . .
291722 162.                                     I                                 S
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291726 164.         .         .         .       I .         .         .         . S       .         .         .         .         .         .
291728 165.         .         .         .       I .         .         .         . S       .         .         .         .         .         .
291730 166.         .         .         .       I .         .         .         . S       .         .         .         .         .         .
291732 167.         .         .         .       I .         .         .         . S       .         .         .         .         .         .
291734 168.         .         .         .       I .         .         .         . S       .         .         .         .         .         .
291736 169.         .         .         .       I .         .         .         .  S      .         .         .         .         .         .
291738 170.         .         .         .       I .         .         .         .  S      .         .         .         .         .         .
291740 171. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
291742 172.         .         .         .       I .         .         .         .  S      .         .         .         .         .         .
291744 173.         .         .         .       I .         .         .         .  S      .         .         .         .         .         .
291746 174.         .         .         .       I .         .         .         .  S      .         .         .         .         .         .
291748 175.         .         .         .       0I.         .         .         .  S      .         .         .         .         .         .
291750 176.         .         .         .       0 I         .         .         .  S      .         .         .         .         .         .
291752 177.         .         .         .       0 .I        .         .         .   S     .         .         .         .         .         .
291754 178.         .         .         .       0 . I       .         .         .    S    .         .         .         .         .         .
291756 179.         .         .         .       0 .  I      .         .         .     S   .         .         .         .         .         .
291758 180.         .         .         .        0.   I     .         .         .      S  .         .         .         .         .         .
291800 181. . . . . . . . . . . . . . . . . . . . .0. . I . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
291802 182.         .         .         .         0    I    .         .         .         S         .         .         .         .         .
291804 183.         .         .         .         0    I    .         .         .         . S       .         .         .         .         .
291806 184.         .         .         .         0    I    .         .         .         .  S      .         .         .         .         .
291808 185.         .         .         .         .0   I    .         .         .         .   S     .         .         .         .         .
291810 186.         .         .         .         .0   I    .         .         .         .    S    .         .         .         .         .
291812 187.         .         .         .         .0   I    .         .         .         .     S   .         .         .         .         .
291814 188.         .         .         .         . 0  I    .         .         .         .      S  .         .         .         .         .
291816 189.         .         .         .         . 0  I    .         .         .         .       S .         .         .         .         .
291818 190.         .         .         .         . 0 I     .         .         .         .        S.         .         .         .         .
291820 191. . . . . . . . . . . . . . . . . . . . . 0 I . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . .
291822 192.         .         .         .         . 0 I     .         .         .         .         S         .         .         .         .
291824 193.         .         .         .         . 0I      .         .         .         .         S         .         .         .         .
291826 194.         .         .         .         . I       .         .         .         .         S         .         .         .         .
291828 195.         .         .         .         . I       .         .         .         .         S         .         .         .         .
291830 196.         .         .         .         .I0       .         .         .         .         S         .         .         .         .
291832 197.         .         .         .         I 0       .         .         .         .        S.         .         .         .         .
291834 198.         .         .         .        I. 0       .         .         .         .        S.         .         .         .         .
291836 199.         .         .         .        I. 0       .         .         .         .       S .         .         .         .         .
291838 200.         .         .         .       I . 0       .         .         .         .      S  .         .         .         .         .
291840 201. . . . . . . . . . . . . . . . . . . I .0. . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . .
291842 202.         .         .         .       I .0        .         .         .         .    S    .         .         .         .         .
291844 203.         .         .         .       I .0        .         .         .         .   S     .         .         .         .         .
291846 204.         .         .         .       I .0        .         .         .         .   S     .         .         .         .         .
291848 205.         .         .         .       I 0         .         .         .         .  S      .         .         .         .         .
291850 206.         .         .         .       I 0         .         .         .         . S       .         .         .         .         .
291852 207.         .         .         .       I 0         .         .         .         . S       .         .         .         .         .
291854 208.         .         .         .       I 0         .         .         .         .S        .         .         .         .         .
291856 209.         .         .         .       I 0         .         .         .         .S        .         .         .         .         .
291858 210.         .         .         .       I 0         .         .         .         S         .         .         .         .         .
291900 211. . . . . . . . . . . . . . . . . . . I 0 . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291902 212.         .         .         .       I0.         .         .         .         S         .         .         .         .         .
291904 213.         .         .         .       I0.         .         .         .        S.         .         .         .         .         .
291906 214.         .         .         .       I0.         .         .         .        S.         .         .         .         .         .
291908 215.         .         .         .       I0.         .         .         .        S.         .         .         .         .         .
291910 216.         .         .         .       I0.         .         .         .       S .         .         .         .         .         .
291912 217.         .         .         .       I0.         .         .         .       S .         .         .         .         .         .
291914 218.         .         .         .       I0.         .         .         .       S .         .         .         .         .         .
291916 219.         .         .         .       I0.         .         .         .       S .         .         .         .         .         .
291918 220.         .         .         .       I0.         .         .         .       S .         .         .         .         .         .
291920 221. . . . . . . . . . . . . . . . . . . I0. . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . .
291922 222.         .         .         .       I0.         .         .         .      S  .         .         .         .         .         .
291924 223.         .         .         .       I0.         .         .         .      S  .         .         .         .         .         .
291926 224.         .         .         .       I0.         .         .         .      S  .         .         .         .         .         .
291928 225.         .         .         .       I0.         .         .         .      S  .         .         .         .         .         .
291930 226.         .         .         .       I .         .         .         .      S  .         .         .         .         .         .
291932 227.         .         .         .       I .         .         .         .      S  .         .         .         .         .         .
291934 228.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
291936 229.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
291938 230.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
291940 231. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
291942 232.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
291944 233.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
291946 234.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
291948 235.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
291950 236.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
291952 237.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
291954 238.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
291956 239.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
291958 240.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
292000 241. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
292002 242.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
292004 243.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
292006 244.         .         .         .       I .         .         .         .     S   .         .         .         .         .         .
292008 245.         .         .         .       I .         .         .         .    S    .         .         .         .         .         .
292010 246.         .         .         .       I .         .         .         .    S    .         .         .         .         .         .
292012 247.         .         .         .       I .         .         .         .    S    .         .         .         .         .         .
292014 248.         .         .         .       I .         .         .         .    S    .         .         .         .         .         .
292016 249.         .         .         .       I .         .         .         .    S    .         .         .         .         .         .
292018 250.         .         .         .       I .         .         .         .    S    .         .         .         .         .         .
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292022 252.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292024 253.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292026 254.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292028 255.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292030 256.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292032 257.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292034 258.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292036 259.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292038 260.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292040 261. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
292042 262.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292044 263.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292046 264.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292048 265.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292050 266.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292052 267.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292054 268.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292056 269.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292058 270.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292100 271. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
292102 272.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292104 273.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292106 274.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292108 275.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292110 276.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292112 277.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292114 278.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292116 279.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292118 280.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292120 281. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
292122 282.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292124 283.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292126 284.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292128 285.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292130 286.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292132 287.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292134 288.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292136 289.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292138 290.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292140 291. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
292142 292.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292144 293.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292146 294.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292148 295.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292150 296.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292152 297.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292154 298.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292156 299.         .         .         .       I .         .         .         .    S    .         .         .         .         .
292158 300.---------.---------.---------.-------I-.---------.---------.---------.----S----.---------.---------.---------.---------.
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           *            *
 129 KK    *      CH4   *
           *            *
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 131 KO         OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .033  TIME INTERVAL IN HOURS


               HYDROGRAPH ROUTING DATA

 132 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                          L        400.  CHANNEL LENGTH
                          S       .0079  SLOPE
                          N        .025  CHANNEL ROUGHNESS COEFFICIENT
                         CA         .00  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD        2.00  BOTTOM WIDTH OR DIAMETER
                          Z        3.00  SIDE SLOPE

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

                      MAIN      2.12     1.34      1.70    133.33      4.25    387.60       .72       2.86


                                            INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                      MAIN      2.12     1.34      2.00                4.25    388.00       .72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3155E+01 EXCESS= .0000E+00 OUTFLOW= .3142E+01 BASIN STORAGE= .1417E-01 PERCENT ERROR=    .0


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

                              HYDROGRAPH AT STATION      CH4

 PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
   (CFS)        (HR)                 6-HR         24-HR         72-HR         9.97-HR
        4.      6.47       (CFS)        4.            4.            4.             4.
                         (INCHES)     .441          .723          .723           .723
                          (AC-FT)       2.            3.            3.             3.

                             CUMULATIVE AREA =      .08 SQ MI



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

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           *            *
 133 KK    *     B345   *
           *            *
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 135 KO         OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
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                          OSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH          1   PUNCH COMPUTED HYDROGRAPH
                           IOUT         21   SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1          1   FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2        300   LAST ORDINATE PUNCHED OR SAVED
                         TIMINT       .033   TIME INTERVAL IN HOURS


                  SUBBASIN RUNOFF DATA

  136 BA            SUBBASIN CHARACTERISTICS
                          TAREA        .01   SUBBASIN AREA

                    PRECIPITATION DATA

  137 PH                                    DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                    ..... HYDRO-35 ......   ............... TP-40 ...............    ........... TP-49 ...........
                    5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                     .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                         STORM AREA =     .01

  138 LS            SCS LOSS RATE
                          STRTL        .08   INITIAL ABSTRACTION
                         CRVNBR      96.00   CURVE NUMBER
                          RTIMP        .00   PERCENT IMPERVIOUS AREA

  139 UD            SCS DIMENSIONLESS UNITGRAPH
                           TLAG        .50   LAG

                                                                  ***

                                                           UNIT HYDROGRAPH
                                                      78 END-OF-PERIOD ORDINATES
                      0.        1.        1.        2.        3.        4.        5.        6.        7.        9.
                     10.       11.       12.       12.       12.       12.       12.       12.       11.       11.
                     10.        9.        9.        8.        7.        6.        5.        5.        4.        4.
                      4.        3.        3.        3.        2.        2.        2.        2.        2.        1.
                      1.        1.        1.        1.        1.        1.        1.        1.        1.        0.
                      0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                      0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                      0.        0.        0.        0.        0.        0.        0.        0.

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

                             HYDROGRAPH AT STATION     B345

    TOTAL RAINFALL =     .61, TOTAL LOSS =     .32, TOTAL EXCESS =     .30

  PEAK FLOW      TIME                            MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                    6-HR        24-HR        72-HR       9.97-HR
       2.        5.57         (CFS)        0.           0.           0.            0.
                            (INCHES)     .290         .290         .290          .290
                             (AC-FT)       0.           0.           0.            0.

                            CUMULATIVE AREA =     .01 SQ MI


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

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                 *            *
  140 KK         *     B345   *
                 *            *
                 **************

  142 KO            OUTPUT CONTROL VARIABLES
                          IPRNT          3   PRINT CONTROL
                          IPLOT          1   PLOT CONTROL
                          OSCAL         0.   HYDROGRAPH PLOT SCALE
                          IPNCH          1   PUNCH COMPUTED HYDROGRAPH
                           IOUT         21   SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1          1   FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2        300   LAST ORDINATE PUNCHED OR SAVED
                         TIMINT       .033   TIME INTERVAL IN HOURS

  143 HC            HYDROGRAPH COMBINATION
                          ICOMP          2   NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

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PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR         24-HR        72-HR       9.97-HR
      6.      5.57        (CFS)       4.            4.           4.            4.
                        (INCHES)    .420          .663         .663          .663
                         (AC-FT)      2.            3.           3.            3.

                      CUMULATIVE AREA =     .09 SQ MI



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


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           *            *
 144 KK    *     RES3   *
           *            *
           **************

 146 KO         OUTPUT CONTROL VARIABLES
                      IPRNT           1  PRINT CONTROL
                      IPLOT           2  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .033  TIME INTERVAL IN HOURS


              HYDROGRAPH ROUTING DATA

 147 RS         STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC       12.83  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 148 SV           STORAGE          .1         .2         .4         .7

 149 SE         ELEVATION     14.20      15.20      16.20      17.20

 150 SL         LOW-LEVEL OUTLET
                      ELEVL       13.83  ELEVATION AT CENTER OF OUTLET
                      CAREA         .06  CROSS-SECTIONAL AREA
                       COOL         .60  COEFFICIENT
                       EXPL         .50  EXPONENT OF HEAD

 151 SS         SPILLWAY
                       CREL       15.75  SPILLWAY CREST ELEVATION
                      SPWID       12.30  SPILLWAY WIDTH
                       COOW        2.70  WEIR COEFFICIENT
                       EXPW        1.50  EXPONENT OF HEAD

                                                                ***

                                                     COMPUTED OUTFLOW-ELEVATION DATA

          OUTFLOW       .00       .20       .21       .23       .24       .27       .29       .32       .36       .42
        ELEVATION     14.20     14.25     14.31     14.39     14.49     14.61     14.77     14.99     15.30     15.75

          OUTFLOW       .48       .90      2.02      4.18      7.74     13.04     20.42     30.24     42.83     58.54
        ELEVATION     15.76     15.81     15.88     15.98     16.11     16.27     16.46     16.68     16.92     17.20


                                                 COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       .08       .09       .10       .11       .12       .14       .16       .19       .22       .24
          OUTFLOW       .18       .20       .21       .23       .24       .27       .29       .32       .35       .36
        ELEVATION     14.20     14.25     14.31     14.39     14.49     14.61     14.77     14.99     15.20     15.30

          STORAGE       .33       .33       .34       .35       .37       .40       .42       .43       .48       .53
          OUTFLOW       .42       .48       .90      2.02      4.18      7.74     10.49     13.04     20.42     30.24
        ELEVATION     15.75     15.76     15.81     15.88     15.98     16.11     16.20     16.27     16.46     16.68

          STORAGE       .60       .66
          OUTFLOW     42.83     58.54
        ELEVATION     16.92     17.20
*********************************************************************************************************************************

                                                       HYDROGRAPH AT STATION     RES3

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                                              *                                          *
29 JUN 1200   1      0.      .1      14.2 * 29 JUN 1520 101      4.      .4      16.0 * 29 JUN 1840 201      5.      .4      16.0
29 JUN 1202   2      0.      .1      14.2 * 29 JUN 1522 102      4.      .4      16.0 * 29 JUN 1842 202      5.      .4      16.0
29 JUN 1204   3      0.      .1      14.2 * 29 JUN 1524 103      4.      .4      16.0 * 29 JUN 1844 203      5.      .4      16.0
29 JUN 1206   4      0.      .1      14.3 * 29 JUN 1526 104      4.      .4      16.0 * 29 JUN 1846 204      5.      .4      16.0
29 JUN 1208   5      0.      .1      14.3 * 29 JUN 1528 105      4.      .4      16.0 * 29 JUN 1848 205      5.      .4      16.0
29 JUN 1210   6      0.      .1      14.4 * 29 JUN 1530 106      4.      .4      16.0 * 29 JUN 1850 206      5.      .4      16.0
29 JUN 1212   7      0.      .1      14.5 * 29 JUN 1532 107      4.      .4      16.0 * 29 JUN 1852 207      4.      .4      16.0
29 JUN 1214   8      0.      .1      14.6 * 29 JUN 1534 108      4.      .4      16.0 * 29 JUN 1854 208      4.      .4      16.0
29 JUN 1216   9      0.      .1      14.6 * 29 JUN 1536 109      4.      .4      16.0 * 29 JUN 1856 209      4.      .4      16.0
29 JUN 1218  10      0.      .2      14.7 * 29 JUN 1538 110      4.      .4      16.0 * 29 JUN 1858 210      4.      .4      16.0
29 JUN 1220  11      0.      .2      14.8 * 29 JUN 1540 111      4.      .4      16.0 * 29 JUN 1900 211      4.      .4      16.0
29 JUN 1222  12      0.      .2      14.8 * 29 JUN 1542 112      4.      .4      16.0 * 29 JUN 1902 212      4.      .4      16.0
29 JUN 1224  13      0.      .2      14.9 * 29 JUN 1544 113      4.      .4      16.0 * 29 JUN 1904 213      4.      .4      16.0
29 JUN 1226  14      0.      .2      15.0 * 29 JUN 1546 114      4.      .4      16.0 * 29 JUN 1906 214      4.      .4      16.0
29 JUN 1228  15      0.      .2      15.0 * 29 JUN 1548 115      4.      .4      16.0 * 29 JUN 1908 215      4.      .4      16.0
29 JUN 1230  16      0.      .2      15.1 * 29 JUN 1550 116      4.      .4      16.0 * 29 JUN 1910 216      4.      .4      16.0
29 JUN 1232  17      0.      .2      15.2 * 29 JUN 1552 117      4.      .4      16.0 * 29 JUN 1912 217      4.      .4      16.0
29 JUN 1234  18      0.      .2      15.2 * 29 JUN 1554 118      4.      .4      16.0 * 29 JUN 1914 218      4.      .4      16.0
29 JUN 1236  19      0.      .2      15.3 * 29 JUN 1556 119      4.      .4      16.0 * 29 JUN 1916 219      4.      .4      16.0
29 JUN 1238  20      0.      .2      15.3 * 29 JUN 1558 120      4.      .4      16.0 * 29 JUN 1918 220      4.      .4      16.0
29 JUN 1240  21      0.      .3      15.4 * 29 JUN 1600 121      4.      .4      16.0 * 29 JUN 1920 221      4.      .4      16.0
29 JUN 1242  22      0.      .3      15.4 * 29 JUN 1602 122      4.      .4      16.0 * 29 JUN 1922 222      4.      .4      16.0
29 JUN 1244  23      0.      .3      15.5 * 29 JUN 1604 123      4.      .4      16.0 * 29 JUN 1924 223      4.      .4      16.0
29 JUN 1246  24      0.      .3      15.5 * 29 JUN 1606 124      4.      .4      16.0 * 29 JUN 1926 224      4.      .4      16.0
29 JUN 1248  25      0.      .3      15.6 * 29 JUN 1608 125      4.      .4      16.0 * 29 JUN 1928 225      4.      .4      16.0
29 JUN 1250  26      0.      .3      15.6 * 29 JUN 1610 126      4.      .4      16.0 * 29 JUN 1930 226      4.      .4      16.0
29 JUN 1252  27      0.      .3      15.7 * 29 JUN 1612 127      4.      .4      16.0 * 29 JUN 1932 227      4.      .4      16.0
29 JUN 1254  28      0.      .3      15.7 * 29 JUN 1614 128      4.      .4      16.0 * 29 JUN 1934 228      4.      .4      16.0
29 JUN 1256  29      0.      .3      15.8 * 29 JUN 1616 129      4.      .4      16.0 * 29 JUN 1936 229      4.      .4      16.0
29 JUN 1258  30      1.      .3      15.8 * 29 JUN 1618 130      4.      .4      16.0 * 29 JUN 1938 230      4.      .4      16.0
29 JUN 1300  31      1.      .3      15.8 * 29 JUN 1620 131      4.      .4      16.0 * 29 JUN 1940 231      4.      .4      16.0
29 JUN 1302  32      2.      .4      15.9 * 29 JUN 1622 132      4.      .4      16.0 * 29 JUN 1942 232      4.      .4      16.0
29 JUN 1304  33      2.      .4      15.9 * 29 JUN 1624 133      4.      .4      16.0 * 29 JUN 1944 233      4.      .4      16.0
29 JUN 1306  34      3.      .4      15.9 * 29 JUN 1626 134      4.      .4      16.0 * 29 JUN 1946 234      4.      .4      16.0
29 JUN 1308  35      3.      .4      15.9 * 29 JUN 1628 135      4.      .4      16.0 * 29 JUN 1948 235      4.      .4      16.0
29 JUN 1310  36      3.      .4      15.9 * 29 JUN 1630 136      4.      .4      16.0 * 29 JUN 1950 236      4.      .4      16.0
29 JUN 1312  37      3.      .4      15.9 * 29 JUN 1632 137      4.      .4      16.0 * 29 JUN 1952 237      4.      .4      16.0
29 JUN 1314  38      3.      .4      16.0 * 29 JUN 1634 138      4.      .4      16.0 * 29 JUN 1954 238      4.      .4      16.0
29 JUN 1316  39      4.      .4      16.0 * 29 JUN 1636 139      4.      .4      16.0 * 29 JUN 1956 239      4.      .4      16.0
29 JUN 1318  40      4.      .4      16.0 * 29 JUN 1638 140      4.      .4      16.0 * 29 JUN 1958 240      4.      .4      16.0
29 JUN 1320  41      4.      .4      16.0 * 29 JUN 1640 141      4.      .4      16.0 * 29 JUN 2000 241      4.      .4      16.0
29 JUN 1322  42      4.      .4      16.0 * 29 JUN 1642 142      4.      .4      16.0 * 29 JUN 2002 242      4.      .4      16.0
29 JUN 1324  43      4.      .4      16.0 * 29 JUN 1644 143      4.      .4      16.0 * 29 JUN 2004 243      4.      .4      16.0
29 JUN 1326  44      4.      .4      16.0 * 29 JUN 1646 144      4.      .4      16.0 * 29 JUN 2006 244      4.      .4      16.0
29 JUN 1328  45      4.      .4      16.0 * 29 JUN 1648 145      4.      .4      16.0 * 29 JUN 2008 245      4.      .4      16.0
29 JUN 1330  46      4.      .4      16.0 * 29 JUN 1650 146      4.      .4      16.0 * 29 JUN 2010 246      4.      .4      16.0
29 JUN 1332  47      4.      .4      16.0 * 29 JUN 1652 147      4.      .4      16.0 * 29 JUN 2012 247      4.      .4      16.0
29 JUN 1334  48      4.      .4      16.0 * 29 JUN 1654 148      4.      .4      16.0 * 29 JUN 2014 248      4.      .4      16.0
29 JUN 1336  49      4.      .4      16.0 * 29 JUN 1656 149      4.      .4      16.0 * 29 JUN 2016 249      4.      .4      16.0
29 JUN 1338  50      4.      .4      16.0 * 29 JUN 1658 150      4.      .4      16.0 * 29 JUN 2018 250      4.      .4      16.0
29 JUN 1340  51      4.      .4      16.0 * 29 JUN 1700 151      4.      .4      16.0 * 29 JUN 2020 251      4.      .4      16.0
29 JUN 1342  52      4.      .4      16.0 * 29 JUN 1702 152      4.      .4      16.0 * 29 JUN 2022 252      4.      .4      16.0
29 JUN 1344  53      4.      .4      16.0 * 29 JUN 1704 153      4.      .4      16.0 * 29 JUN 2024 253      4.      .4      16.0
29 JUN 1346  54      4.      .4      16.0 * 29 JUN 1706 154      4.      .4      16.0 * 29 JUN 2026 254      4.      .4      16.0
29 JUN 1348  55      4.      .4      16.0 * 29 JUN 1708 155      4.      .4      16.0 * 29 JUN 2028 255      4.      .4      16.0
29 JUN 1350  56      4.      .4      16.0 * 29 JUN 1710 156      4.      .4      16.0 * 29 JUN 2030 256      4.      .4      16.0
29 JUN 1352  57      4.      .4      16.0 * 29 JUN 1712 157      4.      .4      16.0 * 29 JUN 2032 257      4.      .4      16.0
29 JUN 1354  58      4.      .4      16.0 * 29 JUN 1714 158      4.      .4      16.0 * 29 JUN 2034 258      4.      .4      16.0
29 JUN 1356  59      4.      .4      16.0 * 29 JUN 1716 159      5.      .4      16.0 * 29 JUN 2036 259      4.      .4      16.0
29 JUN 1358  60      4.      .4      16.0 * 29 JUN 1718 160      5.      .4      16.0 * 29 JUN 2038 260      4.      .4      16.0
29 JUN 1400  61      4.      .4      16.0 * 29 JUN 1720 161      5.      .4      16.0 * 29 JUN 2040 261      4.      .4      16.0
29 JUN 1402  62      4.      .4      16.0 * 29 JUN 1722 162      5.      .4      16.0 * 29 JUN 2042 262      4.      .4      16.0
29 JUN 1404  63      4.      .4      16.0 * 29 JUN 1724 163      5.      .4      16.0 * 29 JUN 2044 263      4.      .4      16.0
29 JUN 1406  64      4.      .4      16.0 * 29 JUN 1726 164      5.      .4      16.0 * 29 JUN 2046 264      4.      .4      16.0
29 JUN 1408  65      4.      .4      16.0 * 29 JUN 1728 165      5.      .4      16.0 * 29 JUN 2048 265      4.      .4      16.0
29 JUN 1410  66      4.      .4      16.0 * 29 JUN 1730 166      5.      .4      16.0 * 29 JUN 2050 266      4.      .4      16.0
29 JUN 1412  67      4.      .4      16.0 * 29 JUN 1732 167      5.      .4      16.0 * 29 JUN 2052 267      4.      .4      16.0
29 JUN 1414  68      4.      .4      16.0 * 29 JUN 1734 168      6.      .4      16.0 * 29 JUN 2054 268      4.      .4      16.0
29 JUN 1416  69      4.      .4      16.0 * 29 JUN 1736 169      6.      .4      16.0 * 29 JUN 2056 269      4.      .4      16.0
29 JUN 1418  70      4.      .4      16.0 * 29 JUN 1738 170      6.      .4      16.0 * 29 JUN 2058 270      4.      .4      16.0
29 JUN 1420  71      4.      .4      16.0 * 29 JUN 1740 171      6.      .4      16.0 * 29 JUN 2100 271      4.      .4      16.0
29 JUN 1422  72      4.      .4      16.0 * 29 JUN 1742 172      6.      .4      16.0 * 29 JUN 2102 272      4.      .4      16.0
29 JUN 1424  73      4.      .4      16.0 * 29 JUN 1744 173      6.      .4      16.0 * 29 JUN 2104 273      4.      .4      16.0
29 JUN 1426  74      4.      .4      16.0 * 29 JUN 1746 174      6.      .4      16.0 * 29 JUN 2106 274      4.      .4      16.0
29 JUN 1428  75      4.      .4      16.0 * 29 JUN 1748 175      5.      .4      16.0 * 29 JUN 2108 275      4.      .4      16.0
29 JUN 1430  76      4.      .4      16.0 * 29 JUN 1750 176      5.      .4      16.0 * 29 JUN 2110 276      4.      .4      16.0
29 JUN 1432  77      4.      .4      16.0 * 29 JUN 1752 177      5.      .4      16.0 * 29 JUN 2112 277      4.      .4      16.0
29 JUN 1434  78      4.      .4      16.0 * 29 JUN 1754 178      5.      .4      16.0 * 29 JUN 2114 278      4.      .4      16.0
29 JUN 1436  79      4.      .4      16.0 * 29 JUN 1756 179      5.      .4      16.0 * 29 JUN 2116 279      4.      .4      16.0
29 JUN 1438  80      4.      .4      16.0 * 29 JUN 1758 180      5.      .4      16.0 * 29 JUN 2118 280      4.      .4      16.0
29 JUN 1440  81      4.      .4      16.0 * 29 JUN 1800 181      5.      .4      16.0 * 29 JUN 2120 281      4.      .4      16.0
29 JUN 1442  82      4.      .4      16.0 * 29 JUN 1802 182      5.      .4      16.0 * 29 JUN 2122 282      4.      .4      16.0
29 JUN 1444  83      4.      .4      16.0 * 29 JUN 1804 183      5.      .4      16.0 * 29 JUN 2124 283      4.      .4      16.0
29 JUN 1446  84      4.      .4      16.0 * 29 JUN 1806 184      5.      .4      16.0 * 29 JUN 2126 284      4.      .4      16.0
29 JUN 1448  85      4.      .4      16.0 * 29 JUN 1808 185      5.      .4      16.0 * 29 JUN 2128 285      4.      .4      16.0
29 JUN 1450  86      4.      .4      16.0 * 29 JUN 1810 186      5.      .4      16.0 * 29 JUN 2130 286      4.      .4      16.0
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 29 JUN 1454  88        4.        .4      16.0 * 29 JUN 1814 188        5.        .4      16.0 * 29 JUN 2134 288        4.        .4      16.0
 29 JUN 1456  89        4.        .4      16.0 * 29 JUN 1816 189        5.        .4      16.0 * 29 JUN 2136 289        4.        .4      16.0
 29 JUN 1458  90        4.        .4      16.0 * 29 JUN 1818 190        5.        .4      16.0 * 29 JUN 2138 290        4.        .4      16.0
 29 JUN 1500  91        4.        .4      16.0 * 29 JUN 1820 191        5.        .4      16.0 * 29 JUN 2140 291        4.        .4      16.0
 29 JUN 1502  92        4.        .4      16.0 * 29 JUN 1822 192        5.        .4      16.0 * 29 JUN 2142 292        4.        .4      16.0
 29 JUN 1504  93        4.        .4      16.0 * 29 JUN 1824 193        5.        .4      16.0 * 29 JUN 2144 293        4.        .4      16.0
 29 JUN 1506  94        4.        .4      16.0 * 29 JUN 1826 194        5.        .4      16.0 * 29 JUN 2146 294        4.        .4      16.0
 29 JUN 1508  95        4.        .4      16.0 * 29 JUN 1828 195        5.        .4      16.0 * 29 JUN 2148 295        4.        .4      16.0
 29 JUN 1510  96        4.        .4      16.0 * 29 JUN 1830 196        5.        .4      16.0 * 29 JUN 2150 296        4.        .4      16.0
 29 JUN 1512  97        4.        .4      16.0 * 29 JUN 1832 197        5.        .4      16.0 * 29 JUN 2152 297        4.        .4      16.0
 29 JUN 1514  98        4.        .4      16.0 * 29 JUN 1834 198        5.        .4      16.0 * 29 JUN 2154 298        4.        .4      16.0
 29 JUN 1516  99        4.        .4      16.0 * 29 JUN 1836 199        5.        .4      16.0 * 29 JUN 2156 299        4.        .4      16.0
 29 JUN 1518 100        4.        .4      16.0 * 29 JUN 1838 200        5.        .4      16.0 * 29 JUN 2158 300        4.        .4      16.0
                                               *                                              *
*******************************************************************************************************************************************

 PEAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                 6-HR        24-HR        72-HR      9.97-HR
       6.      5.63         (CFS)     4.           4.           4.           4.
                         (INCHES)   .420         .606         .606         .606
                          (AC-FT)     2.           3.           3.           3.

PEAK STORAGE   TIME                        MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                 6-HR        24-HR        72-HR      9.97-HR
       0.      5.60                   0.           0.           0.           0.

 PEAK STAGE    TIME                         MAXIMUM AVERAGE STAGE
   (FEET)      (HR)                 6-HR        24-HR        72-HR      9.97-HR
    16.04      5.63                15.99        15.88        15.88        15.88

                             CUMULATIVE AREA =      .09 SQ MI
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                                                          STATION     RES3

                         (I) INFLOW,   (O) OUTFLOW
         0.        1.        2.        3.        4.        5.        6.        0.        0.        0.        0.        0.        0.
                                                                                (S) STORAGE
         .0        .0        .0        .0        .0        .0        .0        .1        .2        .3        .4        .0        .0
DAHRMN PER
291200   1I---------.---------.---------.---------.---------.---------.-------S-.---------.---------.---------.---------.---------.
291202   2. I       .         .         .         .         .         .       S .         .         .         .         .         .
291204   3. O       .         I         .         .         .         .       S .         .         .         .         .         .
291206   4. O       .         .         .         I        .         .        S.         .         .         .         .         .
291208   5. O       .         .         .      I  .         .         .         S         .         .         .         .         .
291210   6. O       .         .         .         I         .         .         .S        .         .         .         .         .
291212   7. O       .         .         .      I  .         .         .         . S       .         .         .         .         .
291214   8.  O      .         .         .       I .         .         .         .  S      .         .         .         .         .
291216   9.  O      .         .         .       I .         .         .         .   S     .         .         .         .         .
291218  10.  O      .         .         .       I .         .         .         .    S    .         .         .         .         .
291220  11. .O. . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . .
291222  12.  O      .         .         .       I .         .         .         .      S  .         .         .         .         .
291224  13.  O      .         .         .       I .         .         .         .       S .         .         .         .         .
291226  14.  O      .         .         .       I .         .         .         .        S.         .         .         .         .
291228  15.  O      .         .         .       I .         .         .         .         S         .         .         .         .
291230  16.  O      .         .         .       I .         .         .         .         .S        .         .         .         .
291232  17.  O      .         .         .       I .         .         .         .         . S       .         .         .         .
291234  18.   O     .         .         .       I .         .         .         .         .  S      .         .         .         .
291236  19.   O     .         .         .       I .         .         .         .         .   S     .         .         .         .
291238  20.   O     .         .         .       I .         .         .         .         .    S    .         .         .         .
291240  21. . O . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . .
291242  22.   O     .         .         .       I .         .         .         .         .      S  .         .         .         .
291244  23.   O     .         .         .       I .         .         .         .         .       S .         .         .         .
291246  24.   O     .         .         .       I .         .         .         .         .       S .         .         .         .
291248  25.   O     .         .         .       I .         .         .         .         .        S.         .         .         .
291250  26.   O     .         .         .       I .         .         .         .         .         S         .         .         .
291252  27.   O     .         .         .       I .         .         .         .         .         .S        .         .         .
291254  28.   O     .         .         .       I .         .         .         .         .         . S       .         .         .
291256  29.    O    .         .         .       I .         .         .         .         .         .  S      .         .         .
291258  30.        O.         .         .       I .         .         .         .         .         .   S     .         .         .
291300  31. . . . . . . O. . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . S. . . . . . . . . . . .
291302  32.         .        O.         .       I .         .         .         .         .         .    S    .         .         .
291304  33.         .         .   O     .       I .         .         .         .         .         .     S   .         .         .
291306  34.         .         .       O .       I .         .         .         .         .         .     S   .         .         .
291308  35.         .         .         O       I .         .         .         .         .         .     S   .         .         .
291310  36.         .         .         . O     I .         .         .         .         .         .      S  .         .         .
291312  37.         .         .         .   O   I .         .         .         .         .         .      S  .         .         .
291314  38.         .         .         .    O  I .         .         .         .         .         .      S  .         .         .
291316  39.         .         .         .     O I .         .         .         .         .         .      S  .         .         .
291318  40.         .         .         .     O I .         .         .         .         .         .      S  .         .         .
291320  41. . . . . . . . . . . . . . . . . . OI . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S. . . . . . . . . . .
291322  42.         .         .         .      OI .         .         .         .         .         .      S  .         .         .
291324  43.         .         .         .      OI .         .         .         .         .         .      S  .         .         .
291326  44.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291328  45.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291330  46.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291332  47.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291334  48.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291336  49.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291338  50.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291340  51. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S. . . . . . . . . . .
291342  52.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291344  53.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291346  54.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291348  55.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291350  56.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291352  57.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291354  58.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291356  59.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291358  60.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291400  61. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S. . . . . . . . . . .
291402  62.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291404  63.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291406  64.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291408  65.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291410  66.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291412  67.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291414  68.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291416  69.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291418  70.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291420  71. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S. . . . . . . . . . .
291422  72.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291424  73.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291426  74.                                     I                                                          S
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291430  76.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291432  77.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291434  78.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291436  79.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291438  80.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291440  81. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
291442  82.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291444  83.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291446  84.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291448  85.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291450  86.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291452  87.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291454  88.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291456  89.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291458  90.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291500  91. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
291502  92.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291504  93.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291506  94.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291508  95.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291510  96.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291512  97.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291514  98.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291516  99.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291518 100.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291520 101. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
291522 102.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291524 103.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291526 104.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291528 105.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291530 106.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291532 107.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291534 108.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291536 109.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291538 110.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291540 111. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
291542 112.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291544 113.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291546 114.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291548 115.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291550 116.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291552 117.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291554 118.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291556 119.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291558 120.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291600 121. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
291602 122.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291604 123.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291606 124.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291608 125.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291610 126.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291612 127.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291614 128.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291616 129.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291618 130.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291620 131. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
291622 132.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291624 133.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291626 134.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291628 135.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291630 136.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291632 137.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291634 138.         .         .         .       I .         .         .         .         .         .      S  .         .         .
291636 139.         .         .         .       0I.         .         .         .         .         .      S  .         .         .
291638 140.         .         .         .       0I.         .         .         .         .         .      S  .         .         .
291640 141. . . . . . . . . . . . . . . . . . . 0I. . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
291642 142.         .         .         .        I.         .         .         .         .         .      S  .         .         .
291644 143.         .         .         .        I.         .         .         .         .         .      S  .         .         .
291646 144.         .         .         .        I.         .         .         .         .         .      S  .         .         .
291648 145.         .         .         .        I.         .         .         .         .         .      S  .         .         .
291650 146.         .         .         .        I.         .         .         .         .         .      S  .         .         .
291652 147.         .         .         .        I.         .         .         .         .         .      S  .         .         .
291654 148.         .         .         .        0I         .         .         .         .         .      S  .         .         .
291656 149.         .         .         .        0I         .         .         .         .         .      S  .         .         .
291658 150.         .         .         .         I         .         .         .         .         .      S  .         .         .
291700 151. . . . . . . . . . . . . . . . . . . . 0I. . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
291702 152.         .         .         .         0I        .         .         .         .         .      S  .         .         .
291704 153.         .         .         .         .0I       .         .         .         .         .      S  .         .         .
291706 154.         .         .         .         .0 I      .         .         .         .         .      S  .         .         .
291708 155.         .         .         .         . 0 I     .         .         .         .         .      S  .         .         .
291710 156.         .         .         .         .  0 I    .         .         .         .         .      S  .         .         .
291712 157.         .         .         .         .   0  I  .         .         .         .         .       S .         .         .
291714 158.         .         .         .         .    0  I .         .         .         .         .       S .         .         .
291716 159.         .         .         .         .     0  I.         .         .         .         .       S .         .         .
291718 160.         .         .         .         .      0  .I        .         .         .         .       S .         .         .
291720 161. . . . . . . . . . . . . . . . . . . . . . . . .0. I . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . .
291722 162                                                  0  I                                            S
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291726 164.         .         .         .         . 0  I    .         .         .       S .         .         .
291728 165.         .         .         .         .  0  I   .         .         .       S .         .         .
291730 166.         .         .         .         .   0 I   .         .         .       S .         .         .
291732 167.         .         .         .         .    0 I  .         .         .       S .         .         .
291734 168.         .         .         .         .    0 I  .         .         .       S .         .         .
291736 169.         .         .         .         .     I   .         .         .       S .         .         .
291738 170.         .         .         .         .     I   .         .         .       S .         .         .
291740 171. . . . . . . . . . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . .
291742 172.         .         .         .         .    I0   .         .         .       S .         .         .
291744 173.         .         .         .         .    I0   .         .         .       S .         .         .
291746 174.         .         .         .         .   I0    .         .         .       S .         .         .
291748 175.         .         .         .         .  I 0    .         .         .       S .         .         .
291750 176.         .         .         .         . I 0     .         .         .       S .         .         .
291752 177.         .         .         .         . I0      .         .         .       S .         .         .
291754 178.         .         .         .         .I 0      .         .         .       S .         .         .
291756 179.         .         .         .         I 0       .         .         .       S .         .         .
291758 180.         .         .         .         I0        .         .         .       S .         .         .
291800 181. . . . . . . . . . . . . . . . . . . . . . . . I0. . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . .
291802 182.         .         .         .         I0        .         .         .       S .         .         .
291804 183.         .         .         .         I         .         .         .       S .         .         .
291806 184.         .         .         .        I0         .         .         .       S .         .         .
291808 185.         .         .         .        I0         .         .         .       S .         .         .
291810 186.         .         .         .        I0         .         .         .       S .         .         .
291812 187.         .         .         .        I0         .         .         .       S .         .         .
291814 188.         .         .         .        I.         .         .         .       S .         .         .
291816 189.         .         .         .        I.         .         .         .       S .         .         .
291818 190.         .         .         .        I.         .         .         .       S .         .         .
291820 191. . . . . . . . . . . . . . . . . . . . . . . .I. . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . .
291822 192.         .         .         .        I.         .         .         .       S .         .         .
291824 193.         .         .         .        I.         .         .         .       S .         .         .
291826 194.         .         .         .       I0.         .         .         .       S .         .         .
291828 195.         .         .         .       I0.         .         .         .       S .         .         .
291830 196.         .         .         .       I .         .         .         .       S .         .         .
291832 197.         .         .         .       I .         .         .         .       S .         .         .
291834 198.         .         .         .      I0 .         .         .         .       S .         .         .
291836 199.         .         .         .      I0 .         .         .         .       S .         .         .
291838 200.         .         .         .      I  .         .         .         .       S .         .         .
291840 201. . . . . . . . . . . . . . . . . . . . . . I0. . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . .
291842 202.         .         .         .     I0  .         .         .         .       S .         .         .
291844 203.         .         .         .    I0   .         .         .         .       S .         .         .
291846 204.         .         .         .    I0   .         .         .         .       S .         .         .
291848 205.         .         .         .    I0   .         .         .         .       S .         .         .
291850 206.         .         .         .   I0    .         .         .         .       S .         .         .
291852 207.         .         .         .   I0    .         .         .         .       S .         .         .
291854 208.         .         .         .   I0    .         .         .         .       S .         .         .
291856 209.         .         .         .  I0     .         .         .         .       S .         .         .
291858 210.         .         .         .  I0     .         .         .         .       S .         .         .
291900 211. . . . . . . . . . . . . . . . . . . . .I0 . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . .
291902 212.         .         .         .  I      .         .         .         .      S  .         .         .
291904 213.         .         .         . I0      .         .         .         .      S  .         .         .
291906 214.         .         .         . I0      .         .         .         .      S  .         .         .
291908 215.         .         .         . I0      .         .         .         .      S  .         .         .
291910 216.         .         .         . I       .         .         .         .      S  .         .         .
291912 217.         .         .         . I       .         .         .         .      S  .         .         .
291914 218.         .         .         . I       .         .         .         .      S  .         .         .
291916 219.         .         .         .I0       .         .         .         .      S  .         .         .
291918 220.         .         .         .I0       .         .         .         .      S  .         .         .
291920 221. . . . . . . . . . . . . . . . . . . .I0 . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
291922 222.         .         .         .I0       .         .         .         .      S  .         .         .
291924 223.         .         .         .I        .         .         .         .      S  .         .         .
291926 224.         .         .         .I        .         .         .         .      S  .         .         .
291928 225.         .         .         .I        .         .         .         .      S  .         .         .
291930 226.         .         .         .I        .         .         .         .      S  .         .         .
291932 227.         .         .         .I        .         .         .         .      S  .         .         .
291934 228.         .         .         .I        .         .         .         .      S  .         .         .
291936 229.         .         .         I0        .         .         .         .      S  .         .         .
291938 230.         .         .         I0        .         .         .         .      S  .         .         .
291940 231. . . . . . . . . . . . . . . . . . . I0. . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
291942 232.         .         .         I0        .         .         .         .      S  .         .         .
291944 233.         .         .         I         .         .         .         .      S  .         .         .
291946 234.         .         .         I         .         .         .         .      S  .         .         .
291948 235.         .         .         I         .         .         .         .      S  .         .         .
291950 236.         .         .         I         .         .         .         .      S  .         .         .
291952 237.         .         .         I         .         .         .         .      S  .         .         .
291954 238.         .         .         I         .         .         .         .      S  .         .         .
291956 239.         .         .         I         .         .         .         .      S  .         .         .
291958 240.         .         .         I         .         .         .         .      S  .         .         .
292000 241. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
292002 242.         .         .         I         .         .         .         .      S  .         .         .
292004 243.         .         .         I         .         .         .         .      S  .         .         .
292006 244.         .         .         I         .         .         .         .      S  .         .         .
292008 245.         .         .         I         .         .         .         .      S  .         .         .
292010 246.         .         .         I         .         .         .         .      S  .         .         .
292012 247.         .         .         I         .         .         .         .      S  .         .         .
292014 248.         .         .         I         .         .         .         .      S  .         .         .
292016 249.         .         .         I         .         .         .         .      S  .         .         .
292018 250.         .         .         I         .         .         .         .      S  .         .         .
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292022 252.         .         .         .         I         .         .         .         .         .      S  .         .         .
292024 253.         .         .         .         I         .         .         .         .         .      S  .         .         .
292026 254.         .         .         .         I         .         .         .         .         .      S  .         .         .
292028 255.         .         .         .         I         .         .         .         .         .      S  .         .         .
292030 256.         .         .         .         I         .         .         .         .         .      S  .         .         .
292032 257.         .         .         .         I         .         .         .         .         .      S  .         .         .
292034 258.         .         .         .         I         .         .         .         .         .      S  .         .         .
292036 259.         .         .         .         I         .         .         .         .         .      S  .         .         .
292038 260.         .         .         .        IO         .         .         .         .         .      S  .         .         .
292040 261. . . . . . . . . . . . . . . . . . . .IO . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . .
292042 262.         .         .         .        IO         .         .         .         .         .      S  .         .         .
292044 263.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292046 264.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292048 265.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292050 266.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292052 267.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292054 268.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292056 269.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292058 270.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292100 271. . . . . . . . . . . . . . . . . . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . .
292102 272.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292104 273.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292106 274.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292108 275.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292110 276.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292112 277.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292114 278.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292116 279.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292118 280.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292120 281. . . . . . . . . . . . . . . . . . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . .
292122 282.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292124 283.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292126 284.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292128 285.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292130 286.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292132 287.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292134 288.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292136 289.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292138 290.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292140 291. . . . . . . . . . . . . . . . . . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . .
292142 292.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292144 293.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292146 294.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292148 295.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292150 296.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292152 297.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292154 298.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292156 299.         .         .         .        I.         .         .         .         .         .      S  .         .         .
292158 300.---------.---------.---------.--------I.---------.---------.---------.---------.---------.------S--.---------.---------.
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                                      RUNOFF SUMMARY
                                FLOW IN CUBIC FEET PER SECOND
                             TIME IN HOURS,  AREA IN SQUARE MILES

                               PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD       BASIN    MAXIMUM    TIME OF
OPERATION        STATION       FLOW     PEAK        6-HOUR      24-HOUR     72-HOUR      AREA      STAGE    MAX STAGE

HYDROGRAPH AT        OF1         1.     5.60           0.          0.          0.        .02

ROUTED TO            CH1         1.     5.67           0.          0.          0.        .02

HYDROGRAPH AT         A2         1.     5.50           0.          0.          0.        .01

2 COMBINED AT         A2         1.     5.63           0.          0.          0.        .02

ROUTED TO            ST1         1.     5.77           0.          0.          0.        .02

HYDROGRAPH AT         A3         1.     5.53           0.          0.          0.        .01

2 COMBINED AT         A3         2.     5.70           0.          0.          0.        .03

HYDROGRAPH AT        OF2         1.     6.00           0.          0.          0.        .02

ROUTED TO            CH2         1.     6.07           0.          0.          0.        .02

HYDROGRAPH AT        OF3         0.     6.10           0.          0.          0.        .00

2 COMBINED AT        OF3         1.     6.07           0.          0.          0.        .02

2 COMBINED AT        OF3         3.     5.77           1.          0.          0.        .05

HYDROGRAPH AT         A1         3.     5.87           1.          0.          0.        .03

2 COMBINED AT         A1         5.     5.80           2.          1.          1.        .08

ROUTED TO             P1         5.     5.83           1.          1.          1.        .08

HYDROGRAPH AT         B1         0.     5.07           0.          0.          0.        .00

2 COMBINED AT         B1         5.     5.83           2.          1.          1.        .08

ROUTED TO           RES1         5.     6.13           4.          4.          4.        .08      20.02       6.13

ROUTED TO            CH3         5.     6.17           4.          4.          4.        .08

HYDROGRAPH AT         B2         0.     5.07           0.          0.          0.        .00

2 COMBINED AT         B2         5.     6.17           4.          4.          4.        .08

ROUTED TO           RES2         4.     6.43           4.          4.          4.        .08      18.25       6.43

ROUTED TO            CH4         4.     6.47           4.          4.          4.        .08

HYDROGRAPH AT       B345         2.     5.57           0.          0.          0.        .01

2 COMBINED AT       B345         6.     5.57           4.          4.          4.        .09

ROUTED TO           RES3         6.     5.63           4.          4.          4.        .09      16.04       5.63
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R3-43

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                                         SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                             (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                 INTERPOLATED TO
                                                                              COMPUTATION INTERVAL
              ISTAQ    ELEMENT       DT         PEAK     TIME TO      VOLUME       DT        PEAK     TIME TO      VOLUME
                                                           PEAK                                          PEAK

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

                  CH1  MANE          2.00         .90     342.00        .12       2.00         .90    342.00          .12

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1113E+00 EXCESS= .0000E+00 OUTFLOW= .1101E+00 BASIN STORAGE= .1379E-02 PERCENT ERROR=    -.1

                  ST1  MANE          2.00        1.48     346.00        .14       2.00        1.48    346.00          .14

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1766E+00 EXCESS= .0000E+00 OUTFLOW= .1737E+00 BASIN STORAGE= .2918E-02 PERCENT ERROR=     .0

                  CH2  MANE          2.00         .70     364.00        .11       2.00         .70    364.00          .11

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1157E+00 EXCESS= .0000E+00 OUTFLOW= .1146E+00 BASIN STORAGE= .1229E-02 PERCENT ERROR=    -.1

                   P1  MANE          1.60        5.18     350.47        .17       2.00        5.18    350.00          .17

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .7442E+00 EXCESS= .0000E+00 OUTFLOW= .7423E+00 BASIN STORAGE= .1955E-02 PERCENT ERROR=     .0

                  CH3  MANE          1.30        4.52     369.20        .73       2.00        4.52    370.00          .73

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3161E+01 EXCESS= .0000E+00 OUTFLOW= .3149E+01 BASIN STORAGE= .1282E-01 PERCENT ERROR=     .0

                  CH4  MANE          1.70        4.25     387.60        .72       2.00        4.25    388.00          .72

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3155E+01 EXCESS= .0000E+00 OUTFLOW= .3142E+01 BASIN STORAGE= .1417E-01 PERCENT ERROR=     .0


 *** NORMAL END OF HEC-1 ***
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*****************************************                                                *****************************************
*                                       *                                                *                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                *     U.S. ARMY CORPS OF ENGINEERS      *
*             SEPTEMBER 1990            *                                                *     HYDROLOGIC ENGINEERING CENTER     *
*              VERSION 4.0              *                                                *          609 SECOND STREET            *
*                                       *                                                *       DAVIS, CALIFORNIA 95616         *
*  RUN DATE  07/01/1994  TIME  20:14:45 *                                                *          (916) 756-1104               *
*                                       *                                                *                                       *
*****************************************                                                *****************************************




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




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

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

DEVELOPED 100 YEAR STORM
BASINS "OF1, OF2, OF3, A AND B"
RUN #4

```
                                          HEC-1 INPUT                                              PAGE  1

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

    1          ID  GRAND VIEW SUBDIVISION
    2          ID  DEVELOPED CONDITION
    3          ID  100 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)
    4          IT       2 29JUN94    1200     300
    5          IO       5       2       0
               * **********

    6          KK     OF1
    7          KM  Basin runoff calculation for    OF1
    8          KO       3       1       0       1      21
    9          BA  0.0175
   10          PH                0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
   11          LS               91
   12          UD   0.304
               * **********

   13          KK     CH1
   14          KM  Muskingum-Cunge channel routing from      CP1 to      CP3
   15          KO       3       1       0       1      21
   16          RD     760  0.0118   0.025            TRAP       2       3
               * **********

   17          KK      A2
   18          KM  Basin runoff calculation for     A2
   19          KO       3       1       0       1      21
   20          BA  0.0051
   21          PH                0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
   22          LS               95
   23          UD   0.293
               * **********

   24          KK      A2
   25          KM  Combining two hydrographs at control point      CP3
   26          KO       3       1       0       1      21
   27          HC       2
               * **********

   28          KK     ST1
   29          KM  Muskingum-Cunge channel routing from      CP3 to      CP4
   30          KO       3       1       0       1      21
   31          RD
   32          RC   0.020   0.020   0.020     966  0.0084
   33          RX     100     104     105     105   106.5   112.5   118.5   120.5
   34          RY   34.86   34.78   34.53   34.40   34.53   34.65   34.77   34.81
               * **********

   35          KK      A3
   36          KM  Basin runoff calculation for     A3
   37          KO       3       1       0       1      21
   38          BA  0.0053
   39          PH                0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
   40          LS               95
   41          UD   0.316
               * **********
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  42           KK      A3
  43           KM   Combining two hydrographs at control point      CP4
  44           KO       3       1       0       1      21
  45           HC       2
               * **********

  46           KK     OF2
  47           KM   Basin runoff calculation for    OF2
  48           KO       3       1       0       1      21
  49           BA  0.0187
  50           PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
  51           LS              91
  52           UD   0.478
               * **********

  53           KK     CH2
  54           KM   Muskingum-Cunge channel routing from      CP2 to      CP4
  55           KO       3       1       0       1      21
  56           RD     630   0.013   0.025            TRAP       2       3
               * **********

  57           KK     OF3
  58           KM   Basin runoff calculation for    OF3
  59           KO       3       1       0       1      21
  60           BA  0.0048
  61           PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
  62           LS              88
  63           UD   0.478
               * **********

  64           KK     OF3
  65           KM   Combining two hydrographs at control point      CP4
  66           KO       3       1       0       1      21
  67           HC       2
               * **********

  68           KK     OF3
  69           KM   Combining two hydrographs at control point      CP4
  70           KO       3       1       0       1      21
  71           HC       2
               * **********

  72           KK      A1
  73           KM   Basin runoff calculation for     A1
  74           KO       3       1       0       1      21
  75           BA  0.0291
  76           PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
  77           LS              95
  78           UD   0.510
               * **********
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R4-3

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


  79           KK     A1
  80           KM   Combining two hydrographs at control point      CP4
  81           KO      3       1       0       1      21
  82           HC      2
               * **********

  83           KK     P1
  84           KM   Muskingum-Cunge channel routing from      CP4 to      CP5
  85           KO      3       1       0       1      21
  86           RD    525  0.0060   0.015           CIRC     3.0
               * **********

  87           KK     B1
  88           KM   Basin runoff calculation for     B1
  89           KO      3       1       0       1      21
  90           BA  0.0005
  91           PH              0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
  92           LS             96
  93           UD   0.037
               * **********

  94           KK     B1
  95           KM   Combining two hydrographs at control point      CP5
  96           KO      3       1       0       1      21
  97           HC      2
               * **********

  98           KK    RES1
  99           KM   Reservoir routing operation
 100           KO      1       2       0       1      21
 101           RS      1    ELEV    18.6
 102           SV  0.0092  0.0613  0.1637  0.3107  0.4578
 103           SE    19.6    20.6    21.6    22.6    23.6
 104           SL    18.6    0.79     0.6     0.5
 105           SS    22.6    19.0     2.7     1.5
               * **********

 106           KK    CH3
 107           KM   Muskingum-Cunge channel routing from      CP5 to      CP6
 108           KO      3       1       0       1      21
 109           RD    310  0.0052   0.025           TRAP       2       3
               * **********

 110           KK     B2
 111           KM   Basin runoff calculation for     B2
 112           KO      3       1       0       1      21
 113           BA  0.0005
 114           PH              0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
 115           LS             96
 116           UD   0.037
               * **********
```

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


  117           KK      B2
  118           KM   Combining two hydrographs at control point      CP6
  119           KO       3       1       0       1      21
  120           HC       2
                * **********

  121           KK     RES2
  122           KM   Reservoir routing operation
  123           KO       1       2       0       1      21
  124           RS       1    ELEV    17.0
  125           SV  0.0150  0.0768   0.184  0.2916
  126           SE    18.0    19.0    20.0    21.0
  127           SL    17.0    0.79     0.6     0.5
  128           SS    20.0    19.0     2.7     1.5
                * **********

  129           KK      CH4
  130           KM   Muskingum-Cunge channel routing from      CP6 to      CP7
  131           KO       3       1       0       1      21
  132           RD     400  0.0079   0.025            TRAP       2       3
                * **********

  133           KK     B345
  134           KM   Basin runoff calculation for   B345
  135           KO       3       1       0       1      21
  136           BA  0.0132
  137           PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
  138           LS              96
  139           UD   0.323
                * **********

  140           KK     B345
  141           KM   Combining two hydrographs at control point      CP7
  142           KO       3       1       0       1      21
  143           HC       2
                * **********

  144           KK     RES3
  145           KM   Reservoir routing operation
  146           KO       1       2       0       1      21
  147           RS       1    ELEV   12.83
  148           SV  0.0817  0.2218  0.4160  0.6632
  149           SE    14.2    15.2    16.2    17.2
  150           SL   13.83  0.0625     0.6     0.5
  151           SS   15.75    14.0     2.7     1.5
                * **********
  152           ZZ
```

```
****************************************                                                ****************************************
*                                      *                                                *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                *     U.S. ARMY CORPS OF ENGINEERS     *
*            SEPTEMBER 1990            *                                                *    HYDROLOGIC ENGINEERING CENTER     *
*             VERSION 4.0              *                                                *          609 SECOND STREET           *
*                                      *                                                *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE  07/01/1994  TIME  20:14:45 *                                               *           (916) 756-1104             *
*                                      *                                                *                                      *
****************************************                                                ****************************************




                            GRAND VIEW SUBDIVISION
                            DEVELOPED CONDITION
                            100 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)

  5 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           2  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN           2  MINUTES IN COMPUTATION INTERVAL
                      IDATE     29JUN94  STARTING DATE
                      ITIME        1200  STARTING TIME
                         NO         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE     29JUN94  ENDING DATE
                     NDTIME        2158  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL     .03 HOURS
                      TOTAL TIME BASE    9.97 HOURS

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


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


            **************
            *            *
  6 KK      *      OF1   *
            *            *
            **************

  8 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .033  TIME INTERVAL IN HOURS


              SUBBASIN RUNOFF DATA

  9 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                PRECIPITATION DATA

 10 PH                            DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......    ............... TP-40 ...............      ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN     2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
                  .39     .76    1.34     1.40    1.44    1.56    1.69    2.01      .00     .00     .00     .00

                                                 STORM AREA =      .02

 11 LS          SCS LOSS RATE
```

R4-6

```
                    CRVNBR       91.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

   12 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .30  LAG

                                                            ***

                                                     UNIT HYDROGRAPH
                                                48 END-OF-PERIOD ORDINATES
                 1.         3.         5.         9.        13.        18.        22.        25.        26.        26.
                25.        24.        22.        19.        16.        13.        11.         9.         8.         7.
                 6.         5.         4.         3.         3.         2.         2.         2.         1.         1.
                 1.         1.         1.         1.         1.         0.         0.         0.         0.         0.
                 0.         0.         0.         0.         0.         0.         0.         0.

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

                            HYDROGRAPH AT STATION      OF1

    TOTAL RAINFALL =     1.65, TOTAL LOSS =      .79, TOTAL EXCESS =      .87

  PEAK FLOW      TIME                               MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                      6-HR         24-HR        72-HR        9.97-HR
                                 (CFS)
      14.        5.33                        2.            1.           1.            1.
                              (INCHES)     .861          .861         .861          .861
                               (AC-FT)       1.            1.           1.            1.

                           CUMULATIVE AREA =      .02 SQ MI


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

               **************
               *            *
   13 KK       *      CH1   *
               *            *
               **************

   15 KO          OUTPUT CONTROL VARIABLES
                       IPRNT            3  PRINT CONTROL
                       IPLOT            1  PLOT CONTROL
                       QSCAL           0.  HYDROGRAPH PLOT SCALE
                       IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                        IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1            1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT         .033  TIME INTERVAL IN HOURS


                 HYDROGRAPH ROUTING DATA

   16 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                           L         760.  CHANNEL LENGTH
                           S        .0118  SLOPE
                           N         .025  CHANNEL ROUGHNESS COEFFICIENT
                          CA          .00  CONTRIBUTING AREA
                       SHAPE         TRAP  CHANNEL SHAPE
                          WD         2.00  BOTTOM WIDTH OR DIAMETER
                           Z         3.00  SIDE SLOPE

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

                      MAIN        2.60      1.34       2.00      253.33       13.80     322.00          .86        4.49


                                              INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                      MAIN        2.60      1.34       2.00                   13.80     322.00          .86

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .8035E+00 EXCESS= .0000E+00 OUTFLOW= .8017E+00 BASIN STORAGE= .2569E-02 PERCENT ERROR=    -.1


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

                            HYDROGRAPH AT STATION      CH1
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```
 PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                   6-HR        24-HR       72-HR       9.97-HR
      14.      5.37         (CFS)       2.           1.          1.            1.
                          (INCHES)    .859         .859        .859          .859
                           (AC-FT)      1.           1.          1.            1.

                         CUMULATIVE AREA =      .02 SQ MI


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


               **************
               *            *
  17 KK        *      A2    *
               *            *
               **************

  19 KO            OUTPUT CONTROL VARIABLES
                         IPRNT           3  PRINT CONTROL
                         IPLOT           1  PLOT CONTROL
                         QSCAL          0.  HYDROGRAPH PLOT SCALE
                         IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                          IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                         ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                         ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                        TIMINT        .033  TIME INTERVAL IN HOURS


                 SUBBASIN RUNOFF DATA

  20 BA            SUBBASIN CHARACTERISTICS
                         TAREA         .01  SUBBASIN AREA

                   PRECIPITATION DATA

  21 PH                                   DEPTHS FOR  0-PERCENT HYPOTHETICAL STORM
                   ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                   5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                     .39     .76    1.34    1.40    1.44    1.56    1.69    2.01     .00     .00     .00     .00

                                                          STORM AREA =      .01

  22 LS            SCS LOSS RATE
                        STRTL          .11  INITIAL ABSTRACTION
                       CRVNBR        95.00  CURVE NUMBER
                        RTIMP          .00  PERCENT IMPERVIOUS AREA

  23 UD            SCS DIMENSIONLESS UNITGRAPH
                         TLAG          .29  LAG

                                                              ***

                                                       UNIT HYDROGRAPH
                                                  46 END-OF-PERIOD ORDINATES
                     0.        1.        2.        3.        4.        6.        7.        8.        8.        8.
                     7.        7.        6.        5.        4.        4.        3.        2.        2.        2.
                     2.        1.        1.        1.        1.        1.        1.        0.        0.        0.
                     0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                     0.        0.        0.        0.        0.        0.

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

                          HYDROGRAPH AT STATION       A2

    TOTAL RAINFALL =     1.65, TOTAL LOSS =      .50, TOTAL EXCESS =     1.16

 PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                   6-HR        24-HR       72-HR       9.97-HR
       5.      5.30         (CFS)       1.           0.          0.            0.
                          (INCHES)   1.149        1.149       1.149         1.149
                           (AC-FT)      0.           0.          0.            0.

                         CUMULATIVE AREA =      .01 SQ MI


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


               **************
               *            *
  24 KK        *      A2    *
               *            *
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R4-8

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  26 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        OSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .033  TIME INTERVAL IN HOURS


  27 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

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

                              HYDROGRAPH AT STATION       A2

 PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                    6-HR        24-HR       72-HR       9.97-HR
     19.       5.37          (CFS)       2.           1.          1.            1.
                          (INCHES)     .924         .924        .924          .924
                           (AC-FT)       1.           1.          1.            1.

                             CUMULATIVE AREA =     .02 SQ MI



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


                 **************
                 *            *
  28 KK          *      ST1   *
                 *            *
                 **************

  30 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        OSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .033  TIME INTERVAL IN HOURS


               HYDROGRAPH ROUTING DATA

  31 RD          MUSKINGUM-CUNGE CHANNEL ROUTING

  32 RC          NORMAL DEPTH CHANNEL
                          ANL        .020  LEFT OVERBANK N-VALUE
                         ANCH        .020  MAIN CHANNEL N-VALUE
                          ANR        .020  RIGHT OVERBANK N-VALUE
                        RLNTH        966.  REACH LENGTH
                          SEL       .0084  ENERGY SLOPE
                        ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                             CROSS-SECTION DATA
                               --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  34 RY        ELEVATION     34.86     34.78     34.53     34.40     34.53     34.65     34.77     34.81
  33 RX        DISTANCE     100.00    104.00    105.00    105.00    106.50    112.50    118.50    120.50

                                                                  ***

                                               COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                 STORAGE        .00        .00        .00        .00        .00        .00        .00        .00        .01        .01
                 OUTFLOW        .00        .00        .01        .02        .05        .08        .12        .19        .32        .50
               ELEVATION      34.40      34.42      34.45      34.47      34.50      34.52      34.55      34.57      34.59      34.62

                 STORAGE        .01        .02        .02        .03        .04        .04        .05        .06        .07        .08
                 OUTFLOW        .76       1.16       1.68       2.30       3.04       3.90       4.86       5.95       7.32       8.87
               ELEVATION      34.64      34.67      34.69      34.71      34.74      34.76      34.79      34.81      34.84      34.86


****** WARNING ******  THE FLOW RATE THAT YOU ARE ROUTING IS GREATER THAN
WHAT CAN BE CALCULATE FROM THE 8 POINT CROSS SECTION YOU ENTERED ON RC, RX,
AND RY RECORDS.  THE PROGRAM HAD TO EXTRAPOLATE BEYOND THE MAXIMUM STORAGE-
DISCHARGE VALUE CALCULATED.  INCREASE ELMAX ON THE RC RECORD OR MAKE THE CROSS
SECTION LARGER
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                          COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                 COMPUTATION TIME STEP
              ELEMENT    ALPHA      M        DT       DX      PEAK    TIME TO    VOLUME   MAXIMUM
                                                                        PEAK               CELERITY
                                            (MIN)     (FT)    (CFS)    (MIN)      (IN)     (FPS)

               MAIN                          2.00   193.20    19.07   326.00       .92      3.30

                                INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

               MAIN                          2.00             19.07   326.00       .92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1114E+01 EXCESS= .0000E+00 OUTFLOW= .1110E+01 BASIN STORAGE= .5794E-02 PERCENT ERROR=   -.2


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

                    HYDROGRAPH AT STATION      ST1

 PEAK FLOW      TIME                         MAXIMUM AVERAGE FLOW
   (CFS)        (HR)                 6-HR        24-HR        72-HR        9.97-HR
      19.       5.43       (CFS)       2.           1.           1.             1.
                         (INCHES)    .921         .921         .921           .921
                          (AC-FT)      1.           1.           1.             1.

                     CUMULATIVE AREA =     .02 SQ MI


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


           **************
           *            *
  35 KK    *       A3   *
           *            *
           **************

  37 KO         OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          1  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE
                      IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                       IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT       .033  TIME INTERVAL IN HOURS


              SUBBASIN RUNOFF DATA

  38 BA         SUBBASIN CHARACTERISTICS
                      TAREA        .01  SUBBASIN AREA

                PRECIPITATION DATA

  39 PH                             DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......     ................ TP-40 ................     ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN     2-HR     3-HR     6-HR    12-HR    24-HR     2-DAY    4-DAY    7-DAY   10-DAY
                  .39     .76    1.34     1.40     1.44     1.56     1.69     2.01       .00      .00      .00      .00

                                                STORM AREA =      .01

  40 LS         SCS LOSS RATE
                     STRTL         .11  INITIAL ABSTRACTION
                    CRVNBR       95.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

  41 UD         SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .32  LAG

                                                          ***

                                                  UNIT HYDROGRAPH
                                              49 END-OF-PERIOD ORDINATES
                 0.         1.         1.         2.         4.         5.         6.         7.         8.         8.
                 8.         7.         7.         6.         5.         4.         4.         3.         3.         2.
                 2.         2.         1.         1.         1.         1.         1.         1.         1.         0.
                 0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                 0.         0.         0.         0.         0.         0.         0.         0.         0.

    ***            ***            ***            ***            ***
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R4-10

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                              HYDROGRAPH AT STATION       A3

          TOTAL RAINFALL =    1.65, TOTAL LOSS =     .50, TOTAL EXCESS =    1.16

      PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
        (CFS)       (HR)                       6-HR       24-HR        72-HR       9.97-HR
           5.       5.33           (CFS)         1.          0.           0.            0.
                                 (INCHES)     1.148       1.148        1.148         1.148
                                  (AC-FT)        0.          0.           0.            0.

                             CUMULATIVE AREA =     .01 SQ MI



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


                **************
                *            *
       42 KK    *        A3  *
                *            *
                **************

       44 KO          OUTPUT CONTROL VARIABLES
                            IPRNT          3  PRINT CONTROL
                            IPLOT          1  PLOT CONTROL
                            OSCAL         0.  HYDROGRAPH PLOT SCALE
                            IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                             IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                            ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                            ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                           TIMINT       .033  TIME INTERVAL IN HOURS


       45 HC          HYDROGRAPH COMBINATION
                            ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                       ***

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

                              HYDROGRAPH AT STATION       A3

      PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
        (CFS)       (HR)                       6-HR       24-HR        72-HR       9.97-HR
          24.       5.40           (CFS)         3.          2.           2.            2.
                                 (INCHES)      .964        .964         .964          .964
                                  (AC-FT)        1.          1.           1.            1.

                             CUMULATIVE AREA =     .03 SQ MI



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


                **************
                *            *
       46 KK    *       OF2  *
                *            *
                **************

       48 KO          OUTPUT CONTROL VARIABLES
                            IPRNT          3  PRINT CONTROL
                            IPLOT          1  PLOT CONTROL
                            OSCAL         0.  HYDROGRAPH PLOT SCALE
                            IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                             IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                            ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                            ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                           TIMINT       .033  TIME INTERVAL IN HOURS


                    SUBBASIN RUNOFF DATA

       49 BA          SUBBASIN CHARACTERISTICS
                           TAREA         .02  SUBBASIN AREA

                      PRECIPITATION DATA

       50 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                      ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                      5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                        .39     .76    1.34    1.40    1.44    1.56    1.69    2.01     .00     .00     .00     .00
```

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

  52 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .48  LAG

                                                              ***

                                                        UNIT HYDROGRAPH
                                                   74 END-OF-PERIOD ORDINATES
                0.         1.         2.         3.         4.         6.         8.        10.        12.        14.
               16.        17.        18.        18.        18.        18.        18.        17.        16.        15.
               14.        13.        11.        10.         9.         8.         7.         6.         6.         5.
                5.         4.         4.         3.         3.         3.         2.         2.         2.         2.
                2.         1.         1.         1.         1.         1.         1.         1.         1.         1.
                1.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                0.         0.         0.         0.

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

                             HYDROGRAPH AT STATION       OF2

     TOTAL RAINFALL =     1.65, TOTAL LOSS =      .79, TOTAL EXCESS =      .87

   PEAK FLOW      TIME                            MAXIMUM AVERAGE FLOW
     (CFS)        (HR)                   6-HR         24-HR        72-HR        9.97-HR
       11.        5.53        (CFS)        2.            1.           1.            1.
                           (INCHES)      .857          .857         .857          .857
                            (AC-FT)        1.            1.           1.            1.

                            CUMULATIVE AREA =      .02 SQ MI



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


              **************
              *            *
  53 KK       *      CH2   *
              *            *
              **************

  55 KO         OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .033  TIME INTERVAL IN HOURS


              HYDROGRAPH ROUTING DATA

  56 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                          L        630.  CHANNEL LENGTH
                          S       .0130  SLOPE
                          N        .025  CHANNEL ROUGHNESS COEFFICIENT
                         CA         .00  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD        2.00  BOTTOM WIDTH OR DIAMETER
                          Z        3.00  SIDE SLOPE

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

                  MAIN       2.72      1.34       2.00     315.00      11.16     334.00          .86        4.40

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                  MAIN       2.72      1.34       2.00                 11.16     334.00          .86

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8545E+00 EXCESS= .0000E+00 OUTFLOW= .8532E+00 BASIN STORAGE= .2230E-02 PERCENT ERROR=   -.1
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```
      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION      CH2

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                 6-HR        24-HR        72-HR      9.97-HR
      11.       5.57        (CFS)      2.           1.           1.           1.
                          (INCHES)   .855         .855         .855         .855
                           (AC-FT)     1.           1.           1.           1.

                       CUMULATIVE AREA =      .02 SQ MI



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


             **************
             *            *
   57 KK     *      OF3   *
             *            *
             **************

   59 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        OSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .033  TIME INTERVAL IN HOURS


                SUBBASIN RUNOFF DATA

   60 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .00  SUBBASIN AREA

                  PRECIPITATION DATA

   61 PH                                    DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
                    .39     .76    1.34    1.40    1.44    1.56    1.69    2.01      .00     .00     .00     .00

                                                        STORM AREA =      .00

   62 LS          SCS LOSS RATE
                       STRTL          .27  INITIAL ABSTRACTION
                      CRVNBR        88.00  CURVE NUMBER
                       RTIMP          .00  PERCENT IMPERVIOUS AREA

   63 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG          .48  LAG

                                                                      ***


                                                              UNIT HYDROGRAPH
                                                         74 END-OF-PERIOD ORDINATES
                  0.        0.        0.        1.        1.        1.        2.        3.        3.        4.
                  4.        4.        5.        5.        5.        5.        5.        4.        4.        4.
                  4.        3.        3.        3.        2.        2.        2.        2.        1.        1.
                  1.        1.        1.        1.        1.        1.        1.        1.        0.        0.
                  0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                  0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                  0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                  0.        0.        0.        0.

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

                        HYDROGRAPH AT STATION      OF3

   TOTAL RAINFALL =     1.65, TOTAL LOSS =      .96, TOTAL EXCESS =      .70

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                 6-HR        24-HR        72-HR      9.97-HR
       2.       5.57        (CFS)      0.           0.           0.           0.
                          (INCHES)   .685         .685         .685         .685
                           (AC-FT)     0.           0.           0.           0.

                       CUMULATIVE AREA =      .00 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

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               *            *
   64 KK       *      OF3   *
               *            *
               **************

   66 KO            OUTPUT CONTROL VARIABLES
                          IPRNT           3  PRINT CONTROL
                          IPLOT           1  PLOT CONTROL
                          OSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                           IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT        .033  TIME INTERVAL IN HOURS


   67 HC            HYDROGRAPH COMBINATION
                          ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                    ***

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

                               HYDROGRAPH AT STATION      OF3

  PEAK FLOW     TIME                                 MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                         6-HR         24-HR        72-HR       9.97-HR
      13.       5.57            (CFS)          2.            1.           1.            1.
                              (INCHES)       .821          .821         .821          .821
                               (AC-FT)         1.            1.           1.            1.

                              CUMULATIVE AREA =     .02 SQ MI



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

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               *            *
   68 KK       *      OF3   *
               *            *
               **************

   70 KO            OUTPUT CONTROL VARIABLES
                          IPRNT           3  PRINT CONTROL
                          IPLOT           1  PLOT CONTROL
                          OSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                           IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT        .033  TIME INTERVAL IN HOURS


   71 HC            HYDROGRAPH COMBINATION
                          ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                    ***

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

                               HYDROGRAPH AT STATION      OF3

  PEAK FLOW     TIME                                 MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                         6-HR         24-HR        72-HR       9.97-HR
      36.       5.43            (CFS)          5.            3.           3.            3.
                              (INCHES)       .898          .898         .898          .898
                               (AC-FT)         2.            2.           2.            2.

                              CUMULATIVE AREA =     .05 SQ MI



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

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               *            *
   72 KK       *       A1   *
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               **************

 74 KO          OUTPUT CONTROL VARIABLES
                      IPRNT             3  PRINT CONTROL
                      IPLOT             1  PLOT CONTROL
                      OSCAL            0.  HYDROGRAPH PLOT SCALE
                      IPNCH             1  PUNCH COMPUTED HYDROGRAPH
                       IOUT            21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1             1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2           300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT          .033  TIME INTERVAL IN HOURS


                  SUBBASIN RUNOFF DATA

 75 BA          SUBBASIN CHARACTERISTICS
                      TAREA           .03  SUBBASIN AREA

                PRECIPITATION DATA

 76 PH                                   DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......    ............... TP-40 ...............    ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
                  .39     .76    1.34    1.40    1.44    1.56    1.69    2.01      .00     .00     .00     .00

                                                   STORM AREA =      .03

 77 LS          SCS LOSS RATE
                      STRTL           .11  INITIAL ABSTRACTION
                     CRVNBR         95.00  CURVE NUMBER
                      RTIMP           .00  PERCENT IMPERVIOUS AREA

 78 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG           .51  LAG

                                                              ***

                                                        UNIT HYDROGRAPH
                                                    78 END-OF-PERIOD ORDINATES
                   1.         1.         2.         4.         6.         8.        10.        13.        16.        19.
                  22.        24.        25.        26.        27.        27.        26.        26.        25.        24.
                  22.        21.        19.        18.        16.        14.        12.        11.        10.         9.
                   8.         7.         7.         6.         5.         5.         4.         4.         4.         3.
                   3.         3.         2.         2.         2.         2.         2.         1.         1.         1.
                   1.         1.         1.         1.         1.         1.         1.         1.         0.         0.
                   0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                   0.         0.         0.         0.         0.         0.         0.         0.

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

                           HYDROGRAPH AT STATION       A1

      TOTAL RAINFALL =     1.65, TOTAL LOSS =      .50, TOTAL EXCESS =     1.16

    PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
      (CFS)        (HR)                   6-HR         24-HR        72-HR        9.97-HR
        22.        5.53          (CFS)      4.            2.           2.            2.
                              (INCHES)   1.143         1.143        1.143         1.143
                               (AC-FT)      2.            2.           2.            2.

                           CUMULATIVE AREA =     .03 SQ MI


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               *            *
 79 KK         *      A1    *
               *            *
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 81 KO          OUTPUT CONTROL VARIABLES
                      IPRNT             3  PRINT CONTROL
                      IPLOT             1  PLOT CONTROL
                      OSCAL            0.  HYDROGRAPH PLOT SCALE
                      IPNCH             1  PUNCH COMPUTED HYDROGRAPH
                       IOUT            21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1             1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2           300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT          .033  TIME INTERVAL IN HOURS

 82 HC          HYDROGRAPH COMBINATION
                      ICOMP             2  NUMBER OF HYDROGRAPHS TO COMBINE
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                              HYDROGRAPH AT STATION       A1

   PEAK FLOW     TIME                                  MAXIMUM AVERAGE FLOW
     (CFS)       (HR)                          6-HR          24-HR        72-HR        9.97-HR
        58.       5.47          (CFS)           9.             5.           5.             5.
                              (INCHES)        .987           .987         .987           .987
                               (AC-FT)          4.             4.           4.             4.

                             CUMULATIVE AREA =      .08 SQ MI



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


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              *            *
   83 KK      *       P1   *
              *            *
              **************

   85 KO           OUTPUT CONTROL VARIABLES
                         IPRNT           3  PRINT CONTROL
                         IPLOT           1  PLOT CONTROL
                         QSCAL          0.  HYDROGRAPH PLOT SCALE
                         IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                          IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                         ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                         ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                        TIMINT        .033  TIME INTERVAL IN HOURS


                 HYDROGRAPH ROUTING DATA

   86 RD           MUSKINGUM-CUNGE CHANNEL ROUTING
                             L        525.  CHANNEL LENGTH
                             S       .0060  SLOPE
                             N        .015  CHANNEL ROUGHNESS COEFFICIENT
                            CA         .00  CONTRIBUTING AREA
                         SHAPE        CIRC  CHANNEL SHAPE
                            WD        3.00  BOTTOM WIDTH OR DIAMETER
                             Z         .00  SIDE SLOPE
                                                                       ***
                                     COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                            COMPUTATION TIME STEP
                      ELEMENT     ALPHA       M          DT         DX        PEAK      TIME TO      VOLUME     MAXIMUM
                                                                                          PEAK                  CELERITY
                                                       (MIN)       (FT)       (CFS)      (MIN)        (IN)       (FPS)

                        MAIN       4.99      1.25         .99     525.00      57.49     329.26         .99        8.85


                                              INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                        MAIN       4.99      1.25       2.00                  57.48     330.00         .99

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4237E+01 EXCESS= .0000E+00 OUTFLOW= .4234E+01 BASIN STORAGE= .3330E-02 PERCENT ERROR=     .0


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

                              HYDROGRAPH AT STATION       P1

   PEAK FLOW     TIME                                  MAXIMUM AVERAGE FLOW
     (CFS)       (HR)                          6-HR          24-HR        72-HR        9.97-HR
        57.       5.50          (CFS)           9.             5.           5.             5.
                              (INCHES)        .986           .986         .986           .986
                               (AC-FT)          4.             4.           4.             4.

                             CUMULATIVE AREA =      .08 SQ MI


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 87 KK        *         B1  *
              *             *
              **************

 89 KO           OUTPUT CONTROL VARIABLES
                       IPRNT            3  PRINT CONTROL
                       IPLOT            1  PLOT CONTROL
                       OSCAL           0.  HYDROGRAPH PLOT SCALE
                       IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                        IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1            1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT         .033  TIME INTERVAL IN HOURS


               SUBBASIN RUNOFF DATA

 90 BA           SUBBASIN CHARACTERISTICS
                       TAREA          .00  SUBBASIN AREA

                 PRECIPITATION DATA

 91 PH                                   DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......    ............... TP-40 ................      ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN     2-HR     3-HR     6-HR    12-HR    24-HR    2-DAY    4-DAY    7-DAY   10-DAY
                   .39     .76    1.34     1.40     1.44     1.56     1.69     2.01      .00      .00      .00      .00

                                                   STORM AREA =      .00

 92 LS           SCS LOSS RATE
                       STRTL          .08  INITIAL ABSTRACTION
                      CRVNBR        96.00  CURVE NUMBER
                       RTIMP          .00  PERCENT IMPERVIOUS AREA

 93 UD           SCS DIMENSIONLESS UNITGRAPH
                        TLAG          .04  LAG
                                                               ***

                                                         UNIT HYDROGRAPH
                                                     8 END-OF-PERIOD ORDINATES
                 3.         4.         2.         1.         0.         0.         0.         0.

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

                         HYDROGRAPH AT STATION       B1

   TOTAL RAINFALL =     1.65, TOTAL LOSS =      .41, TOTAL EXCESS =     1.24

  PEAK FLOW      TIME                           MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                   6-HR         24-HR        72-HR        9.97-HR
        1.       5.03         (CFS)       0.            0.           0.             0.
                            (INCHES)   1.237         1.241        1.241          1.241
                             (AC-FT)      0.            0.           0.             0.

                        CUMULATIVE AREA =      .00 SQ MI


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


              **************
              *            *
 94 KK        *        B1  *
              *            *
              **************

 96 KO           OUTPUT CONTROL VARIABLES
                       IPRNT            3  PRINT CONTROL
                       IPLOT            1  PLOT CONTROL
                       OSCAL           0.  HYDROGRAPH PLOT SCALE
                       IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                        IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1            1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT         .033  TIME INTERVAL IN HOURS

 97 HC           HYDROGRAPH COMBINATION
                       ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                               ***

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 PEAK FLOW      TIME                                MAXIMUM AVERAGE FLOW
   (CFS)        (HR)                      6-HR          24-HR        72-HR        9.97-HR
      58.       5.50        (CFS)           9.             5.           5.             5.
                          (INCHES)        .988           .988         .988           .988
                           (AC-FT)          4.             4.           4.             4.

                          CUMULATIVE AREA =      .08 SQ MI



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


             **************
             *            *
  98 KK      *      RES1  *
             *            *
             **************

 100 KO            OUTPUT CONTROL VARIABLES
                         IPRNT            1  PRINT CONTROL
                         IPLOT            2  PLOT CONTROL
                         QSCAL           0.  HYDROGRAPH PLOT SCALE
                         IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                          IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                         ISAV1            1  FIRST ORDINATE PUNCHED OR SAVED
                         ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                        TIMINT         .033  TIME INTERVAL IN HOURS


                 HYDROGRAPH ROUTING DATA

 101 RS            STORAGE ROUTING
                         NSTPS            1  NUMBER OF SUBREACHES
                          ITYP         ELEV  TYPE OF INITIAL CONDITION
                        RSVRIC        18.60  INITIAL CONDITION
                             X          .00 WORKING R AND D COEFFICIENT

 102 SV              STORAGE            .0         .1         .2         .3         .5

 103 SE            ELEVATION       19.60      20.60      21.60      22.60      23.60

 104 SL            LOW-LEVEL OUTLET
                         ELEVL        18.60  ELEVATION AT CENTER OF OUTLET
                         CAREA          .79  CROSS-SECTIONAL AREA
                          COOL          .60  COEFFICIENT
                          EXPL          .50  EXPONENT OF HEAD

 105 SS            SPILLWAY
                          CREL        22.60  SPILLWAY CREST ELEVATION
                         SPWID        19.00  SPILLWAY WIDTH
                          COOW         2.70  WEIR COEFFICIENT
                          EXPW         1.50  EXPONENT OF HEAD
                                                                   ***

                                                        COMPUTED OUTFLOW-ELEVATION DATA

               OUTFLOW         .00       4.03       4.28       4.56       4.89       5.26       5.70       6.22       6.84       7.60
             ELEVATION       19.60      19.72      19.87      20.04      20.25      20.52      20.85      21.28      21.84      22.60

               OUTFLOW        7.69       8.12       9.20      11.23      14.50      19.30      25.94      34.70      45.89      59.80
             ELEVATION       22.61      22.64      22.70      22.77      22.86      22.97      23.10      23.24      23.41      23.60


                                                    COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

               STORAGE         .01        .02        .02        .03        .04        .06        .06        .09        .13        .16
               OUTFLOW        3.80       4.03       4.28       4.56       4.89       5.26       5.38       5.70       6.22       6.58
             ELEVATION       19.60      19.72      19.87      20.04      20.25      20.52      20.60      20.85      21.28      21.60

               STORAGE         .20        .31        .31        .32        .32        .34        .35        .36        .38        .41
               OUTFLOW        6.84       7.60       7.69       8.12       9.20      11.23      14.50      19.30      25.94      34.70
             ELEVATION       21.84      22.60      22.61      22.64      22.70      22.77      22.86      22.97      23.10      23.24

               STORAGE         .43        .46
               OUTFLOW       45.89      59.80
             ELEVATION       23.41      23.60
**************************************************************************************************************************************

                                                        HYDROGRAPH AT STATION      RES1

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                                             *                                         *
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                                          *                                           *
29 JUN 1200  1      0.     .0     19.6 * 29 JUN 1520 101      4.     .0     19.6 * 29 JUN 1840 201      7.     .3     22.4
29 JUN 1202  2      4.     .0     19.6 * 29 JUN 1522 102      4.     .0     19.6 * 29 JUN 1842 202      7.     .3     22.4
29 JUN 1204  3      4.     .0     19.6 * 29 JUN 1524 103      4.     .0     19.6 * 29 JUN 1844 203      7.     .3     22.3
29 JUN 1206  4      4.     .0     19.6 * 29 JUN 1526 104      4.     .0     19.6 * 29 JUN 1846 204      7.     .3     22.2
29 JUN 1208  5      4.     .0     19.6 * 29 JUN 1528 105      4.     .0     19.6 * 29 JUN 1848 205      7.     .2     22.2
29 JUN 1210  6      4.     .0     19.6 * 29 JUN 1530 106      4.     .0     19.6 * 29 JUN 1850 206      7.     .2     22.1
29 JUN 1212  7      4.     .0     19.6 * 29 JUN 1532 107      4.     .0     19.6 * 29 JUN 1852 207      7.     .2     22.0
29 JUN 1214  8      4.     .0     19.6 * 29 JUN 1534 108      4.     .0     19.6 * 29 JUN 1854 208      7.     .2     22.0
29 JUN 1216  9      4.     .0     19.6 * 29 JUN 1536 109      4.     .0     19.6 * 29 JUN 1856 209      7.     .2     21.9
29 JUN 1218 10      4.     .0     19.6 * 29 JUN 1538 110      4.     .0     19.6 * 29 JUN 1858 210      7.     .2     21.8
29 JUN 1220 11      4.     .0     19.6 * 29 JUN 1540 111      4.     .0     19.6 * 29 JUN 1900 211      7.     .2     21.7
29 JUN 1222 12      4.     .0     19.6 * 29 JUN 1542 112      4.     .0     19.6 * 29 JUN 1902 212      7.     .2     21.7
29 JUN 1224 13      4.     .0     19.6 * 29 JUN 1544 113      4.     .0     19.6 * 29 JUN 1904 213      7.     .2     21.6
29 JUN 1226 14      4.     .0     19.6 * 29 JUN 1546 114      4.     .0     19.6 * 29 JUN 1906 214      6.     .2     21.5
29 JUN 1228 15      4.     .0     19.6 * 29 JUN 1548 115      4.     .0     19.6 * 29 JUN 1908 215      6.     .1     21.4
29 JUN 1230 16      4.     .0     19.6 * 29 JUN 1550 116      4.     .0     19.6 * 29 JUN 1910 216      6.     .1     21.3
29 JUN 1232 17      4.     .0     19.6 * 29 JUN 1552 117      4.     .0     19.6 * 29 JUN 1912 217      6.     .1     21.2
29 JUN 1234 18      4.     .0     19.6 * 29 JUN 1554 118      4.     .0     19.6 * 29 JUN 1914 218      6.     .1     21.1
29 JUN 1236 19      4.     .0     19.6 * 29 JUN 1556 119      4.     .0     19.6 * 29 JUN 1916 219      6.     .1     21.0
29 JUN 1238 20      4.     .0     19.6 * 29 JUN 1558 120      4.     .0     19.6 * 29 JUN 1918 220      6.     .1     20.9
29 JUN 1240 21      4.     .0     19.6 * 29 JUN 1600 121      4.     .0     19.6 * 29 JUN 1920 221      6.     .1     20.8
29 JUN 1242 22      4.     .0     19.6 * 29 JUN 1602 122      4.     .0     19.6 * 29 JUN 1922 222      6.     .1     20.7
29 JUN 1244 23      4.     .0     19.6 * 29 JUN 1604 123      4.     .0     19.6 * 29 JUN 1924 223      5.     .1     20.6
29 JUN 1246 24      4.     .0     19.6 * 29 JUN 1606 124      4.     .0     19.6 * 29 JUN 1926 224      5.     .1     20.5
29 JUN 1248 25      4.     .0     19.6 * 29 JUN 1608 125      4.     .0     19.6 * 29 JUN 1928 225      5.     .0     20.4
29 JUN 1250 26      4.     .0     19.6 * 29 JUN 1610 126      4.     .0     19.6 * 29 JUN 1930 226      5.     .0     20.2
29 JUN 1252 27      4.     .0     19.6 * 29 JUN 1612 127      4.     .0     19.6 * 29 JUN 1932 227      5.     .0     20.1
29 JUN 1254 28      4.     .0     19.6 * 29 JUN 1614 128      4.     .0     19.6 * 29 JUN 1934 228      4.     .0     20.0
29 JUN 1256 29      4.     .0     19.6 * 29 JUN 1616 129      4.     .0     19.6 * 29 JUN 1936 229      4.     .0     19.8
29 JUN 1258 30      4.     .0     19.6 * 29 JUN 1618 130      4.     .0     19.6 * 29 JUN 1938 230      4.     .0     19.7
29 JUN 1300 31      4.     .0     19.6 * 29 JUN 1620 131      4.     .0     19.6 * 29 JUN 1940 231      4.     .0     19.6
29 JUN 1302 32      4.     .0     19.6 * 29 JUN 1622 132      4.     .0     19.6 * 29 JUN 1942 232      4.     .0     19.6
29 JUN 1304 33      4.     .0     19.6 * 29 JUN 1624 133      4.     .0     19.6 * 29 JUN 1944 233      4.     .0     19.6
29 JUN 1306 34      4.     .0     19.6 * 29 JUN 1626 134      4.     .0     19.6 * 29 JUN 1946 234      4.     .0     19.6
29 JUN 1308 35      4.     .0     19.6 * 29 JUN 1628 135      4.     .0     19.6 * 29 JUN 1948 235      4.     .0     19.6
29 JUN 1310 36      4.     .0     19.6 * 29 JUN 1630 136      4.     .0     19.6 * 29 JUN 1950 236      4.     .0     19.6
29 JUN 1312 37      4.     .0     19.6 * 29 JUN 1632 137      4.     .0     19.6 * 29 JUN 1952 237      4.     .0     19.6
29 JUN 1314 38      4.     .0     19.6 * 29 JUN 1634 138      4.     .0     19.6 * 29 JUN 1954 238      4.     .0     19.6
29 JUN 1316 39      4.     .0     19.6 * 29 JUN 1636 139      4.     .0     19.6 * 29 JUN 1956 239      4.     .0     19.6
29 JUN 1318 40      4.     .0     19.6 * 29 JUN 1638 140      4.     .0     19.6 * 29 JUN 1958 240      4.     .0     19.6
29 JUN 1320 41      4.     .0     19.6 * 29 JUN 1640 141      4.     .0     19.6 * 29 JUN 2000 241      4.     .0     19.6
29 JUN 1322 42      4.     .0     19.6 * 29 JUN 1642 142      4.     .0     19.6 * 29 JUN 2002 242      4.     .0     19.6
29 JUN 1324 43      4.     .0     19.6 * 29 JUN 1644 143      4.     .0     19.6 * 29 JUN 2004 243      4.     .0     19.6
29 JUN 1326 44      4.     .0     19.6 * 29 JUN 1646 144      4.     .0     19.6 * 29 JUN 2006 244      4.     .0     19.6
29 JUN 1328 45      4.     .0     19.6 * 29 JUN 1648 145      4.     .0     19.6 * 29 JUN 2008 245      4.     .0     19.6
29 JUN 1330 46      4.     .0     19.6 * 29 JUN 1650 146      4.     .0     19.6 * 29 JUN 2010 246      4.     .0     19.6
29 JUN 1332 47      4.     .0     19.6 * 29 JUN 1652 147      4.     .0     19.6 * 29 JUN 2012 247      4.     .0     19.6
29 JUN 1334 48      4.     .0     19.6 * 29 JUN 1654 148      4.     .0     19.6 * 29 JUN 2014 248      4.     .0     19.6
29 JUN 1336 49      4.     .0     19.6 * 29 JUN 1656 149      4.     .0     19.6 * 29 JUN 2016 249      4.     .0     19.6
29 JUN 1338 50      4.     .0     19.6 * 29 JUN 1658 150      4.     .0     19.6 * 29 JUN 2018 250      4.     .0     19.6
29 JUN 1340 51      4.     .0     19.6 * 29 JUN 1700 151      4.     .0     19.6 * 29 JUN 2020 251      4.     .0     19.6
29 JUN 1342 52      4.     .0     19.6 * 29 JUN 1702 152      4.     .0     19.6 * 29 JUN 2022 252      4.     .0     19.6
29 JUN 1344 53      4.     .0     19.6 * 29 JUN 1704 153      4.     .0     19.6 * 29 JUN 2024 253      4.     .0     19.6
29 JUN 1346 54      4.     .0     19.6 * 29 JUN 1706 154      4.     .0     19.9 * 29 JUN 2026 254      4.     .0     19.6
29 JUN 1348 55      4.     .0     19.6 * 29 JUN 1708 155      5.     .0     20.3 * 29 JUN 2028 255      4.     .0     19.6
29 JUN 1350 56      4.     .0     19.6 * 29 JUN 1710 156      6.     .1     20.7 * 29 JUN 2030 256      4.     .0     19.6
29 JUN 1352 57      4.     .0     19.6 * 29 JUN 1712 157      6.     .1     21.1 * 29 JUN 2032 257      4.     .0     19.6
29 JUN 1354 58      4.     .0     19.6 * 29 JUN 1714 158      7.     .2     21.6 * 29 JUN 2034 258      4.     .0     19.6
29 JUN 1356 59      4.     .0     19.6 * 29 JUN 1716 159      7.     .2     22.1 * 29 JUN 2036 259      4.     .0     19.6
29 JUN 1358 60      4.     .0     19.6 * 29 JUN 1718 160      9.     .3     22.7 * 29 JUN 2038 260      4.     .0     19.6
29 JUN 1400 61      4.     .0     19.6 * 29 JUN 1720 161     29.     .4     23.1 * 29 JUN 2040 261      4.     .0     19.6
29 JUN 1402 62      4.     .0     19.6 * 29 JUN 1722 162     44.     .4     23.4 * 29 JUN 2042 262      4.     .0     19.6
29 JUN 1404 63      4.     .0     19.6 * 29 JUN 1724 163     51.     .4     23.5 * 29 JUN 2044 263      4.     .0     19.6
29 JUN 1406 64      4.     .0     19.6 * 29 JUN 1726 164     54.     .4     23.5 * 29 JUN 2046 264      4.     .0     19.6
29 JUN 1408 65      4.     .0     19.6 * 29 JUN 1728 165     56.     .5     23.6 * 29 JUN 2048 265      4.     .0     19.6
29 JUN 1410 66      4.     .0     19.6 * 29 JUN 1730 166     57.     .5     23.6 * 29 JUN 2050 266      4.     .0     19.6
29 JUN 1412 67      4.     .0     19.6 * 29 JUN 1732 167     57.     .5     23.6 * 29 JUN 2052 267      4.     .0     19.6
29 JUN 1414 68      4.     .0     19.6 * 29 JUN 1734 168     57.     .5     23.6 * 29 JUN 2054 268      4.     .0     19.6
29 JUN 1416 69      4.     .0     19.6 * 29 JUN 1736 169     56.     .4     23.5 * 29 JUN 2056 269      4.     .0     19.6
29 JUN 1418 70      4.     .0     19.6 * 29 JUN 1738 170     54.     .4     23.5 * 29 JUN 2058 270      4.     .0     19.6
29 JUN 1420 71      4.     .0     19.6 * 29 JUN 1740 171     52.     .4     23.5 * 29 JUN 2100 271      4.     .0     19.6
29 JUN 1422 72      4.     .0     19.6 * 29 JUN 1742 172     50.     .4     23.5 * 29 JUN 2102 272      4.     .0     19.6
29 JUN 1424 73      4.     .0     19.6 * 29 JUN 1744 173     48.     .4     23.4 * 29 JUN 2104 273      4.     .0     19.6
29 JUN 1426 74      4.     .0     19.6 * 29 JUN 1746 174     45.     .4     23.4 * 29 JUN 2106 274      4.     .0     19.6
29 JUN 1428 75      4.     .0     19.6 * 29 JUN 1748 175     42.     .4     23.4 * 29 JUN 2108 275      4.     .0     19.6
29 JUN 1430 76      4.     .0     19.6 * 29 JUN 1750 176     40.     .4     23.3 * 29 JUN 2110 276      4.     .0     19.6
29 JUN 1432 77      4.     .0     19.6 * 29 JUN 1752 177     37.     .4     23.3 * 29 JUN 2112 277      4.     .0     19.6
29 JUN 1434 78      4.     .0     19.6 * 29 JUN 1754 178     34.     .4     23.2 * 29 JUN 2114 278      4.     .0     19.6
29 JUN 1436 79      4.     .0     19.6 * 29 JUN 1756 179     31.     .4     23.2 * 29 JUN 2116 279      4.     .0     19.6
29 JUN 1438 80      4.     .0     19.6 * 29 JUN 1758 180     29.     .4     23.1 * 29 JUN 2118 280      4.     .0     19.6
29 JUN 1440 81      4.     .0     19.6 * 29 JUN 1800 181     26.     .4     23.1 * 29 JUN 2120 281      4.     .0     19.6
29 JUN 1442 82      4.     .0     19.6 * 29 JUN 1802 182     24.     .4     23.1 * 29 JUN 2122 282      4.     .0     19.6
29 JUN 1444 83      4.     .0     19.6 * 29 JUN 1804 183     22.     .4     23.0 * 29 JUN 2124 283      4.     .0     19.6
29 JUN 1446 84      4.     .0     19.6 * 29 JUN 1806 184     20.     .4     23.0 * 29 JUN 2126 284      4.     .0     19.6
29 JUN 1448 85      4.     .0     19.6 * 29 JUN 1808 185     19.     .4     23.0 * 29 JUN 2128 285      4.     .0     19.6
29 JUN 1450 86      4.     .0     19.6 * 29 JUN 1810 186     17.     .4     22.9 * 29 JUN 2130 286      4.     .0     19.6
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  29 JUN 1454  88       4.      .0     19.6 * 29 JUN 1814 188       14.      .3     22.9 * 29 JUN 2134 288       4.      .0     19.6
  29 JUN 1456  89       4.      .0     19.6 * 29 JUN 1816 189       13.      .3     22.8 * 29 JUN 2136 289       4.      .0     19.6
  29 JUN 1458  90       4.      .0     19.6 * 29 JUN 1818 190       12.      .3     22.8 * 29 JUN 2138 290       4.      .0     19.6
  29 JUN 1500  91       4.      .0     19.6 * 29 JUN 1820 191       11.      .3     22.8 * 29 JUN 2140 291       4.      .0     19.6
  29 JUN 1502  92       4.      .0     19.6 * 29 JUN 1822 192       10.      .3     22.7 * 29 JUN 2142 292       4.      .0     19.6
  29 JUN 1504  93       4.      .0     19.6 * 29 JUN 1824 193       10.      .3     22.7 * 29 JUN 2144 293       4.      .0     19.6
  29 JUN 1506  94       4.      .0     19.6 * 29 JUN 1826 194        9.      .3     22.7 * 29 JUN 2146 294       4.      .0     19.6
  29 JUN 1508  95       4.      .0     19.6 * 29 JUN 1828 195        8.      .3     22.7 * 29 JUN 2148 295       4.      .0     19.6
  29 JUN 1510  96       4.      .0     19.6 * 29 JUN 1830 196        8.      .3     22.6 * 29 JUN 2150 296       4.      .0     19.6
  29 JUN 1512  97       4.      .0     19.6 * 29 JUN 1832 197        8.      .3     22.6 * 29 JUN 2152 297       4.      .0     19.6
  29 JUN 1514  98       4.      .0     19.6 * 29 JUN 1834 198        8.      .3     22.6 * 29 JUN 2154 298       4.      .0     19.6
  29 JUN 1516  99       4.      .0     19.6 * 29 JUN 1836 199        8.      .3     22.5 * 29 JUN 2156 299       4.      .0     19.6
  29 JUN 1518 100       4.      .0     19.6 * 29 JUN 1838 200        7.      .3     22.5 * 29 JUN 2158 300       4.      .0     19.6
                                            *                                            *
*******************************************************************************************************************************

  PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                   6-HR          24-HR        72-HR        9.97-HR
       57.      5.53          (CFS)     10.             8.           8.             8.
                            (INCHES)   1.155          1.442        1.442          1.442
                             (AC-FT)      5.             6.           6.             6.

PEAK STORAGE    TIME                           MAXIMUM AVERAGE STORAGE
   (AC-FT)      (HR)                   6-HR          24-HR        72-HR        9.97-HR
        0.      5.50                     0.             0.           0.             0.

  PEAK STAGE    TIME                            MAXIMUM AVERAGE STAGE
    (FEET)      (HR)                   6-HR          24-HR        72-HR        9.97-HR
     23.57      5.53                  20.72          20.27        20.27          20.27

                             CUMULATIVE AREA =      .08 SQ MI
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                                                                        STATION     RES1

                                      (I) INFLOW,  (O) OUTFLOW
         0.       10.       20.       30.       40.       50.       60.        0.        0.        0.        0.        0.        0.
                                                                              (S) STORAGE
         .0        .0        .0        .0        .0        .0       -.2        .0        .2        .4        .6        .0        .0
DAHRMN PER
291200   1I---------.---------.---------.---------.---------.---------.---------S---------.---------.---------.---------.---------.
291202   2I   O     .         .         .         .         .         .         S         .         .         .         .         .
291204   3I   O     .         .         .         .         .         .         S         .         .         .         .         .
291206   4I   O     .         .         .         .         .         .         S         .         .         .         .         .
291208   5I   O     .         .         .         .         .         .         S         .         .         .         .         .
291210   6I   O     .         .         .         .         .         .         S         .         .         .         .         .
291212   7I   O     .         .         .         .         .         .         S         .         .         .         .         .
291214   8I   O     .         .         .         .         .         .         S         .         .         .         .         .
291216   9I   O     .         .         .         .         .         .         S         .         .         .         .         .
291218  10I   O     .         .         .         .         .         .         S         .         .         .         .         .
291220  11I...O.................................................................S..................................................
291222  12I   O     .         .         .         .         .         .         S         .         .         .         .         .
291224  13I   O     .         .         .         .         .         .         S         .         .         .         .         .
291226  14I   O     .         .         .         .         .         .         S         .         .         .         .         .
291228  15I   O     .         .         .         .         .         .         S         .         .         .         .         .
291230  16I   O     .         .         .         .         .         .         S         .         .         .         .         .
291232  17I   O     .         .         .         .         .         .         S         .         .         .         .         .
291234  18I   O     .         .         .         .         .         .         S         .         .         .         .         .
291236  19I   O     .         .         .         .         .         .         S         .         .         .         .         .
291238  20I   O     .         .         .         .         .         .         S         .         .         .         .         .
291240  21I...O.................................................................S..................................................
291242  22I   O     .         .         .         .         .         .         S         .         .         .         .         .
291244  23I   O     .         .         .         .         .         .         S         .         .         .         .         .
291246  24I   O     .         .         .         .         .         .         S         .         .         .         .         .
291248  25I   O     .         .         .         .         .         .         S         .         .         .         .         .
291250  26I   O     .         .         .         .         .         .         S         .         .         .         .         .
291252  27I   O     .         .         .         .         .         .         S         .         .         .         .         .
291254  28I   O     .         .         .         .         .         .         S         .         .         .         .         .
291256  29I   O     .         .         .         .         .         .         S         .         .         .         .         .
291258  30I   O     .         .         .         .         .         .         S         .         .         .         .         .
291300  31I...O.................................................................S..................................................
291302  32I   O     .         .         .         .         .         .         S         .         .         .         .         .
291304  33I   O     .         .         .         .         .         .         S         .         .         .         .         .
291306  34I   O     .         .         .         .         .         .         S         .         .         .         .         .
291308  35I   O     .         .         .         .         .         .         S         .         .         .         .         .
291310  36I   O     .         .         .         .         .         .         S         .         .         .         .         .
291312  37I   O     .         .         .         .         .         .         S         .         .         .         .         .
291314  38I   O     .         .         .         .         .         .         S         .         .         .         .         .
291316  39I   O     .         .         .         .         .         .         S         .         .         .         .         .
291318  40I   O     .         .         .         .         .         .         S         .         .         .         .         .
291320  41I...O.................................................................S..................................................
291322  42I   O     .         .         .         .         .         .         S         .         .         .         .         .
291324  43I   O     .         .         .         .         .         .         S         .         .         .         .         .
291326  44I   O     .         .         .         .         .         .         S         .         .         .         .         .
291328  45I   O     .         .         .         .         .         .         S         .         .         .         .         .
291330  46I   O     .         .         .         .         .         .         S         .         .         .         .         .
291332  47I   O     .         .         .         .         .         .         S         .         .         .         .         .
291334  48I   O     .         .         .         .         .         .         S         .         .         .         .         .
291336  49I   O     .         .         .         .         .         .         S         .         .         .         .         .
291338  50I   O     .         .         .         .         .         .         S         .         .         .         .         .
291340  51I...O.................................................................S..................................................
291342  52I   O     .         .         .         .         .         .         S         .         .         .         .         .
291344  53I   O     .         .         .         .         .         .         S         .         .         .         .         .
291346  54I   O     .         .         .         .         .         .         S         .         .         .         .         .
291348  55I   O     .         .         .         .         .         .         S         .         .         .         .         .
291350  56I   O     .         .         .         .         .         .         S         .         .         .         .         .
291352  57I   O     .         .         .         .         .         .         S         .         .         .         .         .
291354  58I   O     .         .         .         .         .         .         S         .         .         .         .         .
291356  59I   O     .         .         .         .         .         .         S         .         .         .         .         .
291358  60I   O     .         .         .         .         .         .         S         .         .         .         .         .
291400  61I...O.................................................................S..................................................
291402  62I   O     .         .         .         .         .         .         S         .         .         .         .         .
291404  63I   O     .         .         .         .         .         .         S         .         .         .         .         .
291406  64I   O     .         .         .         .         .         .         S         .         .         .         .         .
291408  65I   O     .         .         .         .         .         .         S         .         .         .         .         .
291410  66I   O     .         .         .         .         .         .         S         .         .         .         .         .
291412  67I   O     .         .         .         .         .         .         S         .         .         .         .         .
291414  68I   O     .         .         .         .         .         .         S         .         .         .         .         .
291416  69I   O     .         .         .         .         .         .         S         .         .         .         .         .
291418  70I   O     .         .         .         .         .         .         S         .         .         .         .         .
291420  71I...O.................................................................S..................................................
291422  72I   O     .         .         .         .         .         .         S         .         .         .         .         .
291424  73I   O     .         .         .         .         .         .         S         .         .         .         .         .
291426  74I   O
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291430  76I   0     .         .         .         .         .         .         S         .         .         .         .         .
291432  77I   0     .         .         .         .         .         .         S         .         .         .         .         .
291434  78I   0     .         .         .         .         .         .         S         .         .         .         .         .
291436  79I   0     .         .         .         .         .         .         S         .         .         .         .         .
291438  80I   0     .         .         .         .         .         .         S         .         .         .         .         .
291440  81I . 0.................................................................S..................................................
291442  82I   0     .         .         .         .         .         .         S         .         .         .         .         .
291444  83I   0     .         .         .         .         .         .         S         .         .         .         .         .
291446  84I   0     .         .         .         .         .         .         S         .         .         .         .         .
291448  85I   0     .         .         .         .         .         .         S         .         .         .         .         .
291450  86I   0     .         .         .         .         .         .         S         .         .         .         .         .
291452  87I   0     .         .         .         .         .         .         S         .         .         .         .         .
291454  88I   0     .         .         .         .         .         .         S         .         .         .         .         .
291456  89I   0     .         .         .         .         .         .         S         .         .         .         .         .
291458  90I   0     .         .         .         .         .         .         S         .         .         .         .         .
291500  91I . 0.................................................................S..................................................
291502  92I   0     .         .         .         .         .         .         S         .         .         .         .         .
291504  93I   0     .         .         .         .         .         .         S         .         .         .         .         .
291506  94I   0     .         .         .         .         .         .         S         .         .         .         .         .
291508  95I   0     .         .         .         .         .         .         S         .         .         .         .         .
291510  96I   0     .         .         .         .         .         .         S         .         .         .         .         .
291512  97I   0     .         .         .         .         .         .         S         .         .         .         .         .
291514  98I   0     .         .         .         .         .         .         S         .         .         .         .         .
291516  99I   0     .         .         .         .         .         .         S         .         .         .         .         .
291518 100I   0     .         .         .         .         .         .         S         .         .         .         .         .
291520 101I . 0.................................................................S..................................................
291522 102I   0     .         .         .         .         .         .         S         .         .         .         .         .
291524 103I   0     .         .         .         .         .         .         S         .         .         .         .         .
291526 104I   0     .         .         .         .         .         .         S         .         .         .         .         .
291528 105I   0     .         .         .         .         .         .         S         .         .         .         .         .
291530 106I   0     .         .         .         .         .         .         S         .         .         .         .         .
291532 107I   0     .         .         .         .         .         .         S         .         .         .         .         .
291534 108I   0     .         .         .         .         .         .         S         .         .         .         .         .
291536 109I   0     .         .         .         .         .         .         S         .         .         .         .         .
291538 110I   0     .         .         .         .         .         .         S         .         .         .         .         .
291540 111I . 0.................................................................S..................................................
291542 112I   0     .         .         .         .         .         .         S         .         .         .         .         .
291544 113I   0     .         .         .         .         .         .         S         .         .         .         .         .
291546 114I   0     .         .         .         .         .         .         S         .         .         .         .         .
291548 115I   0     .         .         .         .         .         .         S         .         .         .         .         .
291550 116I   0     .         .         .         .         .         .         S         .         .         .         .         .
291552 117I   0     .         .         .         .         .         .         S         .         .         .         .         .
291554 118I   0     .         .         .         .         .         .         S         .         .         .         .         .
291556 119I   0     .         .         .         .         .         .         S         .         .         .         .         .
291558 120I   0     .         .         .         .         .         .         S         .         .         .         .         .
291600 121I . 0.................................................................S..................................................
291602 122I   0     .         .         .         .         .         .         S         .         .         .         .         .
291604 123I   0     .         .         .         .         .         .         S         .         .         .         .         .
291606 124I   0     .         .         .         .         .         .         S         .         .         .         .         .
291608 125I   0     .         .         .         .         .         .         S         .         .         .         .         .
291610 126I   0     .         .         .         .         .         .         S         .         .         .         .         .
291612 127I   0     .         .         .         .         .         .         S         .         .         .         .         .
291614 128I   0     .         .         .         .         .         .         S         .         .         .         .         .
291616 129I   0     .         .         .         .         .         .         S         .         .         .         .         .
291618 130I   0     .         .         .         .         .         .         S         .         .         .         .         .
291620 131I . 0.................................................................S..................................................
291622 132I   0     .         .         .         .         .         .         S         .         .         .         .         .
291624 133I   0     .         .         .         .         .         .         S         .         .         .         .         .
291626 134I   0     .         .         .         .         .         .         S         .         .         .         .         .
291628 135I   0     .         .         .         .         .         .         S         .         .         .         .         .
291630 136I   0     .         .         .         .         .         .         S         .         .         .         .         .
291632 137I   0     .         .         .         .         .         .         S         .         .         .         .         .
291634 138I   0     .         .         .         .         .         .         S         .         .         .         .         .
291636 139I   0     .         .         .         .         .         .         S         .         .         .         .         .
291638 140I   0     .         .         .         .         .         .         S         .         .         .         .         .
291640 141I . 0.................................................................S..................................................
291642 142I   0     .         .         .         .         .         .         S         .         .         .         .         .
291644 143.I  0     .         .         .         .         .         .         S         .         .         .         .         .
291646 144.I  0     .         .         .         .         .         .         S         .         .         .         .         .
291648 145.I  0     .         .         .         .         .         .         S         .         .         .         .         .
291650 146.I  0     .         .         .         .         .         .         S         .         .         .         .         .
291652 147. I 0     .         .         .         .         .         .         S         .         .         .         .         .
291654 148. I 0     .         .         .         .         .         .         S         .         .         .         .         .
291656 149.  I0     .         .         .         .         .         .         S         .         .         .         .         .
291658 150.   I     .         .         .         .         .         .         S         .         .         .         .         .
291700 151. . 0I................................................................S..................................................
291702 152.   0 I   .         .         .         .         .         .         S         .         .         .         .         .
291704 153.   0   I .         .         .         .         .         .         .S        .         .         .         .         .
291706 154.   0     I         .         .         .         .         .         .S        .         .         .         .         .
291708 155.    0    .   I     .         .         .         .         .         . S       .         .         .         .         .
291710 156.     0   .       I .         .         .         .         .         .   S     .         .         .         .         .
291712 157.     0   .         .  I      .         .         .         .         .     S   .         .         .         .         .
291714 158.      0  .         .        I.         .         .         .         .       S .         .         .         .         .
291716 159.      0  .         .         .    I    .         .         .         .         . S       .         .         .         .
291718 160.        0.         .         .         . I       .         .         .         .     S   .         .         .         .
291720 161............................0.................I...........................................S.............................
291722 162.                                            0     I                                        S
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291726 164.         .         .         .         .         .   0 I   .         .         .         . S       .         .         .
291728 165.         .         .         .         .         .     0I  .         .         .         .  S      .         .         .
291730 166.         .         .         .         .         .      0I .         .         .         .  S      .         .         .
291732 167.         .         .         .         .         .      I  .         .         .         .  S      .         .         .
291734 168.         .         .         .         .         .     I0  .         .         .         .  S      .         .         .
291736 169.         .         .         .         .         .    I0   .         .         .         . S       .         .         .
291738 170.         .         .         .         .         .  I0     .         .         .         . S       .         .         .
291740 171. . . . . . . . . . . . . . . . . . . . . . . . . .I0 . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . .
291742 172.         .         .         .         .       I 0         .         .         .         . S       .         .         .
291744 173.         .         .         .         .     I 0 .         .         .         .         . S       .         .         .
291746 174.         .         .         .         .  I 0    .         .         .         .         .S        .         .         .
291748 175.         .         .         .         I 0       .         .         .         .         .S        .         .         .
291750 176.         .         .         .      I  0         .         .         .         .         .S        .         .         .
291752 177.         .         .         .   I  0  .         .         .         .         .         S         .         .         .
291754 178.         .         .         . I 0     .         .         .         .         .         S         .         .         .
291756 179.         .         .        I.0        .         .         .         .         .         S         .         .         .
291758 180.         .         .      I 0.         .         .         .         .         .         S         .         .         .
291800 181. . . . . . . . . . . . I 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . .
291802 182.         .         . I 0     .         .         .         .         .         .        S.         .         .         .
291804 183.         .         I 0       .         .         .         .         .         .        S.         .         .         .
291806 184.         .       I 0         .         .         .         .         .         .       S .         .         .         .
291808 185.         .      I 0.         .         .         .         .         .         .       S .         .         .         .
291810 186.         .    I 0  .         .         .         .         .         .         .       S .         .         .         .
291812 187.         .   I 0   .         .         .         .         .         .         .       S .         .         .         .
291814 188.         .  I0     .         .         .         .         .         .         .      S  .         .         .         .
291816 189.         . I0      .         .         .         .         .         .         .      S  .         .         .         .
291818 190.         .I0       .         .         .         .         .         .         .      S  .         .         .         .
291820 191. . . . . I0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . .
291822 192.        I0         .         .         .         .         .         .         .      S  .         .         .         .
291824 193.       I 0         .         .         .         .         .         .         .     S   .         .         .         .
291826 194.       I0.         .         .         .         .         .         .         .     S   .         .         .         .
291828 195.      I0 .         .         .         .         .         .         .         .     S   .         .         .         .
291830 196.     I 0 .         .         .         .         .         .         .         .     S   .         .         .         .
291832 197.     I 0 .         .         .         .         .         .         .         .     S   .         .         .         .
291834 198.     I 0 .         .         .         .         .         .         .         .     S   .         .         .         .
291836 199.    I  0 .         .         .         .         .         .         .         .    S    .         .         .         .
291838 200.    I 0  .         .         .         .         .         .         .         .    S    .         .         .         .
291840 201. . .I.0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . .
291842 202.   I  0  .         .         .         .         .         .         .         .   S     .         .         .         .
291844 203.   I  0  .         .         .         .         .         .         .         .  S      .         .         .         .
291846 204.   I  0  .         .         .         .         .         .         .         .  S      .         .         .         .
291848 205.   I  0  .         .         .         .         .         .         .         . S       .         .         .         .
291850 206.  I   0  .         .         .         .         .         .         .         . S       .         .         .         .
291852 207.  I   0  .         .         .         .         .         .         .         .S        .         .         .         .
291854 208.  I   0  .         .         .         .         .         .         .         .S        .         .         .         .
291856 209.  I   0  .         .         .         .         .         .         .         S         .         .         .         .
291858 210.  I   0  .         .         .         .         .         .         .         S         .         .         .         .
291900 211. .I. .0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
291902 212.  I   0  .         .         .         .         .         .         .        S.         .         .         .         .
291904 213.  I   0  .         .         .         .         .         .         .       S .         .         .         .         .
291906 214.  I  0   .         .         .         .         .         .         .       S .         .         .         .         .
291908 215.  I  0   .         .         .         .         .         .         .      S  .         .         .         .         .
291910 216.  I  0   .         .         .         .         .         .         .      S  .         .         .         .         .
291912 217.  I  0   .         .         .         .         .         .         .     S   .         .         .         .         .
291914 218. I   0   .         .         .         .         .         .         .     S   .         .         .         .         .
291916 219. I   0   .         .         .         .         .         .         .    S    .         .         .         .         .
291918 220. I   0   .         .         .         .         .         .         .    S    .         .         .         .         .
291920 221. I . 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
291922 222. I   0   .         .         .         .         .         .         .   S     .         .         .         .         .
291924 223. I  0    .         .         .         .         .         .         .  S      .         .         .         .         .
291926 224. I  0    .         .         .         .         .         .         .  S      .         .         .         .         .
291928 225. I  0    .         .         .         .         .         .         . S       .         .         .         .         .
291930 226. I  0    .         .         .         .         .         .         . S       .         .         .         .         .
291932 227. I  0    .         .         .         .         .         .         . S       .         .         .         .         .
291934 228. I 0     .         .         .         .         .         .         .S        .         .         .         .         .
291936 229. I 0     .         .         .         .         .         .         .S        .         .         .         .         .
291938 230. I 0     .         .         .         .         .         .         .S        .         .         .         .         .
291940 231. I 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . .
291942 232. I 0     .         .         .         .         .         .         S         .         .         .         .         .
291944 233. I 0     .         .         .         .         .         .         S         .         .         .         .         .
291946 234. I 0     .         .         .         .         .         .         S         .         .         .         .         .
291948 235. I 0     .         .         .         .         .         .         S         .         .         .         .         .
291950 236. I 0     .         .         .         .         .         .         S         .         .         .         .         .
291952 237. I 0     .         .         .         .         .         .         S         .         .         .         .         .
291954 238. I 0     .         .         .         .         .         .         S         .         .         .         .         .
291956 239. I 0     .         .         .         .         .         .         S         .         .         .         .         .
291958 240. I 0     .         .         .         .         .         .         S         .         .         .         .         .
292000 241. I 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
292002 242. I 0     .         .         .         .         .         .         S         .         .         .         .         .
292004 243. I 0     .         .         .         .         .         .         S         .         .         .         .         .
292006 244. I 0     .         .         .         .         .         .         S         .         .         .         .         .
292008 245. I 0     .         .         .         .         .         .         S         .         .         .         .         .
292010 246. I 0     .         .         .         .         .         .         S         .         .         .         .         .
292012 247. I 0     .         .         .         .         .         .         S         .         .         .         .         .
292014 248. I 0     .         .         .         .         .         .         S         .         .         .         .         .
292016 249. I 0     .         .         .         .         .         .         S         .         .         .         .         .
292018 250. I 0
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292022 252. I 0     .         .         .         .         .         .         S         .         .         .         .         .
292024 253.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292026 254.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292028 255.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292030 256.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292032 257.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292034 258.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292036 259.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292038 260.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292040 261.I. 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
292042 262.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292044 263.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292046 264.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292048 265.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292050 266.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292052 267.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292054 268.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292056 269.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292058 270.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292100 271.I. 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
292102 272.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292104 273.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292106 274.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292108 275.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292110 276.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292112 277.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292114 278.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292116 279.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292118 280.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292120 281.I. 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
292122 282.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292124 283.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292126 284.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292128 285.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292130 286.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292132 287.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292134 288.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292136 289.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292138 290.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292140 291.I. 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
292142 292.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292144 293.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292146 294.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292148 295.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292150 296.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292152 297.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292154 298.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292156 299.I  0     .         .         .         .         .         .         S         .         .         .         .         .
292158 300.I--0-----.---------.---------.---------.---------.---------.---------S---------.---------.---------.---------.---------.
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           *            *
 106 KK    *      CH3   *
           *            *
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 108 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           1  PLOT CONTROL
                       OSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .033  TIME INTERVAL IN HOURS


               HYDROGRAPH ROUTING DATA

 109 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                           L        310.  CHANNEL LENGTH
                           S       .0052  SLOPE
                           N        .025  CHANNEL ROUGHNESS COEFFICIENT
                          CA         .00  CONTRIBUTING AREA
                       SHAPE        TRAP  CHANNEL SHAPE
                          WD        2.00  BOTTOM WIDTH OR DIAMETER
                           Z        3.00  SIDE SLOPE

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

                       MAIN       1.72      1.34       1.08    310.00     57.29    331.74       1.44       4.77

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                       MAIN       1.72      1.34       2.00               57.28    332.00       1.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6232E+01 EXCESS= .0000E+00 OUTFLOW= .6223E+01 BASIN STORAGE= .1282E-01 PERCENT ERROR=   -.1


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

                         HYDROGRAPH AT STATION      CH3

 PEAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
   (CFS)       (HR)               6-HR        24-HR        72-HR        9.97-HR
      57.      5.53     (CFS)      10.           8.           8.            8.
                      (INCHES)    1.155        1.441        1.441         1.441
                       (AC-FT)      5.           6.           6.            6.

                        CUMULATIVE AREA =      .08 SQ MI


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

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           *            *
 110 KK    *       B2   *
           *            *
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 112 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
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                     OSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1   PUNCH COMPUTED HYDROGRAPH
                      IOUT         21   SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1   FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300   LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033   TIME INTERVAL IN HOURS


              SUBBASIN RUNOFF DATA

  113 BA        SUBBASIN CHARACTERISTICS
                     TAREA        .00   SUBBASIN AREA

                PRECIPITATION DATA

  114 PH                            DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......    ................ TP-40 ................   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
                  .39     .76    1.34    1.40    1.44    1.56    1.69    2.01      .00     .00     .00     .00

                                                STORM AREA =     .00

  115 LS        SCS LOSS RATE
                    STRTL         .08   INITIAL ABSTRACTION
                   CRVNBR       96.00   CURVE NUMBER
                    RTIMP         .00   PERCENT IMPERVIOUS AREA

  116 UD        SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .04   LAG

                                                      ***

                                                 UNIT HYDROGRAPH
                                              8 END-OF-PERIOD ORDINATES
                3.        4.        2.        1.        0.        0.        0.        0.

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

                     HYDROGRAPH AT STATION       B2

     TOTAL RAINFALL =    1.65, TOTAL LOSS =     .41, TOTAL EXCESS =    1.24

  PEAK FLOW     TIME                             MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                    6-HR        24-HR       72-HR       9.97-HR
        1.      5.03          (CFS)       0.           0.          0.            0.
                           (INCHES)    1.237        1.241       1.241         1.241
                            (AC-FT)       0.           0.          0.            0.

                     CUMULATIVE AREA =      .00 SQ MI



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

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            *            *
  117 KK    *       B2   *
            *            *
            **************

  119 KO        OUTPUT CONTROL VARIABLES
                     IPRNT          3   PRINT CONTROL
                     IPLOT          1   PLOT CONTROL
                     OSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1   PUNCH COMPUTED HYDROGRAPH
                      IOUT         21   SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1   FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300   LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033   TIME INTERVAL IN HOURS


  120 HC        HYDROGRAPH COMBINATION
                     ICOMP          2   NUMBER OF HYDROGRAPHS TO COMBINE
                                                      ***

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

                     HYDROGRAPH AT STATION       B2

  PEAK FLOW     TIME                             MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                    6-HR        24-HR       72-HR       9.97-HR
       57.      5.53          (CFS)      10.           8.          8.            8.
                           (INCHES)    1.156        1.439       1.439         1.439
                            (AC-FT)       5.           6.          6.            6.
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                              CUMULATIVE AREA =     .08 SQ MI


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                 *            *
  121 KK         *     RES2   *
                 *            *
                 **************

  123 KO             OUTPUT CONTROL VARIABLES
                           IPRNT          1  PRINT CONTROL
                           IPLOT          2  PLOT CONTROL
                           OSCAL         0.  HYDROGRAPH PLOT SCALE
                           IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                            IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                           ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                           ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                          TIMINT       .033  TIME INTERVAL IN HOURS


                   HYDROGRAPH ROUTING DATA

  124 RS             STORAGE ROUTING
                           NSTPS          1  NUMBER OF SUBREACHES
                            ITYP       ELEV  TYPE OF INITIAL CONDITION
                          RSVRIC      17.00  INITIAL CONDITION
                               X        .00 WORKING R AND D COEFFICIENT

  125 SV               STORAGE          .0         .1         .2         .3

  126 SE             ELEVATION       18.00      19.00      20.00      21.00

  127 SL             LOW-LEVEL OUTLET
                           ELEVL      17.00  ELEVATION AT CENTER OF OUTLET
                           CAREA        .79  CROSS-SECTIONAL AREA
                            COOL        .60  COEFFICIENT
                            EXPL        .50  EXPONENT OF HEAD

  128 SS             SPILLWAY
                            CREL      20.00  SPILLWAY CREST ELEVATION
                           SPWID      19.00  SPILLWAY WIDTH
                            COOW       2.70  WEIR COEFFICIENT
                            EXPW       1.50  EXPONENT OF HEAD
                                                                      ***

                                                        COMPUTED OUTFLOW-ELEVATION DATA

               OUTFLOW        .00       3.99       4.20       4.42       4.68       4.97       5.29       5.66       6.09       6.58
             ELEVATION      18.00      18.10      18.22      18.35      18.52      18.71      18.94      19.22      19.57      20.00

               OUTFLOW       6.67       7.12       8.22      10.26      13.55      18.38      25.03      33.80      45.00      58.90
             ELEVATION      20.01      20.04      20.10      20.17      20.26      20.37      20.50      20.64      20.81      21.00

                                                    COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

               STORAGE        .01        .02        .03        .04        .05        .06        .07        .08        .10        .14
               OUTFLOW       3.80       3.99       4.20       4.42       4.68       4.97       5.29       5.38       5.66       6.09
             ELEVATION      18.00      18.10      18.22      18.35      18.52      18.71      18.94      19.00      19.22      19.57

               STORAGE        .18        .19        .19        .19        .20        .21        .22        .24        .25        .27
               OUTFLOW       6.58       6.67       7.12       8.22      10.26      13.55      18.38      25.03      33.80      45.00
             ELEVATION      20.00      20.01      20.04      20.10      20.17      20.26      20.37      20.50      20.64      20.81

               STORAGE        .29
               OUTFLOW      58.90
             ELEVATION      21.00
 ******************************************************************************************************************************************

                                                         HYDROGRAPH AT STATION     RES2

 ******************************************************************************************************************************************
                                               *                                               *
  DA MON HRMN ORD  OUTFLOW  STORAGE     STAGE  * DA MON HRMN ORD  OUTFLOW  STORAGE     STAGE  * DA MON HRMN ORD  OUTFLOW  STORAGE     STAGE
                                               *                                               *
  29 JUN 1200   1       0.       .0      18.0  * 29 JUN 1520 101       4.       .0      18.0  * 29 JUN 1840 201       8.       .2      20.1
  29 JUN 1202   2       4.       .0      18.0  * 29 JUN 1522 102       4.       .0      18.0  * 29 JUN 1842 202       8.       .2      20.1
  29 JUN 1204   3       4.       .0      18.0  * 29 JUN 1524 103       4.       .0      18.0  * 29 JUN 1844 203       7.       .2      20.1
  29 JUN 1206   4       4.       .0      18.0  * 29 JUN 1526 104       4.       .0      18.0  * 29 JUN 1846 204       7.       .2      20.1
  29 JUN 1208   5       4.       .0      18.0  * 29 JUN 1528 105       4.       .0      18.0  * 29 JUN 1848 205       7.       .2      20.1
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29 JUN 1212   7    4.   .0   18.0 * 29 JUN 1532 107    4.   .0   18.0 * 29 JUN 1852 207    7.   .2   20.0
29 JUN 1214   8    4.   .0   18.0 * 29 JUN 1534 108    4.   .0   18.0 * 29 JUN 1854 208    7.   .2   20.0
29 JUN 1216   9    4.   .0   18.0 * 29 JUN 1536 109    4.   .0   18.0 * 29 JUN 1856 209    7.   .2   20.0
29 JUN 1218  10    4.   .0   18.0 * 29 JUN 1538 110    4.   .0   18.0 * 29 JUN 1858 210    7.   .2   20.0
29 JUN 1220  11    4.   .0   18.0 * 29 JUN 1540 111    4.   .0   18.0 * 29 JUN 1900 211    7.   .2   20.0
29 JUN 1222  12    4.   .0   18.0 * 29 JUN 1542 112    4.   .0   18.0 * 29 JUN 1902 212    7.   .2   20.0
29 JUN 1224  13    4.   .0   18.0 * 29 JUN 1544 113    4.   .0   18.0 * 29 JUN 1904 213    7.   .2   20.0
29 JUN 1226  14    4.   .0   18.0 * 29 JUN 1546 114    4.   .0   18.0 * 29 JUN 1906 214    7.   .2   20.0
29 JUN 1228  15    4.   .0   18.0 * 29 JUN 1548 115    4.   .0   18.0 * 29 JUN 1908 215    7.   .2   20.0
29 JUN 1230  16    4.   .0   18.0 * 29 JUN 1550 116    4.   .0   18.0 * 29 JUN 1910 216    7.   .2   20.0
29 JUN 1232  17    4.   .0   18.0 * 29 JUN 1552 117    4.   .0   18.0 * 29 JUN 1912 217    7.   .2   20.0
29 JUN 1234  18    4.   .0   18.0 * 29 JUN 1554 118    4.   .0   18.0 * 29 JUN 1914 218    7.   .2   20.0
29 JUN 1236  19    4.   .0   18.0 * 29 JUN 1556 119    4.   .0   18.0 * 29 JUN 1916 219    7.   .2   20.0
29 JUN 1238  20    4.   .0   18.0 * 29 JUN 1558 120    4.   .0   18.0 * 29 JUN 1918 220    7.   .2   20.0
29 JUN 1240  21    4.   .0   18.0 * 29 JUN 1600 121    4.   .0   18.0 * 29 JUN 1920 221    7.   .2   19.9
29 JUN 1242  22    4.   .0   18.0 * 29 JUN 1602 122    4.   .0   18.0 * 29 JUN 1922 222    6.   .2   19.9
29 JUN 1244  23    4.   .0   18.0 * 29 JUN 1604 123    4.   .0   18.0 * 29 JUN 1924 223    6.   .2   19.9
29 JUN 1246  24    4.   .0   18.0 * 29 JUN 1606 124    4.   .0   18.0 * 29 JUN 1926 224    6.   .2   19.9
29 JUN 1248  25    4.   .0   18.0 * 29 JUN 1608 125    4.   .0   18.0 * 29 JUN 1928 225    6.   .2   19.8
29 JUN 1250  26    4.   .0   18.0 * 29 JUN 1610 126    4.   .0   18.0 * 29 JUN 1930 226    6.   .2   19.8
29 JUN 1252  27    4.   .0   18.0 * 29 JUN 1612 127    4.   .0   18.0 * 29 JUN 1932 227    6.   .2   19.8
29 JUN 1254  28    4.   .0   18.0 * 29 JUN 1614 128    4.   .0   18.0 * 29 JUN 1934 228    6.   .2   19.7
29 JUN 1256  29    4.   .0   18.0 * 29 JUN 1616 129    4.   .0   18.0 * 29 JUN 1936 229    6.   .2   19.7
29 JUN 1258  30    4.   .0   18.0 * 29 JUN 1618 130    4.   .0   18.0 * 29 JUN 1938 230    6.   .1   19.6
29 JUN 1300  31    4.   .0   18.0 * 29 JUN 1620 131    4.   .0   18.0 * 29 JUN 1940 231    6.   .1   19.6
29 JUN 1302  32    4.   .0   18.0 * 29 JUN 1622 132    4.   .0   18.0 * 29 JUN 1942 232    6.   .1   19.5
29 JUN 1304  33    4.   .0   18.0 * 29 JUN 1624 133    4.   .0   18.0 * 29 JUN 1944 233    6.   .1   19.5
29 JUN 1306  34    4.   .0   18.0 * 29 JUN 1626 134    4.   .0   18.0 * 29 JUN 1946 234    6.   .1   19.4
29 JUN 1308  35    4.   .0   18.0 * 29 JUN 1628 135    4.   .0   18.0 * 29 JUN 1948 235    6.   .1   19.4
29 JUN 1310  36    4.   .0   18.0 * 29 JUN 1630 136    4.   .0   18.0 * 29 JUN 1950 236    6.   .1   19.3
29 JUN 1312  37    4.   .0   18.0 * 29 JUN 1632 137    4.   .0   18.0 * 29 JUN 1952 237    6.   .1   19.3
29 JUN 1314  38    4.   .0   18.0 * 29 JUN 1634 138    4.   .0   18.0 * 29 JUN 1954 238    6.   .1   19.2
29 JUN 1316  39    4.   .0   18.0 * 29 JUN 1636 139    4.   .0   18.0 * 29 JUN 1956 239    6.   .1   19.2
29 JUN 1318  40    4.   .0   18.0 * 29 JUN 1638 140    4.   .0   18.0 * 29 JUN 1958 240    6.   .1   19.1
29 JUN 1320  41    4.   .0   18.0 * 29 JUN 1640 141    4.   .0   18.0 * 29 JUN 2000 241    5.   .1   19.1
29 JUN 1322  42    4.   .0   18.0 * 29 JUN 1642 142    4.   .0   18.0 * 29 JUN 2002 242    5.   .1   19.0
29 JUN 1324  43    4.   .0   18.0 * 29 JUN 1644 143    4.   .0   18.0 * 29 JUN 2004 243    5.   .1   19.0
29 JUN 1326  44    4.   .0   18.0 * 29 JUN 1646 144    4.   .0   18.0 * 29 JUN 2006 244    5.   .1   18.9
29 JUN 1328  45    4.   .0   18.0 * 29 JUN 1648 145    4.   .0   18.0 * 29 JUN 2008 245    5.   .1   18.9
29 JUN 1330  46    4.   .0   18.0 * 29 JUN 1650 146    4.   .0   18.0 * 29 JUN 2010 246    5.   .1   18.8
29 JUN 1332  47    4.   .0   18.0 * 29 JUN 1652 147    4.   .0   18.0 * 29 JUN 2012 247    5.   .1   18.7
29 JUN 1334  48    4.   .0   18.0 * 29 JUN 1654 148    4.   .0   18.0 * 29 JUN 2014 248    5.   .1   18.7
29 JUN 1336  49    4.   .0   18.0 * 29 JUN 1656 149    4.   .0   18.0 * 29 JUN 2016 249    5.   .1   18.6
29 JUN 1338  50    4.   .0   18.0 * 29 JUN 1658 150    4.   .0   18.1 * 29 JUN 2018 250    5.   .1   18.6
29 JUN 1340  51    4.   .0   18.0 * 29 JUN 1700 151    4.   .0   18.1 * 29 JUN 2020 251    5.   .0   18.6
29 JUN 1342  52    4.   .0   18.0 * 29 JUN 1702 152    4.   .0   18.1 * 29 JUN 2022 252    5.   .0   18.5
29 JUN 1344  53    4.   .0   18.0 * 29 JUN 1704 153    4.   .0   18.2 * 29 JUN 2024 253    5.   .0   18.5
29 JUN 1346  54    4.   .0   18.0 * 29 JUN 1706 154    4.   .0   18.2 * 29 JUN 2026 254    5.   .0   18.4
29 JUN 1348  55    4.   .0   18.0 * 29 JUN 1708 155    4.   .0   18.2 * 29 JUN 2028 255    5.   .0   18.4
29 JUN 1350  56    4.   .0   18.0 * 29 JUN 1710 156    4.   .0   18.3 * 29 JUN 2030 256    4.   .0   18.4
29 JUN 1352  57    4.   .0   18.0 * 29 JUN 1712 157    4.   .0   18.4 * 29 JUN 2032 257    4.   .0   18.4
29 JUN 1354  58    4.   .0   18.0 * 29 JUN 1714 158    5.   .0   18.4 * 29 JUN 2034 258    4.   .0   18.3
29 JUN 1356  59    4.   .0   18.0 * 29 JUN 1716 159    5.   .0   18.5 * 29 JUN 2036 259    4.   .0   18.3
29 JUN 1358  60    4.   .0   18.0 * 29 JUN 1718 160    5.   .1   18.6 * 29 JUN 2038 260    4.   .0   18.3
29 JUN 1400  61    4.   .0   18.0 * 29 JUN 1720 161    5.   .1   19.0 * 29 JUN 2040 261    4.   .0   18.3
29 JUN 1402  62    4.   .0   18.0 * 29 JUN 1722 162    6.   .1   19.5 * 29 JUN 2042 262    4.   .0   18.2
29 JUN 1404  63    4.   .0   18.0 * 29 JUN 1724 163   16.   .2   20.3 * 29 JUN 2044 263    4.   .0   18.2
29 JUN 1406  64    4.   .0   18.0 * 29 JUN 1726 164   45.   .3   20.8 * 29 JUN 2046 264    4.   .0   18.2
29 JUN 1408  65    4.   .0   18.0 * 29 JUN 1728 165   54.   .3   20.9 * 29 JUN 2048 265    4.   .0   18.2
29 JUN 1410  66    4.   .0   18.0 * 29 JUN 1730 166   56.   .3   21.0 * 29 JUN 2050 266    4.   .0   18.2
29 JUN 1412  67    4.   .0   18.0 * 29 JUN 1732 167   57.   .3   21.0 * 29 JUN 2052 267    4.   .0   18.2
29 JUN 1414  68    4.   .0   18.0 * 29 JUN 1734 168   57.   .3   21.0 * 29 JUN 2054 268    4.   .0   18.1
29 JUN 1416  69    4.   .0   18.0 * 29 JUN 1736 169   57.   .3   21.0 * 29 JUN 2056 269    4.   .0   18.1
29 JUN 1418  70    4.   .0   18.0 * 29 JUN 1738 170   55.   .3   21.0 * 29 JUN 2058 270    4.   .0   18.1
29 JUN 1420  71    4.   .0   18.0 * 29 JUN 1740 171   54.   .3   20.9 * 29 JUN 2100 271    4.   .0   18.1
29 JUN 1422  72    4.   .0   18.0 * 29 JUN 1742 172   52.   .3   20.9 * 29 JUN 2102 272    4.   .0   18.1
29 JUN 1424  73    4.   .0   18.0 * 29 JUN 1744 173   50.   .3   20.9 * 29 JUN 2104 273    4.   .0   18.1
29 JUN 1426  74    4.   .0   18.0 * 29 JUN 1746 174   48.   .3   20.8 * 29 JUN 2106 274    4.   .0   18.1
29 JUN 1428  75    4.   .0   18.0 * 29 JUN 1748 175   45.   .3   20.8 * 29 JUN 2108 275    4.   .0   18.1
29 JUN 1430  76    4.   .0   18.0 * 29 JUN 1750 176   43.   .3   20.8 * 29 JUN 2110 276    4.   .0   18.1
29 JUN 1432  77    4.   .0   18.0 * 29 JUN 1752 177   40.   .3   20.7 * 29 JUN 2112 277    4.   .0   18.1
29 JUN 1434  78    4.   .0   18.0 * 29 JUN 1754 178   37.   .3   20.7 * 29 JUN 2114 278    4.   .0   18.1
29 JUN 1436  79    4.   .0   18.0 * 29 JUN 1756 179   34.   .3   20.7 * 29 JUN 2116 279    4.   .0   18.1
29 JUN 1438  80    4.   .0   18.0 * 29 JUN 1758 180   32.   .2   20.6 * 29 JUN 2118 280    4.   .0   18.1
29 JUN 1440  81    4.   .0   18.0 * 29 JUN 1800 181   29.   .2   20.6 * 29 JUN 2120 281    4.   .0   18.1
29 JUN 1442  82    4.   .0   18.0 * 29 JUN 1802 182   27.   .2   20.5 * 29 JUN 2122 282    4.   .0   18.0
29 JUN 1444  83    4.   .0   18.0 * 29 JUN 1804 183   25.   .2   20.5 * 29 JUN 2124 283    4.   .0   18.0
29 JUN 1446  84    4.   .0   18.0 * 29 JUN 1806 184   23.   .2   20.5 * 29 JUN 2126 284    4.   .0   18.0
29 JUN 1448  85    4.   .0   18.0 * 29 JUN 1808 185   21.   .2   20.4 * 29 JUN 2128 285    4.   .0   18.0
29 JUN 1450  86    4.   .0   18.0 * 29 JUN 1810 186   19.   .2   20.4 * 29 JUN 2130 286    4.   .0   18.0
29 JUN 1452  87    4.   .0   18.0 * 29 JUN 1812 187   18.   .2   20.4 * 29 JUN 2132 287    4.   .0   18.0
29 JUN 1454  88    4.   .0   18.0 * 29 JUN 1814 188   16.   .2   20.3 * 29 JUN 2134 288    4.   .0   18.0
29 JUN 1456  89    4.   .0   18.0 * 29 JUN 1816 189   15.   .2   20.3 * 29 JUN 2136 289    4.   .0   18.0
29 JUN 1458  90    4.   .0   18.0 * 29 JUN 1818 190   14.   .2   20.3 * 29 JUN 2138 290    4.   .0   18.0
29 JUN 1500  91    4.   .0   18.0 * 29 JUN 1820 191   13.   .2   20.2 * 29 JUN 2140 291    4.   .0   18.0
29 JUN 1502  92    4.   .0   18.0 * 29 JUN 1822 192   12.   .2   20.2 * 29 JUN 2142 292    4.   .0   18.0
29 JUN 1504  93    4.   .0   18.0 * 29 JUN 1824 193   11.   .2   20.2 * 29 JUN 2144 293    4.   .0   18.0
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 29 JUN 1508  95        4.        .0      18.0 * 29 JUN 1828 195        10.         .2      20.1 * 29 JUN 2148 295        4.        .0      18.0
 29 JUN 1510  96        4.        .0      18.0 * 29 JUN 1830 196         9.         .2      20.1 * 29 JUN 2150 296        4.        .0      18.0
 29 JUN 1512  97        4.        .0      18.0 * 29 JUN 1832 197         8.         .2      20.1 * 29 JUN 2152 297        4.        .0      18.0
 29 JUN 1514  98        4.        .0      18.0 * 29 JUN 1834 198         8.         .2      20.1 * 29 JUN 2154 298        4.        .0      18.0
 29 JUN 1516  99        4.        .0      18.0 * 29 JUN 1836 199         8.         .2      20.1 * 29 JUN 2156 299        4.        .0      18.0
 29 JUN 1518 100        4.        .0      18.0 * 29 JUN 1838 200         8.         .2      20.1 * 29 JUN 2158 300        4.        .0      18.0
                                               *                                              *
*********************************************************************************************************************************************

  PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                    6-HR        24-HR        72-HR       9.97-HR
      57.       5.57         (CFS)       10.           8.           8.           8.
                           (INCHES)    1.155        1.441        1.441        1.441
                            (AC-FT)       5.           6.           6.           6.

 PEAK STORAGE   TIME                           MAXIMUM AVERAGE STORAGE
   (AC-FT)      (HR)                    6-HR        24-HR        72-HR       9.97-HR
       0.       5.53                      0.           0.           0.           0.

  PEAK STAGE    TIME                            MAXIMUM AVERAGE STAGE
    (FEET)      (HR)                    6-HR        24-HR        72-HR       9.97-HR
    20.98       5.57                   19.06        18.64        18.64        18.64

                             CUMULATIVE AREA =      .08 SQ MI
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                                                          STATION     RES2

                         (I) INFLOW,   (O) OUTFLOW
         0.       10.       20.       30.       40.       50.       60.        0.        0.        0.        0.        0.        0.
                                                                                (S) STORAGE
         .0        .0        .0        .0        .0        .0        .0        .1        .2        .3        .0        .0        .0
DAHRMN PER
291200   1I---------.---------.---------.---------.---------.---------.-S-------.---------.---------.---------.---------.---------.
291202   2.I  O     .         .         .         .         .         . S       .         .         .         .         .         .
291204   3.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291206   4.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291208   5.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291210   6.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291212   7.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291214   8.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291216   9.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291218  10.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291220  11. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291222  12.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291224  13.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291226  14.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291228  15.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291230  16.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291232  17.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291234  18.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291236  19.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291238  20.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291240  21. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291242  22.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291244  23.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291246  24.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291248  25.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291250  26.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291252  27.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291254  28.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291256  29.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291258  30.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291300  31. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291302  32.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291304  33.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291306  34.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291308  35.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291310  36.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291312  37.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291314  38.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291316  39.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291318  40.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291320  41. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291322  42.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291324  43.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291326  44.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291328  45.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291330  46.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291332  47.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291334  48.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291336  49.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291338  50.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291340  51. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291342  52.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291344  53.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291346  54.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291348  55.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291350  56.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291352  57.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291354  58.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291356  59.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291358  60.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291400  61. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291402  62.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291404  63.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291406  64.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291408  65.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291410  66.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291412  67.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291414  68.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291416  69.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291418  70.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291420  71. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291422  72.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291424  73.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291426  74.   I
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291430  76.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291432  77.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291434  78.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291436  79.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291438  80.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291440  81. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291442  82.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291444  83.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291446  84.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291448  85.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291450  86.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291452  87.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291454  88.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291456  89.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291458  90.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291500  91. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291502  92.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291504  93.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291506  94.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291508  95.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291510  96.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291512  97.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291514  98.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291516  99.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291518 100.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291520 101. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291522 102.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291524 103.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291526 104.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291528 105.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291530 106.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291532 107.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291534 108.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291536 109.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291538 110.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291540 111. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291542 112.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291544 113.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291546 114.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291548 115.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291550 116.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291552 117.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291554 118.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291556 119.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291558 120.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291600 121. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291602 122.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291604 123.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291606 124.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291608 125.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291610 126.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291612 127.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291614 128.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291616 129.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291618 130.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291620 131. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291622 132.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291624 133.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291626 134.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291628 135.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291630 136.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291632 137.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291634 138.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291636 139.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291638 140.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291640 141. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291642 142.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291644 143.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291646 144.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291648 145.   I     .         .         .         .         .         .S        .         .         .         .         .         .
291650 146.   I     .         .         .         .         .         . S       .         .         .         .         .         .
291652 147.   I     .         .         .         .         .         . S       .         .         .         .         .         .
291654 148.   I     .         .         .         .         .         . S       .         .         .         .         .         .
291656 149.   I     .         .         .         .         .         . S       .         .         .         .         .         .
291658 150.   OI    .         .         .         .         .         . S       .         .         .         .         .         .
291700 151. . OI. . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
291702 152.   OI    .         .         .         .         .         . S       .         .         .         .         .         .
291704 153.   OI    .         .         .         .         .         .  S      .         .         .         .         .         .
291706 154.   OI    .         .         .         .         .         .  S      .         .         .         .         .         .
291708 155.   OI    .         .         .         .         .         .  S      .         .         .         .         .         .
291710 156.   O I   .         .         .         .         .         .  S      .         .         .         .         .         .
291712 157.   O I   .         .         .         .         .         .   S     .         .         .         .         .         .
291714 158.    O I  .         .         .         .         .         .   S     .         .         .         .         .         .
291716 159.    O I  .         .         .         .         .         .    S    .         .         .         .         .         .
291718 160.    O  I .         .         .         .         .         .     S   .         .         .         .         .         .
291720 161. . .O. . . . . .I. . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . .
291722 162.     O                             I                                    S
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291726 164.         .         .         .         .    O    .  I      .         .         .      S  .         .         .         .
291728 165.         .         .         .         .         .   O I   .         .         .       S .         .         .         .
291730 166.         .         .         .         .         .     OI  .         .         .        S.         .         .         .
291732 167.         .         .         .         .         .      I  .         .         .        S.         .         .         .
291734 168.         .         .         .         .         .      I  .         .         .        S.         .         .         .
291736 169.         .         .         .         .         .     IO  .         .         .        S.         .         .         .
291738 170.         .         .         .         .         .    I    .         .         .        S.         .         .         .
291740 171. . . . . . . . . . . . . . . . . . . . . . . . . . .IO . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . .
291742 172.         .         .         .         .         .IO       .         .         .       S .         .         .         .
291744 173.         .         .         .         .        IO         .         .         .       S .         .         .         .
291746 174.         .         .         .         .     I O .         .         .         .       S .         .         .         .
291748 175.         .         .         .         .   IO    .         .         .         .      S  .         .         .         .
291750 176.         .         .         .         .I O      .         .         .         .      S  .         .         .         .
291752 177.         .         .         .       I O         .         .         .         .     S   .         .         .         .
291754 178.         .         .         .    I O  .         .         .         .         .     S   .         .         .         .
291756 179.         .         .         .  IO     .         .         .         .         .    S    .         .         .         .
291758 180.         .         .         I O       .         .         .         .         .    S    .         .         .         .
291800 181. . . . . . . . . . . . . . . IO. . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . .
291802 182.         .         .     IO  .         .         .         .         .         .   S     .         .         .         .
291804 183.         .         .  I O    .         .         .         .         .         .   S     .         .         .         .
291806 184.         .         .I O      .         .         .         .         .         .  S      .         .         .         .
291808 185.         .         IO        .         .         .         .         .         .  S      .         .         .         .
291810 186.         .       IO.         .         .         .         .         .         .  S      .         .         .         .
291812 187.         .      IO .         .         .         .         .         .         . S       .         .         .         .
291814 188.         .    IO   .         .         .         .         .         .         . S       .         .         .         .
291816 189.         .   IO    .         .         .         .         .         .         . S       .         .         .         .
291818 190.         .  IO     .         .         .         .         .         .         .S        .         .         .         .
291820 191. . . . . . IO. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
291822 192.         .IO       .         .         .         .         .         .         .S        .         .         .         .
291824 193.         IO        .         .         .         .         .         .         S         .         .         .         .
291826 194.        IO         .         .         .         .         .         .         S         .         .         .         .
291828 195.        IO         .         .         .         .         .         .         S         .         .         .         .
291830 196.       IO.         .         .         .         .         .         .         S         .         .         .         .
291832 197.       I .         .         .         .         .         .         .         S         .         .         .         .
291834 198.       I .         .         .         .         .         .         .        S.         .         .         .         .
291836 199.       I .         .         .         .         .         .         .        S.         .         .         .         .
291838 200.       I .         .         .         .         .         .         .        S.         .         .         .         .
291840 201. . . .IO . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . .
291842 202.      IO .         .         .         .         .         .         .        S.         .         .         .         .
291844 203.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291846 204.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291848 205.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291850 206.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291852 207.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291854 208.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291856 209.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291858 210.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291900 211. . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . .
291902 212.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291904 213.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291906 214.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291908 215.     IO  .         .         .         .         .         .         .        S.         .         .         .         .
291910 216.     IO  .         .         .         .         .         .         .       S .         .         .         .         .
291912 217.     IO  .         .         .         .         .         .         .       S .         .         .         .         .
291914 218.     IO  .         .         .         .         .         .         .       S .         .         .         .         .
291916 219.     IO  .         .         .         .         .         .         .       S .         .         .         .         .
291918 220.     IO  .         .         .         .         .         .         .       S .         .         .         .         .
291920 221. . . IO. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291922 222.     I   .         .         .         .         .         .         .       S .         .         .         .         .
291924 223.     I   .         .         .         .         .         .         .      S  .         .         .         .         .
291926 224.    IO   .         .         .         .         .         .         .      S  .         .         .         .         .
291928 225.    IO   .         .         .         .         .         .         .      S  .         .         .         .         .
291930 226.    IO   .         .         .         .         .         .         .     S   .         .         .         .         .
291932 227.    IO   .         .         .         .         .         .         .     S   .         .         .         .         .
291934 228.    IO   .         .         .         .         .         .         .     S   .         .         .         .         .
291936 229.   I O   .         .         .         .         .         .         .    S    .         .         .         .         .
291938 230.   I O   .         .         .         .         .         .         .    S    .         .         .         .         .
291940 231. . I O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
291942 232.   I O   .         .         .         .         .         .         .  S      .         .         .         .         .
291944 233.   I O   .         .         .         .         .         .         .  S      .         .         .         .         .
291946 234.   I O   .         .         .         .         .         .         . S       .         .         .         .         .
291948 235.   I O   .         .         .         .         .         .         . S       .         .         .         .         .
291950 236.   I O   .         .         .         .         .         .         .S        .         .         .         .         .
291952 237.   I O   .         .         .         .         .         .         .S        .         .         .         .         .
291954 238.   I O   .         .         .         .         .         .         S         .         .         .         .         .
291956 239.   I O   .         .         .         .         .         .        S.         .         .         .         .         .
291958 240.   I O   .         .         .         .         .         .        S.         .         .         .         .         .
292000 241. . IO. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . .
292002 242.   IO    .         .         .         .         .         .       S .         .         .         .         .         .
292004 243.   IO    .         .         .         .         .         .       S .         .         .         .         .         .
292006 244.   IO    .         .         .         .         .         .      S  .         .         .         .         .         .
292008 245.   IO    .         .         .         .         .         .      S  .         .         .         .         .         .
292010 246.   IO    .         .         .         .         .         .     S   .         .         .         .         .         .
292012 247.   IO    .         .         .         .         .         .     S   .         .         .         .         .         .
292014 248.   IO    .         .         .         .         .         .     S   .         .         .         .         .         .
292016 249.   IO    .         .         .         .         .         .     S   .         .         .         .         .         .
292018 250.   IO                                                           S
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292022 252.   IO    .         .         .         .         .         .    S    .         .         .         .         .         .
292024 253.   IO    .         .         .         .         .         .   S     .         .         .         .         .         .
292026 254.   IO    .         .         .         .         .         .   S     .         .         .         .         .         .
292028 255.   IO    .         .         .         .         .         .   S     .         .         .         .         .         .
292030 256.   I     .         .         .         .         .         .   S     .         .         .         .         .         .
292032 257.   I     .         .         .         .         .         .   S     .         .         .         .         .         .
292034 258.   I     .         .         .         .         .         .   S     .         .         .         .         .         .
292036 259.   I     .         .         .         .         .         .  S      .         .         .         .         .         .
292038 260.   I     .         .         .         .         .         .  S      .         .         .         .         .         .
292040 261. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
292042 262.   I     .         .         .         .         .         .  S      .         .         .         .         .         .
292044 263.   I     .         .         .         .         .         .  S      .         .         .         .         .         .
292046 264.   I     .         .         .         .         .         .  S      .         .         .         .         .         .
292048 265.   I     .         .         .         .         .         .  S      .         .         .         .         .         .
292050 266.   I     .         .         .         .         .         .  S      .         .         .         .         .         .
292052 267.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292054 268.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292056 269.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292058 270.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292100 271. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
292102 272.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292104 273.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292106 274.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292108 275.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292110 276.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292112 277.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292114 278.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292116 279.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292118 280.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292120 281. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
292122 282.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292124 283.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292126 284.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292128 285.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292130 286.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292132 287.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292134 288.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292136 289.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292138 290.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292140 291. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
292142 292.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292144 293.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292146 294.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292148 295.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292150 296.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292152 297.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292154 298.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292156 299.   I     .         .         .         .         .         . S       .         .         .         .         .         .
292158 300.---I-----.---------.---------.---------.---------.---------.-S-------.---------.---------.---------.---------.---------.
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 129 KK      *      CH4   *
             *            *
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 131 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          3  PRINT CONTROL
                       IPLOT          1  PLOT CONTROL
                       OSCAL         0.  HYDROGRAPH PLOT SCALE
                       IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                        IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       .033  TIME INTERVAL IN HOURS


               HYDROGRAPH ROUTING DATA

 132 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                           L       400.  CHANNEL LENGTH
                           S      .0079  SLOPE
                           N       .025  CHANNEL ROUGHNESS COEFFICIENT
                          CA        .00  CONTRIBUTING AREA
                       SHAPE       TRAP  CHANNEL SHAPE
                          WD       2.00  BOTTOM WIDTH OR DIAMETER
                           Z       3.00  SIDE SLOPE

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

                     MAIN       2.12       1.34       1.20    200.00      57.15    334.32       1.44       5.56


                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                     MAIN       2.12       1.34       2.00                57.14    334.00       1.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6266E+01 EXCESS= .0000E+00 OUTFLOW= .6253E+01 BASIN STORAGE= .1423E-01 PERCENT ERROR=    .0


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

                         HYDROGRAPH AT STATION      CH4

 PEAK FLOW      TIME                           MAXIMUM AVERAGE FLOW
  (CFS)         (HR)                   6-HR        24-HR       72-HR       9.97-HR
     57.        5.57         (CFS)      10.           8.          8.            8.
                          (INCHES)    1.155        1.438       1.438         1.438
                           (AC-FT)       5.           6.          6.            6.

                        CUMULATIVE AREA =      .08 SQ MI


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

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 133 KK      *     B345   *
             *            *
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 135 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          3  PRINT CONTROL
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                       OSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH          1   PUNCH COMPUTED HYDROGRAPH
                        IOUT         21   SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1          1   FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2        300   LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       .033   TIME INTERVAL IN HOURS


              SUBBASIN RUNOFF DATA

 136 BA         SUBBASIN CHARACTERISTICS
                       TAREA        .01   SUBBASIN AREA

                PRECIPITATION DATA

 137 PH                             DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
                  .39     .76    1.34    1.40    1.44    1.56    1.69    2.01      .00     .00     .00     .00

                                                   STORM AREA =      .01

 138 LS         SCS LOSS RATE
                      STRTL         .08   INITIAL ABSTRACTION
                     CRVNBR       96.00   CURVE NUMBER
                      RTIMP         .00   PERCENT IMPERVIOUS AREA

 139 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .32   LAG

                                                                       ***

                                                                UNIT HYDROGRAPH
                                                         50 END-OF-PERIOD ORDINATES
                   1.         2.         3.         6.         9.        12.        15.        17.        18.        19.
                  19.        18.        16.        15.        13.        11.         9.         8.         7.         6.
                   5.         4.         4.         3.         3.         2.         2.         2.         1.         1.
                   1.         1.         1.         1.         1.         0.         0.         0.         0.         0.
                   0.         0.         0.         0.         0.         0.         0.         0.         0.         0.

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

                            HYDROGRAPH AT STATION      B345

   TOTAL RAINFALL =     1.65, TOTAL LOSS =     .41, TOTAL EXCESS =     1.24

 PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
   (CFS)        (HR)                    6-HR         24-HR        72-HR        9.97-HR
     14.        5.33          (CFS)       2.            1.           1.             1.
                           (INCHES)    1.232         1.233        1.233          1.233
                            (AC-FT)       1.            1.           1.             1.

                             CUMULATIVE AREA =      .01 SQ MI


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


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           *            *
 140 KK    *     B345   *
           *            *
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 142 KO         OUTPUT CONTROL VARIABLES
                       IPRNT          3   PRINT CONTROL
                       IPLOT          1   PLOT CONTROL
                       OSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH          1   PUNCH COMPUTED HYDROGRAPH
                        IOUT         21   SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1          1   FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2        300   LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       .033   TIME INTERVAL IN HOURS

 143 HC         HYDROGRAPH COMBINATION
                       ICOMP          2   NUMBER OF HYDROGRAPHS TO COMBINE
                                                                       ***

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

                            HYDROGRAPH AT STATION      B345

 PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
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  67.      5.53      (CFS)       12.          9.          9.           9.
                   (INCHES)    1.166       1.409       1.409        1.409
                    (AC-FT)       6.          7.          7.           7.

                   CUMULATIVE AREA =     .09 SQ MI


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


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          *            *
 144 KK   *     RES3   *
          *            *
          **************

 146 KO         OUTPUT CONTROL VARIABLES
                      IPRNT          1  PRINT CONTROL
                      IPLOT          2  PLOT CONTROL
                      OSCAL         0.  HYDROGRAPH PLOT SCALE
                      IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                       IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT       .033  TIME INTERVAL IN HOURS


             HYDROGRAPH ROUTING DATA

 147 RS         STORAGE ROUTING
                      NSTPS          1  NUMBER OF SUBREACHES
                       ITYP       ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC      12.83  INITIAL CONDITION
                          X        .00 WORKING R AND D COEFFICIENT

 148 SV          STORAGE          .1         .2         .4         .7

 149 SE         ELEVATION      14.20      15.20      16.20      17.20

 150 SL         LOW-LEVEL OUTLET
                      ELEVL      13.83  ELEVATION AT CENTER OF OUTLET
                      CAREA        .06  CROSS-SECTIONAL AREA
                       COOL        .60  COEFFICIENT
                       EXPL        .50  EXPONENT OF HEAD

 151 SS         SPILLWAY
                       CREL      15.75  SPILLWAY CREST ELEVATION
                      SPWID      14.00  SPILLWAY WIDTH
                       COQW       2.70  WEIR COEFFICIENT
                       EXPW       1.50  EXPONENT OF HEAD

                                                                 ***

                                                         COMPUTED OUTFLOW-ELEVATION DATA

           OUTFLOW        .00        .20        .21        .23        .24        .27        .29        .32        .36        .42
         ELEVATION      14.20      14.25      14.31      14.39      14.49      14.61      14.77      14.99      15.30      15.75

           OUTFLOW        .49        .96       2.23       4.70       8.74      14.77      23.17      34.34      48.67      66.55
         ELEVATION      15.76      15.81      15.88      15.98      16.11      16.27      16.46      16.68      16.92      17.20

                                                     COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE        .08        .09        .10        .11        .12        .14        .16        .19        .22        .24
           OUTFLOW        .18        .20        .21        .23        .24        .27        .29        .32        .35        .36
         ELEVATION      14.20      14.25      14.31      14.39      14.49      14.61      14.77      14.99      15.20      15.30

           STORAGE        .33        .33        .34        .35        .37        .40        .42        .43        .48        .53
           OUTFLOW        .42        .49        .96       2.23       4.70       8.74      11.87      14.77      23.17      34.34
         ELEVATION      15.75      15.76      15.81      15.88      15.98      16.11      16.20      16.27      16.46      16.68

           STORAGE        .60        .66
           OUTFLOW      48.67      66.55
         ELEVATION      16.92      17.20
*************************************************************************************************************************************

                                                          HYDROGRAPH AT STATION     RES3

*************************************************************************************************************************************
                                                  *                                             *
 DA MON HRMN ORD  OUTFLOW  STORAGE    STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE    STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE    STAGE
                                                  *                                             *
 29 JUN 1200   1       0.       .1     14.2 * 29 JUN 1520 101       .4       .4     15.9 * 29 JUN 1840 201       .9       .4     16.1
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29 JUN 1204   3    0.   .1   14.2 * 29 JUN 1524 103    4.   .4   15.9 * 29 JUN 1844 203    8.   .4   16.1
29 JUN 1206   4    0.   .1   14.3 * 29 JUN 1526 104    4.   .4   15.9 * 29 JUN 1846 204    8.   .4   16.1
29 JUN 1208   5    0.   .1   14.4 * 29 JUN 1528 105    4.   .4   15.9 * 29 JUN 1848 205    8.   .4   16.1
29 JUN 1210   6    0.   .1   14.4 * 29 JUN 1530 106    4.   .4   15.9 * 29 JUN 1850 206    8.   .4   16.1
29 JUN 1212   7    0.   .1   14.5 * 29 JUN 1532 107    4.   .4   15.9 * 29 JUN 1852 207    8.   .4   16.1
29 JUN 1214   8    0.   .1   14.6 * 29 JUN 1534 108    4.   .4   15.9 * 29 JUN 1854 208    8.   .4   16.1
29 JUN 1216   9    0.   .1   14.6 * 29 JUN 1536 109    4.   .4   15.9 * 29 JUN 1856 209    8.   .4   16.1
29 JUN 1218  10    0.   .2   14.7 * 29 JUN 1538 110    4.   .4   15.9 * 29 JUN 1858 210    8.   .4   16.1
29 JUN 1220  11    0.   .2   14.8 * 29 JUN 1540 111    4.   .4   15.9 * 29 JUN 1900 211    8.   .4   16.1
29 JUN 1222  12    0.   .2   14.8 * 29 JUN 1542 112    4.   .4   15.9 * 29 JUN 1902 212    8.   .4   16.1
29 JUN 1224  13    0.   .2   14.9 * 29 JUN 1544 113    4.   .4   15.9 * 29 JUN 1904 213    7.   .4   16.1
29 JUN 1226  14    0.   .2   15.0 * 29 JUN 1546 114    4.   .4   15.9 * 29 JUN 1906 214    7.   .4   16.1
29 JUN 1228  15    0.   .2   15.0 * 29 JUN 1548 115    4.   .4   15.9 * 29 JUN 1908 215    7.   .4   16.1
29 JUN 1230  16    0.   .2   15.1 * 29 JUN 1550 116    4.   .4   15.9 * 29 JUN 1910 216    7.   .4   16.1
29 JUN 1232  17    0.   .2   15.2 * 29 JUN 1552 117    4.   .4   15.9 * 29 JUN 1912 217    7.   .4   16.1
29 JUN 1234  18    0.   .2   15.2 * 29 JUN 1554 118    4.   .4   15.9 * 29 JUN 1914 218    7.   .4   16.1
29 JUN 1236  19    0.   .2   15.3 * 29 JUN 1556 119    4.   .4   15.9 * 29 JUN 1916 219    7.   .4   16.1
29 JUN 1238  20    0.   .2   15.3 * 29 JUN 1558 120    4.   .4   15.9 * 29 JUN 1918 220    7.   .4   16.1
29 JUN 1240  21    0.   .3   15.4 * 29 JUN 1600 121    4.   .4   15.9 * 29 JUN 1920 221    7.   .4   16.1
29 JUN 1242  22    0.   .3   15.4 * 29 JUN 1602 122    4.   .4   15.9 * 29 JUN 1922 222    7.   .4   16.1
29 JUN 1244  23    0.   .3   15.5 * 29 JUN 1604 123    4.   .4   15.9 * 29 JUN 1924 223    7.   .4   16.1
29 JUN 1246  24    0.   .3   15.5 * 29 JUN 1606 124    4.   .4   15.9 * 29 JUN 1926 224    7.   .4   16.1
29 JUN 1248  25    0.   .3   15.6 * 29 JUN 1608 125    4.   .4   15.9 * 29 JUN 1928 225    7.   .4   16.1
29 JUN 1250  26    0.   .3   15.6 * 29 JUN 1610 126    4.   .4   15.9 * 29 JUN 1930 226    7.   .4   16.1
29 JUN 1252  27    0.   .3   15.7 * 29 JUN 1612 127    4.   .4   15.9 * 29 JUN 1932 227    7.   .4   16.1
29 JUN 1254  28    0.   .3   15.7 * 29 JUN 1614 128    4.   .4   15.9 * 29 JUN 1934 228    7.   .4   16.0
29 JUN 1256  29    1.   .3   15.8 * 29 JUN 1616 129    4.   .4   15.9 * 29 JUN 1936 229    7.   .4   16.0
29 JUN 1258  30    1.   .3   15.8 * 29 JUN 1618 130    4.   .4   15.9 * 29 JUN 1938 230    7.   .4   16.0
29 JUN 1300  31    2.   .3   15.8 * 29 JUN 1620 131    4.   .4   15.9 * 29 JUN 1940 231    7.   .4   16.0
29 JUN 1302  32    2.   .4   15.9 * 29 JUN 1622 132    4.   .4   15.9 * 29 JUN 1942 232    7.   .4   16.0
29 JUN 1304  33    3.   .4   15.9 * 29 JUN 1624 133    4.   .4   15.9 * 29 JUN 1944 233    6.   .4   16.0
29 JUN 1306  34    3.   .4   15.9 * 29 JUN 1626 134    4.   .4   15.9 * 29 JUN 1946 234    6.   .4   16.0
29 JUN 1308  35    3.   .4   15.9 * 29 JUN 1628 135    4.   .4   15.9 * 29 JUN 1948 235    6.   .4   16.0
29 JUN 1310  36    3.   .4   15.9 * 29 JUN 1630 136    4.   .4   15.9 * 29 JUN 1950 236    6.   .4   16.0
29 JUN 1312  37    3.   .4   15.9 * 29 JUN 1632 137    4.   .4   15.9 * 29 JUN 1952 237    6.   .4   16.0
29 JUN 1314  38    4.   .4   15.9 * 29 JUN 1634 138    4.   .4   16.0 * 29 JUN 1954 238    6.   .4   16.0
29 JUN 1316  39    4.   .4   15.9 * 29 JUN 1636 139    4.   .4   16.0 * 29 JUN 1956 239    6.   .4   16.0
29 JUN 1318  40    4.   .4   15.9 * 29 JUN 1638 140    4.   .4   16.0 * 29 JUN 1958 240    6.   .4   16.0
29 JUN 1320  41    4.   .4   15.9 * 29 JUN 1640 141    4.   .4   16.0 * 29 JUN 2000 241    6.   .4   16.0
29 JUN 1322  42    4.   .4   15.9 * 29 JUN 1642 142    4.   .4   16.0 * 29 JUN 2002 242    6.   .4   16.0
29 JUN 1324  43    4.   .4   15.9 * 29 JUN 1644 143    4.   .4   16.0 * 29 JUN 2004 243    6.   .4   16.0
29 JUN 1326  44    4.   .4   15.9 * 29 JUN 1646 144    4.   .4   16.0 * 29 JUN 2006 244    6.   .4   16.0
29 JUN 1328  45    4.   .4   15.9 * 29 JUN 1648 145    4.   .4   16.0 * 29 JUN 2008 245    6.   .4   16.0
29 JUN 1330  46    4.   .4   15.9 * 29 JUN 1650 146    4.   .4   16.0 * 29 JUN 2010 246    6.   .4   16.0
29 JUN 1332  47    4.   .4   15.9 * 29 JUN 1652 147    5.   .4   16.0 * 29 JUN 2012 247    6.   .4   16.0
29 JUN 1334  48    4.   .4   15.9 * 29 JUN 1654 148    5.   .4   16.0 * 29 JUN 2014 248    5.   .4   16.0
29 JUN 1336  49    4.   .4   15.9 * 29 JUN 1656 149    5.   .4   16.0 * 29 JUN 2016 249    5.   .4   16.0
29 JUN 1338  50    4.   .4   15.9 * 29 JUN 1658 150    6.   .4   16.0 * 29 JUN 2018 250    5.   .4   16.0
29 JUN 1340  51    4.   .4   15.9 * 29 JUN 1700 151    6.   .4   16.0 * 29 JUN 2020 251    5.   .4   16.0
29 JUN 1342  52    4.   .4   15.9 * 29 JUN 1702 152    7.   .4   16.0 * 29 JUN 2022 252    5.   .4   16.0
29 JUN 1344  53    4.   .4   15.9 * 29 JUN 1704 153    8.   .4   16.1 * 29 JUN 2024 253    5.   .4   16.0
29 JUN 1346  54    4.   .4   15.9 * 29 JUN 1706 154    9.   .4   16.1 * 29 JUN 2026 254    5.   .4   16.0
29 JUN 1348  55    4.   .4   15.9 * 29 JUN 1708 155   10.   .4   16.1 * 29 JUN 2028 255    5.   .4   16.0
29 JUN 1350  56    4.   .4   15.9 * 29 JUN 1710 156   11.   .4   16.2 * 29 JUN 2030 256    5.   .4   16.0
29 JUN 1352  57    4.   .4   15.9 * 29 JUN 1712 157   13.   .4   16.2 * 29 JUN 2032 257    5.   .4   16.0
29 JUN 1354  58    4.   .4   15.9 * 29 JUN 1714 158   14.   .4   16.3 * 29 JUN 2034 258    5.   .4   16.0
29 JUN 1356  59    4.   .4   15.9 * 29 JUN 1716 159   15.   .4   16.3 * 29 JUN 2036 259    5.   .4   16.0
29 JUN 1358  60    4.   .4   15.9 * 29 JUN 1718 160   17.   .4   16.3 * 29 JUN 2038 260    5.   .4   16.0
29 JUN 1400  61    4.   .4   15.9 * 29 JUN 1720 161   18.   .5   16.3 * 29 JUN 2040 261    5.   .4   16.0
29 JUN 1402  62    4.   .4   15.9 * 29 JUN 1722 162   18.   .5   16.4 * 29 JUN 2042 262    5.   .4   16.0
29 JUN 1404  63    4.   .4   15.9 * 29 JUN 1724 163   20.   .5   16.4 * 29 JUN 2044 263    5.   .4   16.0
29 JUN 1406  64    4.   .4   15.9 * 29 JUN 1726 164   25.   .5   16.5 * 29 JUN 2046 264    5.   .4   16.0
29 JUN 1408  65    4.   .4   15.9 * 29 JUN 1728 165   37.   .5   16.7 * 29 JUN 2048 265    4.   .4   16.0
29 JUN 1410  66    4.   .4   15.9 * 29 JUN 1730 166   50.   .6   17.0 * 29 JUN 2050 266    4.   .4   16.0
29 JUN 1412  67    4.   .4   15.9 * 29 JUN 1732 167   59.   .6   17.1 * 29 JUN 2052 267    4.   .4   16.0
29 JUN 1414  68    4.   .4   15.9 * 29 JUN 1734 168   63.   .7   17.2 * 29 JUN 2054 268    4.   .4   16.0
29 JUN 1416  69    4.   .4   15.9 * 29 JUN 1736 169   65.   .7   17.2 * 29 JUN 2056 269    4.   .4   16.0
29 JUN 1418  70    4.   .4   15.9 * 29 JUN 1738 170   65.   .7   17.2 * 29 JUN 2058 270    4.   .4   16.0
29 JUN 1420  71    4.   .4   15.9 * 29 JUN 1740 171   64.   .7   17.2 * 29 JUN 2100 271    4.   .4   16.0
29 JUN 1422  72    4.   .4   15.9 * 29 JUN 1742 172   62.   .6   17.1 * 29 JUN 2102 272    4.   .4   16.0
29 JUN 1424  73    4.   .4   15.9 * 29 JUN 1744 173   60.   .6   17.1 * 29 JUN 2104 273    4.   .4   16.0
29 JUN 1426  74    4.   .4   15.9 * 29 JUN 1746 174   58.   .6   17.1 * 29 JUN 2106 274    4.   .4   16.0
29 JUN 1428  75    4.   .4   15.9 * 29 JUN 1748 175   55.   .6   17.0 * 29 JUN 2108 275    4.   .4   16.0
29 JUN 1430  76    4.   .4   15.9 * 29 JUN 1750 176   52.   .6   17.0 * 29 JUN 2110 276    4.   .4   16.0
29 JUN 1432  77    4.   .4   15.9 * 29 JUN 1752 177   49.   .6   16.9 * 29 JUN 2112 277    4.   .4   16.0
29 JUN 1434  78    4.   .4   15.9 * 29 JUN 1754 178   46.   .6   16.9 * 29 JUN 2114 278    4.   .4   16.0
29 JUN 1436  79    4.   .4   15.9 * 29 JUN 1756 179   43.   .6   16.8 * 29 JUN 2116 279    4.   .4   16.0
29 JUN 1438  80    4.   .4   15.9 * 29 JUN 1758 180   40.   .6   16.8 * 29 JUN 2118 280    4.   .4   16.0
29 JUN 1440  81    4.   .4   15.9 * 29 JUN 1800 181   37.   .5   16.7 * 29 JUN 2120 281    4.   .4   16.0
29 JUN 1442  82    4.   .4   15.9 * 29 JUN 1802 182   35.   .5   16.7 * 29 JUN 2122 282    4.   .4   16.0
29 JUN 1444  83    4.   .4   15.9 * 29 JUN 1804 183   32.   .5   16.6 * 29 JUN 2124 283    4.   .4   16.0
29 JUN 1446  84    4.   .4   15.9 * 29 JUN 1806 184   30.   .5   16.6 * 29 JUN 2126 284    4.   .4   16.0
29 JUN 1448  85    4.   .4   15.9 * 29 JUN 1808 185   27.   .5   16.5 * 29 JUN 2128 285    4.   .4   16.0
29 JUN 1450  86    4.   .4   15.9 * 29 JUN 1810 186   25.   .5   16.5 * 29 JUN 2130 286    4.   .4   16.0
29 JUN 1452  87    4.   .4   15.9 * 29 JUN 1812 187   23.   .5   16.5 * 29 JUN 2132 287    4.   .4   16.0
29 JUN 1454  88    4.   .4   15.9 * 29 JUN 1814 188   22.   .5   16.4 * 29 JUN 2134 288    4.   .4   16.0
29 JUN 1456  89    4.   .4   15.9 * 29 JUN 1816 189   20.   .5   16.4 * 29 JUN 2136 289    4.   .4   16.0
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 29 JUN 1500  91       4.        .4      15.9 * 29 JUN 1820 191       17.        .4      16.3 * 29 JUN 2140 291        4.        .4      16.0
 29 JUN 1502  92       4.        .4      15.9 * 29 JUN 1822 192       16.        .4      16.3 * 29 JUN 2142 292        4.        .4      16.0
 29 JUN 1504  93       4.        .4      15.9 * 29 JUN 1824 193       15.        .4      16.3 * 29 JUN 2144 293        4.        .4      16.0
 29 JUN 1506  94       4.        .4      15.9 * 29 JUN 1826 194       14.        .4      16.2 * 29 JUN 2146 294        4.        .4      16.0
 29 JUN 1508  95       4.        .4      15.9 * 29 JUN 1828 195       13.        .4      16.2 * 29 JUN 2148 295        4.        .4      16.0
 29 JUN 1510  96       4.        .4      15.9 * 29 JUN 1830 196       12.        .4      16.2 * 29 JUN 2150 296        4.        .4      16.0
 29 JUN 1512  97       4.        .4      15.9 * 29 JUN 1832 197       11.        .4      16.2 * 29 JUN 2152 297        4.        .4      16.0
 29 JUN 1514  98       4.        .4      15.9 * 29 JUN 1834 198       10.        .4      16.2 * 29 JUN 2154 298        4.        .4      16.0
 29 JUN 1516  99       4.        .4      15.9 * 29 JUN 1836 199       10.        .4      16.1 * 29 JUN 2156 299        4.        .4      16.0
 29 JUN 1518 100       4.        .4      15.9 * 29 JUN 1838 200        9.        .4      16.1 * 29 JUN 2158 300        4.        .4      16.0
                                                *                                            *
*******************************************************************************************************************************************

 PEAK FLOW     TIME                                  MAXIMUM AVERAGE FLOW
  (CFS)        (HR)                        6-HR          24-HR         72-HR        9.97-HR
     65.       5.63            (CFS)        12.             8.            8.             8.
                             (INCHES)     1.165          1.352         1.352          1.352
                              (AC-FT)        6.             7.            7.             7.

PEAK STORAGE   TIME                                MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                        6-HR          24-HR         72-HR        9.97-HR
       1.      5.60                          0.             0.            0.             0.

 PEAK STAGE    TIME                                  MAXIMUM AVERAGE STAGE
  (FEET)       (HR)                        6-HR          24-HR         72-HR        9.97-HR
   17.18       5.63                       16.15          15.98         15.98          15.98

                              CUMULATIVE AREA =      .09 SQ MI
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                                                          STATION     RES3

                         (I) INFLOW,   (O) OUTFLOW
         0.       10.       20.       30.       40.       50.       60.       70.        0.        0.        0.        0.        0.
                                                                               (S) STORAGE
        .0        .0        .0        .0        .0        .0        .0        .2        .4        .6        .8        .0        .0
DAHRMN PER
291200   1I---------.---------.---------.---------.---------.---------.---S-----.---------.---------.---------.---------.---------.
291202   2I         .         .         .         .         .         .   S     .         .         .         .         .         .
291204   30  I      .         .         .         .         .         .   S     .         .         .         .         .         .
291206   40   I     .         .         .         .         .         .    S    .         .         .         .         .         .
291208   50   I     .         .         .         .         .         .    S    .         .         .         .         .         .
291210   60   I     .         .         .         .         .         .     S   .         .         .         .         .         .
291212   70   I     .         .         .         .         .         .     S   .         .         .         .         .         .
291214   80   I     .         .         .         .         .         .      S  .         .         .         .         .         .
291216   90   I     .         .         .         .         .         .      S  .         .         .         .         .         .
291218  100   I     .         .         .         .         .         .       S .         .         .         .         .         .
291220  110 . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . .
291222  120   I     .         .         .         .         .         .        S.         .         .         .         .         .
291224  130   I     .         .         .         .         .         .        S.         .         .         .         .         .
291226  140   I     .         .         .         .         .         .         S         .         .         .         .         .
291228  150   I     .         .         .         .         .         .         S         .         .         .         .         .
291230  160   I     .         .         .         .         .         .         .S        .         .         .         .         .
291232  170   I     .         .         .         .         .         .         .S        .         .         .         .         .
291234  180   I     .         .         .         .         .         .         .S        .         .         .         .         .
291236  190   I     .         .         .         .         .         .         . S       .         .         .         .         .
291238  200   I     .         .         .         .         .         .         . S       .         .         .         .         .
291240  210 . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . .
291242  220   I     .         .         .         .         .         .         .  S      .         .         .         .         .
291244  230   I     .         .         .         .         .         .         .   S     .         .         .         .         .
291246  240   I     .         .         .         .         .         .         .   S     .         .         .         .         .
291248  250   I     .         .         .         .         .         .         .    S    .         .         .         .         .
291250  260   I     .         .         .         .         .         .         .    S    .         .         .         .         .
291252  270   I     .         .         .         .         .         .         .     S   .         .         .         .         .
291254  280   I     .         .         .         .         .         .         .     S   .         .         .         .         .
291256  29.0  I     .         .         .         .         .         .         .      S  .         .         .         .         .
291258  30.0  I     .         .         .         .         .         .         .      S  .         .         .         .         .
291300  31. O I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S. . . . . . . . . . . . . . . . . . . . .
291302  32. O I     .         .         .         .         .         .         .       S .         .         .         .         .
291304  33.  OI     .         .         .         .         .         .         .       S .         .         .         .         .
291306  34.  OI     .         .         .         .         .         .         .       S .         .         .         .         .
291308  35.  OI     .         .         .         .         .         .         .       S .         .         .         .         .
291310  36.  OI     .         .         .         .         .         .         .       S .         .         .         .         .
291312  37.  OI     .         .         .         .         .         .         .       S .         .         .         .         .
291314  38.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291316  39.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291318  40.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291320  41. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291322  42.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291324  43.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291326  44.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291328  45.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291330  46.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291332  47.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291334  48.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291336  49.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291338  50.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291340  51. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291342  52.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291344  53.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291346  54.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291348  55.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291350  56.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291352  57.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291354  58.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291356  59.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291358  60.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291400  61. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291402  62.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291404  63.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291406  64.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291408  65.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291410  66.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291412  67.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291414  68.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291416  69.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291418  70.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291420  71. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291422  72.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291424  73.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291426  74.   I     .         .         .         .         .         .         .       S .         .         .         .         .
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291430  76.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291432  77.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291434  78.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291436  79.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291438  80.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291440  81. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291442  82.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291444  83.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291446  84.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291448  85.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291450  86.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291452  87.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291454  88.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291456  89.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291458  90.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291500  91. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291502  92.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291504  93.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291506  94.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291508  95.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291510  96.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291512  97.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291514  98.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291516  99.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291518 100.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291520 101. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291522 102.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291524 103.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291526 104.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291528 105.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291530 106.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291532 107.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291534 108.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291536 109.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291538 110.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291540 111. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291542 112.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291544 113.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291546 114.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291548 115.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291550 116.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291552 117.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291554 118.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291556 119.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291558 120.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291600 121. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291602 122.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291604 123.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291606 124.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291608 125.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291610 126.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291612 127.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291614 128.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291616 129.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291618 130.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291620 131. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291622 132.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291624 133.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291626 134.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291628 135.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291630 136.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291632 137.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291634 138.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291636 139.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291638 140.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291640 141. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
291642 142.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291644 143.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291646 144.   I     .         .         .         .         .         .         .       S .         .         .         .         .
291648 145.   0I    .         .         .         .         .         .         .        S.         .         .         .         .
291650 146.   0I    .         .         .         .         .         .         .        S.         .         .         .         .
291652 147.    I    .         .         .         .         .         .         .        S.         .         .         .         .
291654 148.    0I   .         .         .         .         .         .         .        S.         .         .         .         .
291656 149.    0I   .         .         .         .         .         .         .        S.         .         .         .         .
291658 150.     0I  .         .         .         .         .         .         .        S.         .         .         .         .
291700 151. . . 0I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
291702 152.      0I .         .         .         .         .         .         .        S.         .         .         .         .
291704 153.       0 I         .         .         .         .         .         .         S         .         .         .         .
291706 154.        0.I        .         .         .         .         .         .         S         .         .         .         .
291708 155.         0  I      .         .         .         .         .         .         S         .         .         .         .
291710 156.         .0  I     .         .         .         .         .         .         .S        .         .         .         .
291712 157.         .  0  I   .         .         .         .         .         .         .S        .         .         .         .
291714 158.         .   0  I  .         .         .         .         .         .         . S       .         .         .         .
291716 159.         .    0  I .         .         .         .         .         .         . S       .         .         .         .
291718 160.         .      0 I.         .         .         .         .         .         . S       .         .         .         .
291720 161. . . . . . . . . 0I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . .
291722 162.                 0 I                                                              S
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291726 164.         .         .    0    .         .I        .         .         .         .   S     .         .         .         .
291728 165.         .         .         .      0  .         .         . I       .         .      S  .         .         .         .
291730 166.         .         .         .         .         0         .     I   .         .         S         .         .         .
291732 167.         .         .         .         .         .        0.      I  .         .         . S       .         .         .
291734 168.         .         .         .         .         .         .  0   I  .         .         .  S      .         .         .
291736 169.         .         .         .         .         .         .    0I   .         .         .  S      .         .         .
291738 170.         .         .         .         .         .         .   I0    .         .         .  S      .         .         .
291740 171. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . I 0 . . . . . . . . . . . . . . S. . . . . . . . . . . . .
291742 172.         .         .         .         .         .         I 0       .         .         . S       .         .         .
291744 173.         .         .         .         .         .      I  0         .         .         . S       .         .         .
291746 174.         .         .         .         .         .   I   0 .         .         .         .S        .         .         .
291748 175.         .         .         .         .         .I   0    .         .         .         .S        .         .         .
291750 176.         .         .         .         .       I . 0       .         .         .         S         .         .         .
291752 177.         .         .         .         .    I   0.         .         .         .         S         .         .         .
291754 178.         .         .         .         . I   0   .         .         .         .        S.         .         .         .
291756 179.         .         .         .        I.  0      .         .         .         .        S.         .         .         .
291758 180.         .         .         .     I   0         .         .         .         .       S .         .         .         .
291800 181. . . . . . . . . . . . . . . . .I. .0. . . . . . . . . . . . . . . . . . . . . . . . . S. . . . . . . . . . . . . . . .
291802 182.         .         .         I    0    .         .         .         .         .      S  .         .         .         .
291804 183.         .         .       I . 0       .         .         .         .         .     S   .         .         .         .
291806 184.         .         .     I   0         .         .         .         .         .     S   .         .         .         .
291808 185.         .         .   I  0  .         .         .         .         .         .    S    .         .         .         .
291810 186.         .         . I  0    .         .         .         .         .         .    S    .         .         .         .
291812 187.         .         I  0      .         .         .         .         .         .   S     .         .         .         .
291814 188.         .       I . 0       .         .         .         .         .         .   S     .         .         .         .
291816 189.         .      I  0         .         .         .         .         .         .  S      .         .         .         .
291818 190.         .     I 0 .         .         .         .         .         .         .  S      .         .         .         .
291820 191. . . . . . I . 0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . .
291822 192.         .  I  0   .         .         .         .         .         .         . S       .         .         .         .
291824 193.         . I  0    .         .         .         .         .         .         . S       .         .         .         .
291826 194.         .I  0     .         .         .         .         .         .         .S        .         .         .         .
291828 195.         .I 0      .         .         .         .         .         .         .S        .         .         .         .
291830 196.         I 0       .         .         .         .         .         .         .S        .         .         .         .
291832 197.        I.0        .         .         .         .         .         .         .S        .         .         .         .
291834 198.        I0         .         .         .         .         .         .         S         .         .         .         .
291836 199.        I0         .         .         .         .         .         .         S         .         .         .         .
291838 200.       I0.         .         .         .         .         .         .         S         .         .         .         .
291840 201. . . . I0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . .
291842 202.       I .         .         .         .         .         .         .         S         .         .         .         .
291844 203.       I .         .         .         .         .         .         .         S         .         .         .         .
291846 204.       I .         .         .         .         .         .         .         S         .         .         .         .
291848 205.       I .         .         .         .         .         .         .         S         .         .         .         .
291850 206.       I .         .         .         .         .         .         .         S         .         .         .         .
291852 207.       I .         .         .         .         .         .         .         S         .         .         .         .
291854 208.       I .         .         .         .         .         .         .         S         .         .         .         .
291856 209.       I .         .         .         .         .         .         .         S         .         .         .         .
291858 210.      I0 .         .         .         .         .         .         .         S         .         .         .         .
291900 211. . . .I0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . .
291902 212.      I0 .         .         .         .         .         .         .         S         .         .         .         .
291904 213.      I  .         .         .         .         .         .         .         S         .         .         .         .
291906 214.      I  .         .         .         .         .         .         .         S         .         .         .         .
291908 215.      I  .         .         .         .         .         .         .         S         .         .         .         .
291910 216.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291912 217.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291914 218.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291916 219.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291918 220.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291920 221. . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
291922 222.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291924 223.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291926 224.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291928 225.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291930 226.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291932 227.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291934 228.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291936 229.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291938 230.      I  .         .         .         .         .         .         .        S.         .         .         .         .
291940 231. . . I0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
291942 232.     I0  .         .         .         .         .         .         .        S.         .         .         .         .
291944 233.     I   .         .         .         .         .         .         .        S.         .         .         .         .
291946 234.     I   .         .         .         .         .         .         .        S.         .         .         .         .
291948 235.     I   .         .         .         .         .         .         .        S.         .         .         .         .
291950 236.     I   .         .         .         .         .         .         .        S.         .         .         .         .
291952 237.     I   .         .         .         .         .         .         .        S.         .         .         .         .
291954 238.     I   .         .         .         .         .         .         .        S.         .         .         .         .
291956 239.     I   .         .         .         .         .         .         .        S.         .         .         .         .
291958 240.     I   .         .         .         .         .         .         .        S.         .         .         .         .
292000 241. . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
292002 242.     I   .         .         .         .         .         .         .        S.         .         .         .         .
292004 243.     I   .         .         .         .         .         .         .        S.         .         .         .         .
292006 244.     I   .         .         .         .         .         .         .        S.         .         .         .         .
292008 245.     I   .         .         .         .         .         .         .        S.         .         .         .         .
292010 246.    I0   .         .         .         .         .         .         .        S.         .         .         .         .
292012 247.    I0   .         .         .         .         .         .         .        S.         .         .         .         .
292014 248.    I    .         .         .         .         .         .         .        S.         .         .         .         .
292016 249.    I    .         .         .         .         .         .         .        S.         .         .         .         .
292018 250.    I                                                                          S
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292022 252.    I    .         .         .         .         .         .         .        S.         .         .         .         .
292024 253.    I    .         .         .         .         .         .         .        S.         .         .         .         .
292026 254.    I    .         .         .         .         .         .         .        S.         .         .         .         .
292028 255.    I    .         .         .         .         .         .         .        S.         .         .         .         .
292030 256.    I    .         .         .         .         .         .         .        S.         .         .         .         .
292032 257.    I    .         .         .         .         .         .         .        S.         .         .         .         .
292034 258.    I    .         .         .         .         .         .         .        S.         .         .         .         .
292036 259.    I    .         .         .         .         .         .         .        S.         .         .         .         .
292038 260.    I    .         .         .         .         .         .         .        S.         .         .         .         .
292040 261. . .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . .
292042 262.   IO    .         .         .         .         .         .         .        S.         .         .         .         .
292044 263.   IO    .         .         .         .         .         .         .        S.         .         .         .         .
292046 264.   IO    .         .         .         .         .         .         .        S.         .         .         .         .
292048 265.   I     .         .         .         .         .         .         .        S.         .         .         .         .
292050 266.   I     .         .         .         .         .         .         .        S.         .         .         .         .
292052 267.   I     .         .         .         .         .         .         .        S.         .         .         .         .
292054 268.   I     .         .         .         .         .         .         .        S.         .         .         .         .
292056 269.   I     .         .         .         .         .         .         .        S.         .         .         .         .
292058 270.   I     .         .         .         .         .         .         .        S.         .         .         .         .
292100 271. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . .
292102 272.   I     .         .         .         .         .         .         .        S.         .         .         .         .
292104 273.   I     .         .         .         .         .         .         .        S.         .         .         .         .
292106 274.   I     .         .         .         .         .         .         .        S.         .         .         .         .
292108 275.   I     .         .         .         .         .         .         .        S.         .         .         .         .
292110 276.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292112 277.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292114 278.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292116 279.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292118 280.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292120 281. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
292122 282.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292124 283.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292126 284.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292128 285.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292130 286.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292132 287.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292134 288.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292136 289.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292138 290.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292140 291. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
292142 292.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292144 293.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292146 294.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292148 295.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292150 296.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292152 297.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292154 298.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292156 299.   I     .         .         .         .         .         .         .       S .         .         .         .         .
292158 300.---I-----.---------.---------.---------.---------.---------.---------.-------S-.---------.---------.---------.---------.
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                                   RUNOFF SUMMARY
                            FLOW IN CUBIC FEET PER SECOND
                          TIME IN HOURS,  AREA IN SQUARE MILES

                                 PEAK    TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
  OPERATION        STATION       FLOW     PEAK        6-HOUR      24-HOUR     72-HOUR      AREA      STAGE     MAX STAGE

  HYDROGRAPH AT        OF1        14.     5.33          2.          1.          1.         .02

  ROUTED TO            CH1        14.     5.37          2.          1.          1.         .02

  HYDROGRAPH AT         A2         5.     5.30          1.          0.          0.         .01

  2 COMBINED AT         A2        19.     5.37          2.          1.          1.         .02

  ROUTED TO            ST1        19.     5.43          2.          1.          1.         .02

  HYDROGRAPH AT         A3         5.     5.33          1.          0.          0.         .01

  2 COMBINED AT         A3        24.     5.40          3.          2.          2.         .03

  HYDROGRAPH AT        OF2        11.     5.53          2.          1.          1.         .02

  ROUTED TO            CH2        11.     5.57          2.          1.          1.         .02

  HYDROGRAPH AT        OF3         2.     5.57          0.          0.          0.         .00

  2 COMBINED AT        OF3        13.     5.57          2.          1.          1.         .02

  2 COMBINED AT        OF3        36.     5.43          5.          3.          3.         .05

  HYDROGRAPH AT         A1        22.     5.53          4.          2.          2.         .03

  2 COMBINED AT         A1        58.     5.47          9.          5.          5.         .08

  ROUTED TO             P1        57.     5.50          9.          5.          5.         .08

  HYDROGRAPH AT         B1         1.     5.03          0.          0.          0.         .00

  2 COMBINED AT         B1        58.     5.50          9.          5.          5.         .08

  ROUTED TO           RES1        57.     5.53         10.          8.          8.         .08      23.57        5.53

  ROUTED TO            CH3        57.     5.53         10.          8.          8.         .08

  HYDROGRAPH AT         B2         1.     5.03          0.          0.          0.         .00

  2 COMBINED AT         B2        57.     5.53         10.          8.          8.         .08

  ROUTED TO           RES2        57.     5.57         10.          8.          8.         .08      20.98        5.57

  ROUTED TO            CH4        57.     5.57         10.          8.          8.         .08

  HYDROGRAPH AT       B345        14.     5.33          2.          1.          1.         .01

  2 COMBINED AT       B345        67.     5.53         12.          9.          9.         .09

  ROUTED TO           RES3        65.     5.63         12.          8.          8.         .09      17.18        5.63
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                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                       (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                              INTERPOLATED TO
                                                                           COMPUTATION INTERVAL
            ISTAQ    ELEMENT     DT        PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO       VOLUME
                                                     PEAK                                      PEAK

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

               CH1  MANE         2.00     13.80    322.00        .86      2.00     13.80    322.00          .86

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .8035E+00 EXCESS= .0000E+00 OUTFLOW= .8017E+00 BASIN STORAGE= .2569E-02 PERCENT ERROR=     -.1

               ST1  MANE         2.00     19.07    326.00        .92      2.00     19.07    326.00          .92

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1114E+01 EXCESS= .0000E+00 OUTFLOW= .1110E+01 BASIN STORAGE= .5794E-02 PERCENT ERROR=     -.2

               CH2  MANE         2.00     11.16    334.00        .86      2.00     11.16    334.00          .86

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .8545E+00 EXCESS= .0000E+00 OUTFLOW= .8532E+00 BASIN STORAGE= .2230E-02 PERCENT ERROR=     -.1

                P1  MANE          .99     57.49    329.26        .99      2.00     57.48    330.00          .99

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4237E+01 EXCESS= .0000E+00 OUTFLOW= .4234E+01 BASIN STORAGE= .3330E-02 PERCENT ERROR=      .0

               CH3  MANE         1.08     57.29    331.74       1.44      2.00     57.28    332.00         1.44

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .6232E+01 EXCESS= .0000E+00 OUTFLOW= .6223E+01 BASIN STORAGE= .1282E-01 PERCENT ERROR=     -.1

               CH4  MANE         1.20     57.15    334.32       1.44      2.00     57.14    334.00         1.44

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .6266E+01 EXCESS= .0000E+00 OUTFLOW= .6253E+01 BASIN STORAGE= .1423E-01 PERCENT ERROR=      .0


 *** NORMAL END OF HEC-1 ***
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****************************************                                                  ****************************************
*                                      *                                                  *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                  *    U.S. ARMY CORPS OF ENGINEERS      *
*            SEPTEMBER 1990            *                                                  *    HYDROLOGIC ENGINEERING CENTER     *
*             VERSION 4.0              *                                                  *          609 SECOND STREET           *
*                                      *                                                  *       DAVIS, CALIFORNIA 95616        *
* RUN DATE  07/01/1994  TIME  19:36:56 *                                                  *           (916) 756-1104             *
*                                      *                                                  *                                      *
****************************************                                                  ****************************************




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




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

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

DEVELOPED 2 YEAR STORM

SUB-BASINS "C, D AND E

RUN #5

RS-1

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

   1            ID   GRAND VIEW SUBDIVISION
   2            ID   DEVELOPED CONDITION
   3            ID   2 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)
   4            IT       2 30JUN94    1200     300
   5            IO       5       2       0
                * **********

   6            KK    D123
   7            KM   Basin runoff calculation for   D123
   8            KO       3       1       0       1      21
   9            BA  0.0187
  10            PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  11            LS              96
  12            UD   0.709
                * **********

  13            KK    CH1A
  14            KM   Muskingum-Cunge channel routing from     CP9 to     CP10
  15            KO       3       1       0       1      21
  16            RD     315  0.0045   0.025            TRAP       2       4
                * **********

  17            KK      D4
  18            KM   Basin runoff calculation for     D4
  19            KO       3       1       0       1      21
  20            BA  0.0036
  21            PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  22            LS              96
  23            UD   0.820
                * **********

  24            KK      D4
  25            KM   Combining two hydrographs at control point    CP10
  26            KO       3       1       0       1      21
  27            HC       2
                * **********

  28            KK    RES4
  29            KM   Reservoir routing operation
  30            KO       1       2       0       1      21
  31            RS       1    ELEV   17.30
  32            SV  0.0326  0.0994  0.0204  0.3618  0.5767  0.8459  1.0833
  33            SE    18.3    19.3    20.3    21.3    22.3    23.3    24.0
  34            SL    18.3  0.0625     0.6     0.5
  35            SS    23.5   12.29     2.7     1.5
                * **********

  36            KK     P1A
  37            KM   Muskingum-Cunge channel routing from    CP10 to       CP8
  38            KO       3       1       0       1      21
  39            RD     655  0.0067   0.015            CIRC     2.0
                * **********
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R5-2

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


  40           KK      C2
  41           KM   Basin runoff calculation for    C2
  42           KO       3       1       0       1      21
  43           BA  0.0049
  44           PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  45           LS              96
  46           UD   1.000
               * **********

  47           KK      C2
  48           KM   Combining two hydrographs at control point     CP8
  49           KO       3       1       0       1      21
  50           HC       2
               * **********

  51           KK     C13
  52           KM   Basin runoff calculation for   C13
  53           KO       3       1       0       1      21
  54           BA  0.0206
  55           PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  56           LS              96
  57           UD   0.719
               * **********

  58           KK     C12
  59           KM   Combining two hydrographs at control point     CP8
  60           KO       3       1       0       1      21
  61           HC       2
               * **********

  62           KK     P2A
  63           KM   Muskingum-Cunge channel routing from     CP8 to     CP11
  64           KO       3       1       0       1      21
  65           RD     277  0.0054   0.015            CIRC     3.0
               * **********

  66           KK      E1
  67           KM   Basin runoff calculation for    E1
  68           KO       3       1       0       1      21
  69           BA  0.0009
  70           PH               0    0.10    0.19    0.34    0.42    0.47    0.55    0.64    0.70
  71           LS              96
  72           UD   0.146
               * **********

  73           KK      E1
  74           KM   Combining two hydrographs at control point    CP11
  75           KO       3       1       0       1      21
  76           HC       2
               * **********
```

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


   77          KK    RES5
   78          KM   Reservoir routing operation
   79          KO       1       2       0       1      21
   80          RS       1    ELEV   11.24
   81          SV  0.0184  0.0693  0.1631  0.3126  0.5207  0.7889
   82          SE    12.0    13.0    14.0    15.0    16.0    17.0
   83          SL   12.24  0.0625     0.6    0.50
   84          SS    16.0   12.29     2.7     1.5
               * **********
   85          ZZ
```

```
 ***************************************                                                 ***************************************
 *                                     *                                                 *                                     *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                *   U.S. ARMY CORPS OF ENGINEERS      *
 *           SEPTEMBER 1990            *                                                 *   HYDROLOGIC ENGINEERING CENTER     *
 *             VERSION 4.0             *                                                 *        609 SECOND STREET            *
 *                                     *                                                 *     DAVIS, CALIFORNIA 95616         *
 * RUN DATE  07/01/1994  TIME  19:36:56 *                                                *         (916) 756-1104              *
 *                                     *                                                 *                                     *
 ***************************************                                                 ***************************************




                             GRAND VIEW SUBDIVISION
                             DEVELOPED CONDITION
                             2 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)

  5 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           2  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN           2  MINUTES IN COMPUTATION INTERVAL
                      IDATE     30JUN94  STARTING DATE
                      ITIME        1200  STARTING TIME
                         NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE     30JUN94  ENDING DATE
                     NDTIME        2158  ENDING TIME
                      ICENT          19  CENTURY MARK

                COMPUTATION INTERVAL     .03 HOURS
                     TOTAL TIME BASE    9.97 HOURS

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


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


            **************
            *            *
  6 KK      *     D123   *
            *            *
            **************

  8 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .033  TIME INTERVAL IN HOURS
```

R5-5

```
                   SUBBASIN RUNOFF DATA

      9 BA           SUBBASIN CHARACTERISTICS
                           TAREA          .02  SUBBASIN AREA

                     PRECIPITATION DATA

     10 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                     ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                     5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                       .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                       STORM AREA =      .02

     11 LS           SCS LOSS RATE
                           STRTL          .08  INITIAL ABSTRACTION
                          CRVNBR        96.00  CURVE NUMBER
                           RTIMP          .00  PERCENT IMPERVIOUS AREA

     12 UD           SCS DIMENSIONLESS UNITGRAPH
                            TLAG          .71  LAG

                                                                    ***

                                                              UNIT HYDROGRAPH
                                                        108 END-OF-PERIOD ORDINATES
                     0.         0.         1.         1.         2.         2.         3.         3.         4.         5.
                     6.         7.         8.         9.        10.        11.        11.        12.        12.        12.
                    12.        12.        12.        12.        12.        12.        11.        11.        10.        10.
                     9.         9.         8.         8.         7.         6.         6.         5.         5.         5.
                     4.         4.         4.         3.         3.         3.         3.         3.         2.         2.
                     2.         2.         2.         2.         2.         1.         1.         1.         1.         1.
                     1.         1.         1.         1.         1.         1.         1.         1.         1.         0.
                     0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                     0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                     0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                     0.         0.         0.         0.         0.         0.         0.         0.

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

                            HYDROGRAPH AT STATION     D123

       TOTAL RAINFALL =      .61, TOTAL LOSS =      .32, TOTAL EXCESS =      .30

    'EAK FLOW     TIME                             MAXIMUM AVERAGE FLOW
      (CFS)       (HR)                    6-HR        24-HR        72-HR      9.97-HR
         2.       5.80        (CFS)         1.           0.           0.           0.
                            (INCHES)      .287         .287         .287         .287
                             (AC-FT)        0.           0.           0.           0.

                           CUMULATIVE AREA =      .02 SQ MI



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

               **************
               *            *
     13 KK     *     CH1A   *
               *            *
               **************
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R5-6

```
                    IPRNT          3  PRINT CONTROL
                    IPLOT          1  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE
                    IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                     IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT       .033  TIME INTERVAL IN HOURS


            HYDROGRAPH ROUTING DATA

 16 RD        MUSKINGUM-CUNGE CHANNEL ROUTING
                        L       315.  CHANNEL LENGTH
                        S      .0045  SLOPE
                        N       .025  CHANNEL ROUGHNESS COEFFICIENT
                       CA        .00  CONTRIBUTING AREA
                    SHAPE       TRAP  CHANNEL SHAPE
                       WD       2.00  BOTTOM WIDTH OR DIAMETER
                        Z       4.00  SIDE SLOPE

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


                 MAIN      1.50      1.34      2.00    105.00     2.11    350.00       .29      1.84


                                       INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                 MAIN      1.50      1.34      2.00               2.11    350.00       .29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2860E+00 EXCESS= .0000E+00 OUTFLOW= .2848E+00 BASIN STORAGE= .1343E-02 PERCENT ERROR=    .0



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

                        HYDROGRAPH AT STATION     CH1A

 EAK FLOW     TIME                             MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR        24-HR       72-HR      9.97-HR
     2.       5.83       (CFS)       1.           0.          0.          0.
                       (INCHES)    .285         .285        .285        .285
                        (AC-FT)      0.           0.          0.          0.

                       CUMULATIVE AREA =     .02 SQ MI



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


          **************
          *            *
 17 KK    *        D4  *
          *            *
          **************
```

R5-7

```
                     IPRNT           3  PRINT CONTROL
                     IPLOT           1  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                      IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT        .033  TIME INTERVAL IN HOURS


             SUBBASIN RUNOFF DATA

 20 BA         SUBBASIN CHARACTERISTICS
                     TAREA         .00  SUBBASIN AREA

               PRECIPITATION DATA

 21 PH                             DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                          STORM AREA =     .00

 22 LS         SCS LOSS RATE
                     STRTL         .08  INITIAL ABSTRACTION
                    CRVNBR       96.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

 23 UD         SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .82  LAG

                                                   ***

                                                UNIT HYDROGRAPH
                                           125 END-OF-PERIOD ORDINATES
               0.        0.        0.        0.        0.        0.        0.        0.        1.        1.
               1.        1.        1.        1.        1.        1.        2.        2.        2.        2.
               2.        2.        2.        2.        2.        2.        2.        2.        2.        2.
               2.        2.        2.        2.        2.        2.        1.        1.        1.        1.
               1.        1.        1.        1.        1.        1.        1.        1.        1.        1.
               1.        1.        0.        0.        0.        0.        0.        0.        0.        0.
               0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
               0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
               0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
               0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
               0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
               0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
               0.        0.        0.        0.        0.

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

                   HYDROGRAPH AT STATION       D4

  TOTAL RAINFALL =     .61, TOTAL LOSS =     .32, TOTAL EXCESS =     .30

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                  6-HR        24-HR        72-HR       9.97-HR
       0.      5.90        (CFS)       0.           0.           0.           0.
                         (INCHES)    .285         .285         .285         .285
                          (AC-FT)      0.           0.           0.           0.

                         CUMULATIVE AREA =     .00 SQ MI
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R5-8

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


        **************
        *            *
 24 KK  *        D4  *
        *            *
        **************

 26 KO         OUTPUT CONTROL VARIABLES
                    IPRNT           3  PRINT CONTROL
                    IPLOT           1  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE
                    IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                     IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT        .033  TIME INTERVAL IN HOURS


 27 HC         HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                ***

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

                       HYDROGRAPH AT STATION       D4

 EAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR        24-HR       72-HR      9.97-HR
       2.     5.83        (CFS)       1.           0.          0.           0.
                        (INCHES)    .285         .285        .285         .285
                         (AC-FT)      0.           0.          0.           0.

                        CUMULATIVE AREA =      .02 SQ MI



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


        **************
        *            *
 28 KK  *      RES4  *
        *            *
        **************

 30 KO         OUTPUT CONTROL VARIABLES
                    IPRNT           1  PRINT CONTROL
                    IPLOT           2  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE
                    IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                     IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT        .033  TIME INTERVAL IN HOURS


             HYDROGRAPH ROUTING DATA

 31 RS         STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
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R5-9

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                    RSVRIC       17.30  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

  32 SV           STORAGE           .0         .1         .0         .4         .6         .8        1.1

  33 SE         ELEVATION       18.30      19.30      20.30      21.30      22.30      23.30      24.00

  34 SL         LOW-LEVEL OUTLET
                      ELEVL      18.30  ELEVATION AT CENTER OF OUTLET
                      CAREA        .06  CROSS-SECTIONAL AREA
                       COQL        .60  COEFFICIENT
                       EXPL        .50  EXPONENT OF HEAD

  35 SS         SPILLWAY
                       CREL      23.50  SPILLWAY CREST ELEVATION
                      SPWID      12.29  SPILLWAY WIDTH
                       COQW       2.70  WEIR COEFFICIENT
                       EXPW       1.50  EXPONENT OF HEAD

                                                                 ***

                                                  COMPUTED OUTFLOW-ELEVATION DATA

              OUTFLOW        .00        .11        .13        .14        .17        .20        .24        .31        .42        .69
            ELEVATION      18.30      18.45      18.48      18.53      18.61      18.73      18.93      19.33      20.28      23.50

              OUTFLOW        .70        .78       1.01       1.45       2.17       3.24       4.74       6.72       9.27      12.45
            ELEVATION      23.51      23.52      23.55      23.58      23.63      23.68      23.75      23.82      23.91      24.00

                                              COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

              STORAGE        .03        .04        .04        .05        .05        .06        .07        .10        .10        .02
              OUTFLOW        .00        .11        .13        .14        .17        .20        .24        .30        .31        .42
            ELEVATION      18.30      18.45      18.48      18.53      18.61      18.73      18.93      19.30      19.33      20.28

              STORAGE        .02        .36        .58        .85        .91        .92        .93        .94        .96        .97
              OUTFLOW        .43        .52        .60        .67        .69        .78       1.01       1.45       2.17       3.24
            ELEVATION      20.30      21.30      22.30      23.30      23.50      23.52      23.55      23.58      23.63      23.68

              STORAGE       1.00       1.02       1.05       1.08
              OUTFLOW       4.74       6.72       9.27      12.45
            ELEVATION      23.75      23.82      23.91      24.00
*************************************************************************************************************************************

                                                   HYDROGRAPH AT STATION      RES4

 ************************************************************************************************************************************
                                            *                                          *
 DA MON HRMN ORD  OUTFLOW  STORAGE    STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE
                                            *                                          *
  ) JUN 1200   1      0.       .0     18.3 * 30 JUN 1520 101       0.       .0    18.3 * 30 JUN 1840 201      0.       .2    20.9
 30 JUN 1202   2      0.       .0     18.3 * 30 JUN 1522 102       0.       .0    18.3 * 30 JUN 1842 202      0.       .2    20.9
  ) JUN 1204   3      0.       .0     18.3 * 30 JUN 1524 103       0.       .0    18.3 * 30 JUN 1844 203      0.       .2    20.9
  ) JUN 1206   4      0.       .0     18.3 * 30 JUN 1526 104       0.       .0    18.3 * 30 JUN 1846 204      0.       .2    20.9
 30 JUN 1208   5      0.       .0     18.3 * 30 JUN 1528 105       0.       .0    18.3 * 30 JUN 1848 205      0.       .2    20.9
  ) JUN 1210   6      0.       .0     18.3 * 30 JUN 1530 106       0.       .0    18.3 * 30 JUN 1850 206      0.       .2    20.9
  ) JUN 1212   7      0.       .0     18.3 * 30 JUN 1532 107       0.       .0    18.3 * 30 JUN 1852 207      0.       .2    20.9
 30 JUN 1214   8      0.       .0     18.3 * 30 JUN 1534 108       0.       .0    18.3 * 30 JUN 1854 208      0.       .2    20.9
  ) JUN 1216   9      0.       .0     18.3 * 30 JUN 1536 109       0.       .0    18.3 * 30 JUN 1856 209      0.       .2    20.9
  ) JUN 1218  10      0.       .0     18.3 * 30 JUN 1538 110       0.       .0    18.3 * 30 JUN 1858 210      0.       .2    20.9
 30 JUN 1220  11      0.       .0     18.3 * 30 JUN 1540 111       0.       .0    18.3 * 30 JUN 1900 211      0.       .2    20.9
  ) JUN 1222  12      0.       .0     18.3 * 30 JUN 1542 112       0.       .0    18.3 * 30 JUN 1902 212      0.       .2    20.9
  ) JUN 1224  13      0.       .0     18.3 * 30 JUN 1544 113       0.       .0    18.3 * 30 JUN 1904 213      0.       .2    20.9
```

R5-10

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 0 JUN 1228  15     0.      .0     18.3 * 30 JUN 1548 115     0.      .0     18.3 * 30 JUN 1908 215     0.      .2      20.9
30 JUN 1230  16     0.      .0     18.3 * 30 JUN 1550 116     0.      .0     18.3 * 30 JUN 1910 216     0.      .2      20.9
30 JUN 1232  17     0.      .0     18.3 * 30 JUN 1552 117     0.      .0     18.3 * 30 JUN 1912 217     0.      .2      20.9
 0 JUN 1234  18     0.      .0     18.3 * 30 JUN 1554 118     0.      .0     18.3 * 30 JUN 1914 218     0.      .2      20.9
30 JUN 1236  19     0.      .0     18.3 * 30 JUN 1556 119     0.      .0     18.3 * 30 JUN 1916 219     0.      .2      20.9
30 JUN 1238  20     0.      .0     18.3 * 30 JUN 1558 120     0.      .0     18.3 * 30 JUN 1918 220     0.      .2      20.9
 0 JUN 1240  21     0.      .0     18.3 * 30 JUN 1600 121     0.      .0     18.3 * 30 JUN 1920 221     0.      .2      20.9
30 JUN 1242  22     0.      .0     18.3 * 30 JUN 1602 122     0.      .0     18.3 * 30 JUN 1922 222     0.      .2      20.9
30 JUN 1244  23     0.      .0     18.3 * 30 JUN 1604 123     0.      .0     18.3 * 30 JUN 1924 223     0.      .2      20.9
 0 JUN 1246  24     0.      .0     18.3 * 30 JUN 1606 124     0.      .0     18.3 * 30 JUN 1926 224     0.      .2      20.9
30 JUN 1248  25     0.      .0     18.3 * 30 JUN 1608 125     0.      .0     18.3 * 30 JUN 1928 225     0.      .2      20.9
30 JUN 1250  26     0.      .0     18.3 * 30 JUN 1610 126     0.      .0     18.3 * 30 JUN 1930 226     0.      .2      20.9
 0 JUN 1252  27     0.      .0     18.3 * 30 JUN 1612 127     0.      .0     18.3 * 30 JUN 1932 227     0.      .2      20.9
30 JUN 1254  28     0.      .0     18.3 * 30 JUN 1614 128     0.      .0     18.3 * 30 JUN 1934 228     0.      .2      20.9
30 JUN 1256  29     0.      .0     18.3 * 30 JUN 1616 129     0.      .0     18.3 * 30 JUN 1936 229     0.      .2      20.9
 0 JUN 1258  30     0.      .0     18.3 * 30 JUN 1618 130     0.      .0     18.3 * 30 JUN 1938 230     0.      .2      20.9
30 JUN 1300  31     0.      .0     18.3 * 30 JUN 1620 131     0.      .0     18.3 * 30 JUN 1940 231     0.      .2      20.9
30 JUN 1302  32     0.      .0     18.3 * 30 JUN 1622 132     0.      .0     18.3 * 30 JUN 1942 232     0.      .2      20.9
 0 JUN 1304  33     0.      .0     18.3 * 30 JUN 1624 133     0.      .0     18.3 * 30 JUN 1944 233     0.      .2      20.9
30 JUN 1306  34     0.      .0     18.3 * 30 JUN 1626 134     0.      .0     18.3 * 30 JUN 1946 234     0.      .2      20.9
30 JUN 1308  35     0.      .0     18.3 * 30 JUN 1628 135     0.      .0     18.3 * 30 JUN 1948 235     0.      .2      20.9
 0 JUN 1310  36     0.      .0     18.3 * 30 JUN 1630 136     0.      .0     18.3 * 30 JUN 1950 236     0.      .2      20.9
30 JUN 1312  37     0.      .0     18.3 * 30 JUN 1632 137     0.      .0     18.3 * 30 JUN 1952 237     0.      .2      20.9
30 JUN 1314  38     0.      .0     18.3 * 30 JUN 1634 138     0.      .0     18.3 * 30 JUN 1954 238     0.      .2      20.9
 0 JUN 1316  39     0.      .0     18.3 * 30 JUN 1636 139     0.      .0     18.3 * 30 JUN 1956 239     0.      .2      20.9
30 JUN 1318  40     0.      .0     18.3 * 30 JUN 1638 140     0.      .0     18.3 * 30 JUN 1958 240     0.      .2      20.9
30 JUN 1320  41     0.      .0     18.3 * 30 JUN 1640 141     0.      .0     18.3 * 30 JUN 2000 241     0.      .2      20.9
 0 JUN 1322  42     0.      .0     18.3 * 30 JUN 1642 142     0.      .0     18.3 * 30 JUN 2002 242     0.      .2      20.9
30 JUN 1324  43     0.      .0     18.3 * 30 JUN 1644 143     0.      .0     18.3 * 30 JUN 2004 243     0.      .2      20.9
30 JUN 1326  44     0.      .0     18.3 * 30 JUN 1646 144     0.      .0     18.3 * 30 JUN 2006 244     0.      .2      20.9
 0 JUN 1328  45     0.      .0     18.3 * 30 JUN 1648 145     0.      .0     18.3 * 30 JUN 2008 245     0.      .2      20.9
30 JUN 1330  46     0.      .0     18.3 * 30 JUN 1650 146     0.      .0     18.3 * 30 JUN 2010 246     0.      .2      20.9
30 JUN 1332  47     0.      .0     18.3 * 30 JUN 1652 147     0.      .0     18.3 * 30 JUN 2012 247     0.      .2      20.9
 0 JUN 1334  48     0.      .0     18.3 * 30 JUN 1654 148     0.      .0     18.3 * 30 JUN 2014 248     0.      .2      20.9
30 JUN 1336  49     0.      .0     18.3 * 30 JUN 1656 149     0.      .0     18.3 * 30 JUN 2016 249     0.      .2      20.9
30 JUN 1338  50     0.      .0     18.3 * 30 JUN 1658 150     0.      .0     18.3 * 30 JUN 2018 250     0.      .2      20.9
 0 JUN 1340  51     0.      .0     18.3 * 30 JUN 1700 151     0.      .0     18.3 * 30 JUN 2020 251     0.      .2      20.9
30 JUN 1342  52     0.      .0     18.3 * 30 JUN 1702 152     0.      .0     18.3 * 30 JUN 2022 252     0.      .2      20.9
30 JUN 1344  53     0.      .0     18.3 * 30 JUN 1704 153     0.      .0     18.4 * 30 JUN 2024 253     0.      .2      20.9
 0 JUN 1346  54     0.      .0     18.3 * 30 JUN 1706 154     0.      .0     18.4 * 30 JUN 2026 254     0.      .2      20.9
30 JUN 1348  55     0.      .0     18.3 * 30 JUN 1708 155     0.      .0     18.4 * 30 JUN 2028 255     0.      .2      20.9
30 JUN 1350  56     0.      .0     18.3 * 30 JUN 1710 156     0.      .0     18.4 * 30 JUN 2030 256     0.      .2      20.9
 0 JUN 1352  57     0.      .0     18.3 * 30 JUN 1712 157     0.      .0     18.4 * 30 JUN 2032 257     0.      .2      20.9
30 JUN 1354  58     0.      .0     18.3 * 30 JUN 1714 158     0.      .0     18.4 * 30 JUN 2034 258     0.      .2      20.9
30 JUN 1356  59     0.      .0     18.3 * 30 JUN 1716 159     0.      .0     18.4 * 30 JUN 2036 259     0.      .2      20.9
 0 JUN 1358  60     0.      .0     18.3 * 30 JUN 1718 160     0.      .0     18.5 * 30 JUN 2038 260     0.      .2      20.9
30 JUN 1400  61     0.      .0     18.3 * 30 JUN 1720 161     0.      .0     18.5 * 30 JUN 2040 261     0.      .2      20.9
30 JUN 1402  62     0.      .0     18.3 * 30 JUN 1722 162     0.      .0     18.5 * 30 JUN 2042 262     0.      .2      20.9
 0 JUN 1404  63     0.      .0     18.3 * 30 JUN 1724 163     0.      .1     18.6 * 30 JUN 2044 263     0.      .2      20.9
30 JUN 1406  64     0.      .0     18.3 * 30 JUN 1726 164     0.      .1     18.6 * 30 JUN 2046 264     0.      .2      20.9
30 JUN 1408  65     0.      .0     18.3 * 30 JUN 1728 165     0.      .1     18.7 * 30 JUN 2048 265     0.      .2      20.9
 0 JUN 1410  66     0.      .0     18.3 * 30 JUN 1730 166     0.      .1     18.8 * 30 JUN 2050 266     0.      .2      20.9
30 JUN 1412  67     0.      .0     18.3 * 30 JUN 1732 167     0.      .1     18.8 * 30 JUN 2052 267     0.      .2      20.9
30 JUN 1414  68     0.      .0     18.3 * 30 JUN 1734 168     0.      .1     18.9 * 30 JUN 2054 268     0.      .2      20.9
 0 JUN 1416  69     0.      .0     18.3 * 30 JUN 1736 169     0.      .1     19.0 * 30 JUN 2056 269     0.      .2      20.9
30 JUN 1418  70     0.      .0     18.3 * 30 JUN 1738 170     0.      .1     19.1 * 30 JUN 2058 270     0.      .2      20.9
30 JUN 1420  71     0.      .0     18.3 * 30 JUN 1740 171     0.      .1     19.1 * 30 JUN 2100 271     0.      .2      20.9
 0 JUN 1422  72     0.      .0     18.3 * 30 JUN 1742 172     0.      .1     19.2 * 30 JUN 2102 272     0.      .2      20.9
30 JUN 1424  73     0.      .0     18.3 * 30 JUN 1744 173     0.      .1     20.5 * 30 JUN 2104 273     0.      .2      20.9
30 JUN 1426  74     0.      .0     18.3 * 30 JUN 1746 174     0.      .1     20.5 * 30 JUN 2106 274     0.      .2      20.9
 0 JUN 1428  75     0.      .0     18.3 * 30 JUN 1748 175     0.      .1     20.6 * 30 JUN 2108 275     0.      .2      20.9
30 JUN 1430  76     0.      .0     18.3 * 30 JUN 1750 176     0.      .1     20.6 * 30 JUN 2110 276     0.      .2      20.9
30 JUN 1432  77     0.      .0     18.3 * 30 JUN 1752 177     0.      .1     20.6 * 30 JUN 2112 277     0.      .2      20.9
 0 JUN 1434  78     0.      .0     18.3 * 30 JUN 1754 178     0.      .1     20.6 * 30 JUN 2114 278     0.      .2      20.9
30 JUN 1436  79     0.      .0     18.3 * 30 JUN 1756 179     0.      .1     20.6 * 30 JUN 2116 279     0.      .2      20.9
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 30 JUN 1440  81      0.       .0     18.3 * 30 JUN 1800 181      0.      .1     20.7 * 30 JUN 2120 281      0.      .2     20.9
 30 JUN 1442  82      0.       .0     18.3 * 30 JUN 1802 182      0.      .1     20.7 * 30 JUN 2122 282      0.      .2     20.9
 30 JUN 1444  83      0.       .0     18.3 * 30 JUN 1804 183      0.      .2     20.7 * 30 JUN 2124 283      0.      .2     20.8
 30 JUN 1446  84      0.       .0     18.3 * 30 JUN 1806 184      0.      .2     20.7 * 30 JUN 2126 284      0.      .2     20.8
 30 JUN 1448  85      0.       .0     18.3 * 30 JUN 1808 185      0.      .2     20.7 * 30 JUN 2128 285      0.      .2     20.8
 30 JUN 1450  86      0.       .0     18.3 * 30 JUN 1810 186      0.      .2     20.7 * 30 JUN 2130 286      0.      .2     20.8
 30 JUN 1452  87      0.       .0     18.3 * 30 JUN 1812 187      0.      .2     20.7 * 30 JUN 2132 287      0.      .2     20.8
 30 JUN 1454  88      0.       .0     18.3 * 30 JUN 1814 188      0.      .2     20.8 * 30 JUN 2134 288      0.      .2     20.8
 30 JUN 1456  89      0.       .0     18.3 * 30 JUN 1816 189      0.      .2     20.8 * 30 JUN 2136 289      0.      .2     20.8
 30 JUN 1458  90      0.       .0     18.3 * 30 JUN 1818 190      0.      .2     20.8 * 30 JUN 2138 290      0.      .2     20.8
 30 JUN 1500  91      0.       .0     18.3 * 30 JUN 1820 191      0.      .2     20.8 * 30 JUN 2140 291      0.      .2     20.8
 30 JUN 1502  92      0.       .0     18.3 * 30 JUN 1822 192      0.      .2     20.8 * 30 JUN 2142 292      0.      .2     20.8
 30 JUN 1504  93      0.       .0     18.3 * 30 JUN 1824 193      0.      .2     20.8 * 30 JUN 2144 293      0.      .2     20.8
 30 JUN 1506  94      0.       .0     18.3 * 30 JUN 1826 194      0.      .2     20.8 * 30 JUN 2146 294      0.      .2     20.8
 30 JUN 1508  95      0.       .0     18.3 * 30 JUN 1828 195      0.      .2     20.8 * 30 JUN 2148 295      0.      .2     20.8
 30 JUN 1510  96      0.       .0     18.3 * 30 JUN 1830 196      0.      .2     20.8 * 30 JUN 2150 296      0.      .2     20.8
 30 JUN 1512  97      0.       .0     18.3 * 30 JUN 1832 197      0.      .2     20.8 * 30 JUN 2152 297      0.      .2     20.8
 30 JUN 1514  98      0.       .0     18.3 * 30 JUN 1834 198      0.      .2     20.8 * 30 JUN 2154 298      0.      .2     20.8
 30 JUN 1516  99      0.       .0     18.3 * 30 JUN 1836 199      0.      .2     20.8 * 30 JUN 2156 299      0.      .2     20.8
 30 JUN 1518 100      0.       .0     18.3 * 30 JUN 1838 200      0.      .2     20.9 * 30 JUN 2158 300      0.      .2     20.8
                                           *                                       *
 ***************************************************************************************************************************

 PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                    6-HR         24-HR        72-HR        9.97-HR
       0.      7.20       (CFS)          0.            0.           0.            0.
                       (INCHES)        .149          .149         .149          .149
                         (AC-FT)         0.            0.           0.            0.

PEAK STORAGE   TIME                            MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                    6-HR         24-HR        72-HR        9.97-HR
       0.      7.43                      0.            0.           0.            0.

 PEAK STAGE    TIME                              MAXIMUM AVERAGE STAGE
   (FEET)      (HR)                    6-HR         24-HR        72-HR        9.97-HR
     20.92     7.60                   20.15         19.41        19.41         19.41

                         CUMULATIVE AREA =     .02 SQ MI
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                                                          STATION     RES4

                         (I) INFLOW,   (O) OUTFLOW
         .0        .4        .8       1.2       1.6       2.0       2.4       2.8        .0        .0        .0        .0        .0
                                                                                (S) STORAGE
         .0        .0        .0        .0        .0        .0        .0        .1        .2        .3        .0        .0        .0
DAHRMN PER
301200   1I---------.---------.---------.---------.---------.---------.--S------.---------.---------.---------.---------.---------.
301202   2I         .         .         .         .         .         .  S      .         .         .         .         .         .
301204   3I         .         .         .         .         .         .  S      .         .         .         .         .         .
301206   4I         .         .         .         .         .         .  S      .         .         .         .         .         .
301208   5I         .         .         .         .         .         .  S      .         .         .         .         .         .
301210   6I         .         .         .         .         .         .  S      .         .         .         .         .         .
301212   7I         .         .         .         .         .         .  S      .         .         .         .         .         .
301214   8I         .         .         .         .         .         .  S      .         .         .         .         .         .
301216   9I         .         .         .         .         .         .  S      .         .         .         .         .         .
301218  10I         .         .         .         .         .         .  S      .         .         .         .         .         .
301220  11I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
301222  12I         .         .         .         .         .         .  S      .         .         .         .         .         .
301224  13I         .         .         .         .         .         .  S      .         .         .         .         .         .
301226  14I         .         .         .         .         .         .  S      .         .         .         .         .         .
301228  15I         .         .         .         .         .         .  S      .         .         .         .         .         .
301230  16I         .         .         .         .         .         .  S      .         .         .         .         .         .
301232  17I         .         .         .         .         .         .  S      .         .         .         .         .         .
301234  18I         .         .         .         .         .         .  S      .         .         .         .         .         .
301236  19I         .         .         .         .         .         .  S      .         .         .         .         .         .
301238  20I         .         .         .         .         .         .  S      .         .         .         .         .         .
301240  21I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
301242  22I         .         .         .         .         .         .  S      .         .         .         .         .         .
301244  23I         .         .         .         .         .         .  S      .         .         .         .         .         .
301246  24I         .         .         .         .         .         .  S      .         .         .         .         .         .
301248  25I         .         .         .         .         .         .  S      .         .         .         .         .         .
301250  26I         .         .         .         .         .         .  S      .         .         .         .         .         .
301252  27I         .         .         .         .         .         .  S      .         .         .         .         .         .
301254  28I         .         .         .         .         .         .  S      .         .         .         .         .         .
301256  29I         .         .         .         .         .         .  S      .         .         .         .         .         .
301258  30I         .         .         .         .         .         .  S      .         .         .         .         .         .
301300  31I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
301302  32I         .         .         .         .         .         .  S      .         .         .         .         .         .
301304  33I         .         .         .         .         .         .  S      .         .         .         .         .         .
301306  34I         .         .         .         .         .         .  S      .         .         .         .         .         .
301308  35I         .         .         .         .         .         .  S      .         .         .         .         .         .
301310  36I         .         .         .         .         .         .  S      .         .         .         .         .         .
301312  37I         .         .         .         .         .         .  S      .         .         .         .         .         .
301314  38I         .         .         .         .         .         .  S      .         .         .         .         .         .
301316  39I         .         .         .         .         .         .  S      .         .         .         .         .         .
301318  40I         .         .         .         .         .         .  S      .         .         .         .         .         .
301320  41I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
301322  42I         .         .         .         .         .         .  S      .         .         .         .         .         .
301324  43I         .         .         .         .         .         .  S      .         .         .         .         .         .
301326  44I         .         .         .         .         .         .  S      .         .         .         .         .         .
301328  45I         .         .         .         .         .         .  S      .         .         .         .         .         .
301330  46I         .         .         .         .         .         .  S      .         .         .         .         .         .
301332  47I         .         .         .         .         .         .  S      .         .         .         .         .         .
301334  48I         .         .         .         .         .         .  S      .         .         .         .         .         .
301336  49I         .         .         .         .         .         .  S      .         .         .         .         .         .
301338  50I         .         .         .         .         .         .  S      .         .         .         .         .         .
301340  51I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
301342  52I         .         .         .         .         .         .  S      .         .         .         .         .         .
301344  53I         .         .         .         .         .         .  S      .         .         .         .         .         .
301346  54I         .         .         .         .         .         .  S      .         .         .         .         .         .
301348  55I         .         .         .         .         .         .  S      .         .         .         .         .         .
301350  56I         .         .         .         .         .         .  S      .         .         .         .         .         .
301352  57I                                                               S
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301356  59I         .         .         .         .         .         .  S      .         .         .         .         .         .
301358  60I         .         .         .         .         .         .  S      .         .         .         .         .         .
301400  61I .............................................................S.........................................................
 01402  62I         .         .         .         .         .         .  S      .         .         .         .         .         .
301404  63I         .         .         .         .         .         .  S      .         .         .         .         .         .
301406  64I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01408  65I         .         .         .         .         .         .  S      .         .         .         .         .         .
301410  66I         .         .         .         .         .         .  S      .         .         .         .         .         .
301412  67I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01414  68I         .         .         .         .         .         .  S      .         .         .         .         .         .
301416  69I         .         .         .         .         .         .  S      .         .         .         .         .         .
301418  70I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01420  71I .............................................................S.........................................................
301422  72I         .         .         .         .         .         .  S      .         .         .         .         .         .
301424  73I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01426  74I         .         .         .         .         .         .  S      .         .         .         .         .         .
301428  75I         .         .         .         .         .         .  S      .         .         .         .         .         .
301430  76I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01432  77I         .         .         .         .         .         .  S      .         .         .         .         .         .
301434  78I         .         .         .         .         .         .  S      .         .         .         .         .         .
301436  79I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01438  80I         .         .         .         .         .         .  S      .         .         .         .         .         .
301440  81I .............................................................S.........................................................
301442  82I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01444  83I         .         .         .         .         .         .  S      .         .         .         .         .         .
301446  84I         .         .         .         .         .         .  S      .         .         .         .         .         .
301448  85I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01450  86I         .         .         .         .         .         .  S      .         .         .         .         .         .
301452  87I         .         .         .         .         .         .  S      .         .         .         .         .         .
301454  88I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01456  89I         .         .         .         .         .         .  S      .         .         .         .         .         .
301458  90I         .         .         .         .         .         .  S      .         .         .         .         .         .
301500  91I .............................................................S.........................................................
 01502  92I         .         .         .         .         .         .  S      .         .         .         .         .         .
301504  93I         .         .         .         .         .         .  S      .         .         .         .         .         .
301506  94I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01508  95I         .         .         .         .         .         .  S      .         .         .         .         .         .
301510  96I         .         .         .         .         .         .  S      .         .         .         .         .         .
301512  97I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01514  98I         .         .         .         .         .         .  S      .         .         .         .         .         .
301516  99I         .         .         .         .         .         .  S      .         .         .         .         .         .
301518 100I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01520 101I .............................................................S.........................................................
301522 102I         .         .         .         .         .         .  S      .         .         .         .         .         .
301524 103I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01526 104I         .         .         .         .         .         .  S      .         .         .         .         .         .
301528 105I         .         .         .         .         .         .  S      .         .         .         .         .         .
301530 106I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01532 107I         .         .         .         .         .         .  S      .         .         .         .         .         .
301534 108I         .         .         .         .         .         .  S      .         .         .         .         .         .
301536 109I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01538 110I         .         .         .         .         .         .  S      .         .         .         .         .         .
301540 111I .............................................................S.........................................................
301542 112I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01544 113I         .         .         .         .         .         .  S      .         .         .         .         .         .
301546 114I         .         .         .         .         .         .  S      .         .         .         .         .         .
301548 115I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01550 116I         .         .         .         .         .         .  S      .         .         .         .         .         .
301552 117I         .         .         .         .         .         .  S      .         .         .         .         .         .
301554 118I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01556 119I         .         .         .         .         .         .  S      .         .         .         .         .         .
301558 120I         .         .         .         .         .         .  S      .         .         .         .         .         .
301600 121I .............................................................S.........................................................
 01602 122I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01604 123I                                                              S
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 01608 125I         .         .         .         .         .         .  S      .         .         .         .         .         .
301610 126I         .         .         .         .         .         .  S      .         .         .         .         .         .
301612 127I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01614 128I         .         .         .         .         .         .  S      .         .         .         .         .         .
301616 129I         .         .         .         .         .         .  S      .         .         .         .         .         .
301618 130I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01620 131I..............................................................S.........................................................
301622 132I         .         .         .         .         .         .  S      .         .         .         .         .         .
301624 133I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01626 134I         .         .         .         .         .         .  S      .         .         .         .         .         .
301628 135I         .         .         .         .         .         .  S      .         .         .         .         .         .
301630 136I         .         .         .         .         .         .  S      .         .         .         .         .         .
 01632 137I         .         .         .         .         .         .  S      .         .         .         .         .         .
301634 1380I        .         .         .         .         .         .  S      .         .         .         .         .         .
301636 1390I        .         .         .         .         .         .  S      .         .         .         .         .         .
 01638 1400I        .         .         .         .         .         .  S      .         .         .         .         .         .
301640 1410I.............................................................S.........................................................
301642 1420I        .         .         .         .         .         .  S      .         .         .         .         .         .
 01644 1430I        .         .         .         .         .         .  S      .         .         .         .         .         .
301646 1440 I       .         .         .         .         .         .  S      .         .         .         .         .         .
301648 1450 I       .         .         .         .         .         .  S      .         .         .         .         .         .
 01650 1460 I       .         .         .         .         .         .  S      .         .         .         .         .         .
301652 1470 I       .         .         .         .         .         .  S      .         .         .         .         .         .
301654 1480  I      .         .         .         .         .         .  S      .         .         .         .         .         .
 01656 149.0 I      .         .         .         .         .         .  S      .         .         .         .         .         .
301658 150.0  I     .         .         .         .         .         .  S      .         .         .         .         .         .
301700 151.0. I...........................................................S........................................................
 01702 152.0   I    .         .         .         .         .         .   S     .         .         .         .         .         .
301704 153.0    I   .         .         .         .         .         .   S     .         .         .         .         .         .
301706 154.0      I .         .         .         .         .         .   S     .         .         .         .         .         .
 01708 155.0       I.         .         .         .         .         .   S     .         .         .         .         .         .
301710 156. 0       .I        .         .         .         .         .   S     .         .         .         .         .         .
301712 157. 0       .  I      .         .         .         .         .   S     .         .         .         .         .         .
 01714 158. 0       .     I   .         .         .         .         .   S     .         .         .         .         .         .
301716 159.  0      .        I.         .         .         .         .   S     .         .         .         .         .         .
301718 160.  0      .         .  I      .         .         .         .   S     .         .         .         .         .         .
 01720 161. .0.....................I.......................................S.......................................................
301722 162.   0     .         .        I.         .         .         .    S    .         .         .         .         .         .
301724 163.   0     .         .         .  I      .         .         .    S    .         .         .         .         .         .
 01726 164.   0     .         .         .     I   .         .         .     S   .         .         .         .         .         .
301728 165.    0    .         .         .         I         .         .     S   .         .         .         .         .         .
301730 166.    0    .         .         .         .   I     .         .     S   .         .         .         .         .         .
 01732 167.    0    .         .         .         .      I  .         .      S  .         .         .         .         .         .
301734 168.     0   .         .         .         .         I         .      S  .         .         .         .         .         .
301736 169.     0   .         .         .         .         .  I      .       S .         .         .         .         .         .
 01738 170.     0   .         .         .         .         .    I    .       S .         .         .         .         .         .
301740 171.......0.................................................I...........S...................................................
301742 172.      0  .         .         .         .         .        I.        S.         .         .         .         .         .
 01744 173.         .0        .         .         .         .         I         S         .         .         .         .         .
301746 174.         .0        .         .         .         .         .I        S         .         .         .         .         .
301748 175.         .0        .         .         .         .         .I        .S        .         .         .         .         .
 01750 176.         .0        .         .         .         .         . I       . S       .         .         .         .         .
301752 177.         .0        .         .         .         .         . I       . S       .         .         .         .         .
301754 178.         .0        .         .         .         .         .I        .  S      .         .         .         .         .
 01756 179.         .0        .         .         .         .         .I        .  S      .         .         .         .         .
301758 180.         .0        .         .         .         .         I         .   S     .         .         .         .         .
301800 181...........0...............................................I..............S..............................................
 01802 182.         . 0       .         .         .         .      I  .         .    S    .         .         .         .         .
301804 183.         . 0       .         .         .         .     I   .         .    S    .         .         .         .         .
301806 184.         . 0       .         .         .         .   I     .         .     S   .         .         .         .         .
 01808 185.         . 0       .         .         .         .  I      .         .     S   .         .         .         .         .
301810 186.         . 0       .         .         .         .I        .         .      S  .         .         .         .         .
301812 187.         . 0       .         .         .        I.         .         .      S  .         .         .         .         .
 01814 188.         . 0       .         .         .      I  .         .         .       S .         .         .         .         .
301816 189.           0                                 I                                S
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 01820 191. . . . . . 0 . . . . . . . . . . . . . . I . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
301822 192.         . 0       .         .         .I        .         .         .        S.         .         .         .         .
301824 193.         . 0       .         .        I.         .         .         .        S.         .         .         .         .
 01826 194.         . 0       .         .       I .         .         .         .         S         .         .         .         .
301828 195.         . 0       .         .     I   .         .         .         .         S         .         .         .         .
301830 196.         . 0       .         .    I    .         .         .         .         S         .         .         .         .
 01832 197.         . 0       .         .   I     .         .         .         .         S         .         .         .         .
301834 198.         . 0       .         .  I      .         .         .         .         .S        .         .         .         .
301836 199.         . 0       .         .I        .         .         .         .         .S        .         .         .         .
 01838 200.         . 0       .         I         .         .         .         .         .S        .         .         .         .
301840 201. . . . . . 0 . . . . . . . .I. . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
301842 202.         . 0       .       I .         .         .         .         .         .S        .         .         .         .
 01844 203.         . 0       .      I  .         .         .         .         .         . S       .         .         .         .
301846 204.         . 0       .     I   .         .         .         .         .         . S       .         .         .         .
301848 205.         . 0       .    I    .         .         .         .         .         . S       .         .         .         .
 01850 206.         . 0       .    I    .         .         .         .         .         . S       .         .         .         .
301852 207.         . 0       .   I     .         .         .         .         .         . S       .         .         .         .
301854 208.         . 0       .  I      .         .         .         .         .         . S       .         .         .         .
 01856 209.         . 0       . I       .         .         .         .         .         . S       .         .         .         .
301858 210.         . 0       . I       .         .         .         .         .         . S       .         .         .         .
301900 211. . . . . . 0 . . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . .
 01902 212.         . 0       I         .         .         .         .         .         .  S      .         .         .         .
301904 213.         . 0      I.         .         .         .         .         .         .  S      .         .         .         .
301906 214.         . 0      I.         .         .         .         .         .         .  S      .         .         .         .
 01908 215.         . 0     I .         .         .         .         .         .         .  S      .         .         .         .
301910 216.         . 0     I .         .         .         .         .         .         .  S      .         .         .         .
301912 217.         . 0    I  .         .         .         .         .         .         .  S      .         .         .         .
 01914 218.         . 0    I  .         .         .         .         .         .         .  S      .         .         .         .
301916 219.         . 0   I   .         .         .         .         .         .         .  S      .         .         .         .
301918 220.         . 0   I   .         .         .         .         .         .         .  S      .         .         .         .
 01920 221. . . . . . 0 .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . .
301922 222.         . 0  I    .         .         .         .         .         .         .  S      .         .         .         .
301924 223.         . 0 I     .         .         .         .         .         .         .  S      .         .         .         .
  1926 224.         . 0 I     .         .         .         .         .         .         .  S      .         .         .         .
301928 225.         . 0I      .         .         .         .         .         .         .  S      .         .         .         .
301930 226.         . 0I      .         .         .         .         .         .         .  S      .         .         .         .
  1932 227.         . 0I      .         .         .         .         .         .         .  S      .         .         .         .
301934 228.         . I       .         .         .         .         .         .         .  S      .         .         .         .
301936 229.         . I       .         .         .         .         .         .         .  S      .         .         .         .
  1938 230.         . I       .         .         .         .         .         .         .  S      .         .         .         .
301940 231. . . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . .
301942 232.         .I0       .         .         .         .         .         .         .  S      .         .         .         .
  1944 233.         .I0       .         .         .         .         .         .         .  S      .         .         .         .
301946 234.         .I0       .         .         .         .         .         .         .  S      .         .         .         .
301948 235.         .I0       .         .         .         .         .         .         .  S      .         .         .         .
  1950 236.         I 0       .         .         .         .         .         .         .  S      .         .         .         .
301952 237.         I 0       .         .         .         .         .         .         .  S      .         .         .         .
301954 238.         I 0       .         .         .         .         .         .         .  S      .         .         .         .
  1956 239.         I 0       .         .         .         .         .         .         .  S      .         .         .         .
301958 240.        I. 0       .         .         .         .         .         .         .  S      .         .         .         .
302000 241. . . . I. 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . .
  2002 242.        I. 0       .         .         .         .         .         .         .  S      .         .         .         .
302004 243.        I. 0       .         .         .         .         .         .         .  S      .         .         .         .
302006 244.        I. 0       .         .         .         .         .         .         .  S      .         .         .         .
  2008 245.        I. 0       .         .         .         .         .         .         .  S      .         .         .         .
302010 246.        I. 0       .         .         .         .         .         .         .  S      .         .         .         .
302012 247.       I . 0       .         .         .         .         .         .         .  S      .         .         .         .
  2014 248.       I . 0       .         .         .         .         .         .         .  S      .         .         .         .
302016 249.       I . 0       .         .         .         .         .         .         .  S      .         .         .         .
302018 250.       I . 0       .         .         .         .         .         .         .  S      .         .         .         .
  2020 251. . . I . 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . .
302022 252.       I . 0       .         .         .         .         .         .         .  S      .         .         .         .
302024 253.       I . 0       .         .         .         .         .         .         .  S      .         .         .         .
  2026 254.      I  . 0       .         .         .         .         .         .         .  S      .         .         .         .
  2028 255.      I    0                                                                      S
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 02032 257.      I  . 0       .         .         .         .         .         .         . S       .         .         .         .
302034 258.      I  . 0       .         .         .         .         .         .         . S       .         .         .         .
302036 259.      I  . 0       .         .         .         .         .         .         . S       .         .         .         .
 02038 260.      I  . 0       .         .         .         .         .         .         . S       .         .         .         .
302040 261. . . .I. . 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . .
302042 262.      I  . 0       .         .         .         .         .         .         . S       .         .         .         .
 02044 263.      I  . 0       .         .         .         .         .         .         . S       .         .         .         .
302046 264.     I   . 0       .         .         .         .         .         .         . S       .         .         .         .
302048 265.     I   . 0       .         .         .         .         .         .         . S       .         .         .         .
 02050 266.     I   . 0       .         .         .         .         .         .         . S       .         .         .         .
302052 267.     I   . 0       .         .         .         .         .         .         . S       .         .         .         .
302054 268.     I   . 0       .         .         .         .         .         .         . S       .         .         .         .
 02056 269.     I   . 0       .         .         .         .         .         .         . S       .         .         .         .
302058 270.     I   . 0       .         .         .         .         .         .         . S       .         .         .         .
302100 271. . . I . . 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . .
 02102 272.     I   . 0       .         .         .         .         .         .         . S       .         .         .         .
302104 273.     I   . 0       .         .         .         .         .         .         .S        .         .         .         .
302106 274.     I   . 0       .         .         .         .         .         .         .S        .         .         .         .
 02108 275.     I   . 0       .         .         .         .         .         .         .S        .         .         .         .
302110 276.     I   . 0       .         .         .         .         .         .         .S        .         .         .         .
302112 277.     I   . 0       .         .         .         .         .         .         .S        .         .         .         .
 02114 278.     I   . 0       .         .         .         .         .         .         .S        .         .         .         .
302116 279.     I   . 0       .         .         .         .         .         .         .S        .         .         .         .
302118 280.    I    . 0       .         .         .         .         .         .         .S        .         .         .         .
 02120 281. . .I. . . 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
302122 282.    I    . 0       .         .         .         .         .         .         .S        .         .         .         .
302124 283.    I    . 0       .         .         .         .         .         .         .S        .         .         .         .
 02126 284.    I    . 0       .         .         .         .         .         .         .S        .         .         .         .
302128 285.    I    . 0       .         .         .         .         .         .         .S        .         .         .         .
302130 286.    I    . 0       .         .         .         .         .         .         .S        .         .         .         .
 02132 287.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
302134 288.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
302136 289.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
 02138 290.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
302140 291. . .I. . . 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . .
302142 292.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
 02144 293.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
302146 294.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
302148 295.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
 02150 296.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
302152 297.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
302154 298.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
 02156 299.    I    . 0       .         .         .         .         .         .         S         .         .         .         .
302158 300.----I----.-0-------.---------.---------.---------.---------.---------.---------.--------S.---------.---------.---------.---------.
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          *            *
 36 KK    *      P1A   *
          *            *
          **************

 38 KO         OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          1  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS


               HYDROGRAPH ROUTING DATA

 39 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                         L       655.  CHANNEL LENGTH
                         S      .0067  SLOPE
                         N       .015  CHANNEL ROUGHNESS COEFFICIENT
                        CA        .00  CONTRIBUTING AREA
                     SHAPE       CIRC  CHANNEL SHAPE
                        WD       2.00  BOTTOM WIDTH OR DIAMETER
                         Z        .00  SIDE SLOPE

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

                         MAIN      4.92      1.25       2.00    218.33       .48    458.00       .15       3.37


                                             INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                         MAIN      4.92      1.25       2.00                 .48    458.00       .15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1779E+00 EXCESS= .0000E+00 OUTFLOW= .1756E+00 BASIN STORAGE= .2313E-02 PERCENT ERROR=    .0


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

                            HYDROGRAPH AT STATION      P1A

 EAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                      6-HR         24-HR         72-HR        9.97-HR
       0.      7.23         (CFS)          0.            0.            0.            0.
                          (INCHES)       .147          .147          .147          .147
                           (AC-FT)         0             0             0             0
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                    CUMULATIVE AREA =      .02 SQ MI



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           *            *
 40 KK     *        C2  *
           *            *
           **************

 42 KO         OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          1  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS


             SUBBASIN RUNOFF DATA

 43 BA         SUBBASIN CHARACTERISTICS
                     TAREA        .00  SUBBASIN AREA

               PRECIPITATION DATA

 44 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                    STORM AREA =      .00

 45 LS         SCS LOSS RATE
                     STRTL        .08  INITIAL ABSTRACTION
                    CRVNBR      96.00  CURVE NUMBER
                     RTIMP        .00  PERCENT IMPERVIOUS AREA

 46 UD         SCS DIMENSIONLESS UNITGRAPH
                      TLAG       1.00  LAG

                                                                 ***

                                                          UNIT HYDROGRAPH
                                                    152 END-OF-PERIOD ORDINATES
               0.         0.         0.         0.         0.         0.         0.         0.         0.         1.
               1.         1.         1.         1.         1.         1.         1.         1.         2.         2.
               2.         2.         2.         2.         2.         2.         2.         2.         2.         2.
               2.         2.         2.         2.         2.         2.         2.         2.         2.         2.
               2.         2.         2.         2.         2.         2.         1.         1.         1.         1.
               1.         1.         1.         1.         1.         1.         1.         1.         1.         1.
               1.         1.         1.         1.         1.         1.         0.         0.         0.         0.
               0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
               0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
               0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
               0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
               0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
               0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
               0.         0          0          0          0          0          0          0          0          0
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               0.       0.

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

                         HYDROGRAPH AT STATION       C2

   TOTAL RAINFALL =     .61, TOTAL LOSS =     .32, TOTAL EXCESS =     .30

 PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                    6-HR        24-HR        72-HR       9.97-HR
      0.       6.10       (CFS)          0.           0.           0.            0.
                       (INCHES)        .281         .281         .281          .281
                         (AC-FT)         0.           0.           0.            0.

                        CUMULATIVE AREA =     .00 SQ MI



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


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           *            *
  47 KK    *       C2   *
           *            *
           **************

  49 KO         OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          1  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS


  50 HC         HYDROGRAPH COMBINATION
                     ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

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

                         HYDROGRAPH AT STATION       C2

  EAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                    6-HR        24-HR        72-HR       9.97-HR
      1.       6.13       (CFS)          1.           0.           0.            0.
                       (INCHES)        .171         .171         .171          .171
                         (AC-FT)         0.           0.           0.            0.

                        CUMULATIVE AREA =     .03 SQ MI



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           *            *
  51 KK    *      C13   *
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 53 KO           OUTPUT CONTROL VARIABLES
                       IPRNT          3  PRINT CONTROL
                       IPLOT          1  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE
                       IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                        IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       .033  TIME INTERVAL IN HOURS


               SUBBASIN RUNOFF DATA

 54 BA           SUBBASIN CHARACTERISTICS
                       TAREA        .02  SUBBASIN AREA

                 PRECIPITATION DATA

 55 PH                                    DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......    ............... TP-40 ...............    ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
                   .10     .19     .34     .42     .47     .55     .64     .70      .00     .00     .00     .00

                                                     STORM AREA =      .02

 56 LS           SCS LOSS RATE
                       STRTL        .08  INITIAL ABSTRACTION
                      CRVNBR      96.00  CURVE NUMBER
                       RTIMP        .00  PERCENT IMPERVIOUS AREA

 57 UD           SCS DIMENSIONLESS UNITGRAPH
                        TLAG        .72  LAG

                                                                  ***

                                                            UNIT HYDROGRAPH
                                                      110 END-OF-PERIOD ORDINATES
                   0.         0.         1.         1.         2.         2.         3.         4.         4.         5.
                   6.         7.         9.        10.        11.        11.        12.        13.        13.        13.
                  13.        14.        13.        13.        13.        13.        12.        12.        11.        11.
                  10.        10.         9.         9.         8.         7.         7.         6.         6.         5.
                   5.         4.         4.         4.         4.         3.         3.         3.         3.         3.
                   2.         2.         2.         2.         2.         2.         1.         1.         1.         1.
                   1.         1.         1.         1.         1.         1.         1.         1.         1.         1.
                   1.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                   0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                   0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                   0.         0.         0.         0.         0.         0.         0.         0.         0.         0.

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

                         HYDROGRAPH AT STATION       C13

  TOTAL RAINFALL =      .61, TOTAL LOSS =      .32, TOTAL EXCESS =      .30

 EAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
  (CFS)        (HR)                     6-HR        24-HR        72-HR      9.97-HR
      2.       5.80        (CFS)          1.           0.           0.           0.
                         (INCHES)       .286         .286         .286         .286
                          (AC-FT)         0.           0.           0.           0.

                          CUMULATIVE AREA =      .02 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
 58 KK    *       C12  *
          *            *
          **************

 60 KO         OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          1  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS


 61 HC         HYDROGRAPH COMBINATION
                     ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                      ***

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

                       HYDROGRAPH AT STATION      C12

PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                    6-HR         24-HR        72-HR       9.97-HR
     3.       5.83        (CFS)         1.            1.           1.            1.
                        (INCHES)      .221          .221         .221          .221
                         (AC-FT)        1.            1.           1.            1.

                      CUMULATIVE AREA =     .05 SQ MI



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


          **************
          *            *
 62 KK    *       P2A  *
          *            *
          **************

 64 KO         OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          1  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS


             HYDROGRAPH ROUTING DATA

 65 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
```

```
                      S         .0054  SLOPE
                      N          .015  CHANNEL ROUGHNESS COEFFICIENT
                     CA           .00  CONTRIBUTING AREA
                  SHAPE          CIRC  CHANNEL SHAPE
                     WD          3.00  BOTTOM WIDTH OR DIAMETER
                      Z           .00  SIDE SLOPE

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

                  MAIN     4.73     1.25      .97   138.50     3.15    350.03      .22       4.75


                                    INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                  MAIN     4.73     1.25     2.00              3.15    350.00      .22


CONTINUITY SUMMARY (AC-FT) - INFLOW= .5635E+00 EXCESS= .0000E+00 OUTFLOW= .5621E+00 BASIN STORAGE= .1366E-02 PERCENT ERROR=    .0



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

                    HYDROGRAPH AT STATION      P2A

  PEAK FLOW    TIME                       MAXIMUM AVERAGE FLOW
    (CFS)      (HR)                6-HR       24-HR      72-HR      9.97-HR
       3.      5.83       (CFS)      1.          1.         1.           1.
                       (INCHES)    .220        .220       .220         .220
                         (AC-FT)     1.          1.         1.           1.

                      CUMULATIVE AREA =     .05 SQ MI



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


          **************
          *            *
  66 KK   *        E1  *
          *            *
          **************

  68 KO        OUTPUT CONTROL VARIABLES
                    IPRNT          3  PRINT CONTROL
                    IPLOT          1  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE
                    IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                     IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT       .033  TIME INTERVAL IN HOURS


            SUBBASIN RUNOFF DATA

  69 BA        SUBBASIN CHARACTERISTICS
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R5-23

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              PRECIPITATION DATA

 70 PH                               DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
              ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
              5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                .10     .19     .34     .42     .47     .55     .64     .70     .00     .00     .00     .00

                                                  STORM AREA =      .00

 71 LS        SCS LOSS RATE
                    STRTL          .08  INITIAL ABSTRACTION
                   CRVNBR        96.00  CURVE NUMBER
                    RTIMP          .00  PERCENT IMPERVIOUS AREA

 72 UD        SCS DIMENSIONLESS UNITGRAPH
                     TLAG          .15  LAG

                                                                 ***

                                                         UNIT HYDROGRAPH
                                                    24 END-OF-PERIOD ORDINATES
              0.        1.        2.        3.        3.        2.        2.        1.        1.        1.
              1.        0.        0.        0.        0.        0.        0.        0.        0.        0.
              0.        0.        0.        0.

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

                       HYDROGRAPH AT STATION       E1

   TOTAL RAINFALL =      .61, TOTAL LOSS =      .32, TOTAL EXCESS =      .30

 PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                      6-HR        24-HR        72-HR       9.97-HR
        0.     5.13         (CFS)          0.           0.           0.            0.
                          (INCHES)       .295         .296         .296          .296
                           (AC-FT)         0.           0.           0.            0.

                      CUMULATIVE AREA =      .00 SQ MI



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


          **************
          *            *
 73 KK    *        E1  *
          *            *
          **************

 75 KO        OUTPUT CONTROL VARIABLES
                    IPRNT            3  PRINT CONTROL
                    IPLOT            1  PLOT CONTROL
                    QSCAL           0.  HYDROGRAPH PLOT SCALE
                    IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                     IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1            1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2          300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT         .033  TIME INTERVAL IN HOURS

 76 HC        HYDROGRAPH COMBINATION
                    ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE
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R5-24

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                                                                    ***

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

                          HYDROGRAPH AT STATION       E1

  PEAK FLOW      TIME                             MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                     6-HR         24-HR         72-HR       9.97-HR
       3.        5.83         (CFS)         1.            1.            1.            1.
                            (INCHES)      .222          .222          .222          .222
                             (AC-FT)        1.            1.            1.            1.

                           CUMULATIVE AREA =     .05 SQ MI



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


               **************
               *            *
  77 KK        *     RES5   *
               *            *
               **************

  79 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           1  PRINT CONTROL
                       IPLOT           2  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .033  TIME INTERVAL IN HOURS


                 HYDROGRAPH ROUTING DATA

  80 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
                        ITYP        ELEV  TYPE OF INITIAL CONDITION
                      RSVRIC       11.24  INITIAL CONDITION
                           X         .00 WORKING R AND D COEFFICIENT

  81 SV            STORAGE          .0         .1         .2         .3         .5         .8

  82 SE          ELEVATION       12.00      13.00      14.00      15.00      16.00      17.00

  83 SL          LOW-LEVEL OUTLET
                       ELEVL       12.24  ELEVATION AT CENTER OF OUTLET
                       CAREA         .06  CROSS-SECTIONAL AREA
                        COQL         .60  COEFFICIENT
                        EXPL         .50  EXPONENT OF HEAD

  84 SS          SPILLWAY
                        CREL       16.00  SPILLWAY CREST ELEVATION
                       SPWID       12.29  SPILLWAY WIDTH
                        COQW        2.70  WEIR COEFFICIENT
                        EXPW        1.50  EXPONENT OF HEAD

                                                                    ***

                                                    COMPUTED OUTFLOW-ELEVATION DATA
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R5-25

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       ELEVATION     12.00     12.24     12.39     12.43     12.49     12.58     12.74     13.05     13.75     16.00

         OUTFLOW       .62       .86      1.50      2.73      4.77      7.80     12.02     17.64     24.85     33.84
       ELEVATION     16.01     16.04     16.09     16.16     16.25     16.36     16.49     16.64     16.81     17.00


                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

         STORAGE       .02       .03       .04       .04       .04       .05       .06       .07       .07       .14
         OUTFLOW       .00       .00       .12       .13       .15       .18       .21       .26       .27       .37
       ELEVATION     12.00     12.24     12.39     12.43     12.49     12.58     12.74     13.00     13.05     13.75

         STORAGE       .16       .31       .52       .52       .53       .55       .56       .59       .62       .65
         OUTFLOW       .40       .50       .58       .62       .86      1.50      2.73      4.77      7.80     12.02
       ELEVATION     14.00     15.00     16.00     16.01     16.04     16.09     16.16     16.25     16.36     16.49

         STORAGE       .69       .74       .79
         OUTFLOW     17.64     24.85     33.84
       ELEVATION     16.64     16.81     17.00

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


                                            HYDROGRAPH AT STATION     RES5

 ******************************************************************************************************************
                                        *                                        *
 DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE   STAGE
                                        *                                        *
 30 JUN 1200   1      0.       .0    12.0 * 30 JUN 1520 101      0.       .0    12.0 * 30 JUN 1840 201      0.       .3    14.8
 30 JUN 1202   2      0.       .0    12.0 * 30 JUN 1522 102      0.       .0    12.0 * 30 JUN 1842 202      0.       .3    14.8
 30 JUN 1204   3      0.       .0    12.0 * 30 JUN 1524 103      0.       .0    12.0 * 30 JUN 1844 203      0.       .3    14.8
 30 JUN 1206   4      0.       .0    12.0 * 30 JUN 1526 104      0.       .0    12.0 * 30 JUN 1846 204      0.       .3    14.9
 30 JUN 1208   5      0.       .0    12.0 * 30 JUN 1528 105      0.       .0    12.0 * 30 JUN 1848 205      0.       .3    14.9
 30 JUN 1210   6      0.       .0    12.0 * 30 JUN 1530 106      0.       .0    12.0 * 30 JUN 1850 206      0.       .3    14.9
 30 JUN 1212   7      0.       .0    12.0 * 30 JUN 1532 107      0.       .0    12.0 * 30 JUN 1852 207      0.       .3    14.9
 30 JUN 1214   8      0.       .0    12.0 * 30 JUN 1534 108      0.       .0    12.0 * 30 JUN 1854 208      0.       .3    15.0
 30 JUN 1216   9      0.       .0    12.0 * 30 JUN 1536 109      0.       .0    12.0 * 30 JUN 1856 209      0.       .3    15.0
 30 JUN 1218  10      0.       .0    12.0 * 30 JUN 1538 110      0.       .0    12.0 * 30 JUN 1858 210      0.       .3    15.0
 30 JUN 1220  11      0.       .0    12.0 * 30 JUN 1540 111      0.       .0    12.0 * 30 JUN 1900 211      1.       .3    15.0
 30 JUN 1222  12      0.       .0    12.0 * 30 JUN 1542 112      0.       .0    12.0 * 30 JUN 1902 212      1.       .3    15.0
 30 JUN 1224  13      0.       .0    12.0 * 30 JUN 1544 113      0.       .0    12.0 * 30 JUN 1904 213      1.       .3    15.0
 30 JUN 1226  14      0.       .0    12.0 * 30 JUN 1546 114      0.       .0    12.0 * 30 JUN 1906 214      1.       .3    15.0
 30 JUN 1228  15      0.       .0    12.0 * 30 JUN 1548 115      0.       .0    12.0 * 30 JUN 1908 215      1.       .3    15.1
 30 JUN 1230  16      0.       .0    12.0 * 30 JUN 1550 116      0.       .0    12.0 * 30 JUN 1910 216      1.       .3    15.1
 30 JUN 1232  17      0.       .0    12.0 * 30 JUN 1552 117      0.       .0    12.0 * 30 JUN 1912 217      1.       .3    15.1
 30 JUN 1234  18      0.       .0    12.0 * 30 JUN 1554 118      0.       .0    12.0 * 30 JUN 1914 218      1.       .3    15.1
 30 JUN 1236  19      0.       .0    12.0 * 30 JUN 1556 119      0.       .0    12.0 * 30 JUN 1916 219      1.       .3    15.1
 30 JUN 1238  20      0.       .0    12.0 * 30 JUN 1558 120      0.       .0    12.0 * 30 JUN 1918 220      1.       .3    15.1
 30 JUN 1240  21      0.       .0    12.0 * 30 JUN 1600 121      0.       .0    12.0 * 30 JUN 1920 221      1.       .3    15.1
 30 JUN 1242  22      0.       .0    12.0 * 30 JUN 1602 122      0.       .0    12.0 * 30 JUN 1922 222      1.       .3    15.1
 30 JUN 1244  23      0.       .0    12.0 * 30 JUN 1604 123      0.       .0    12.0 * 30 JUN 1924 223      1.       .3    15.1
  0 JUN 1246  24      0.       .0    12.0 * 30 JUN 1606 124      0.       .0    12.0 * 30 JUN 1926 224      1.       .3    15.1
 30 JUN 1248  25      0.       .0    12.0 * 30 JUN 1608 125      0.       .0    12.0 * 30 JUN 1928 225      1.       .3    15.2
 30 JUN 1250  26      0.       .0    12.0 * 30 JUN 1610 126      0.       .0    12.0 * 30 JUN 1930 226      1.       .3    15.2
  0 JUN 1252  27      0.       .0    12.0 * 30 JUN 1612 127      0.       .0    12.0 * 30 JUN 1932 227      1.       .3    15.2
 30 JUN 1254  28      0.       .0    12.0 * 30 JUN 1614 128      0.       .0    12.0 * 30 JUN 1934 228      1.       .4    15.2
 30 JUN 1256  29      0.       .0    12.0 * 30 JUN 1616 129      0.       .0    12.0 * 30 JUN 1936 229      1.       .4    15.2
  0 JUN 1258  30      0.       .0    12.0 * 30 JUN 1618 130      0.       .0    12.0 * 30 JUN 1938 230      1.       .4    15.2
 30 JUN 1300  31      0.       .0    12.0 * 30 JUN 1620 131      0.       .0    12.0 * 30 JUN 1940 231      1.       .4    15.2
 30 JUN 1302  32      0.       .0    12.0 * 30 JUN 1622 132      0.       .0    12.0 * 30 JUN 1942 232      1.       .4    15.2
  0 JUN 1304  33      0.       .0    12.0 * 30 JUN 1624 133      0.       .0    12.0 * 30 JUN 1944 233      1.       .4    15.2
 30 JUN 1306  34      0.       .0    12.0 * 30 JUN 1626 134      0.       .0    12.0 * 30 JUN 1946 234      1.       .4    15.2
 30 JUN 1308  35      0.       .0    12.0 * 30 JUN 1628 135      0.       .0    12.0 * 30 JUN 1948 235      1.       .4    15.2
  0 JUN 1310  36      0.       .0    12.0 * 30 JUN 1630 136      0.       .0    12.0 * 30 JUN 1950 236      1.       .4    15.2
 30 JUN 1312  37      0.       .0    12.0 * 30 JUN 1632 137      0.       .0    12.0 * 30 JUN 1952 237      1.       .4    15.2
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30 JUN 1316  39     0.     .0    12.0 * 30 JUN 1636 139     0.     .0    12.0 * 30 JUN 1956 239     1.     .4    15.3
30 JUN 1318  40     0.     .0    12.0 * 30 JUN 1638 140     0.     .0    12.0 * 30 JUN 1958 240     1.     .4    15.3
30 JUN 1320  41     0.     .0    12.0 * 30 JUN 1640 141     0.     .0    12.0 * 30 JUN 2000 241     1.     .4    15.3
30 JUN 1322  42     0.     .0    12.0 * 30 JUN 1642 142     0.     .0    12.0 * 30 JUN 2002 242     1.     .4    15.3
30 JUN 1324  43     0.     .0    12.0 * 30 JUN 1644 143     0.     .0    12.0 * 30 JUN 2004 243     1.     .4    15.3
30 JUN 1326  44     0.     .0    12.0 * 30 JUN 1646 144     0.     .0    12.0 * 30 JUN 2006 244     1.     .4    15.3
30 JUN 1328  45     0.     .0    12.0 * 30 JUN 1648 145     0.     .0    12.0 * 30 JUN 2008 245     1.     .4    15.3
30 JUN 1330  46     0.     .0    12.0 * 30 JUN 1650 146     0.     .0    12.1 * 30 JUN 2010 246     1.     .4    15.3
30 JUN 1332  47     0.     .0    12.0 * 30 JUN 1652 147     0.     .0    12.1 * 30 JUN 2012 247     1.     .4    15.3
30 JUN 1334  48     0.     .0    12.0 * 30 JUN 1654 148     0.     .0    12.1 * 30 JUN 2014 248     1.     .4    15.3
30 JUN 1336  49     0.     .0    12.0 * 30 JUN 1656 149     0.     .0    12.1 * 30 JUN 2016 249     1.     .4    15.3
30 JUN 1338  50     0.     .0    12.0 * 30 JUN 1658 150     0.     .0    12.1 * 30 JUN 2018 250     1.     .4    15.3
30 JUN 1340  51     0.     .0    12.0 * 30 JUN 1700 151     0.     .0    12.1 * 30 JUN 2020 251     1.     .4    15.3
30 JUN 1342  52     0.     .0    12.0 * 30 JUN 1702 152     0.     .0    12.1 * 30 JUN 2022 252     1.     .4    15.3
30 JUN 1344  53     0.     .0    12.0 * 30 JUN 1704 153     0.     .0    12.2 * 30 JUN 2024 253     1.     .4    15.3
30 JUN 1346  54     0.     .0    12.0 * 30 JUN 1706 154     0.     .0    12.2 * 30 JUN 2026 254     1.     .4    15.3
30 JUN 1348  55     0.     .0    12.0 * 30 JUN 1708 155     0.     .0    12.2 * 30 JUN 2028 255     1.     .4    15.3
30 JUN 1350  56     0.     .0    12.0 * 30 JUN 1710 156     0.     .0    12.3 * 30 JUN 2030 256     1.     .4    15.3
30 JUN 1352  57     0.     .0    12.0 * 30 JUN 1712 157     0.     .0    12.3 * 30 JUN 2032 257     1.     .4    15.3
30 JUN 1354  58     0.     .0    12.0 * 30 JUN 1714 158     0.     .0    12.4 * 30 JUN 2034 258     1.     .4    15.3
30 JUN 1356  59     0.     .0    12.0 * 30 JUN 1716 159     0.     .0    12.4 * 30 JUN 2036 259     1.     .4    15.3
30 JUN 1358  60     0.     .0    12.0 * 30 JUN 1718 160     0.     .0    12.5 * 30 JUN 2038 260     1.     .4    15.4
30 JUN 1400  61     0.     .0    12.0 * 30 JUN 1720 161     0.     .0    12.5 * 30 JUN 2040 261     1.     .4    15.4
30 JUN 1402  62     0.     .0    12.0 * 30 JUN 1722 162     0.     .0    12.6 * 30 JUN 2042 262     1.     .4    15.4
30 JUN 1404  63     0.     .0    12.0 * 30 JUN 1724 163     0.     .1    12.7 * 30 JUN 2044 263     1.     .4    15.4
30 JUN 1406  64     0.     .0    12.0 * 30 JUN 1726 164     0.     .1    12.8 * 30 JUN 2046 264     1.     .4    15.4
30 JUN 1408  65     0.     .0    12.0 * 30 JUN 1728 165     0.     .1    12.9 * 30 JUN 2048 265     1.     .4    15.4
30 JUN 1410  66     0.     .0    12.0 * 30 JUN 1730 166     0.     .1    13.0 * 30 JUN 2050 266     1.     .4    15.4
30 JUN 1412  67     0.     .0    12.0 * 30 JUN 1732 167     0.     .1    13.0 * 30 JUN 2052 267     1.     .4    15.4
30 JUN 1414  68     0.     .0    12.0 * 30 JUN 1734 168     0.     .1    13.1 * 30 JUN 2054 268     1.     .4    15.4
30 JUN 1416  69     0.     .0    12.0 * 30 JUN 1736 169     0.     .1    13.2 * 30 JUN 2056 269     1.     .4    15.4
30 JUN 1418  70     0.     .0    12.0 * 30 JUN 1738 170     0.     .1    13.2 * 30 JUN 2058 270     1.     .4    15.4
30 JUN 1420  71     0.     .0    12.0 * 30 JUN 1740 171     0.     .1    13.3 * 30 JUN 2100 271     1.     .4    15.4
30 JUN 1422  72     0.     .0    12.0 * 30 JUN 1742 172     0.     .1    13.4 * 30 JUN 2102 272     1.     .4    15.4
30 JUN 1424  73     0.     .0    12.0 * 30 JUN 1744 173     0.     .1    13.5 * 30 JUN 2104 273     1.     .4    15.4
30 JUN 1426  74     0.     .0    12.0 * 30 JUN 1746 174     0.     .1    13.5 * 30 JUN 2106 274     1.     .4    15.4
30 JUN 1428  75     0.     .0    12.0 * 30 JUN 1748 175     0.     .1    13.6 * 30 JUN 2108 275     1.     .4    15.4
30 JUN 1430  76     0.     .0    12.0 * 30 JUN 1750 176     0.     .1    13.7 * 30 JUN 2110 276     1.     .4    15.4
30 JUN 1432  77     0.     .0    12.0 * 30 JUN 1752 177     0.     .1    13.8 * 30 JUN 2112 277     1.     .4    15.4
30 JUN 1434  78     0.     .0    12.0 * 30 JUN 1754 178     0.     .2    13.9 * 30 JUN 2114 278     1.     .4    15.4
30 JUN 1436  79     0.     .0    12.0 * 30 JUN 1756 179     0.     .2    13.9 * 30 JUN 2116 279     1.     .4    15.4
30 JUN 1438  80     0.     .0    12.0 * 30 JUN 1758 180     0.     .2    14.0 * 30 JUN 2118 280     1.     .4    15.4
30 JUN 1440  81     0.     .0    12.0 * 30 JUN 1800 181     0.     .2    14.1 * 30 JUN 2120 281     1.     .4    15.4
30 JUN 1442  82     0.     .0    12.0 * 30 JUN 1802 182     0.     .2    14.1 * 30 JUN 2122 282     1.     .4    15.4
30 JUN 1444  83     0.     .0    12.0 * 30 JUN 1804 183     0.     .2    14.2 * 30 JUN 2124 283     1.     .4    15.4
30 JUN 1446  84     0.     .0    12.0 * 30 JUN 1806 184     0.     .2    14.2 * 30 JUN 2126 284     1.     .4    15.4
30 JUN 1448  85     0.     .0    12.0 * 30 JUN 1808 185     0.     .2    14.3 * 30 JUN 2128 285     1.     .4    15.4
30 JUN 1450  86     0.     .0    12.0 * 30 JUN 1810 186     0.     .2    14.3 * 30 JUN 2130 286     1.     .4    15.4
30 JUN 1452  87     0.     .0    12.0 * 30 JUN 1812 187     0.     .2    14.3 * 30 JUN 2132 287     1.     .4    15.4
30 JUN 1454  88     0.     .0    12.0 * 30 JUN 1814 188     0.     .2    14.4 * 30 JUN 2134 288     1.     .4    15.4
30 JUN 1456  89     0.     .0    12.0 * 30 JUN 1816 189     0.     .2    14.4 * 30 JUN 2136 289     1.     .4    15.4
30 JUN 1458  90     0.     .0    12.0 * 30 JUN 1818 190     0.     .2    14.5 * 30 JUN 2138 290     1.     .4    15.4
30 JUN 1500  91     0.     .0    12.0 * 30 JUN 1820 191     0.     .2    14.5 * 30 JUN 2140 291     1.     .4    15.4
30 JUN 1502  92     0.     .0    12.0 * 30 JUN 1822 192     0.     .2    14.5 * 30 JUN 2142 292     1.     .4    15.4
30 JUN 1504  93     0.     .0    12.0 * 30 JUN 1824 193     0.     .2    14.6 * 30 JUN 2144 293     1.     .4    15.4
30 JUN 1506  94     0.     .0    12.0 * 30 JUN 1826 194     0.     .3    14.6 * 30 JUN 2146 294     1.     .4    15.5
30 JUN 1508  95     0.     .0    12.0 * 30 JUN 1828 195     0.     .3    14.6 * 30 JUN 2148 295     1.     .4    15.5
30 JUN 1510  96     0.     .0    12.0 * 30 JUN 1830 196     0.     .3    14.7 * 30 JUN 2150 296     1.     .4    15.5
30 JUN 1512  97     0.     .0    12.0 * 30 JUN 1832 197     0.     .3    14.7 * 30 JUN 2152 297     1.     .4    15.5
30 JUN 1514  98     0.     .0    12.0 * 30 JUN 1834 198     0.     .3    14.7 * 30 JUN 2154 298     1.     .4    15.5
30 JUN 1516  99     0.     .0    12.0 * 30 JUN 1836 199     0.     .3    14.7 * 30 JUN 2156 299     1.     .4    15.5
30 JUN 1518 100     0.     .0    12.0 * 30 JUN 1838 200     0.     .3    14.8 * 30 JUN 2158 300     1.     .4    15.5
                                     *                                       *
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  (CFS)       (HR)                    6-HR       24-HR       72-HR      9.97-HR
     1.       9.80       (CFS)          0.          0.          0.           0.
                       (INCHES)       .071        .071        .071         .071
                        (AC-FT)         0.          0.          0.           0.

PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                   6-HR       24-HR       72-HR      9.97-HR
       0.      9.93                     0.          0.          0.           0.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
   (FEET)      (HR)                   6-HR       24-HR       72-HR      9.97-HR
    15.46      9.97                  14.24       13.35       13.35        13.35

                        CUMULATIVE AREA =      .05 SQ MI
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                                               STATION     RES5

                    (I) INFLOW,   (O) OUTFLOW
         .0        .4        .8       1.2       1.6       2.0       2.4       2.8       3.2        .0        .0        .0        .0
                                                                                   (S) STORAGE
         .0        .0        .0        .0        .0        .0        .0        .1        .2        .3        .4        .5        .0
DAHRMN PER
301200   1I---------.---------.---------.---------.---------.---------.-S-------.---------.---------.---------.---------.---------.
 01202   2I         .         .         .         .         .         . S       .         .         .         .         .         .
301204   3I         .         .         .         .         .         . S       .         .         .         .         .         .
301206   4I         .         .         .         .         .         . S       .         .         .         .         .         .
 01208   5I         .         .         .         .         .         . S       .         .         .         .         .         .
301210   6I         .         .         .         .         .         . S       .         .         .         .         .         .
301212   7I         .         .         .         .         .         . S       .         .         .         .         .         .
 01214   8I         .         .         .         .         .         . S       .         .         .         .         .         .
301216   9I         .         .         .         .         .         . S       .         .         .         .         .         .
301218  10I         .         .         .         .         .         . S       .         .         .         .         .         .
 01220  11I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301222  12I         .         .         .         .         .         . S       .         .         .         .         .         .
301224  13I         .         .         .         .         .         . S       .         .         .         .         .         .
 01226  14I         .         .         .         .         .         . S       .         .         .         .         .         .
301228  15I         .         .         .         .         .         . S       .         .         .         .         .         .
301230  16I         .         .         .         .         .         . S       .         .         .         .         .         .
 01232  17I         .         .         .         .         .         . S       .         .         .         .         .         .
301234  18I         .         .         .         .         .         . S       .         .         .         .         .         .
301236  19I         .         .         .         .         .         . S       .         .         .         .         .         .
 01238  20I         .         .         .         .         .         . S       .         .         .         .         .         .
301240  21I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301242  22I         .         .         .         .         .         . S       .         .         .         .         .         .
 01244  23I         .         .         .         .         .         . S       .         .         .         .         .         .
301246  24I         .         .         .         .         .         . S       .         .         .         .         .         .
301248  25I         .         .         .         .         .         . S       .         .         .         .         .         .
 01250  26I         .         .         .         .         .         . S       .         .         .         .         .         .
301252  27I         .         .         .         .         .         . S       .         .         .         .         .         .
301254  28I         .         .         .         .         .         . S       .         .         .         .         .         .
 01256  29I         .         .         .         .         .         . S       .         .         .         .         .         .
301258  30I         .         .         .         .         .         . S       .         .         .         .         .         .
301300  31I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1302  32I         .         .         .         .         .         . S       .         .         .         .         .         .
301304  33I         .         .         .         .         .         . S       .         .         .         .         .         .
301306  34I         .         .         .         .         .         . S       .         .         .         .         .         .
  1308  35I         .         .         .         .         .         . S       .         .         .         .         .         .
301310  36I         .         .         .         .         .         . S       .         .         .         .         .         .
301312  37I         .         .         .         .         .         . S       .         .         .         .         .         .
  1314  38I         .         .         .         .         .         . S       .         .         .         .         .         .
301316  39I         .         .         .         .         .         . S       .         .         .         .         .         .
301318  40I         .         .         .         .         .         . S       .         .         .         .         .         .
  1320  41I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301322  42I         .         .         .         .         .         . S       .         .         .         .         .         .
301324  43I         .         .         .         .         .         . S       .         .         .         .         .         .
  1326  44I         .         .         .         .         .         . S       .         .         .         .         .         .
301328  45I         .         .         .         .         .         . S       .         .         .         .         .         .
301330  46I         .         .         .         .         .         . S       .         .         .         .         .         .
  1332  47I         .         .         .         .         .         . S       .         .         .         .         .         .
301334  48I         .         .         .         .         .         . S       .         .         .         .         .         .
301336  49I         .         .         .         .         .         . S       .         .         .         .         .         .
  1338  50I         .         .         .         .         .         . S       .         .         .         .         .         .
301340  51I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301342  52I         .         .         .         .         .         . S       .         .         .         .         .         .
  1344  53I         .         .         .         .         .         . S       .         .         .         .         .         .
301346  54I         .         .         .         .         .         . S       .         .         .         .         .         .
301348  55I         .         .         .         .         .         . S       .         .         .         .         .         .
  1350  56I         .         .         .         .         .         . S       .         .         .         .         .         .
 01352  57I                                                               S
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301356  59I         .         .         .         .         .        .S         .         .         .         .         .         .
301358  60I         .         .         .         .         .        .S         .         .         .         .         .         .
301400  61I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301402  62I         .         .         .         .         .        .S         .         .         .         .         .         .
301404  63I         .         .         .         .         .        .S         .         .         .         .         .         .
301406  64I         .         .         .         .         .        .S         .         .         .         .         .         .
301408  65I         .         .         .         .         .        .S         .         .         .         .         .         .
301410  66I         .         .         .         .         .        .S         .         .         .         .         .         .
301412  67I         .         .         .         .         .        .S         .         .         .         .         .         .
301414  68I         .         .         .         .         .        .S         .         .         .         .         .         .
301416  69I         .         .         .         .         .        .S         .         .         .         .         .         .
301418  70I         .         .         .         .         .        .S         .         .         .         .         .         .
301420  71I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301422  72I         .         .         .         .         .        .S         .         .         .         .         .         .
301424  73I         .         .         .         .         .        .S         .         .         .         .         .         .
301426  74I         .         .         .         .         .        .S         .         .         .         .         .         .
301428  75I         .         .         .         .         .        .S         .         .         .         .         .         .
301430  76I         .         .         .         .         .        .S         .         .         .         .         .         .
301432  77I         .         .         .         .         .        .S         .         .         .         .         .         .
301434  78I         .         .         .         .         .        .S         .         .         .         .         .         .
301436  79I         .         .         .         .         .        .S         .         .         .         .         .         .
 01438  80I         .         .         .         .         .        .S         .         .         .         .         .         .
301440  81I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301442  82I         .         .         .         .         .        .S         .         .         .         .         .         .
 01444  83I         .         .         .         .         .        .S         .         .         .         .         .         .
301446  84I         .         .         .         .         .        .S         .         .         .         .         .         .
301448  85I         .         .         .         .         .        .S         .         .         .         .         .         .
 01450  86I         .         .         .         .         .        .S         .         .         .         .         .         .
 01452  87I         .         .         .         .         .        .S         .         .         .         .         .         .
301454  88I         .         .         .         .         .        .S         .         .         .         .         .         .
 01456  89I         .         .         .         .         .        .S         .         .         .         .         .         .
 01458  90I         .         .         .         .         .        .S         .         .         .         .         .         .
301500  91I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 01502  92I         .         .         .         .         .        .S         .         .         .         .         .         .
 01504  93I         .         .         .         .         .        .S         .         .         .         .         .         .
301506  94I         .         .         .         .         .        .S         .         .         .         .         .         .
 01508  95I         .         .         .         .         .        .S         .         .         .         .         .         .
 01510  96I         .         .         .         .         .        .S         .         .         .         .         .         .
301512  97I         .         .         .         .         .        .S         .         .         .         .         .         .
 01514  98I         .         .         .         .         .        .S         .         .         .         .         .         .
 01516  99I         .         .         .         .         .        .S         .         .         .         .         .         .
301518 100I         .         .         .         .         .        .S         .         .         .         .         .         .
 01520 101I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 01522 102I         .         .         .         .         .        .S         .         .         .         .         .         .
301524 103I         .         .         .         .         .        .S         .         .         .         .         .         .
 01526 104I         .         .         .         .         .        .S         .         .         .         .         .         .
 01528 105I         .         .         .         .         .        .S         .         .         .         .         .         .
301530 106I         .         .         .         .         .        .S         .         .         .         .         .         .
 01532 107I         .         .         .         .         .        .S         .         .         .         .         .         .
 01534 108I         .         .         .         .         .        .S         .         .         .         .         .         .
301536 109I         .         .         .         .         .        .S         .         .         .         .         .         .
 01538 110I         .         .         .         .         .        .S         .         .         .         .         .         .
 01540 111I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301542 112I         .         .         .         .         .        .S         .         .         .         .         .         .
 01544 113I         .         .         .         .         .        .S         .         .         .         .         .         .
 01546 114I         .         .         .         .         .        .S         .         .         .         .         .         .
301548 115I         .         .         .         .         .        .S         .         .         .         .         .         .
 01550 116I         .         .         .         .         .        .S         .         .         .         .         .         .
 01552 117I         .         .         .         .         .        .S         .         .         .         .         .         .
301554 118I         .         .         .         .         .        .S         .         .         .         .         .         .
 01556 119I         .         .         .         .         .        .S         .         .         .         .         .         .
 01558 120I         .         .         .         .         .        .S         .         .         .         .         .         .
301600 121I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1602 122I         .         .         .         .         .        .S         .         .         .         .         .         .
  1604 123I         .         .         .         .         .         S
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 01608 125I         .         .         .         .         .         . S       .         .         .         .         .         .
301610 126I         .         .         .         .         .         . S       .         .         .         .         .         .
301612 127I         .         .         .         .         .         . S       .         .         .         .         .         .
 01614 128I         .         .         .         .         .         . S       .         .         .         .         .         .
301616 129I         .         .         .         .         .         . S       .         .         .         .         .         .
301618 130I         .         .         .         .         .         . S       .         .         .         .         .         .
 01620 131I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301622 132I         .         .         .         .         .         . S       .         .         .         .         .         .
301624 1330I        .         .         .         .         .         . S       .         .         .         .         .         .
 01626 1340I        .         .         .         .         .         . S       .         .         .         .         .         .
301628 1350I        .         .         .         .         .         . S       .         .         .         .         .         .
301630 1360I        .         .         .         .         .         . S       .         .         .         .         .         .
 01632 1370I        .         .         .         .         .         . S       .         .         .         .         .         .
301634 1380I        .         .         .         .         .         . S       .         .         .         .         .         .
301636 1390I        .         .         .         .         .         . S       .         .         .         .         .         .
 01638 1400 I       .         .         .         .         .         . S       .         .         .         .         .         .
301640 1410 I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301642 1420 I       .         .         .         .         .         . S       .         .         .         .         .         .
 01644 1430 I       .         .         .         .         .         . S       .         .         .         .         .         .
301646 1440  I      .         .         .         .         .         . S       .         .         .         .         .         .
301648 1450  I      .         .         .         .         .         . S       .         .         .         .         .         .
 01650 1460   I     .         .         .         .         .         . S       .         .         .         .         .         .
301652 1470   I     .         .         .         .         .         . S       .         .         .         .         .         .
301654 1480    I    .         .         .         .         .         . S       .         .         .         .         .         .
 01656 1490     I   .         .         .         .         .         . S       .         .         .         .         .         .
301658 1500      I  .         .         .         .         .         . S       .         .         .         .         .         .
301700 1510 . . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 01702 1520         .I        .         .         .         .         .  S      .         .         .         .         .         .
301704 1530         .  I      .         .         .         .         .  S      .         .         .         .         .         .
301706 1540         .     I   .         .         .         .         .  S      .         .         .         .         .         .
 01708 1550         .        I.         .         .         .         .  S      .         .         .         .         .         .
301710 156.0        .         .I        .         .         .         .  S      .         .         .         .         .         .
301712 157.0        .         .  I      .         .         .         .  S      .         .         .         .         .         .
 01714 158. 0       .         .     I   .         .         .         .   S     .         .         .         .         .         .
301716 159.  0      .         .        I.         .         .         .   S     .         .         .         .         .         .
301718 160.   0     .         .         .  I      .         .         .   S     .         .         .         .         .         .
 01720 161. . 0 . . . . . . . . . . . . . . . .I. . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
301722 162.    0    .         .         .        I.         .         .    S    .         .         .         .         .         .
301724 163.    0    .         .         .         .  I      .         .    S    .         .         .         .         .         .
 01726 164.    0    .         .         .         .      I  .         .     S   .         .         .         .         .         .
301728 165.     0   .         .         .         .         .I        .     S   .         .         .         .         .         .
301730 166.     0   .         .         .         .         .    I    .      S  .         .         .         .         .         .
 01732 167.      0  .         .         .         .         .       I .      S  .         .         .         .         .         .
301734 168.      0  .         .         .         .         .         .I      S .         .         .         .         .         .
301736 169.      0  .         .         .         .         .         .   I    S.         .         .         .         .         .
 01738 170.      0  .         .         .         .         .         .      I S.         .         .         .         .         .
301740 171. . . . 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .IS . . . . . . . . . . . . . . . . . . . . . . . . .
301742 172.       0 .         .         .         .         .         .         .S        .         .         .         .         .
 01744 173.       0 .         .         .         .         .         .         .S I      .         .         .         .         .
301746 174.       0 .         .         .         .         .         .         . S  I    .         .         .         .         .
301748 175.        0.         .         .         .         .         .         .  S    I .         .         .         .         .
 01750 176.        0.         .         .         .         .         .         .  S      I         .         .         .         .
301752 177.        0.         .         .         .         .         .         .   S    I.         .         .         .         .
301754 178.         0         .         .         .         .         .         .    S   I.         .         .         .         .
 01756 179.         0         .         .         .         .         .         .     S I .         .         .         .         .
301758 180.         0         .         .         .         .         .         .      S  .         .         .         .         .
301800 181. . . . . 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . .
 01802 182.         0         .         .         .         .         .         .    I  S .         .         .         .         .
301804 183.         0         .         .         .         .         .         .   I    S.         .         .         .         .
301806 184.         0         .         .         .         .         .         . I      S.         .         .         .         .
 01808 185.         .0        .         .         .         .         .         .I        S         .         .         .         .
301810 186.         .0        .         .         .         .         .        I.         .S        .         .         .         .
301812 187.         .0        .         .         .         .         .      I  .         .S        .         .         .         .
 01814 188.         .0        .         .         .         .         .    I    .         . S       .         .         .         .
301816 189.         .0        .         .         .         .         .   I     .         .  S      .         .         .         .
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 01820 191. . . . . .0. . . . . . . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . S . . . . . . . . . . . . . . . . . .
301822 192.         .0        .         .         .         .        I.         .         .   S     .         .         .         .
301824 193.         .0        .         .         .         .      I  .         .         .    S    .         .         .         .
 01826 194.         .0        .         .         .         .     I   .         .         .    S    .         .         .         .
301828 195.         . 0       .         .         .         .   I     .         .         .     S   .         .         .         .
301830 196.         . 0       .         .         .         .  I      .         .         .     S   .         .         .         .
 01832 197.         . 0       .         .         .         . I       .         .         .      S  .         .         .         .
301834 198.         . 0       .         .         .         I         .         .         .      S  .         .         .         .
301836 199.         . 0       .         .         .        I.         .         .         .      S  .         .         .         .
 01838 200.         . 0       .         .         .       I .         .         .         .       S .         .         .         .
301840 201. . . . . . 0 . . . . . . . . . . . . . . . . .I. . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . .
301842 202.         . 0       .         .         .     I   .         .         .         .        S.         .         .         .
 01844 203.         . 0       .         .         .   I     .         .         .         .        S.         .         .         .
301846 204.         . 0       .         .         .  I      .         .         .         .        S.         .         .         .
301848 205.         . 0       .         .         . I       .         .         .         .         S         .         .         .
 01850 206.         . 0       .         .         .I        .         .         .         .         S         .         .         .
301852 207.         . 0       .         .         I         .         .         .         .         S         .         .         .
301854 208.         . 0       .         .         I         .         .         .         .         .S        .         .         .
 01856 209.         . 0       .         .        I.         .         .         .         .         .S        .         .         .
301858 210.         . 0       .         .       I .         .         .         .         .         .S        .         .         .
301900 211. . . . . . .0. . . . . . . . . . .I. . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . .
 01902 212.         .  0      .         .     I   .         .         .         .         .         . S       .         .         .
 01904 213.         .  0      .         .     I   .         .         .         .         .         . S       .         .         .
301906 214.         .  0      .         .    I    .         .         .         .         .         . S       .         .         .
 01908 215.         .  0      .         .   I     .         .         .         .         .         . S       .         .         .
 01910 216.         .  0      .         .  I      .         .         .         .         .         .  S      .         .         .
301912 217.         .  0      .         .  I      .         .         .         .         .         .  S      .         .         .
 01914 218.         .  0      .         . I       .         .         .         .         .         .  S      .         .         .
 01916 219.         .  0      .         . I       .         .         .         .         .         .  S      .         .         .
301918 220.         .  0      .         .I        .         .         .         .         .         .   S     .         .         .
 01920 221. . . . . . .0. . . . . . . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . .
  1922 222.         .  0      .         I         .         .         .         .         .         .   S     .         .         .
301924 223.         .  0      .         I         .         .         .         .         .         .   S     .         .         .
  1926 224.         .  0      .        I.         .         .         .         .         .         .   S     .         .         .
  1928 225.         .  0      .        I.         .         .         .         .         .         .    S    .         .         .
301930 226.         .  0      .       I .         .         .         .         .         .         .    S    .         .         .
  1932 227.         .  0      .       I .         .         .         .         .         .         .    S    .         .         .
  1934 228.         .  0      .      I  .         .         .         .         .         .         .    S    .         .         .
301936 229.         .  0      .      I  .         .         .         .         .         .         .    S    .         .         .
  1938 230.         .  0      .      I  .         .         .         .         .         .         .    S    .         .         .
  1940 231. . . . . . .0. . . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . .
301942 232.         .  0      .     I   .         .         .         .         .         .         .     S   .         .         .
  1944 233.         .  0      .     I   .         .         .         .         .         .         .     S   .         .         .
  1946 234.         .  0      .    I    .         .         .         .         .         .         .     S   .         .         .
301948 235.         .  0      .    I    .         .         .         .         .         .         .     S   .         .         .
  1950 236.         .  0      .    I    .         .         .         .         .         .         .     S   .         .         .
  1952 237.         .  0      .   I     .         .         .         .         .         .         .     S   .         .         .
301954 238.         .  0      .   I     .         .         .         .         .         .         .     S   .         .         .
  1956 239.         .  0      .   I     .         .         .         .         .         .         .      S  .         .         .
  1958 240.         .  0      .   I     .         .         .         .         .         .         .      S  .         .         .
302000 241. . . . . . .0. . . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . .
  2002 242.         .  0      .  I      .         .         .         .         .         .         .      S  .         .         .
  2004 243.         .  0      .  I      .         .         .         .         .         .         .      S  .         .         .
302006 244.         .  0      .  I      .         .         .         .         .         .         .      S  .         .         .
  2008 245.         .  0      .  I      .         .         .         .         .         .         .      S  .         .         .
  2010 246.         .  0      . I       .         .         .         .         .         .         .      S  .         .         .
302012 247.         .  0      . I       .         .         .         .         .         .         .      S  .         .         .
  2014 248.         .  0      . I       .         .         .         .         .         .         .       S .         .         .
  2016 249.         .  0      . I       .         .         .         .         .         .         .       S .         .         .
302018 250.         .  0      . I       .         .         .         .         .         .         .       S .         .         .
  2020 251. . . . . . .0. . . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . .
  2022 252.         .  0      .I        .         .         .         .         .         .         .       S .         .         .
302024 253.         .  0      .I        .         .         .         .         .         .         .       S .         .         .
  2026 254.         .  0      .I        .         .         .         .         .         .         .       S .         .         .
  2028 255.         .  0      .I        .         .         .         .         .         .         .       S .         .         .
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 02032 257.         .  0      .I        .         .         .         .         .         .         .       S .         .         .
302034 258.         .  0      .I        .         .         .         .         .         .         .       S .         .         .
302036 259.         .  0      I         .         .         .         .         .         .         .        S.         .         .
 02038 260.         .  0      I         .         .         .         .         .         .         .        S.         .         .
302040 261. . . . . .0. . . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . .
302042 262.         .  0      I         .         .         .         .         .         .         .        S.         .         .
 02044 263.         .  0      I         .         .         .         .         .         .         .        S.         .         .
302046 264.         .  0      I         .         .         .         .         .         .         .        S.         .         .
302048 265.         .  0      I         .         .         .         .         .         .         .        S.         .         .
 02050 266.         .  0      I         .         .         .         .         .         .         .        S.         .         .
302052 267.         .  0      I         .         .         .         .         .         .         .        S.         .         .
302054 268.         .  0     I.         .         .         .         .         .         .         .        S.         .         .
 02056 269.         .  0     I.         .         .         .         .         .         .         .        S.         .         .
302058 270.         .  0     I.         .         .         .         .         .         .         .        S.         .         .
302100 271. . . . . .0. . .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . .
 02102 272.         .  0     I.         .         .         .         .         .         .         .        S.         .         .
302104 273.         .  0     I.         .         .         .         .         .         .         .        S.         .         .
302106 274.         .  0     I.         .         .         .         .         .         .         .         S         .         .
 02108 275.         .  0     I.         .         .         .         .         .         .         .         S         .         .
302110 276.         .  0     I.         .         .         .         .         .         .         .         S         .         .
302112 277.         .  0     I.         .         .         .         .         .         .         .         S         .         .
 02114 278.         .  0     I.         .         .         .         .         .         .         .         S         .         .
302116 279.         .  0     I.         .         .         .         .         .         .         .         S         .         .
302118 280.         .  0     I.         .         .         .         .         .         .         .         S         .         .
 02120 281. . . . . .0. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . .
302122 282.         .  0    I .         .         .         .         .         .         .         .         S         .         .
302124 283.         .  0    I .         .         .         .         .         .         .         .         S         .         .
 02126 284.         .  0    I .         .         .         .         .         .         .         .         S         .         .
302128 285.         .  0    I .         .         .         .         .         .         .         .         S         .         .
302130 286.         .  0    I .         .         .         .         .         .         .         .         S         .         .
 02132 287.         .  0    I .         .         .         .         .         .         .         .         S         .         .
302134 288.         .  0    I .         .         .         .         .         .         .         .         S         .         .
302136 289.         .  0    I .         .         .         .         .         .         .         .         S         .         .
 02138 290.         .  0    I .         .         .         .         .         .         .         .         S         .         .
302140 291. . . . . .0. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . .
302142 292.         .  0    I .         .         .         .         .         .         .         .         .S        .         .
 02144 293.         .  0    I .         .         .         .         .         .         .         .         .S        .         .
302146 294.         .  0    I .         .         .         .         .         .         .         .         .S        .         .
302148 295.         .  0    I .         .         .         .         .         .         .         .         .S        .         .
 02150 296.         .  0    I .         .         .         .         .         .         .         .         .S        .         .
302152 297.         .  0    I .         .         .         .         .         .         .         .         .S        .         .
302154 298.         .  0    I .         .         .         .         .         .         .         .         .S        .         .
  2156 299.         .  0    I .         .         .         .         .         .         .         .         .S        .         .
302158 300.---------.--0---I--.---------.---------.---------.---------.---------.---------.---------.---------.S--------.---------.
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                                       RUNOFF SUMMARY
                                FLOW IN CUBIC FEET PER SECOND
                              TIME IN HOURS,  AREA IN SQUARE MILES

                                 PEAK    TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD       BASIN     MAXIMUM     TIME OF
OPERATION        STATION         FLOW     PEAK        6-HOUR      24-HOUR      72-HOUR      AREA      STAGE     MAX STAGE

HYDROGRAPH AT       D123           2.     5.80           1.           0.           0.       .02

ROUTED TO           CH1A           2.     5.83           1.           0.           0.       .02

HYDROGRAPH AT         D4           0.     5.90           0.           0.           0.       .00

2 COMBINED AT         D4           2.     5.83           1.           0.           0.       .02

ROUTED TO           RES4           0.     7.20           0.           0.           0.       .02      20.92        7.60

ROUTED TO            P1A           0.     7.23           0.           0.           0.       .02

HYDROGRAPH AT         C2           0.     6.10           0.           0.           0.       .00

2 COMBINED AT         C2           1.     6.13           1.           0.           0.       .03

HYDROGRAPH AT        C13           2.     5.80           1.           0.           0.       .02

2 COMBINED AT        C12           3.     5.83           1.           1.           1.       .05

ROUTED TO            P2A           3.     5.83           1.           1.           1.       .05

HYDROGRAPH AT         E1           0.     5.13           0.           0.           0.       .00

2 COMBINED AT         E1           3.     5.83           1.           1.           1.       .05

ROUTED TO           RES5           1.     9.80           0.           0.           0.       .05      15.46        9.97
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                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                      (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                     INTERPOLATED TO
                                                                  COMPUTATION INTERVAL
          ISTAQ   ELEMENT      DT       PEAK    TIME TO     VOLUME      DT        PEAK    TIME TO      VOLUME
                                                  PEAK                                      PEAK

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

             CH1A  MANE        2.00      2.11    350.00       .29      2.00      2.11    350.00          .29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2860E+00 EXCESS= .0000E+00 OUTFLOW= .2848E+00 BASIN STORAGE= .1343E-02 PERCENT ERROR=    .0

              P1A  MANE        2.00       .48    458.00       .15      2.00       .48    458.00          .15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1779E+00 EXCESS= .0000E+00 OUTFLOW= .1756E+00 BASIN STORAGE= .2313E-02 PERCENT ERROR=    .0

              P2A  MANE         .97      3.15    350.03       .22      2.00      3.15    350.00          .22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5635E+00 EXCESS= .0000E+00 OUTFLOW= .5621E+00 BASIN STORAGE= .1366E-02 PERCENT ERROR=    .0



*** NORMAL END OF HEC-1 ***
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****************************************                                             ****************************************
*                                      *                                             *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                             *   U.S. ARMY CORPS OF ENGINEERS       *
*           SEPTEMBER 1990             *                                             *   HYDROLOGIC ENGINEERING CENTER      *
*            VERSION 4.0               *                                             *         609 SECOND STREET            *
*                                      *                                             *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE  07/01/1994  TIME  19:21:01 *                                            *          (916) 756-1104              *
*                                      *                                             *                                      *
****************************************                                             ****************************************




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




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

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

DEVELOPED 100 YEAR STORM

SUB-BASINS "C, D and E"

RUN #6

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

    1          ID   GRAND VIEW SUBDIVISION
    2          ID   DEVELOPED CONDITION
    3          ID   100 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)
    4          IT       2 30JUN94    1200     300
    5          IO       5       2       0
               * **********

    6          KK    D123
    7          KM   Basin runoff calculation for    D123
    8          KO       3       1       0       1      21
    9          BA  0.0187
   10          PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
   11          LS              96
   12          UD   0.457
               * **********

   13          KK    CH1A
   14          KM   Muskingum-Cunge channel routing from      CP9 to     CP10
   15          KO       3       1       0       1      21
   16          RD     315  0.0045   0.025          TRAP       2       4
               * **********

   17          KK      D4
   18          KM   Basin runoff calculation for      D4
   19          KO       3       1       0       1      21
   20          BA  0.0036
   21          PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
   22          LS              96
   23          UD   0.484
               * **********

   24          KK      D4
   25          KM   Combining two hydrographs at control point     CP10
   26          KO       3       1       0       1      21
   27          HC       2
               * **********

   28          KK    RES4
   29          KM   Reservoir routing operation
   30          KO       1       2       0       1      21
   31          RS       1    ELEV   17.30
   32          SV  0.0326  0.0994  0.0204  0.3618  0.5767  0.8459  1.0833
   33          SE    18.3    19.3    20.3    21.3    22.3    23.3    24.0
   34          SL    18.3  0.0625     0.6     0.5
   35          SS    23.5   12.29     2.7     1.5
               * **********

   36          KK     P1A
   37          KM   Muskingum-Cunge channel routing from     CP10 to      CP8
   38          KO       3       1       0       1      21
   39          RD     655  0.0067   0.015          CIRC     2.0
               * **********
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R6-2

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


   40          KK      C2
   41          KM   Basin runoff calculation for     C2
   42          KO       3       1       0       1      21
   43          BA  0.0049
   44          PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
   45          LS              96
   46          UD   0.608
               * **********

   47          KK      C2
   48          KM   Combining two hydrographs at control point      CP8
   49          KO       3       1       0       1      21
   50          HC       2
               * **********

   51          KK     C13
   52          KM   Basin runoff calculation for    C13
   53          KO       3       1       0       1      21
   54          BA  0.0206
   55          PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
   56          LS              96
   57          UD   0.472
               * **********

   58          KK     C12
   59          KM   Combining two hydrographs at control point      CP8
   60          KO       3       1       0       1      21
   61          HC       2
               * **********

   62          KK     P2A
   63          KM   Muskingum-Cunge channel routing from      CP8 to     CP11
   64          KO       3       1       0       1      21
   65          RD     277  0.0054   0.015            CIRC     3.0
               * **********

   66          KK      E1
   67          KM   Basin runoff calculation for     E1
   68          KO       3       1       0       1      21
   69          BA  0.0009
   70          PH               0    0.39    0.76    1.34    1.40    1.44    1.56    1.69    2.01
   71          LS              96
   72          UD   0.129
               * **********

   73          KK      E1
   74          KM   Combining two hydrographs at control point     CP11
   75          KO       3       1       0       1      21
   76          HC       2
               * **********
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R6-3

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


  77          KK    RES5
  78          KM   Reservoir routing operation
  79          KO       1       2       0       1      21
  80          RS       1    ELEV   11.24
  81          SV  0.0184  0.0693  0.1631  0.3126  0.5207  0.7889
  82          SE    12.0    13.0    14.0    15.0    16.0    17.0
  83          SL   12.24  0.0625     0.6    0.50
  84          SS    16.0   12.29     2.7     1.5
              * **********
  85          ZZ
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R6-4

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****************************************                                               ****************************************
*                                      *                                               *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                               *    U.S. ARMY CORPS OF ENGINEERS      *
*            SEPTEMBER 1990            *                                               *    HYDROLOGIC ENGINEERING CENTER     *
*             VERSION 4.0              *                                               *          609 SECOND STREET           *
*                                      *                                               *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE  07/01/1994  TIME  19:21:01 *                                              *           (916) 756-1104             *
*                                      *                                               *                                      *
****************************************                                               ****************************************




                              GRAND VIEW SUBDIVISION
                              DEVELOPED CONDITION
                              100 YEAR 24 HOUR STORM (GRAND JUNCTION URBANIZED AREA D-D-F DATA)

   5 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          2  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN          2  MINUTES IN COMPUTATION INTERVAL
                       IDATE    30JUN94  STARTING DATE
                       ITIME       1200  STARTING TIME
                          NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE    30JUN94  ENDING DATE
                      NDTIME       2158  ENDING TIME
                       ICENT         19  CENTURY MARK

                   COMPUTATION INTERVAL     .03 HOURS
                        TOTAL TIME BASE    9.97 HOURS

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


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


              **************
              *            *
   6 KK       *      D123  *
              *            *
              **************

   8 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          3  PRINT CONTROL
                       IPLOT          1  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE
                       IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                        IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       .033  TIME INTERVAL IN HOURS
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R6-5

```
             SUBBASIN RUNOFF DATA

   9 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                PRECIPITATION DATA

  10 PH                           DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .39     .76    1.34    1.40    1.44    1.56    1.69    2.01     .00     .00     .00     .00

                                                   STORM AREA =      .02

  11 LS         SCS LOSS RATE
                      STRTL         .08  INITIAL ABSTRACTION
                     CRVNBR       96.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  12 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .46  LAG

                                                              ***

                                                        UNIT HYDROGRAPH
                                                   71 END-OF-PERIOD ORDINATES
               0.        1.        2.        3.        5.        7.        9.       11.       14.       16.
              17.       18.       19.       19.       19.       19.       18.       17.       16.       15.
              13.       12.       10.        9.        8.        7.        6.        6.        5.        5.
               4.        4.        3.        3.        3.        2.        2.        2.        2.        1.
               1.        1.        1.        1.        1.        1.        1.        1.        1.        0.
               0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
               0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
               0.

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

                     HYDROGRAPH AT STATION      D123

    TOTAL RAINFALL =     1.65, TOTAL LOSS =      .41, TOTAL EXCESS =     1.24

  EAK FLOW       TIME                              MAXIMUM AVERAGE FLOW
   (CFS)         (HR)                     6-HR          24-HR          72-HR        9.97-HR
      16.        5.50         (CFS)          2.             1.             1.             1.
                            (INCHES)      1.229          1.230          1.230          1.230
                             (AC-FT)         1.             1.             1.             1.

                      CUMULATIVE AREA =      .02 SQ MI




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


           **************
           *            *
  13 KK    *     CH1A   *
           *            *
           **************

  15 KO         OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
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R6-6

```
                  IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                   IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                  ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                  ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                 TIMINT       .033  TIME INTERVAL IN HOURS


             HYDROGRAPH ROUTING DATA

 16 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                      L       315.  CHANNEL LENGTH
                      S      .0045  SLOPE
                      N       .025  CHANNEL ROUGHNESS COEFFICIENT
                     CA        .00  CONTRIBUTING AREA
                  SHAPE       TRAP  CHANNEL SHAPE
                     WD       2.00  BOTTOM WIDTH OR DIAMETER
                      Z       4.00  SIDE SLOPE

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


                  MAIN       1.50      1.34       1.70    157.50     16.37    330.76       1.23       3.10


                               INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                  MAIN       1.50      1.34       2.00               16.35    330.00       1.23


CONTINUITY SUMMARY (AC-FT) - INFLOW= .1226E+01 EXCESS= .0000E+00 OUTFLOW= .1225E+01 BASIN STORAGE= .1911E-02 PERCENT ERROR=    .0



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


                   HYDROGRAPH AT STATION     CH1A

 EAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR        24-HR        72-HR       9.97-HR
    16.       5.50       (CFS)        2.           1.           1.           1.
                       (INCHES)    1.227        1.228        1.228        1.228
                        (AC-FT)       1.           1.           1.           1.

                   CUMULATIVE AREA =     .02 SQ MI



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


          **************
          *            *
 17 KK    *      D4    *
          *            *
          **************

 19 KO         OUTPUT CONTROL VARIABLES
                  IPRNT          3  PRINT CONTROL
                  IPLOT          1  PLOT CONTROL
```

R6-7

```
                 IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                  IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                 ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                 ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                TIMINT       .033  TIME INTERVAL IN HOURS


           SUBBASIN RUNOFF DATA

 20 BA        SUBBASIN CHARACTERISTICS
                 TAREA        .00  SUBBASIN AREA

            PRECIPITATION DATA

 21 PH                            DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
            ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
            5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
              .39     .76    1.34    1.40    1.44    1.56    1.69    2.01     .00     .00     .00     .00

                                            STORM AREA =      .00

 22 LS        SCS LOSS RATE
                 STRTL        .08  INITIAL ABSTRACTION
                CRVNBR      96.00  CURVE NUMBER
                 RTIMP        .00  PERCENT IMPERVIOUS AREA

 23 UD        SCS DIMENSIONLESS UNITGRAPH
                  TLAG        .48  LAG

                                                        ***

                                                  UNIT HYDROGRAPH
                                              75 END-OF-PERIOD ORDINATES
            0.        0.        0.        1.        1.        1.        1.        2.        2.        3.
            3.        3.        3.        3.        3.        3.        3.        3.        3.        3.
            3.        2.        2.        2.        2.        2.        1.        1.        1.        1.
            1.        1.        1.        1.        1.        1.        0.        0.        0.        0.
            0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
            0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
            0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
            0.        0.        0.        0.        0.

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

                  HYDROGRAPH AT STATION       D4

  TOTAL RAINFALL =    1.65, TOTAL LOSS =     .41, TOTAL EXCESS =    1.24

EAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR        24-HR        72-HR      9.97-HR
     3.       5.50        (CFS)       0.           0.           0.           0.
                       (INCHES)    1.228        1.229        1.229        1.229
                         (AC-FT)      0.           0.           0.           0.

                 CUMULATIVE AREA =     .00 SQ MI



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


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           *            *
 4 KK      *       D4   *
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R6-8

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

 26 KO          OUTPUT CONTROL VARIABLES
                      IPRNT             3  PRINT CONTROL
                      IPLOT             1  PLOT CONTROL
                      QSCAL            0.  HYDROGRAPH PLOT SCALE
                      IPNCH             1  PUNCH COMPUTED HYDROGRAPH
                       IOUT            21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1             1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2           300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT          .033  TIME INTERVAL IN HOURS


 27 HC          HYDROGRAPH COMBINATION
                      ICOMP             2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                               ***

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

                        HYDROGRAPH AT STATION       D4

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR      9.97-HR
     19.      5.50       (CFS)        3.          2.          2.           2.
                      (INCHES)     1.227       1.228       1.228        1.228
                       (AC-FT)        1.          1.          1.           1.

                       CUMULATIVE AREA =     .02 SQ MI



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


           **************
           *            *
 28 KK     *      RES4  *
           *            *
           **************

 30 KO          OUTPUT CONTROL VARIABLES
                      IPRNT             1  PRINT CONTROL
                      IPLOT             2  PLOT CONTROL
                      QSCAL            0.  HYDROGRAPH PLOT SCALE
                      IPNCH             1  PUNCH COMPUTED HYDROGRAPH
                       IOUT            21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1             1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2           300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT          .033  TIME INTERVAL IN HOURS


              HYDROGRAPH ROUTING DATA

 31 RS          STORAGE ROUTING
                      NSTPS             1  NUMBER OF SUBREACHES
                       ITYP          ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC         17.30  INITIAL CONDITION
                          X           .00 WORKING R AND D COEFFICIENT

 32 SV            STORAGE          .0        .1        .0        .4        .6        .8       1.1

 33 SE          ELEVATION       18.30     19.30     20.30     21.30     22.30     23.30     24.00
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                   ELEVL      18.30  ELEVATION AT CENTER OF OUTLET
                   CAREA        .06  CROSS-SECTIONAL AREA
                    COQL        .60  COEFFICIENT
                    EXPL        .50  EXPONENT OF HEAD

 35 SS        SPILLWAY
                    CREL      23.50  SPILLWAY CREST ELEVATION
                   SPWID      12.29  SPILLWAY WIDTH
                    COQW       2.70  WEIR COEFFICIENT
                    EXPW       1.50  EXPONENT OF HEAD

                                                        ***

                                                COMPUTED OUTFLOW-ELEVATION DATA

           OUTFLOW       .00       .11       .13       .14       .17       .20       .24       .31       .42       .69
         ELEVATION     18.30     18.45     18.48     18.53     18.61     18.73     18.93     19.33     20.28     23.50

           OUTFLOW       .70       .78      1.01      1.45      2.17      3.24      4.74      6.72      9.27     12.45
         ELEVATION     23.51     23.52     23.55     23.58     23.63     23.68     23.75     23.82     23.91     24.00


                                            COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE       .03       .04       .04       .05       .05       .06       .07       .10       .10       .02
           OUTFLOW       .00       .11       .13       .14       .17       .20       .24       .30       .31       .42
         ELEVATION     18.30     18.45     18.48     18.53     18.61     18.73     18.93     19.30     19.33     20.28

           STORAGE       .02       .36       .58       .85       .91       .92       .93       .94       .96       .97
           OUTFLOW       .43       .52       .60       .67       .69       .78      1.01      1.45      2.17      3.24
         ELEVATION     20.30     21.30     22.30     23.30     23.50     23.52     23.55     23.58     23.63     23.68

           STORAGE      1.00      1.02      1.05      1.08
           OUTFLOW      4.74      6.72      9.27     12.45
         ELEVATION     23.75     23.82     23.91     24.00

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

                                                 HYDROGRAPH AT STATION      RES4

*******************************************************************************************************************
                                        *                                       *
DA MON HRMN ORD  OUTFLOW  STORAGE    STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE    STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE    STAGE
                                        *                                       *
30 JUN 1200   1      0.       .0     18.3 * 30 JUN 1520 101      0.       .0     18.3 * 30 JUN 1840 201      2.      1.0     23.6
30 JUN 1202   2      0.       .0     18.3 * 30 JUN 1522 102      0.       .0     18.3 * 30 JUN 1842 202      2.      1.0     23.6
30 JUN 1204   3      0.       .0     18.3 * 30 JUN 1524 103      0.       .0     18.3 * 30 JUN 1844 203      2.      1.0     23.6
30 JUN 1206   4      0.       .0     18.3 * 30 JUN 1526 104      0.       .0     18.3 * 30 JUN 1846 204      2.      1.0     23.6
30 JUN 1208   5      0.       .0     18.3 * 30 JUN 1528 105      0.       .0     18.3 * 30 JUN 1848 205      2.      1.0     23.6
30 JUN 1210   6      0.       .0     18.3 * 30 JUN 1530 106      0.       .0     18.3 * 30 JUN 1850 206      2.       .9     23.6
30 JUN 1212   7      0.       .0     18.3 * 30 JUN 1532 107      0.       .0     18.3 * 30 JUN 1852 207      2.       .9     23.6
30 JUN 1214   8      0.       .0     18.3 * 30 JUN 1534 108      0.       .0     18.3 * 30 JUN 1854 208      2.       .9     23.6
30 JUN 1216   9      0.       .0     18.3 * 30 JUN 1536 109      0.       .0     18.3 * 30 JUN 1856 209      2.       .9     23.6
30 JUN 1218  10      0.       .0     18.3 * 30 JUN 1538 110      0.       .0     18.3 * 30 JUN 1858 210      1.       .9     23.6
30 JUN 1220  11      0.       .0     18.3 * 30 JUN 1540 111      0.       .0     18.3 * 30 JUN 1900 211      1.       .9     23.6
30 JUN 1222  12      0.       .0     18.3 * 30 JUN 1542 112      0.       .0     18.3 * 30 JUN 1902 212      1.       .9     23.6
30 JUN 1224  13      0.       .0     18.3 * 30 JUN 1544 113      0.       .0     18.3 * 30 JUN 1904 213      1.       .9     23.6
30 JUN 1226  14      0.       .0     18.3 * 30 JUN 1546 114      0.       .0     18.3 * 30 JUN 1906 214      1.       .9     23.6
30 JUN 1228  15      0.       .0     18.3 * 30 JUN 1548 115      0.       .0     18.3 * 30 JUN 1908 215      1.       .9     23.6
30 JUN 1230  16      0.       .0     18.3 * 30 JUN 1550 116      0.       .0     18.3 * 30 JUN 1910 216      1.       .9     23.6
30 JUN 1232  17      0.       .0     18.3 * 30 JUN 1552 117      0.       .0     18.3 * 30 JUN 1912 217      1.       .9     23.6
30 JUN 1234  18      0.       .0     18.3 * 30 JUN 1554 118      0.       .0     18.3 * 30 JUN 1914 218      1.       .9     23.6
30 JUN 1236  19      0.       .0     18.3 * 30 JUN 1556 119      0.       .0     18.3 * 30 JUN 1916 219      1.       .9     23.6
30 JUN 1238  20      0.       .0     18.3 * 30 JUN 1558 120      0.       .0     18.3 * 30 JUN 1918 220 [illegible]    .9     23.5
30 JUN 1240  21      0.       .0     18.3 * 30 JUN 1600 121      0.       .0     18.3 * 30 JUN 1920 221      1.       .9     23.5
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30 JUN 1244  23    0.   .0   18.3 * 30 JUN 1604 123    0.   .0   18.3 * 30 JUN 1924 223    1.   .9   23.5
30 JUN 1246  24    0.   .0   18.3 * 30 JUN 1606 124    0.   .0   18.3 * 30 JUN 1926 224    1.   .9   23.5
30 JUN 1248  25    0.   .0   18.3 * 30 JUN 1608 125    0.   .0   18.3 * 30 JUN 1928 225    1.   .9   23.5
30 JUN 1250  26    0.   .0   18.3 * 30 JUN 1610 126    0.   .0   18.3 * 30 JUN 1930 226    1.   .9   23.5
30 JUN 1252  27    0.   .0   18.3 * 30 JUN 1612 127    0.   .0   18.3 * 30 JUN 1932 227    1.   .9   23.5
30 JUN 1254  28    0.   .0   18.3 * 30 JUN 1614 128    0.   .0   18.3 * 30 JUN 1934 228    1.   .9   23.5
30 JUN 1256  29    0.   .0   18.3 * 30 JUN 1616 129    0.   .0   18.3 * 30 JUN 1936 229    1.   .9   23.5
30 JUN 1258  30    0.   .0   18.3 * 30 JUN 1618 130    0.   .0   18.3 * 30 JUN 1938 230    1.   .9   23.5
30 JUN 1300  31    0.   .0   18.3 * 30 JUN 1620 131    0.   .0   18.3 * 30 JUN 1940 231    1.   .9   23.5
30 JUN 1302  32    0.   .0   18.3 * 30 JUN 1622 132    0.   .0   18.3 * 30 JUN 1942 232    1.   .9   23.5
30 JUN 1304  33    0.   .0   18.3 * 30 JUN 1624 133    0.   .0   18.3 * 30 JUN 1944 233    1.   .9   23.5
30 JUN 1306  34    0.   .0   18.3 * 30 JUN 1626 134    0.   .0   18.3 * 30 JUN 1946 234    1.   .9   23.5
30 JUN 1308  35    0.   .0   18.3 * 30 JUN 1628 135    0.   .0   18.3 * 30 JUN 1948 235    1.   .9   23.5
30 JUN 1310  36    0.   .0   18.3 * 30 JUN 1630 136    0.   .0   18.3 * 30 JUN 1950 236    1.   .9   23.5
30 JUN 1312  37    0.   .0   18.3 * 30 JUN 1632 137    0.   .0   18.3 * 30 JUN 1952 237    1.   .9   23.5
30 JUN 1314  38    0.   .0   18.3 * 30 JUN 1634 138    0.   .0   18.4 * 30 JUN 1954 238    1.   .9   23.5
30 JUN 1316  39    0.   .0   18.3 * 30 JUN 1636 139    0.   .0   18.4 * 30 JUN 1956 239    1.   .9   23.5
30 JUN 1318  40    0.   .0   18.3 * 30 JUN 1638 140    0.   .0   18.4 * 30 JUN 1958 240    1.   .9   23.5
30 JUN 1320  41    0.   .0   18.3 * 30 JUN 1640 141    0.   .0   18.4 * 30 JUN 2000 241    1.   .9   23.5
30 JUN 1322  42    0.   .0   18.3 * 30 JUN 1642 142    0.   .0   18.4 * 30 JUN 2002 242    1.   .9   23.5
30 JUN 1324  43    0.   .0   18.3 * 30 JUN 1644 143    0.   .0   18.4 * 30 JUN 2004 243    1.   .9   23.5
30 JUN 1326  44    0.   .0   18.3 * 30 JUN 1646 144    0.   .0   18.4 * 30 JUN 2006 244    1.   .9   23.5
30 JUN 1328  45    0.   .0   18.3 * 30 JUN 1648 145    0.   .0   18.4 * 30 JUN 2008 245    1.   .9   23.5
30 JUN 1330  46    0.   .0   18.3 * 30 JUN 1650 146    0.   .0   18.4 * 30 JUN 2010 246    1.   .9   23.5
30 JUN 1332  47    0.   .0   18.3 * 30 JUN 1652 147    0.   .0   18.5 * 30 JUN 2012 247    1.   .9   23.5
30 JUN 1334  48    0.   .0   18.3 * 30 JUN 1654 148    0.   .0   18.5 * 30 JUN 2014 248    1.   .9   23.5
30 JUN 1336  49    0.   .0   18.3 * 30 JUN 1656 149    0.   .0   18.5 * 30 JUN 2016 249    1.   .9   23.5
30 JUN 1338  50    0.   .0   18.3 * 30 JUN 1658 150    0.   .1   18.6 * 30 JUN 2018 250    1.   .9   23.5
30 JUN 1340  51    0.   .0   18.3 * 30 JUN 1700 151    0.   .1   18.7 * 30 JUN 2020 251    1.   .9   23.5
30 JUN 1342  52    0.   .0   18.3 * 30 JUN 1702 152    0.   .1   18.8 * 30 JUN 2022 252    1.   .9   23.5
30 JUN 1344  53    0.   .0   18.3 * 30 JUN 1704 153    0.   .1   18.9 * 30 JUN 2024 253    1.   .9   23.5
30 JUN 1346  54    0.   .0   18.3 * 30 JUN 1706 154    0.   .1   19.1 * 30 JUN 2026 254    1.   .9   23.5
30 JUN 1348  55    0.   .0   18.3 * 30 JUN 1708 155    0.   .1   20.5 * 30 JUN 2028 255    1.   .9   23.5
30 JUN 1350  56    0.   .0   18.3 * 30 JUN 1710 156    0.   .1   20.6 * 30 JUN 2030 256    1.   .9   23.5
30 JUN 1352  57    0.   .0   18.3 * 30 JUN 1712 157    0.   .1   20.7 * 30 JUN 2032 257    1.   .9   23.5
30 JUN 1354  58    0.   .0   18.3 * 30 JUN 1714 158    0.   .2   20.7 * 30 JUN 2034 258    1.   .9   23.5
30 JUN 1356  59    0.   .0   18.3 * 30 JUN 1716 159    0.   .2   20.8 * 30 JUN 2036 259    1.   .9   23.5
30 JUN 1358  60    0.   .0   18.3 * 30 JUN 1718 160    0.   .2   20.9 * 30 JUN 2038 260    1.   .9   23.5
30 JUN 1400  61    0.   .0   18.3 * 30 JUN 1720 161    0.   .3   21.1 * 30 JUN 2040 261    1.   .9   23.5
 0 JUN 1402  62    0.   .0   18.3 * 30 JUN 1722 162    1.   .3   21.2 * 30 JUN 2042 262    1.   .9   23.5
30 JUN 1404  63    0.   .0   18.3 * 30 JUN 1724 163    1.   .4   21.3 * 30 JUN 2044 263    1.   .9   23.5
30 JUN 1406  64    0.   .0   18.3 * 30 JUN 1726 164    1.   .4   21.6 * 30 JUN 2046 264    1.   .9   23.5
 0 JUN 1408  65    0.   .0   18.3 * 30 JUN 1728 165    1.   .5   21.8 * 30 JUN 2048 265    1.   .9   23.5
30 JUN 1410  66    0.   .0   18.3 * 30 JUN 1730 166    1.   .5   22.0 * 30 JUN 2050 266    1.   .9   23.5
30 JUN 1412  67    0.   .0   18.3 * 30 JUN 1732 167    1.   .6   22.3 * 30 JUN 2052 267    1.   .9   23.5
 0 JUN 1414  68    0.   .0   18.3 * 30 JUN 1734 168    1.   .6   22.5 * 30 JUN 2054 268    1.   .9   23.5
30 JUN 1416  69    0.   .0   18.3 * 30 JUN 1736 169    1.   .7   22.7 * 30 JUN 2056 269    1.   .9   23.4
30 JUN 1418  70    0.   .0   18.3 * 30 JUN 1738 170    1.   .7   22.8 * 30 JUN 2058 270    1.   .9   23.4
 0 JUN 1420  71    0.   .0   18.3 * 30 JUN 1740 171    1.   .8   23.0 * 30 JUN 2100 271    1.   .9   23.4
30 JUN 1422  72    0.   .0   18.3 * 30 JUN 1742 172    1.   .8   23.2 * 30 JUN 2102 272    1.   .9   23.4
30 JUN 1424  73    0.   .0   18.3 * 30 JUN 1744 173    1.   .9   23.3 * 30 JUN 2104 273    1.   .9   23.4
 0 JUN 1426  74    0.   .0   18.3 * 30 JUN 1746 174    1.   .9   23.4 * 30 JUN 2106 274    1.   .9   23.4
30 JUN 1428  75    0.   .0   18.3 * 30 JUN 1748 175    1.   .9   23.5 * 30 JUN 2108 275    1.   .9   23.4
30 JUN 1430  76    0.   .0   18.3 * 30 JUN 1750 176    2.  1.0   23.6 * 30 JUN 2110 276    1.   .9   23.4
 0 JUN 1432  77    0.   .0   18.3 * 30 JUN 1752 177    4.  1.0   23.7 * 30 JUN 2112 277    1.   .9   23.4
30 JUN 1434  78    0.   .0   18.3 * 30 JUN 1754 178    5.  1.0   23.8 * 30 JUN 2114 278    1.   .9   23.4
30 JUN 1436  79    0.   .0   18.3 * 30 JUN 1756 179    6.  1.0   23.8 * 30 JUN 2116 279    1.   .9   23.4
 0 JUN 1438  80    0.   .0   18.3 * 30 JUN 1758 180    7.  1.0   23.8 * 30 JUN 2118 280    1.   .9   23.4
30 JUN 1440  81    0.   .0   18.3 * 30 JUN 1800 181    7.  1.0   23.8 * 30 JUN 2120 281    1.   .9   23.4
30 JUN 1442  82    0.   .0   18.3 * 30 JUN 1802 182    7.  1.0   23.8 * 30 JUN 2122 282    1.   .9   23.4
 0 JUN 1444  83    0.   .0   18.3 * 30 JUN 1804 183    7.  1.0   23.8 * 30 JUN 2124 283    1.   .9   23.4
30 JUN 1446  84    0.   .0   18.3 * 30 JUN 1806 184    7.  1.0   23.8 * 30 JUN 2126 284    1.   .9   23.4
30 JUN 1448  85    0.   .0   18.3 * 30 JUN 1808 185    7.  1.0   23.8 * 30 JUN 2128 285    1.   .9   23.4
 0 JUN 1450  86    0.   .0   18.3 * 30 JUN 1810 186    6.  1.0   23.8 * 30 JUN 2130 286    1.   .9   23.4
 0 JUN 1452  87    0.   .0   18.3 * 30 JUN 1812 187    6.  1.0   23.8 * 30 JUN 2132 287    1.   .9   23.4
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 30 JUN 1456  89       0.        .0     18.3 * 30 JUN 1816 189        5.       1.0     23.8 * 30 JUN 2136 289        1.        .9     23.4
 30 JUN 1458  90       0.        .0     18.3 * 30 JUN 1818 190        5.       1.0     23.8 * 30 JUN 2138 290        1.        .9     23.4
 30 JUN 1500  91       0.        .0     18.3 * 30 JUN 1820 191        5.       1.0     23.7 * 30 JUN 2140 291        1.        .9     23.4
 30 JUN 1502  92       0.        .0     18.3 * 30 JUN 1822 192        4.       1.0     23.7 * 30 JUN 2142 292        1.        .9     23.4
 30 JUN 1504  93       0.        .0     18.3 * 30 JUN 1824 193        4.       1.0     23.7 * 30 JUN 2144 293        1.        .9     23.4
 30 JUN 1506  94       0.        .0     18.3 * 30 JUN 1826 194        4.       1.0     23.7 * 30 JUN 2146 294        1.        .9     23.4
 30 JUN 1508  95       0.        .0     18.3 * 30 JUN 1828 195        4.       1.0     23.7 * 30 JUN 2148 295        1.        .9     23.4
 30 JUN 1510  96       0.        .0     18.3 * 30 JUN 1830 196        3.       1.0     23.7 * 30 JUN 2150 296        1.        .9     23.4
 30 JUN 1512  97       0.        .0     18.3 * 30 JUN 1832 197        3.       1.0     23.7 * 30 JUN 2152 297        1.        .9     23.4
 30 JUN 1514  98       0.        .0     18.3 * 30 JUN 1834 198        3.       1.0     23.7 * 30 JUN 2154 298        1.        .9     23.4
 30 JUN 1516  99       0.        .0     18.3 * 30 JUN 1836 199        3.       1.0     23.7 * 30 JUN 2156 299        1.        .9     23.4
 30 JUN 1518 100       0.        .0     18.3 * 30 JUN 1838 200        3.       1.0     23.6 * 30 JUN 2158 300        1.        .9     23.4
                                           *                                             *
***************************************************************************************************************************************

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                 6-HR         24-HR         72-HR       9.97-HR
      7.       6.03        (CFS)       1.            1.            1.            1.
                        (INCHES)     .526          .526          .526          .526
                         (AC-FT)       1.            1.            1.            1.

EAK STORAGE    TIME                        MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                 6-HR         24-HR         72-HR       9.97-HR
      1.       6.03                    1.            0.            0.            0.

PEAK STAGE     TIME                         MAXIMUM AVERAGE STAGE
  (FEET)       (HR)                 6-HR         24-HR         72-HR       9.97-HR
   23.84       6.03                22.37         20.75         20.75         20.75

                     CUMULATIVE AREA =      .02 SQ MI
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                                                          STATION     RES4

                          (I) INFLOW,   (O) OUTFLOW
          0.        4.        8.       12.       16.       20.        0.        0.        0.        0.        0.        0.        0.
                                                                              (S) STORAGE
          .0        .0        .0        .0        .0        .0        .0        .4        .8       1.2        .0        .0        .0
DAHRMN PER
301200  1I---------.---------.---------.---------.---------.---------.S--------.---------.---------.---------.---------.---------.
 01202  2I         .         .         .         .         .         .S        .         .         .         .         .         .
301204  3I         .         .         .         .         .         .S        .         .         .         .         .         .
301206  4I         .         .         .         .         .         .S        .         .         .         .         .         .
 01208  5I         .         .         .         .         .         .S        .         .         .         .         .         .
301210  6I         .         .         .         .         .         .S        .         .         .         .         .         .
301212  7I         .         .         .         .         .         .S        .         .         .         .         .         .
 01214  8I         .         .         .         .         .         .S        .         .         .         .         .         .
301216  9I         .         .         .         .         .         .S        .         .         .         .         .         .
301218 10I         .         .         .         .         .         .S        .         .         .         .         .         .
 01220 11I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301222 12I         .         .         .         .         .         .S        .         .         .         .         .         .
301224 13I         .         .         .         .         .         .S        .         .         .         .         .         .
 01226 14I         .         .         .         .         .         .S        .         .         .         .         .         .
301228 15I         .         .         .         .         .         .S        .         .         .         .         .         .
301230 16I         .         .         .         .         .         .S        .         .         .         .         .         .
 01232 17I         .         .         .         .         .         .S        .         .         .         .         .         .
301234 18I         .         .         .         .         .         .S        .         .         .         .         .         .
301236 19I         .         .         .         .         .         .S        .         .         .         .         .         .
 01238 20I         .         .         .         .         .         .S        .         .         .         .         .         .
301240 21I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301242 22I         .         .         .         .         .         .S        .         .         .         .         .         .
 01244 23I         .         .         .         .         .         .S        .         .         .         .         .         .
301246 24I         .         .         .         .         .         .S        .         .         .         .         .         .
301248 25I         .         .         .         .         .         .S        .         .         .         .         .         .
 01250 26I         .         .         .         .         .         .S        .         .         .         .         .         .
301252 27I         .         .         .         .         .         .S        .         .         .         .         .         .
301254 28I         .         .         .         .         .         .S        .         .         .         .         .         .
 01256 29I         .         .         .         .         .         .S        .         .         .         .         .         .
301258 30I         .         .         .         .         .         .S        .         .         .         .         .         .
301300 31I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 01302 32I         .         .         .         .         .         .S        .         .         .         .         .         .
301304 33I         .         .         .         .         .         .S        .         .         .         .         .         .
301306 34I         .         .         .         .         .         .S        .         .         .         .         .         .
 01308 35I         .         .         .         .         .         .S        .         .         .         .         .         .
301310 36I         .         .         .         .         .         .S        .         .         .         .         .         .
301312 37I         .         .         .         .         .         .S        .         .         .         .         .         .
 01314 38I         .         .         .         .         .         .S        .         .         .         .         .         .
301316 39I         .         .         .         .         .         .S        .         .         .         .         .         .
301318 40I         .         .         .         .         .         .S        .         .         .         .         .         .
 01320 41I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1322 42I         .         .         .         .         .         .S        .         .         .         .         .         .
301324 43I         .         .         .         .         .         .S        .         .         .         .         .         .
  1326 44I         .         .         .         .         .         .S        .         .         .         .         .         .
  1328 45I         .         .         .         .         .         .S        .         .         .         .         .         .
301330 46I         .         .         .         .         .         .S        .         .         .         .         .         .
  1332 47I         .         .         .         .         .         .S        .         .         .         .         .         .
  1334 48I         .         .         .         .         .         .S        .         .         .         .         .         .
301336 49I         .         .         .         .         .         .S        .         .         .         .         .         .
  1338 50I         .         .         .         .         .         .S        .         .         .         .         .         .
  1340 51I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301342 52I         .         .         .         .         .         .S        .         .         .         .         .         .
  1344 53I         .         .         .         .         .         .S        .         .         .         .         .         .
  1346 54I         .         .         .         .         .         .S        .         .         .         .         .         .
301348 55I         .         .         .         .         .         .S        .         .         .         .         .         .
  1350 56I         .         .         .         .         .         .S        .         .         .         .         .         .
  1352 57I                                                             S
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 01356  59I         .         .         .         .         .         .S        .         .         .         .         .         .
301358  60I         .         .         .         .         .         .S        .         .         .         .         .         .
 01400  61I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 01402  62I         .         .         .         .         .         .S        .         .         .         .         .         .
301404  63I         .         .         .         .         .         .S        .         .         .         .         .         .
 01406  64I         .         .         .         .         .         .S        .         .         .         .         .         .
 01408  65I         .         .         .         .         .         .S        .         .         .         .         .         .
301410  66I         .         .         .         .         .         .S        .         .         .         .         .         .
 01412  67I         .         .         .         .         .         .S        .         .         .         .         .         .
 01414  68I         .         .         .         .         .         .S        .         .         .         .         .         .
301416  69I         .         .         .         .         .         .S        .         .         .         .         .         .
 01418  70I         .         .         .         .         .         .S        .         .         .         .         .         .
 01420  71I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301422  72I         .         .         .         .         .         .S        .         .         .         .         .         .
 01424  73I         .         .         .         .         .         .S        .         .         .         .         .         .
 01426  74I         .         .         .         .         .         .S        .         .         .         .         .         .
301428  75I         .         .         .         .         .         .S        .         .         .         .         .         .
 01430  76I         .         .         .         .         .         .S        .         .         .         .         .         .
 01432  77I         .         .         .         .         .         .S        .         .         .         .         .         .
301434  78I         .         .         .         .         .         .S        .         .         .         .         .         .
 01436  79I         .         .         .         .         .         .S        .         .         .         .         .         .
 01438  80I         .         .         .         .         .         .S        .         .         .         .         .         .
301440  81I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 01442  82I         .         .         .         .         .         .S        .         .         .         .         .         .
 01444  83I         .         .         .         .         .         .S        .         .         .         .         .         .
301446  84I         .         .         .         .         .         .S        .         .         .         .         .         .
 01448  85I         .         .         .         .         .         .S        .         .         .         .         .         .
 01450  86I         .         .         .         .         .         .S        .         .         .         .         .         .
301452  87I         .         .         .         .         .         .S        .         .         .         .         .         .
 01454  88I         .         .         .         .         .         .S        .         .         .         .         .         .
 01456  89I         .         .         .         .         .         .S        .         .         .         .         .         .
301458  90I         .         .         .         .         .         .S        .         .         .         .         .         .
 01500  91I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 01502  92I         .         .         .         .         .         .S        .         .         .         .         .         .
301504  93I         .         .         .         .         .         .S        .         .         .         .         .         .
 01506  94I         .         .         .         .         .         .S        .         .         .         .         .         .
 01508  95I         .         .         .         .         .         .S        .         .         .         .         .         .
301510  96I         .         .         .         .         .         .S        .         .         .         .         .         .
 01512  97I         .         .         .         .         .         .S        .         .         .         .         .         .
 01514  98I         .         .         .         .         .         .S        .         .         .         .         .         .
301516  99I         .         .         .         .         .         .S        .         .         .         .         .         .
 01518 100I         .         .         .         .         .         .S        .         .         .         .         .         .
 01520 101I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301522 102I         .         .         .         .         .         .S        .         .         .         .         .         .
 01524 103I         .         .         .         .         .         .S        .         .         .         .         .         .
 01526 104I         .         .         .         .         .         .S        .         .         .         .         .         .
301528 105I         .         .         .         .         .         .S        .         .         .         .         .         .
 01530 106I         .         .         .         .         .         .S        .         .         .         .         .         .
 01532 107I         .         .         .         .         .         .S        .         .         .         .         .         .
301534 108I         .         .         .         .         .         .S        .         .         .         .         .         .
 01536 109I         .         .         .         .         .         .S        .         .         .         .         .         .
 01538 110I         .         .         .         .         .         .S        .         .         .         .         .         .
301540 111I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 01542 112I         .         .         .         .         .         .S        .         .         .         .         .         .
  1544 113I         .         .         .         .         .         .S        .         .         .         .         .         .
301546 114I         .         .         .         .         .         .S        .         .         .         .         .         .
 01548 115I         .         .         .         .         .         .S        .         .         .         .         .         .
  1550 116I         .         .         .         .         .         .S        .         .         .         .         .         .
301552 117I         .         .         .         .         .         .S        .         .         .         .         .         .
 01554 118I         .         .         .         .         .         .S        .         .         .         .         .         .
  1556 119I         .         .         .         .         .         .S        .         .         .         .         .         .
301558 120I         .         .         .         .         .         .S        .         .         .         .         .         .
 01600 121I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1602 122I         .         .         .         .         .         .S        .         .         .         .         .         .
  1604 123I                                                             S
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301608 125I         .         .         .         .         .         .S        .         .         .         .         .         .
301610 126I         .         .         .         .         .         .S        .         .         .         .         .         .
301612 127I         .         .         .         .         .         .S        .         .         .         .         .         .
301614 128I         .         .         .         .         .         .S        .         .         .         .         .         .
301616 129I         .         .         .         .         .         .S        .         .         .         .         .         .
301618 130I         .         .         .         .         .         .S        .         .         .         .         .         .
301620 131I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301622 132I         .         .         .         .         .         .S        .         .         .         .         .         .
301624 133I         .         .         .         .         .         .S        .         .         .         .         .         .
 01626 134I         .         .         .         .         .         .S        .         .         .         .         .         .
301628 135I         .         .         .         .         .         .S        .         .         .         .         .         .
301630 136I         .         .         .         .         .         .S        .         .         .         .         .         .
301632 137I         .         .         .         .         .         .S        .         .         .         .         .         .
301634 138I         .         .         .         .         .         .S        .         .         .         .         .         .
301636 139I         .         .         .         .         .         .S        .         .         .         .         .         .
 01638 140I         .         .         .         .         .         .S        .         .         .         .         .         .
301640 1410I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301642 1420I        .         .         .         .         .         .S        .         .         .         .         .         .
 01644 1430I        .         .         .         .         .         .S        .         .         .         .         .         .
301646 1440I        .         .         .         .         .         .S        .         .         .         .         .         .
301648 1450I        .         .         .         .         .         .S        .         .         .         .         .         .
 01650 1460 I       .         .         .         .         .         .S        .         .         .         .         .         .
301652 1470 I       .         .         .         .         .         .S        .         .         .         .         .         .
301654 1480  I      .         .         .         .         .         .S        .         .         .         .         .         .
 01656 1490   I     .         .         .         .         .         .S        .         .         .         .         .         .
301658 1500    I    .         .         .         .         .         .S        .         .         .         .         .         .
301700 1510 . . I . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 01702 152.0      I .         .         .         .         .         . S       .         .         .         .         .         .
301704 153.0        I         .         .         .         .         . S       .         .         .         .         .         .
301706 154.0        .  I      .         .         .         .         . S       .         .         .         .         .         .
 01708 155.0        .     I   .         .         .         .         .  S      .         .         .         .         .         .
301710 156.0        .         I         .         .         .         .  S      .         .         .         .         .         .
301712 157.0        .         .   I     .         .         .         .   S     .         .         .         .         .         .
 01714 158.0        .         .       I .         .         .         .   S     .         .         .         .         .         .
301716 159.0        .         .         . I       .         .         .    S    .         .         .         .         .         .
301718 160.0        .         .         .     I   .         .         .     S   .         .         .         .         .         .
 01720 161.0. . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
301722 162.0        .         .         .         .  I      .         .       S .         .         .         .         .         .
301724 163.0        .         .         .         .    I    .         .        S.         .         .         .         .         .
 01726 164.0        .         .         .         .      I  .         .         S         .         .         .         .         .
301728 165.0        .         .         .         .       I .         .         . S       .         .         .         .         .
301730 166.0        .         .         .         .       I .         .         .  S      .         .         .         .         .
 01732 167.0        .         .         .         .       I .         .         .   S     .         .         .         .         .
301734 168. 0       .         .         .         .       I .         .         .     S   .         .         .         .         .
301736 169. 0       .         .         .         .      I  .         .         .      S  .         .         .         .         .
 01738 170. 0       .         .         .         .    I    .         .         .       S .         .         .         .         .
301740 171. 0 . . . . . . . . . . . . . . . . . . . .I. . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . .
301742 172. 0       .         .         .         .I        .         .         .         S         .         .         .         .
 01744 173. 0       .         .         .       I .         .         .         .         .S        .         .         .         .
301746 174. 0       .         .         .     I   .         .         .         .         . S       .         .         .         .
301748 175.  0      .         .         .  I      .         .         .         .         .  S      .         .         .         .
 01750 176.     0   .         .         .I        .         .         .         .         .   S     .         .         .         .
301752 177.         0         .       I .         .         .         .         .         .    S    .         .         .         .
301754 178.         .  0      .     I   .         .         .         .         .         .    S    .         .         .         .
 01756 179.         .    0    .   I     .         .         .         .         .         .    S    .         .         .         .
301758 180.         .      0  . I       .         .         .         .         .         .     S   .         .         .         .
301800 181. . . . . . . . . 0 I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . .
 01802 182.         .       I .         .         .         .         .         .         .     S   .         .         .         .
301804 183.         .      I0 .         .         .         .         .         .         .     S   .         .         .         .
301806 184.         .    I  0 .         .         .         .         .         .         .     S   .         .         .         .
 01808 185.         .   I  0  .         .         .         .         .         .         .     S   .         .         .         .
301810 186.         .  I  0   .         .         .         .         .         .         .    S    .         .         .         .
301812 187.         .I   0    .         .         .         .         .         .         .    S    .         .         .         .
  1814 188.         I   0     .         .         .         .         .         .         .    S    .         .         .         .
  1816 189.       I    0                                                                      S
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 01820 191.......I...0........................................................................S...................................
301822 192.      I  .0        .         .         .         .         .         .         .    S    .         .         .         .
301824 193.      I  0         .         .         .         .         .         .         .    S    .         .         .         .
 01826 194.     I   0         .         .         .         .         .         .         .    S    .         .         .         .
301828 195.     I  0.         .         .         .         .         .         .         .    S    .         .         .         .
301830 196.    I  0 .         .         .         .         .         .         .         .   S     .         .         .         .
 01832 197.    I  0 .         .         .         .         .         .         .         .   S     .         .         .         .
301834 198.   I  0  .         .         .         .         .         .         .         .   S     .         .         .         .
301836 199.   I  0  .         .         .         .         .         .         .         .   S     .         .         .         .
 01838 200.   I 0   .         .         .         .         .         .         .         .   S     .         .         .         .
301840 201....I.0.............................................................................S....................................
301842 202.  I  0   .         .         .         .         .         .         .         .   S     .         .         .         .
 01844 203.  I 0    .         .         .         .         .         .         .         .   S     .         .         .         .
301846 204.  I 0    .         .         .         .         .         .         .         .   S     .         .         .         .
301848 205.  I 0    .         .         .         .         .         .         .         .   S     .         .         .         .
 01850 206.  I 0    .         .         .         .         .         .         .         .   S     .         .         .         .
301852 207.  I0     .         .         .         .         .         .         .         .   S     .         .         .         .
301854 208. I 0     .         .         .         .         .         .         .         .   S     .         .         .         .
 01856 209. I 0     .         .         .         .         .         .         .         .   S     .         .         .         .
301858 210. I 0     .         .         .         .         .         .         .         .   S     .         .         .         .
301900 211..I.0...............................................................................S....................................
 01902 212. I0      .         .         .         .         .         .         .         .  S      .         .         .         .
301904 213. I0      .         .         .         .         .         .         .         .  S      .         .         .         .
301906 214. I0      .         .         .         .         .         .         .         .  S      .         .         .         .
 01908 215. I0      .         .         .         .         .         .         .         .  S      .         .         .         .
301910 216. I0      .         .         .         .         .         .         .         .  S      .         .         .         .
301912 217. I0      .         .         .         .         .         .         .         .  S      .         .         .         .
 01914 218. I0      .         .         .         .         .         .         .         .  S      .         .         .         .
301916 219. I0      .         .         .         .         .         .         .         .  S      .         .         .         .
301918 220. I0      .         .         .         .         .         .         .         .  S      .         .         .         .
 01920 221..I0...............................................................................S.....................................
301922 222. I       .         .         .         .         .         .         .         .  S      .         .         .         .
301924 223. I       .         .         .         .         .         .         .         .  S      .         .         .         .
 01926 224. I       .         .         .         .         .         .         .         .  S      .         .         .         .
301928 225. I       .         .         .         .         .         .         .         .  S      .         .         .         .
301930 226. I       .         .         .         .         .         .         .         .  S      .         .         .         .
 01932 227. I       .         .         .         .         .         .         .         .  S      .         .         .         .
301934 228. I       .         .         .         .         .         .         .         .  S      .         .         .         .
301936 229.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
 01938 230.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
301940 231.I0................................................................................S.....................................
301942 232.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
 01944 233.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
301946 234.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
301948 235.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
 01950 236.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
301952 237.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
301954 238.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
 01956 239.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
301958 240.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302000 241.I0................................................................................S.....................................
 02002 242.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302004 243.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302006 244.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
 02008 245.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302010 246.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302012 247.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
  2014 248.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302016 249.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302018 250.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
  2020 251.I0................................................................................S.....................................
302022 252.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302024 253.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
  2026 254.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
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 02032 257.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302034 258.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302036 259.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
 02038 260.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302040 261.I0 ...............................................................................S.....................................
302042 262.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
 02044 263.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302046 264.I0       .         .         .         .         .         .         .         .  S      .         .         .         .
302048 265.I0       .         .         .         .         .         .         .         . S       .         .         .         .
 02050 266.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302052 267.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302054 268.I0       .         .         .         .         .         .         .         . S       .         .         .         .
 02056 269.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302058 270.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302100 271.I0 ..............................................................................S......................................
 02102 272.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302104 273.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302106 274.I0       .         .         .         .         .         .         .         . S       .         .         .         .
 02108 275.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302110 276.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302112 277.I0       .         .         .         .         .         .         .         . S       .         .         .         .
 02114 278.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302116 279.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302118 280.I0       .         .         .         .         .         .         .         . S       .         .         .         .
 02120 281.I0 ..............................................................................S......................................
302122 282.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302124 283.I0       .         .         .         .         .         .         .         . S       .         .         .         .
 02126 284.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302128 285.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302130 286.I0       .         .         .         .         .         .         .         . S       .         .         .         .
 02132 287.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302134 288.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302136 289.I0       .         .         .         .         .         .         .         . S       .         .         .         .
 02138 290.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302140 291.I0 ..............................................................................S......................................
302142 292.I0       .         .         .         .         .         .         .         . S       .         .         .         .
 02144 293.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302146 294.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302148 295.I0       .         .         .         .         .         .         .         . S       .         .         .         .
 02150 296.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302152 297.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302154 298.I0       .         .         .         .         .         .         .         . S       .         .         .         .
 02156 299.I0       .         .         .         .         .         .         .         . S       .         .         .         .
302158 300.I0-------.---------.---------.---------.---------.---------.---------.---------.-S-------.---------.---------.---------.
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

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         *            *
 36 KK   *       P1A  *
         *            *
         **************

 38 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          1  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE
                      IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                       IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT       .033  TIME INTERVAL IN HOURS


                HYDROGRAPH ROUTING DATA

 39 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                          L       655.  CHANNEL LENGTH
                          S      .0067  SLOPE
                          N       .015  CHANNEL ROUGHNESS COEFFICIENT
                         CA        .00  CONTRIBUTING AREA
                      SHAPE       CIRC  CHANNEL SHAPE
                         WD       2.00  BOTTOM WIDTH OR DIAMETER
                          Z        .00  SIDE SLOPE

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

                      MAIN       4.92      1.25       1.89     327.50      7.20    364.27        .52       5.78


                                                 INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                      MAIN       4.92      1.25       2.00                 7.19    364.00        .52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6256E+00 EXCESS= .0000E+00 OUTFLOW= .6225E+00 BASIN STORAGE= .3074E-02 PERCENT ERROR=    .0


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

                         HYDROGRAPH AT STATION      P1A

 EAK FLOW      TIME                               MAXIMUM AVERAGE FLOW
  (CFS)        (HR)                     6-HR         24-HR        72-HR       9.97-HR
     7.        6.07         (CFS)         1.            1.           1.            1.
                          (INCHES)      .524          .524         .524          .524
                           (AC-FT)        1.            1.           1.            1.
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                          CUMULATIVE AREA =      .02 SQ MI




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


              **************
              *            *
  40 KK       *        C2  *
              *            *
              **************

  42 KO           OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .033  TIME INTERVAL IN HOURS


                SUBBASIN RUNOFF DATA

  43 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .00  SUBBASIN AREA

                  PRECIPITATION DATA

  44 PH                                   DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......    ............... TP-40 ...............    ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .39     .76    1.34    1.40    1.44    1.56    1.69    2.01     .00     .00     .00     .00

                                                     STORM AREA =      .00

  45 LS           SCS LOSS RATE
                        STRTL         .08  INITIAL ABSTRACTION
                       CRVNBR       96.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

  46 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .61  LAG

                                                                  ***

                                                            UNIT HYDROGRAPH
                                                       93 END-OF-PERIOD ORDINATES
                  0.        0.        0.        0.        1.        1.        1.        1.        2.        2.
                  2.        3.        3.        3.        4.        4.        4.        4.        4.        4.
                  4.        4.        3.        3.        3.        3.        3.        3.        2.        2.
                  2.        2.        2.        1.        1.        1.        1.        1.        1.        1.
                  1.        1.        1.        1.        1.        1.        0.        0.        0.        0.
                  0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                  0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                  0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                  0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                  0.        0.        0.

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                           HYDROGRAPH AT STATION        C2
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   TOTAL RAINFALL =    1.65, TOTAL LOSS =     .41, TOTAL EXCESS =    1.24

  PEAK FLOW     TIME                                MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                       6-HR        24-HR       72-HR      9.97-HR
       4.       5.63        (CFS)            1.           0.          0.           0.
                          (INCHES)        1.225        1.225       1.225        1.225
                           (AC-FT)           0.           0.          0.           0.

                           CUMULATIVE AREA =      .00 SQ MI




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


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              *            *
  47 KK       *        C2  *
              *            *
              **************

  49 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           1  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .033  TIME INTERVAL IN HOURS


  50 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                   ***

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

                         HYDROGRAPH AT STATION       C2

  PEAK FLOW     TIME                                MAXIMUM AVERAGE FLOW
    (CFS)       (HR)                       6-HR        24-HR       72-HR      9.97-HR
       9.       6.03        (CFS)            2.           1.          1.           1.
                          (INCHES)         .650         .650        .650         .650
                           (AC-FT)           1.           1.          1.           1.

                           CUMULATIVE AREA =      .03 SQ MI




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


              **************
              *            *
  51 KK       *       C13  *
              *            *
              **************

  53 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           1  PLOT CONTROL
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                  IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                   IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                  ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                  ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                 TIMINT        .033  TIME INTERVAL IN HOURS


            SUBBASIN RUNOFF DATA

 54 BA        SUBBASIN CHARACTERISTICS
                  TAREA         .02  SUBBASIN AREA

              PRECIPITATION DATA

 55 PH                           DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
              ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
              5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                .39     .76    1.34    1.40    1.44    1.56    1.69    2.01     .00     .00     .00     .00

                                          STORM AREA =     .02

 56 LS        SCS LOSS RATE
                  STRTL         .08  INITIAL ABSTRACTION
                 CRVNBR       96.00  CURVE NUMBER
                  RTIMP         .00  PERCENT IMPERVIOUS AREA

 57 UD        SCS DIMENSIONLESS UNITGRAPH
                   TLAG         .47  LAG

                                                  ***

                                             UNIT HYDROGRAPH
                                         73 END-OF-PERIOD ORDINATES
             0.          1.          2.          3.          5.          7.          9.         11.         14.         16.
            18.         19.         20.         20.         20.         20.         19.         19.         18.         16.
            15.         14.         12.         11.          9.          8.          7.          7.          6.          5.
             5.          4.          4.          3.          3.          3.          2.          2.          2.          2.
             2.          1.          1.          1.          1.          1.          1.          1.          1.          1.
             1.          0.          0.          0.          0.          0.          0.          0.          0.          0.
             0.          0.          0.          0.          0.          0.          0.          0.          0.          0.
             0.          0.          0.

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

                    HYDROGRAPH AT STATION      C13

  TOTAL RAINFALL =    1.65, TOTAL LOSS =     .41, TOTAL EXCESS =    1.24

 EAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                   6-HR         24-HR         72-HR       9.97-HR
     18.      5.50        (CFS)        3.            2.            2.            2.
                       (INCHES)     1.228         1.229         1.229         1.229
                        (AC-FT)        1.            1.            1.            1.

                    CUMULATIVE AREA =     .02 SQ MI



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


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           *             *
58 KK      *     C12     *
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 60 KO         OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          1  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS


 61 HC         HYDROGRAPH COMBINATION
                     ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

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

                       HYDROGRAPH AT STATION      C12

PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                    6-HR        24-HR       72-HR      9.97-HR
     22.      5.53        (CFS)          5.          3.          3.          3.
                       (INCHES)        .899        .900        .900        .900
                         (AC-FT)         2.          2.          2.          2.

                      CUMULATIVE AREA =     .05 SQ MI



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


          **************
          *            *
 62 KK    *      P2A   *
          *            *
          **************

 64 KO         OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          1  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS


             HYDROGRAPH ROUTING DATA

 65 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                         L       277.  CHANNEL LENGTH
                         S      .0054  SLOPE
                         N       .015  CHANNEL ROUGHNESS COEFFICIENT
                        CA        .00  CONTRIBUTING AREA
                     SHAPE       CIRC  CHANNEL SHAPE
                        WD       3.00  BOTTOM WIDTH OR DIAMETER
                         Z        .00  SIDE SLOPE

                                                                  ***
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R6-22

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


                   MAIN       4.73      1.25        .66     277.00     21.55     331.76        .90        6.97


                                      INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                   MAIN       4.73      1.25       2.00                21.55     332.00        .90


CONTINUITY SUMMARY (AC-FT) - INFLOW= .2294E+01 EXCESS= .0000E+00 OUTFLOW= .2293E+01 BASIN STORAGE= .1864E-02 PERCENT ERROR=    .0



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

                    HYDROGRAPH AT STATION      P2A

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                   6-HR        24-HR       72-HR       9.97-HR
    22.       5.53       (CFS)         5.           3.          3.            3.
                       (INCHES)      .899         .899        .899          .899
                        (AC-FT)        2.           2.          2.            2.

                    CUMULATIVE AREA =     .05 SQ MI



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


           **************
           *            *
 66 KK     *        E1  *
           *            *
           **************

 68 KO         OUTPUT CONTROL VARIABLES
                    IPRNT          3  PRINT CONTROL
                    IPLOT          1  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE
                    IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                     IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT       .033  TIME INTERVAL IN HOURS


             SUBBASIN RUNOFF DATA

 69 BA         SUBBASIN CHARACTERISTICS
                    TAREA        .00  SUBBASIN AREA

               PRECIPITATION DATA

 70 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......  ............... TP-40 ...............  ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .39     .76    1.34    1.40    1.44    1.56    1.69    2.01     .00     .00     .00     .00
```

R6-23

```
71 LS         SCS LOSS RATE
                    STRTL         .08  INITIAL ABSTRACTION
                   CRVNBR       96.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

 72 UD         SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .13  LAG

                                                                    ***

                                                              UNIT HYDROGRAPH
                                                         21 END-OF-PERIOD ORDINATES
                  0.         1.         2.         3.         3.         2.         2.         1.         1.         1.
                  0.         0.         0.         0.         0.         0.         0.         0.         0.         0.
                  0.

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

                          HYDROGRAPH AT STATION       E1

  TOTAL RAINFALL =    1.65, TOTAL LOSS =     .41, TOTAL EXCESS =    1.24

PEAK FLOW      TIME                     MAXIMUM AVERAGE FLOW
  (CFS)        (HR)                6-HR        24-HR       72-HR       9.97-HR
     2.        5.13      (CFS)       0.          0.          0.           0.
                      (INCHES)     1.235       1.238       1.238        1.238
                       (AC-FT)       0.          0.          0.           0.

                        CUMULATIVE AREA =     .00 SQ MI



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


            **************
            *            *
 73 KK      *       E1   *
            *            *
            **************

 75 KO         OUTPUT CONTROL VARIABLES
                    IPRNT           3  PRINT CONTROL
                    IPLOT           1  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE
                    IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                     IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT        .033  TIME INTERVAL IN HOURS

 76 HC         HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                    ***

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

                          HYDROGRAPH AT STATION       E1

EAK FLOW       TIME                     MAXIMUM AVERAGE FLOW
 (CFS)         (HR)                6-HR        24-HR       72-HR       9.97-HR
```

R6-24

```
                 (INCHES)      .905         .906         .906          .906
                 (AC-FT)        2.           2.           2.            2.

                  CUMULATIVE AREA =      .05 SQ MI



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


          **************
          *            *
  77 KK   *     RES5   *
          *            *
          **************

  79 KO         OUTPUT CONTROL VARIABLES
                    IPRNT           1  PRINT CONTROL
                    IPLOT           2  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE
                    IPNCH           1  PUNCH COMPUTED HYDROGRAPH
                     IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT        .033  TIME INTERVAL IN HOURS


              HYDROGRAPH ROUTING DATA

  80 RS         STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        ELEV  TYPE OF INITIAL CONDITION
                   RSVRIC       11.24  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

  81 SV           STORAGE          .0         .1         .2         .3         .5         .8

  82 SE         ELEVATION       12.00      13.00      14.00      15.00      16.00      17.00

  83 SL         LOW-LEVEL OUTLET
                    ELEVL       12.24  ELEVATION AT CENTER OF OUTLET
                    CAREA         .06  CROSS-SECTIONAL AREA
                     COQL         .60  COEFFICIENT
                     EXPL         .50  EXPONENT OF HEAD

  84 SS         SPILLWAY
                     CREL       16.00  SPILLWAY CREST ELEVATION
                    SPWID       12.29  SPILLWAY WIDTH
                     COQW        2.70  WEIR COEFFICIENT
                     EXPW        1.50  EXPONENT OF HEAD

                                                                   ***

                                                     COMPUTED OUTFLOW-ELEVATION DATA

          OUTFLOW        .00        .00        .12        .13        .15        .18        .21        .27        .37        .58
        ELEVATION      12.00      12.24      12.39      12.43      12.49      12.58      12.74      13.05      13.75      16.00

          OUTFLOW        .62        .86       1.50       2.73       4.77       7.80      12.02      17.64      24.85      33.84
        ELEVATION      16.01      16.04      16.09      16.16      16.25      16.36      16.49      16.64      16.81      17.00


                                                COMPUTED STORAGE-OUTFLOW-ELEVATION DATA
```

```
         OUTFLOW        .00        .00        .12        .13        .15        .18        .21        .26        .27        .37
       ELEVATION      12.00      12.24      12.39      12.43      12.49      12.58      12.74      13.00      13.05      13.75

         STORAGE        .16        .31        .52        .52        .53        .55        .56        .59        .62        .65
         OUTFLOW        .40        .50        .58        .62        .86       1.50       2.73       4.77       7.80      12.02
       ELEVATION      14.00      15.00      16.00      16.01      16.04      16.09      16.16      16.25      16.36      16.49

         STORAGE        .69        .74        .79
         OUTFLOW      17.64      24.85      33.84
       ELEVATION      16.64      16.81      17.00

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

                                                 HYDROGRAPH AT STATION     RES5

*********************************************************************************************************************************
                                           *                                          *
 DA MON HRMN ORD  OUTFLOW  STORAGE     STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE     STAGE * DA MON HRMN ORD  OUTFLOW  STORAGE     STAGE
                                           *                                          *
 30 JUN 1200   1       0.       .0      12.0 * 30 JUN 1520 101       0.       .0      12.0 * 30 JUN 1840 201       6.       .6      16.3
 30 JUN 1202   2       0.       .0      12.0 * 30 JUN 1522 102       0.       .0      12.0 * 30 JUN 1842 202       6.       .6      16.3
 30 JUN 1204   3       0.       .0      12.0 * 30 JUN 1524 103       0.       .0      12.0 * 30 JUN 1844 203       5.       .6      16.3
 30 JUN 1206   4       0.       .0      12.0 * 30 JUN 1526 104       0.       .0      12.0 * 30 JUN 1846 204       5.       .6      16.3
 30 JUN 1208   5       0.       .0      12.0 * 30 JUN 1528 105       0.       .0      12.0 * 30 JUN 1848 205       5.       .6      16.2
 30 JUN 1210   6       0.       .0      12.0 * 30 JUN 1530 106       0.       .0      12.0 * 30 JUN 1850 206       4.       .6      16.2
 30 JUN 1212   7       0.       .0      12.0 * 30 JUN 1532 107       0.       .0      12.0 * 30 JUN 1852 207       4.       .6      16.2
 30 JUN 1214   8       0.       .0      12.0 * 30 JUN 1534 108       0.       .0      12.0 * 30 JUN 1854 208       4.       .6      16.2
 30 JUN 1216   9       0.       .0      12.0 * 30 JUN 1536 109       0.       .0      12.0 * 30 JUN 1856 209       4.       .6      16.2
 30 JUN 1218  10       0.       .0      12.0 * 30 JUN 1538 110       0.       .0      12.0 * 30 JUN 1858 210       4.       .6      16.2
 30 JUN 1220  11       0.       .0      12.0 * 30 JUN 1540 111       0.       .0      12.0 * 30 JUN 1900 211       3.       .6      16.2
 30 JUN 1222  12       0.       .0      12.0 * 30 JUN 1542 112       0.       .0      12.0 * 30 JUN 1902 212       3.       .6      16.2
 30 JUN 1224  13       0.       .0      12.0 * 30 JUN 1544 113       0.       .0      12.0 * 30 JUN 1904 213       3.       .6      16.2
 30 JUN 1226  14       0.       .0      12.0 * 30 JUN 1546 114       0.       .0      12.0 * 30 JUN 1906 214       3.       .6      16.2
 30 JUN 1228  15       0.       .0      12.0 * 30 JUN 1548 115       0.       .0      12.0 * 30 JUN 1908 215       3.       .6      16.2
 30 JUN 1230  16       0.       .0      12.0 * 30 JUN 1550 116       0.       .0      12.0 * 30 JUN 1910 216       3.       .6      16.2
 30 JUN 1232  17       0.       .0      12.0 * 30 JUN 1552 117       0.       .0      12.0 * 30 JUN 1912 217       3.       .6      16.2
 30 JUN 1234  18       0.       .0      12.0 * 30 JUN 1554 118       0.       .0      12.0 * 30 JUN 1914 218       3.       .6      16.2
 30 JUN 1236  19       0.       .0      12.0 * 30 JUN 1556 119       0.       .0      12.0 * 30 JUN 1916 219       2.       .6      16.1
 30 JUN 1238  20       0.       .0      12.0 * 30 JUN 1558 120       0.       .0      12.0 * 30 JUN 1918 220       2.       .6      16.1
 30 JUN 1240  21       0.       .0      12.0 * 30 JUN 1600 121       0.       .0      12.0 * 30 JUN 1920 221       2.       .6      16.1
 30 JUN 1242  22       0.       .0      12.0 * 30 JUN 1602 122       0.       .0      12.0 * 30 JUN 1922 222       2.       .6      16.1
 30 JUN 1244  23       0.       .0      12.0 * 30 JUN 1604 123       0.       .0      12.0 * 30 JUN 1924 223       2.       .6      16.1
 30 JUN 1246  24       0.       .0      12.0 * 30 JUN 1606 124       0.       .0      12.0 * 30 JUN 1926 224       2.       .6      16.1
 30 JUN 1248  25       0.       .0      12.0 * 30 JUN 1608 125       0.       .0      12.0 * 30 JUN 1928 225       2.       .6      16.1
 30 JUN 1250  26       0.       .0      12.0 * 30 JUN 1610 126       0.       .0      12.1 * 30 JUN 1930 226       2.       .6      16.1
 30 JUN 1252  27       0.       .0      12.0 * 30 JUN 1612 127       0.       .0      12.1 * 30 JUN 1932 227       2.       .6      16.1
 30 JUN 1254  28       0.       .0      12.0 * 30 JUN 1614 128       0.       .0      12.1 * 30 JUN 1934 228       2.       .6      16.1
 30 JUN 1256  29       0.       .0      12.0 * 30 JUN 1616 129       0.       .0      12.1 * 30 JUN 1936 229       2.       .6      16.1
 30 JUN 1258  30       0.       .0      12.0 * 30 JUN 1618 130       0.       .0      12.1 * 30 JUN 1938 230       2.       .5      16.1
 30 JUN 1300  31       0.       .0      12.0 * 30 JUN 1620 131       0.       .0      12.1 * 30 JUN 1940 231       2.       .5      16.1
 30 JUN 1302  32       0.       .0      12.0 * 30 JUN 1622 132       0.       .0      12.1 * 30 JUN 1942 232       2.       .5      16.1
 30 JUN 1304  33       0.       .0      12.0 * 30 JUN 1624 133       0.       .0      12.1 * 30 JUN 1944 233       2.       .5      16.1
 30 JUN 1306  34       0.       .0      12.0 * 30 JUN 1626 134       0.       .0      12.1 * 30 JUN 1946 234       2.       .5      16.1
 30 JUN 1308  35       0.       .0      12.0 * 30 JUN 1628 135       0.       .0      12.1 * 30 JUN 1948 235       2.       .5      16.1
 30 JUN 1310  36       0.       .0      12.0 * 30 JUN 1630 136       0.       .0      12.1 * 30 JUN 1950 236       2.       .5      16.1
 30 JUN 1312  37       0.       .0      12.0 * 30 JUN 1632 137       0.       .0      12.1 * 30 JUN 1952 237       2.       .5      16.1
 30 JUN 1314  38       0.       .0      12.0 * 30 JUN 1634 138       0.       .0      12.1 * 30 JUN 1954 238       2.       .5      16.1
 30 JUN 1316  39       0.       .0      12.0 * 30 JUN 1636 139       0.       .0      12.2 * 30 JUN 1956 239       2.       .5      16.1
 30 JUN 1318  40       0.       .0      12.0 * 30 JUN 1638 140       0.       .0      12.2 * 30 JUN 1958 240       1.       .5      16.1
 30 JUN 1320  41       0.       .0      12.0 * 30 JUN 1640 141       0.       .0      12.2 * 30 JUN 2000 241       1.       .5      16.1
 30 JUN 1322  42       0.       .0      12.0 * 30 JUN 1642 142       0.       .0      12.2 * 30 JUN 2002 242       1.       .5      16.1
 30 JUN 1324  43       0.       .0      12.0 * 30 JUN 1644 143       0.       .0      12.2 * 30 JUN 2004 243       1.       .5      16.1
 30 JUN 1326  44       0.       .0      12.0 * 30 JUN 1646 144       0.       .0      12.3 * 30 JUN 2006 244       1.       .5      16.1
 30 JUN 1328  45       0.       .0      12.0 * 30 JUN 1648 145       0.       .0      12.3 * 30 JUN 2008 245       1.       .5      16.1
 30 JUN 1330  46       0.       .0      12.0 * 30 JUN 1650 146       0.       .0      12.4 * 30 JUN 2010 246       1.       .5      16.1
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30 JUN 1334  48     0.      .0     12.0 * 30 JUN 1654 148      0.      .0     12.5 * 30 JUN 2014 248      1.      .5    16.1
30 JUN 1336  49     0.      .0     12.0 * 30 JUN 1656 149      0.      .1     12.6 * 30 JUN 2016 249      1.      .5    16.1
30 JUN 1338  50     0.      .0     12.0 * 30 JUN 1658 150      0.      .1     12.8 * 30 JUN 2018 250      1.      .5    16.1
30 JUN 1340  51     0.      .0     12.0 * 30 JUN 1700 151      0.      .1     12.9 * 30 JUN 2020 251      1.      .5    16.1
30 JUN 1342  52     0.      .0     12.0 * 30 JUN 1702 152      0.      .1     13.1 * 30 JUN 2022 252      1.      .5    16.1
30 JUN 1344  53     0.      .0     12.0 * 30 JUN 1704 153      0.      .1     13.2 * 30 JUN 2024 253      1.      .5    16.1
30 JUN 1346  54     0.      .0     12.0 * 30 JUN 1706 154      0.      .1     13.4 * 30 JUN 2026 254      1.      .5    16.1
30 JUN 1348  55     0.      .0     12.0 * 30 JUN 1708 155      0.      .1     13.6 * 30 JUN 2028 255      1.      .5    16.1
30 JUN 1350  56     0.      .0     12.0 * 30 JUN 1710 156      0.      .2     13.9 * 30 JUN 2030 256      1.      .5    16.1
30 JUN 1352  57     0.      .0     12.0 * 30 JUN 1712 157      0.      .2     14.1 * 30 JUN 2032 257      1.      .5    16.1
30 JUN 1354  58     0.      .0     12.0 * 30 JUN 1714 158      0.      .2     14.4 * 30 JUN 2034 258      1.      .5    16.1
30 JUN 1356  59     0.      .0     12.0 * 30 JUN 1716 159      0.      .3     14.6 * 30 JUN 2036 259      1.      .5    16.1
30 JUN 1358  60     0.      .0     12.0 * 30 JUN 1718 160      0.      .3     14.9 * 30 JUN 2038 260      1.      .5    16.1
30 JUN 1400  61     0.      .0     12.0 * 30 JUN 1720 161      1.      .3     15.1 * 30 JUN 2040 261      1.      .5    16.1
30 JUN 1402  62     0.      .0     12.0 * 30 JUN 1722 162      1.      .4     15.4 * 30 JUN 2042 262      1.      .5    16.1
30 JUN 1404  63     0.      .0     12.0 * 30 JUN 1724 163      1.      .4     15.6 * 30 JUN 2044 263      1.      .5    16.1
30 JUN 1406  64     0.      .0     12.0 * 30 JUN 1726 164      1.      .5     15.9 * 30 JUN 2046 264      1.      .5    16.1
30 JUN 1408  65     0.      .0     12.0 * 30 JUN 1728 165      2.      .6     16.1 * 30 JUN 2048 265      1.      .5    16.1
30 JUN 1410  66     0.      .0     12.0 * 30 JUN 1730 166      6.      .6     16.3 * 30 JUN 2050 266      1.      .5    16.1
30 JUN 1412  67     0.      .0     12.0 * 30 JUN 1732 167     11.      .6     16.4 * 30 JUN 2052 267      1.      .5    16.1
30 JUN 1414  68     0.      .0     12.0 * 30 JUN 1734 168     14.      .7     16.5 * 30 JUN 2054 268      1.      .5    16.1
30 JUN 1416  69     0.      .0     12.0 * 30 JUN 1736 169     16.      .7     16.6 * 30 JUN 2056 269      1.      .5    16.1
30 JUN 1418  70     0.      .0     12.0 * 30 JUN 1738 170     18.      .7     16.6 * 30 JUN 2058 270      1.      .5    16.1
30 JUN 1420  71     0.      .0     12.0 * 30 JUN 1740 171     19.      .7     16.7 * 30 JUN 2100 271      1.      .5    16.1
30 JUN 1422  72     0.      .0     12.0 * 30 JUN 1742 172     19.      .7     16.7 * 30 JUN 2102 272      1.      .5    16.1
30 JUN 1424  73     0.      .0     12.0 * 30 JUN 1744 173     19.      .7     16.7 * 30 JUN 2104 273      1.      .5    16.1
30 JUN 1426  74     0.      .0     12.0 * 30 JUN 1746 174     19.      .7     16.7 * 30 JUN 2106 274      1.      .5    16.1
 0 JUN 1428  75     0.      .0     12.0 * 30 JUN 1748 175     18.      .7     16.6 * 30 JUN 2108 275      1.      .5    16.1
 0 JUN 1430  76     0.      .0     12.0 * 30 JUN 1750 176     17.      .7     16.6 * 30 JUN 2110 276      1.      .5    16.1
30 JUN 1432  77     0.      .0     12.0 * 30 JUN 1752 177     17.      .7     16.6 * 30 JUN 2112 277      1.      .5    16.1
 0 JUN 1434  78     0.      .0     12.0 * 30 JUN 1754 178     16.      .7     16.6 * 30 JUN 2114 278      1.      .5    16.1
 0 JUN 1436  79     0.      .0     12.0 * 30 JUN 1756 179     16.      .7     16.6 * 30 JUN 2116 279      1.      .5    16.1
30 JUN 1438  80     0.      .0     12.0 * 30 JUN 1758 180     16.      .7     16.6 * 30 JUN 2118 280      1.      .5    16.1
 0 JUN 1440  81     0.      .0     12.0 * 30 JUN 1800 181     16.      .7     16.6 * 30 JUN 2120 281      1.      .5    16.1
 0 JUN 1442  82     0.      .0     12.0 * 30 JUN 1802 182     16.      .7     16.6 * 30 JUN 2122 282      1.      .5    16.1
30 JUN 1444  83     0.      .0     12.0 * 30 JUN 1804 183     16.      .7     16.6 * 30 JUN 2124 283      1.      .5    16.1
 0 JUN 1446  84     0.      .0     12.0 * 30 JUN 1806 184     16.      .7     16.6 * 30 JUN 2126 284      1.      .5    16.1
 0 JUN 1448  85     0.      .0     12.0 * 30 JUN 1808 185     15.      .7     16.6 * 30 JUN 2128 285      1.      .5    16.1
30 JUN 1450  86     0.      .0     12.0 * 30 JUN 1810 186     15.      .7     16.6 * 30 JUN 2130 286      1.      .5    16.1
 0 JUN 1452  87     0.      .0     12.0 * 30 JUN 1812 187     14.      .7     16.5 * 30 JUN 2132 287      1.      .5    16.1
 0 JUN 1454  88     0.      .0     12.0 * 30 JUN 1814 188     13.      .7     16.5 * 30 JUN 2134 288      1.      .5    16.1
30 JUN 1456  89     0.      .0     12.0 * 30 JUN 1816 189     13.      .7     16.5 * 30 JUN 2136 289      1.      .5    16.1
 0 JUN 1458  90     0.      .0     12.0 * 30 JUN 1818 190     12.      .7     16.5 * 30 JUN 2138 290      1.      .5    16.1
 0 JUN 1500  91     0.      .0     12.0 * 30 JUN 1820 191     11.      .6     16.5 * 30 JUN 2140 291      1.      .5    16.1
30 JUN 1502  92     0.      .0     12.0 * 30 JUN 1822 192     11.      .6     16.4 * 30 JUN 2142 292      1.      .5    16.1
 0 JUN 1504  93     0.      .0     12.0 * 30 JUN 1824 193     10.      .6     16.4 * 30 JUN 2144 293      1.      .5    16.1
 0 JUN 1506  94     0.      .0     12.0 * 30 JUN 1826 194      9.      .6     16.4 * 30 JUN 2146 294      1.      .5    16.1
30 JUN 1508  95     0.      .0     12.0 * 30 JUN 1828 195      9.      .6     16.4 * 30 JUN 2148 295      1.      .5    16.1
 0 JUN 1510  96     0.      .0     12.0 * 30 JUN 1830 196      8.      .6     16.4 * 30 JUN 2150 296      1.      .5    16.1
 0 JUN 1512  97     0.      .0     12.0 * 30 JUN 1832 197      8.      .6     16.4 * 30 JUN 2152 297      1.      .5    16.1
30 JUN 1514  98     0.      .0     12.0 * 30 JUN 1834 198      7.      .6     16.3 * 30 JUN 2154 298      1.      .5    16.1
 0 JUN 1516  99     0.      .0     12.0 * 30 JUN 1836 199      7.      .6     16.3 * 30 JUN 2156 299      1.      .5    16.1
 0 JUN 1518 100     0.      .0     12.0 * 30 JUN 1838 200      6.      .6     16.3 * 30 JUN 2158 300      1.      .5    16.1
                                        *                                         *
 *************************************************************************************************************************

  PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
    (CFS)        (HR)                     6-HR        24-HR        72-HR       9.97-HR
       19.       5.70          (CFS)        4.           2.           2.           2.
                             (INCHES)     .706         .706         .706         .706
                              (AC-FT)       2.           2.           2.           2.

 PEAK STORAGE    TIME                        MAXIMUM AVERAGE STORAGE
   (AC-FT)       (HR)                     6-HR        24-HR        72-HR       9.97-HR
        1.       5.70                       0            0.           0            0
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EAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
 (FEET)      (HR)                   6-HR          24-HR         72-HR      9.97-HR
  16.68      5.70                  15.38          14.04         14.04        14.04

                      CUMULATIVE AREA =     .05 SQ MI
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                                                         STATION     RES5

                         (I) INFLOW,  (O) OUTFLOW
           0.        4.        8.       12.       16.       20.       24.        0.        0.        0.        0.        0.        0.
                                                                                    (S) STORAGE

           .0        .0        .0        .0        .0        .0        .0        .2        .4        .6        .8        .0        .0
  HRMN PER
301200   1I---------.---------.---------.---------.---------.---------.S--------.---------.---------.---------.---------.---------.
  1202   2I         .         .         .         .         .         .S        .         .         .         .         .         .
  1204   3I         .         .         .         .         .         .S        .         .         .         .         .         .
301206   4I         .         .         .         .         .         .S        .         .         .         .         .         .
  1208   5I         .         .         .         .         .         .S        .         .         .         .         .         .
  1210   6I         .         .         .         .         .         .S        .         .         .         .         .         .
301212   7I         .         .         .         .         .         .S        .         .         .         .         .         .
  1214   8I         .         .         .         .         .         .S        .         .         .         .         .         .
  1216   9I         .         .         .         .         .         .S        .         .         .         .         .         .
301218  10I         .         .         .         .         .         .S        .         .         .         .         .         .
  1220  11I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1222  12I         .         .         .         .         .         .S        .         .         .         .         .         .
301224  13I         .         .         .         .         .         .S        .         .         .         .         .         .
  1226  14I         .         .         .         .         .         .S        .         .         .         .         .         .
  1228  15I         .         .         .         .         .         .S        .         .         .         .         .         .
301230  16I         .         .         .         .         .         .S        .         .         .         .         .         .
  1232  17I         .         .         .         .         .         .S        .         .         .         .         .         .
  1234  18I         .         .         .         .         .         .S        .         .         .         .         .         .
301236  19I         .         .         .         .         .         .S        .         .         .         .         .         .
  1238  20I         .         .         .         .         .         .S        .         .         .         .         .         .
  1240  21I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301242  22I         .         .         .         .         .         .S        .         .         .         .         .         .
  1244  23I         .         .         .         .         .         .S        .         .         .         .         .         .
  1246  24I         .         .         .         .         .         .S        .         .         .         .         .         .
301248  25I         .         .         .         .         .         .S        .         .         .         .         .         .
  1250  26I         .         .         .         .         .         .S        .         .         .         .         .         .
  1252  27I         .         .         .         .         .         .S        .         .         .         .         .         .
301254  28I         .         .         .         .         .         .S        .         .         .         .         .         .
  1256  29I         .         .         .         .         .         .S        .         .         .         .         .         .
  1258  30I         .         .         .         .         .         .S        .         .         .         .         .         .
301300  31I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1302  32I         .         .         .         .         .         .S        .         .         .         .         .         .
  1304  33I         .         .         .         .         .         .S        .         .         .         .         .         .
301306  34I         .         .         .         .         .         .S        .         .         .         .         .         .
  1308  35I         .         .         .         .         .         .S        .         .         .         .         .         .
  1310  36I         .         .         .         .         .         .S        .         .         .         .         .         .
301312  37I         .         .         .         .         .         .S        .         .         .         .         .         .
  1314  38I         .         .         .         .         .         .S        .         .         .         .         .         .
  1316  39I         .         .         .         .         .         .S        .         .         .         .         .         .
301318  40I         .         .         .         .         .         .S        .         .         .         .         .         .
  1320  41I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1322  42I         .         .         .         .         .         .S        .         .         .         .         .         .
301324  43I         .         .         .         .         .         .S        .         .         .         .         .         .
  1326  44I         .         .         .         .         .         .S        .         .         .         .         .         .
  1328  45I         .         .         .         .         .         .S        .         .         .         .         .         .
301330  46I         .         .         .         .         .         .S        .         .         .         .         .         .
  1332  47I         .         .         .         .         .         .S        .         .         .         .         .         .
  1334  48I         .         .         .         .         .         .S        .         .         .         .         .         .
301336  49I         .         .         .         .         .         .S        .         .         .         .         .         .
  1338  50I         .         .         .         .         .         .S        .         .         .         .         .         .
  1340  51I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301342  52I         .         .         .         .         .         .S        .         .         .         .         .         .
  1344  53I         .         .         .         .         .         .S        .         .         .         .         .         .
  1346  54I         .         .         .         .         .         .S        .         .         .         .         .         .
301348  55I         .         .         .         .         .         .S        .         .         .         .         .         .
  1350  56I         .         .         .         .         .         .S        .         .         .         .         .         .
  1352  57I         .         .         .         .         .         .S        .
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  1356  59I         .         .         .         .         .         .S         .         .         .         .         .         .
  1358  60I         .         .         .         .         .         .S         .         .         .         .         .         .
301400  61I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1402  62I         .         .         .         .         .         .S         .         .         .         .         .         .
  1404  63I         .         .         .         .         .         .S         .         .         .         .         .         .
301406  64I         .         .         .         .         .         .S         .         .         .         .         .         .
  1408  65I         .         .         .         .         .         .S         .         .         .         .         .         .
  1410  66I         .         .         .         .         .         .S         .         .         .         .         .         .
301412  67I         .         .         .         .         .         .S         .         .         .         .         .         .
  1414  68I         .         .         .         .         .         .S         .         .         .         .         .         .
  1416  69I         .         .         .         .         .         .S         .         .         .         .         .         .
301418  70I         .         .         .         .         .         .S         .         .         .         .         .         .
  1420  71I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1422  72I         .         .         .         .         .         .S         .         .         .         .         .         .
301424  73I         .         .         .         .         .         .S         .         .         .         .         .         .
  1426  74I         .         .         .         .         .         .S         .         .         .         .         .         .
  1428  75I         .         .         .         .         .         .S         .         .         .         .         .         .
301430  76I         .         .         .         .         .         .S         .         .         .         .         .         .
  1432  77I         .         .         .         .         .         .S         .         .         .         .         .         .
  1434  78I         .         .         .         .         .         .S         .         .         .         .         .         .
301436  79I         .         .         .         .         .         .S         .         .         .         .         .         .
  1438  80I         .         .         .         .         .         .S         .         .         .         .         .         .
  1440  81I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301442  82I         .         .         .         .         .         .S         .         .         .         .         .         .
  1444  83I         .         .         .         .         .         .S         .         .         .         .         .         .
  1446  84I         .         .         .         .         .         .S         .         .         .         .         .         .
301448  85I         .         .         .         .         .         .S         .         .         .         .         .         .
  1450  86I         .         .         .         .         .         .S         .         .         .         .         .         .
  1452  87I         .         .         .         .         .         .S         .         .         .         .         .         .
301454  88I         .         .         .         .         .         .S         .         .         .         .         .         .
  1456  89I         .         .         .         .         .         .S         .         .         .         .         .         .
  1458  90I         .         .         .         .         .         .S         .         .         .         .         .         .
301500  91I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1502  92I         .         .         .         .         .         .S         .         .         .         .         .         .
  1504  93I         .         .         .         .         .         .S         .         .         .         .         .         .
301506  94I         .         .         .         .         .         .S         .         .         .         .         .         .
  1508  95I         .         .         .         .         .         .S         .         .         .         .         .         .
  1510  96I         .         .         .         .         .         .S         .         .         .         .         .         .
301512  97I         .         .         .         .         .         .S         .         .         .         .         .         .
  1514  98I         .         .         .         .         .         .S         .         .         .         .         .         .
  1516  99I         .         .         .         .         .         .S         .         .         .         .         .         .
301518 100I         .         .         .         .         .         .S         .         .         .         .         .         .
  1520 101I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1522 102I         .         .         .         .         .         .S         .         .         .         .         .         .
301524 103I         .         .         .         .         .         .S         .         .         .         .         .         .
  1526 104I         .         .         .         .         .         .S         .         .         .         .         .         .
  1528 105I         .         .         .         .         .         .S         .         .         .         .         .         .
301530 106I         .         .         .         .         .         .S         .         .         .         .         .         .
  1532 107I         .         .         .         .         .         .S         .         .         .         .         .         .
  1534 108I         .         .         .         .         .         .S         .         .         .         .         .         .
301536 109I         .         .         .         .         .         .S         .         .         .         .         .         .
  1538 110I         .         .         .         .         .         .S         .         .         .         .         .         .
  1540 111I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301542 112I         .         .         .         .         .         .S         .         .         .         .         .         .
  1544 113I         .         .         .         .         .         .S         .         .         .         .         .         .
  1546 114I         .         .         .         .         .         .S         .         .         .         .         .         .
301548 115I         .         .         .         .         .         .S         .         .         .         .         .         .
  1550 116I         .         .         .         .         .         .S         .         .         .         .         .         .
  1552 117I         .         .         .         .         .         .S         .         .         .         .         .         .
301554 118I         .         .         .         .         .         .S         .         .         .         .         .         .
  1556 119I         .         .         .         .         .         .S         .         .         .         .         .         .
  1558 120I         .         .         .         .         .         .S         .         .         .         .         .         .
301600 121I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1602 122I         .         .         .         .         .         .S         .         .         .         .         .         .
  1604 123I                                                             S
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  1608 125I         .         .         .         .         .         .S        .         .         .         .         .         .
[redacted]1610 126I         .         .         .         .         .         .S        .         .         .         .         .         .
301612 127I         .         .         .         .         .         .S        .         .         .         .         .         .
  1614 128I         .         .         .         .         .         .S        .         .         .         .         .         .
[redacted]1616 129I         .         .         .         .         .         .S        .         .         .         .         .         .
301618 130I         .         .         .         .         .         .S        .         .         .         .         .         .
  1620 131I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
[redacted]1622 132I         .         .         .         .         .         .S        .         .         .         .         .         .
301624 133I         .         .         .         .         .         .S        .         .         .         .         .         .
  1626 134I         .         .         .         .         .         .S        .         .         .         .         .         .
[redacted]1628 135I         .         .         .         .         .         .S        .         .         .         .         .         .
301630 136I         .         .         .         .         .         .S        .         .         .         .         .         .
  1632 137I         .         .         .         .         .         .S        .         .         .         .         .         .
[redacted]1634 1380I        .         .         .         .         .         .S        .         .         .         .         .         .
301636 1390I        .         .         .         .         .         .S        .         .         .         .         .         .
  1638 1400I        .         .         .         .         .         .S        .         .         .         .         .         .
[redacted]1640 1410I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
301642 1420I        .         .         .         .         .         .S        .         .         .         .         .         .
  1644 1430 I       .         .         .         .         .         . S       .         .         .         .         .         .
[redacted]1646 1440 I       .         .         .         .         .         . S       .         .         .         .         .         .
301648 1450 I       .         .         .         .         .         . S       .         .         .         .         .         .
  1650 1460  I      .         .         .         .         .         . S       .         .         .         .         .         .
[redacted]1652 1470   I     .         .         .         .         .         . S       .         .         .         .         .         .
301654 1480    I    .         .         .         .         .         . S       .         .         .         .         .         .
  1656 1490     I   .         .         .         .         .         .  S      .         .         .         .         .         .
[redacted]1658 150.0     I  .         .         .         .         .         .  S      .         .         .         .         .         .
301700 151.0. . . .I. . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  1702 152.0        . I       .         .         .         .         .   S     .         .         .         .         .         .
[redacted]1704 153.0        .    I    .         .         .         .         .    S    .         .         .         .         .         .
301706 154.0        .       I .         .         .         .         .    S    .         .         .         .         .         .
  1708 155.0        .         . I       .         .         .         .     S   .         .         .         .         .         .
[redacted]1710 156.0        .         .     I   .         .         .         .       S .         .         .         .         .         .
301712 157.0        .         .        I.         .         .         .        S.         .         .         .         .         .
  1714 158.0        .         .         .  I      .         .         .         .S        .         .         .         .         .
[redacted]1716 159.0        .         .         .      I  .         .         .         .  S      .         .         .         .         .
301718 160.0        .         .         .         .I        .         .         .    S    .         .         .         .         .
  1720 161.0. . . . . . . . . . . . . . . . . . . . . .I. . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . .
[redacted]1722 162.0        .         .         .         .       I .         .         .         S         .         .         .         .
301724 163.0        .         .         .         .         .I        .         .         . S       .         .         .         .
  1726 164.0        .         .         .         .         . I       .         .         .    S    .         .         .         .
[redacted]1728 165.     0   .         .         .         .         .   I     .         .         .       S .         .         .         .
301730 166.         .     0   .         .         .         .    I    .         .         .         S         .         .         .
  1732 167.         .         .     0   .         .         .    I    .         .         .         . S       .         .         .
[redacted]1734 168.         .         .         .    0    .         .   I     .         .         .         .  S      .         .         .
301736 169.         .         .         .         .0        .  I      .         .         .         .   S     .         .         .
  1738 170.         .         .         .         .    0    . I       .         .         .         .    S    .         .         .
[redacted]1740 171. . . . . . . . . . . . . . . . . . . . . . . .0. I . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . .
301742 172.         .         .         .         .       I .         .         .         .         .    S    .         .         .
  1744 173.         .         .         .         .     I 0 .         .         .         .         .    S    .         .         .
[redacted]1746 174.         .         .         .         .  I  0   .         .         .         .         .    S    .         .         .
301748 175.         .         .         .         .I   0    .         .         .         .         .    S    .         .         .
  1750 176.         .         .         .        I.  0      .         .         .         .         .   S     .         .         .
[redacted]1752 177.         .         .         .        I. 0       .         .         .         .         .   S     .         .         .
301754 178.         .         .         .         I0        .         .         .         .         .   S     .         .         .
  1756 179.         .         .         .         .I        .         .         .         .         .   S     .         .         .
[redacted]1758 180.         .         .         .         .I        .         .         .         .         .   S     .         .         .
301800 181. . . . . . . . . . . . . . . . . . . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . .
  1802 182.         .         .         .         I0        .         .         .         .         .   S     .         .         .
[redacted]1804 183.         .         .         .        I0         .         .         .         .         .   S     .         .         .
301806 184.         .         .         .      I  0         .         .         .         .         .   S     .         .         .
  1808 185.         .         .         .    I  0 .         .         .         .         .         .   S     .         .         .
[redacted]1810 186.         .         .         .  I   0  .         .         .         .         .         .   S     .         .         .
301812 187.         .         .         .I   0    .         .         .         .         .         .  S      .         .         .
  1814 188.         .         .        I.  0      .         .         .         .         .         .  S      .         .         .
[redacted]1816 189.         .         .      I  . 0       .         .         .         .         .         .  S      .         .         .
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. 1820 191. . . . . . . . . . . . . .I. . 0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . .
[redacted]1822 192.         .         . I    0  .         .         .         .         .         .         . S       .         .         .
301824 193.         .         I    0    .         .         .         .         .         .         . S       .         .         .
. 1826 194.         .        I.  0      .         .         .         .         .         .        S        .         .         .
[redacted]1828 195.         .      I  . 0       .         .         .         .         .         .        S        .         .         .
301830 196.         .     I   0         .         .         .         .         .         .        S        .         .         .
. 1832 197.         .    I   0.         .         .         .         .         .         .        S        .         .         .
[redacted]1834 198.         .   I   0 .         .         .         .         .         .         .        S        .         .         .
301836 199.         .  I   0  .         .         .         .         .         .         S         .         .         .
. 1838 200.         . I   0   .         .         .         .         .         .         S         .         .         .
[redacted]1840 201. . . . . .I. .0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . .
301842 202.         .I  0     .         .         .         .         .         .         S         .         .         .
. 1844 203.         I  0      .         .         .         .         .         .         S         .         .         .
[redacted]1846 204.         I 0       .         .         .         .         .         .        S.         .         .         .
301848 205.        I. 0       .         .         .         .         .         .        S.         .         .         .
. 1850 206.        I.0        .         .         .         .         .         .        S.         .         .         .
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301854 208.       I 0         .         .         .         .         .         .         .        S.         .         .         .
. 1856 209.      I 0.         .         .         .         .         .         .         .        S.         .         .         .
[redacted]1858 210.      I 0.         .         .         .         .         .         .         .        S.         .         .         .
301900 211. . . .I.0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . .
. 1902 212.     I 0 .         .         .         .         .         .         .         .       S .         .         .         .
[redacted]1904 213.     I 0 .         .         .         .         .         .         .         .       S .         .         .         .
301906 214.     I0  .         .         .         .         .         .         .         .       S .         .         .         .
. 1908 215.     I0  .         .         .         .         .         .         .         .       S .         .         .         .
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301912 217.    I 0  .         .         .         .         .         .         .         .       S .         .         .         .
. 1914 218.    I0   .         .         .         .         .         .         .         .       S .         .         .         .
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301918 220.    I0   .         .         .         .         .         .         .         .       S .         .         .         .
. 1920 221. . .I0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . .
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301924 223.    I    .         .         .         .         .         .         .         .       S .         .         .         .
. 1926 224.   I0    .         .         .         .         .         .         .         .       S .         .         .         .
[redacted]1928 225.   I0    .         .         .         .         .         .         .         .       S .         .         .         .
301930 226.   I0    .         .         .         .         .         .         .         .       S .         .         .         .
. 1932 227.   I0    .         .         .         .         .         .         .         .       S .         .         .         .
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301936 229.   I0    .         .         .         .         .         .         .         .       S .         .         .         .
. 1938 230.   I0    .         .         .         .         .         .         .         .      S  .         .         .         .
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301942 232.   I     .         .         .         .         .         .         .         .      S  .         .         .         .
. 1944 233.   I     .         .         .         .         .         .         .         .      S  .         .         .         .
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301948 235.   I     .         .         .         .         .         .         .         .      S  .         .         .         .
. 1950 236.   I     .         .         .         .         .         .         .         .      S  .         .         .         .
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. 1956 239.  I0     .         .         .         .         .         .         .         .      S  .         .         .         .
[redacted]1958 240.  I0     .         .         .         .         .         .         .         .      S  .         .         .         .
302000 241. .I0 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . .
. 2002 242.  I0     .         .         .         .         .         .         .         .      S  .         .         .         .
[redacted]2004 243.  I0     .         .         .         .         .         .         .         .      S  .         .         .         .
302006 244.  I0     .         .         .         .         .         .         .         .      S  .         .         .         .
. 2008 245.  I0     .         .         .         .         .         .         .         .      S  .         .         .         .
[redacted]2010 246.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
302012 247.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
. 2014 248.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
[redacted]2016 249.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
302018 250.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
. 2020 251. .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . .
[redacted]2022 252.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
302024 253.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
. 2026 254.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
[redacted]2028 255.  I                                                                                    S
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R6-32

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  2032 257.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
 02034 258.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
302036 259.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2038 260.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
 02040 261. .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . .
302042 262.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2044 263.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
 02046 264.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
302048 265.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2050 266.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
 02052 267.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
302054 268.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2056 269.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2058 270.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
302100 271. .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . .
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  2104 273.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
302106 274.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2108 275.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2110 276.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
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  2116 279.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
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  2120 281. .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . .
  2122 282.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
302124 283.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2126 284.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
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  2138 290.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2140 291. .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . .
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  2144 293.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2146 294.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
302148 295.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2150 296.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2152 297.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
302154 298.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2156 299.  I      .         .         .         .         .         .         .         .      S  .         .         .         .
  2158 300.--I------.---------.---------.---------.---------.---------.---------.---------.------S--.---------.---------.---------.
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R6-33

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

                                PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM    TIME OF
OPERATION        STATION        FLOW    PEAK        6-HOUR     24-HOUR     72-HOUR     AREA      STAGE    MAX STAGE

HYDROGRAPH AT       D123         16.    5.50          2.          1.          1.        .02

ROUTED TO           CH1A         16.    5.50          2.          1.          1.        .02

HYDROGRAPH AT         D4          3.    5.50          0.          0.          0.        .00

2 COMBINED AT         D4         19.    5.50          3.          2.          2.        .02

ROUTED TO           RES4          7.    6.03          1.          1.          1.        .02     23.84       6.03

ROUTED TO            P1A          7.    6.07          1.          1.          1.        .02

HYDROGRAPH AT         C2          4.    5.63          1.          0.          0.        .00

2 COMBINED AT         C2          9.    6.03          2.          1.          1.        .03

HYDROGRAPH AT        C13         18.    5.50          3.          2.          2.        .02

2 COMBINED AT        C12         22.    5.53          5.          3.          3.        .05

ROUTED TO            P2A         22.    5.53          5.          3.          3.        .05

HYDROGRAPH AT         E1          2.    5.13          0.          0.          0.        .00

2 COMBINED AT         E1         22.    5.53          5.          3.          3.        .05

ROUTED TO           RES5         19.    5.70          4.          2.          2.        .05     16.68       5.70
```

```
                                         SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                             (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                 INTERPOLATED TO
                                                                              COMPUTATION INTERVAL
          ISTAQ    ELEMENT       DT        PEAK    TIME TO      VOLUME       DT        PEAK    TIME TO      VOLUME
                                                    PEAK                                      PEAK

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

             CH1A  MANE          1.70      16.37    330.76      1.23        2.00      16.35    330.00        1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW: .1226E+01 EXCESS: .0000E+00 OUTFLOW: .1225E+01 BASIN STORAGE: .1911E-02 PERCENT ERROR=    .0

              P1A  MANE          1.89       7.20    364.27       .52        2.00       7.19    364.00         .52

CONTINUITY SUMMARY (AC-FT) - INFLOW: .6256E+00 EXCESS: .0000E+00 OUTFLOW: .6225E+00 BASIN STORAGE: .3074E-02 PERCENT ERROR=    .0

              P2A  MANE           .66      21.55    331.76       .90        2.00      21.55    332.00         .90

CONTINUITY SUMMARY (AC-FT) - INFLOW: .2294E+01 EXCESS: .0000E+00 OUTFLOW: .2293E+01 BASIN STORAGE: .1864E-02 PERCENT ERROR=    .0



*** NORMAL END OF HEC-1 ***
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R6-35

Original
Do NOT Remove
From Office

85 9[illegible]-2

TRAFFIC STUDY

FOR

GRANDVIEW SUBDIVISION

June 30, 1994

Prepared for:
Don dela Motte

Prepared by:
HART GROUP, PC
ENGINEERS DESIGNERS PLANNERS
A DIVISION OF
LANDesign
200 North 6th St.
Suite 102
Grand Junction, Colorado 81501

I certify that this study has been prepared by me or under my supervision.

Prepared by:________________________________
Philip M. Hart P.E
State of Colorado, #19346

TABLE OF CONTENTS

A. INTRODUCTION

1. Land Use

Grandview Subdivision site is located 1/4 mile north of Patterson Road, east of 28 Road in the City of Grand Junction. The 64.8 acre site was formerly know as "Fox Estates."

The existing land use is agricultural and contains one single family dwelling and two out buildings. The topography of the site is relatively flat and gently slopes towards the southwest at a average rate of 1%. The historic use of the site has been crop production. The site has little vegetation except for a grove of cottonwood trees near the single family residence.

The proposed use of the site calls for the ultimate development of 200 single family building sites on the 64.8 acres. The resulting density is 3.1 dwelling units per acre. Lots range in size from 8,000 square feet to 12,500 square feet. The proposed zoning for the parcel is RSF-5.

The surrounding land uses of the site are primarily single family developments on moderately sized lots. Some acreage sized parcels adjoin the site to the north on 28 Road. Land to the south consists of a large parcel which currently has no development plans. Land to the west consists of single family residential lots. To the east the Matchett Village Development which is currently in the County review process. This development consists of mixed single family, multi-family and non-residential uses. There are no existing non-residential uses in the surrounding area. Figure 1 shows the site with the surrounding zoning and land uses.

2. Access

Primary access to the site is gained from 28 Road runs north\south along the west side of the site. Patterson Road located 1/4 mile to the south serves as a major east/west

SURROUNDING ZONING MAP

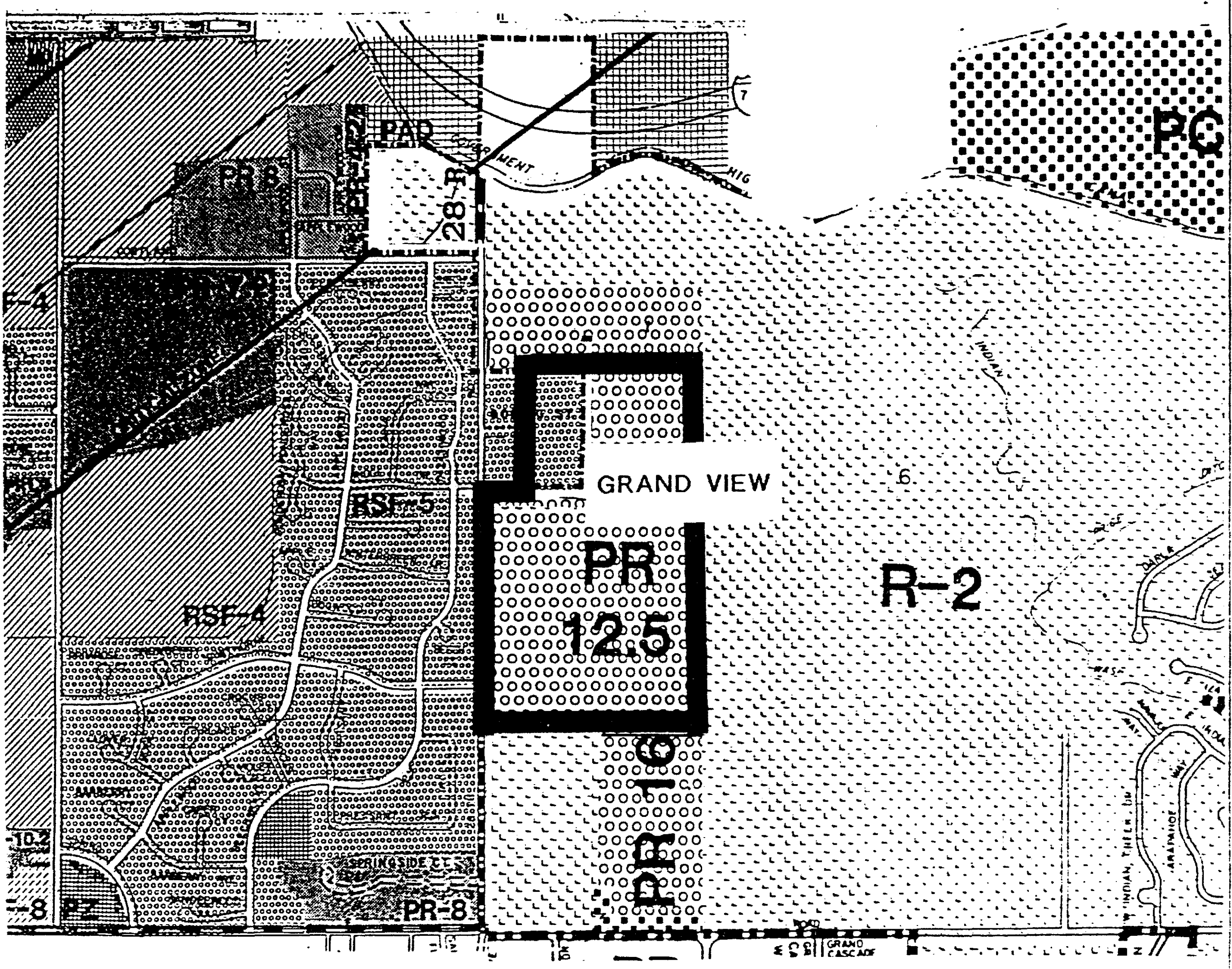


Figure 1

Surrounding Land Use and Zoning

arterial roadway in Grand Junction and connects 28 Road to the Other access is gained from Ridge Drive, Hawthorn Avenue and Cortland Avenue. Figure 2 shown the current street configuration in the general area of the site. The intersections of 28 Road and Ridge Drive and 28 Road and Hawthorn Avenue will be studied for traffic impact in this report as well as a traffic signal warrants analysis at the intersection of 28 Road and Patterson Avenue. The existing and proposed street alignment for 28 Road and Ridge Drive, 28 Road and Hawthorn Avenue and Patterson Avenue and 28 Road are shown in Figure 3 , Figure 4 and Figure 5.

B. ROADWAY IMPROVEMENTS

Improvements to the roadway system are to be made due to the proposed development. Additionally, improvements will be made to the east side of 28 Road by widening the pavement by 9' and adding a 2' vertical curb and gutter section where 28 Road is adjacent to the planned development. Currently, a curb and gutter section is located on the west side of 28 Road adjacent to the existing development. This improvement to 28 Road will provide curb and gutter on both sides of 28 Road. This addition will improve the drainage on 28 Road and provide a vertical barrier to traffic on 28 Road.

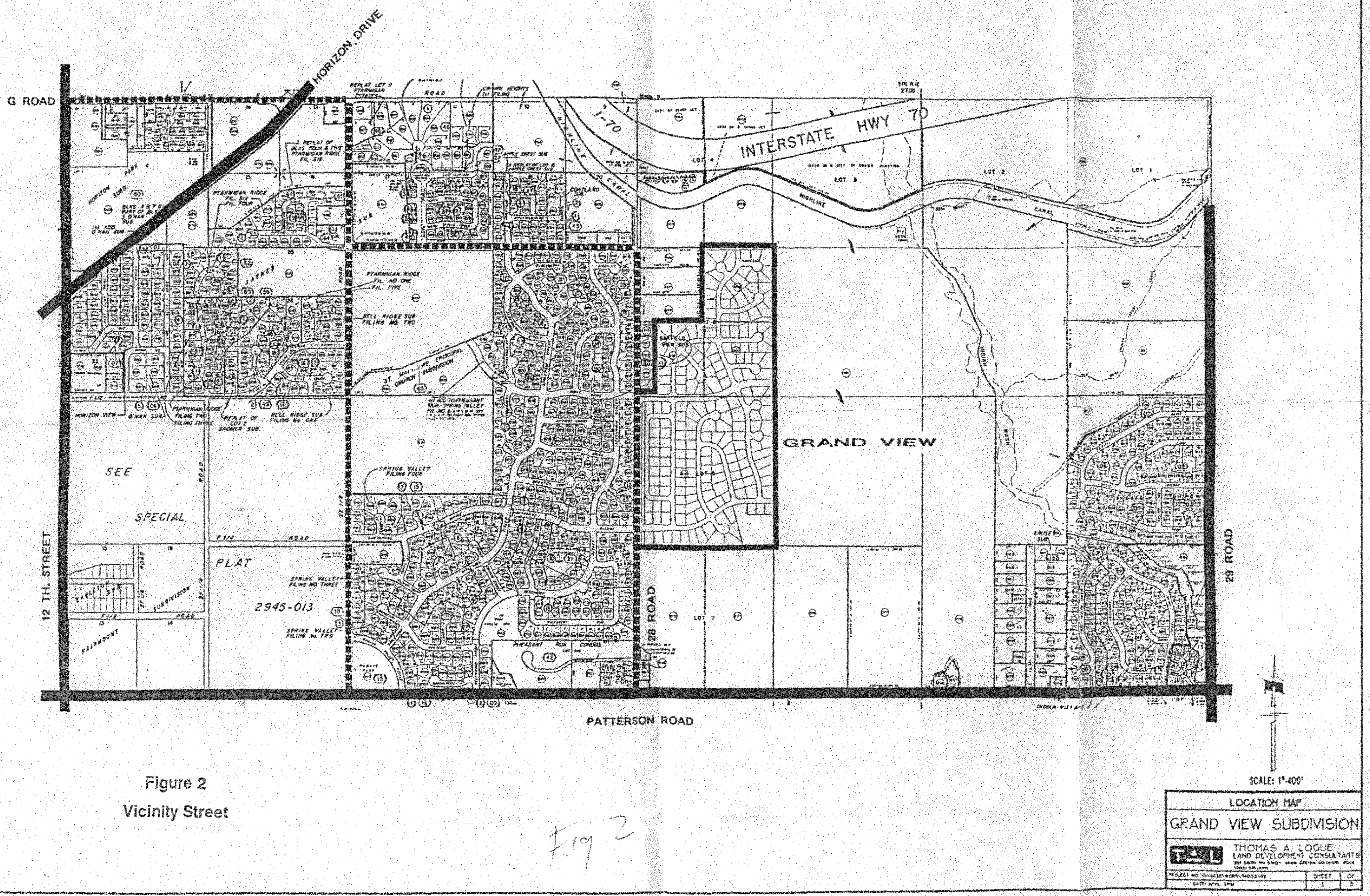


Figure 2
Vicinity Street

Fig 2

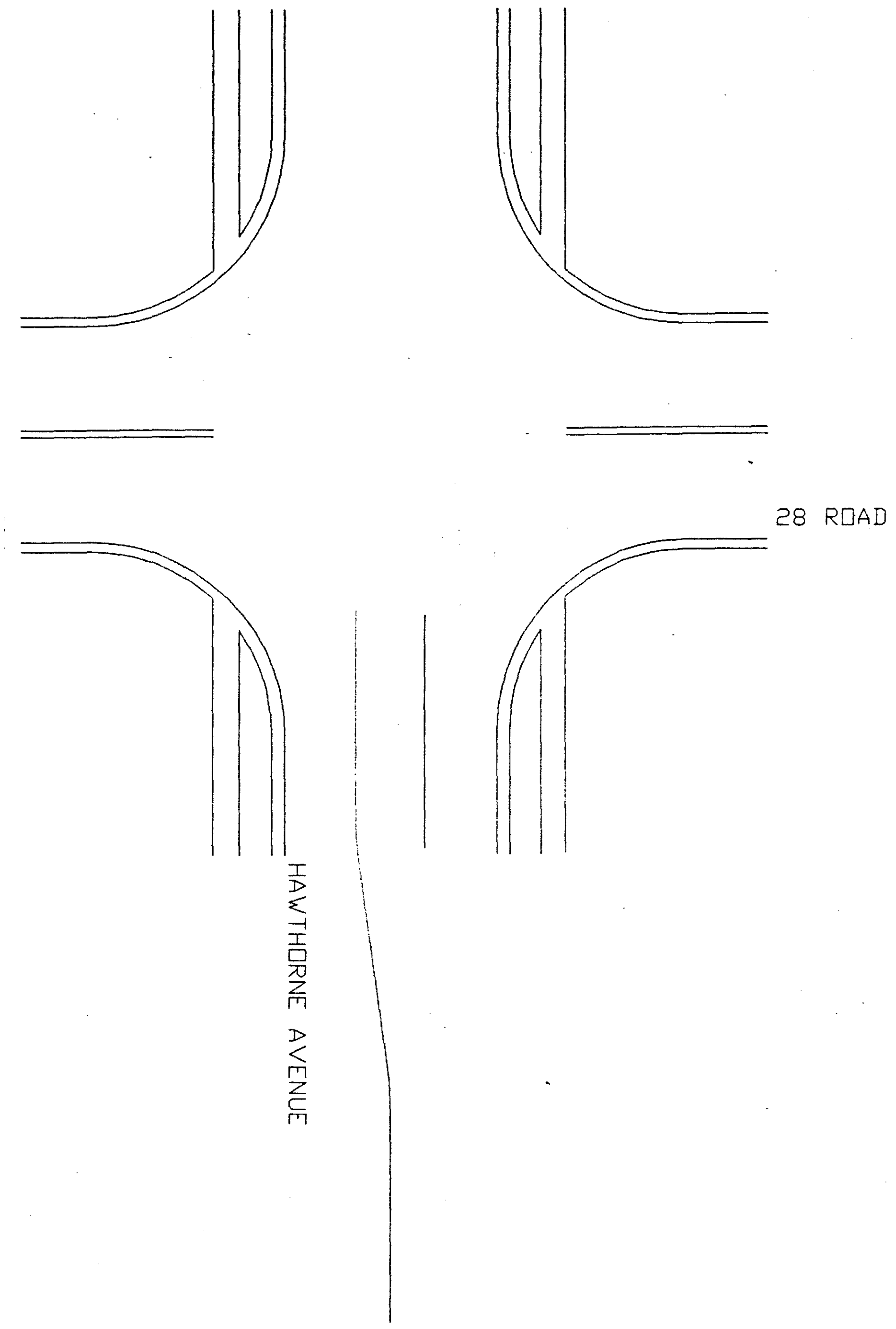


Figure 3

28 Road and Hawthorn Avenue Intersection

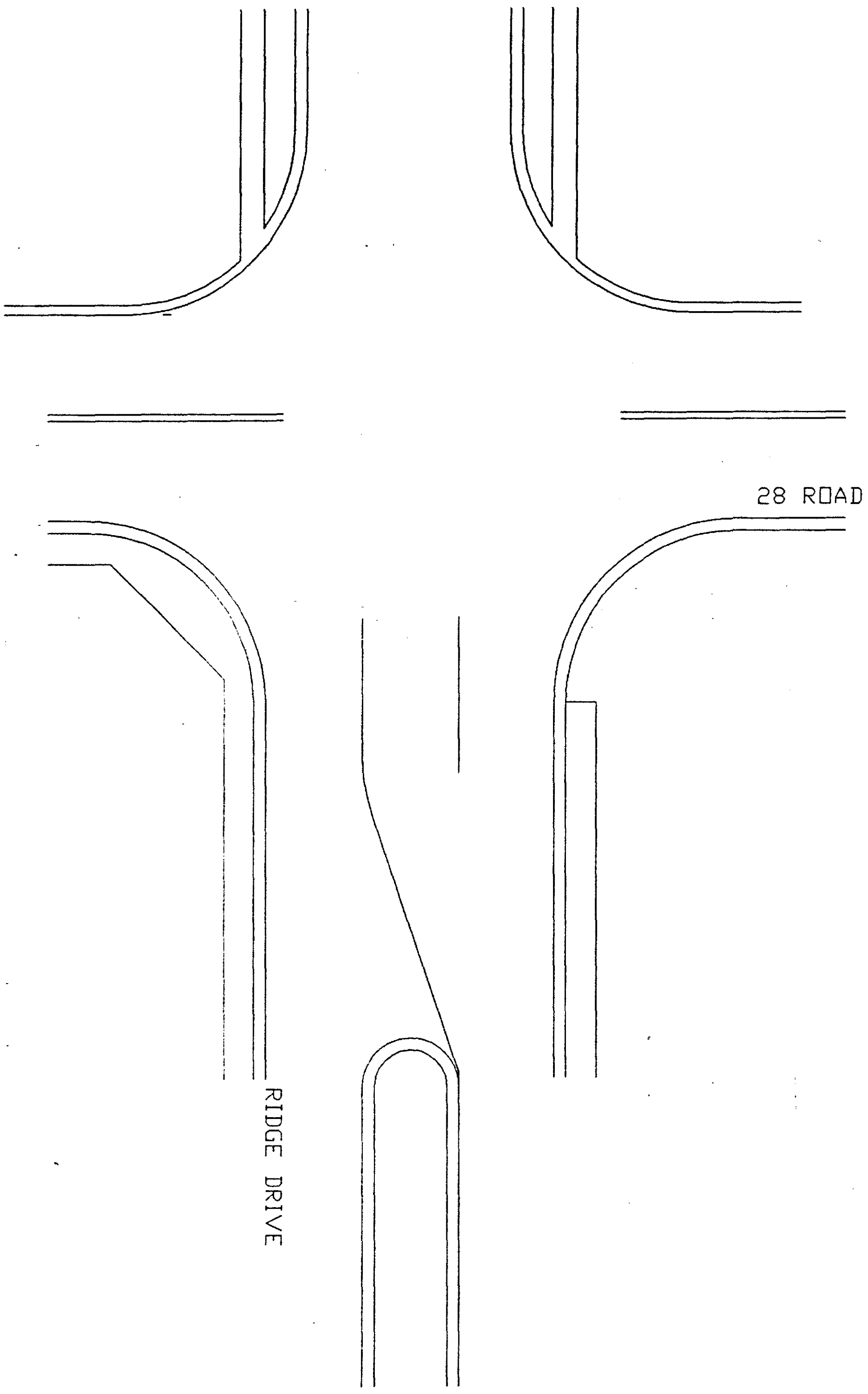


Figure 4

28 Road and Ridge Drive Intersection

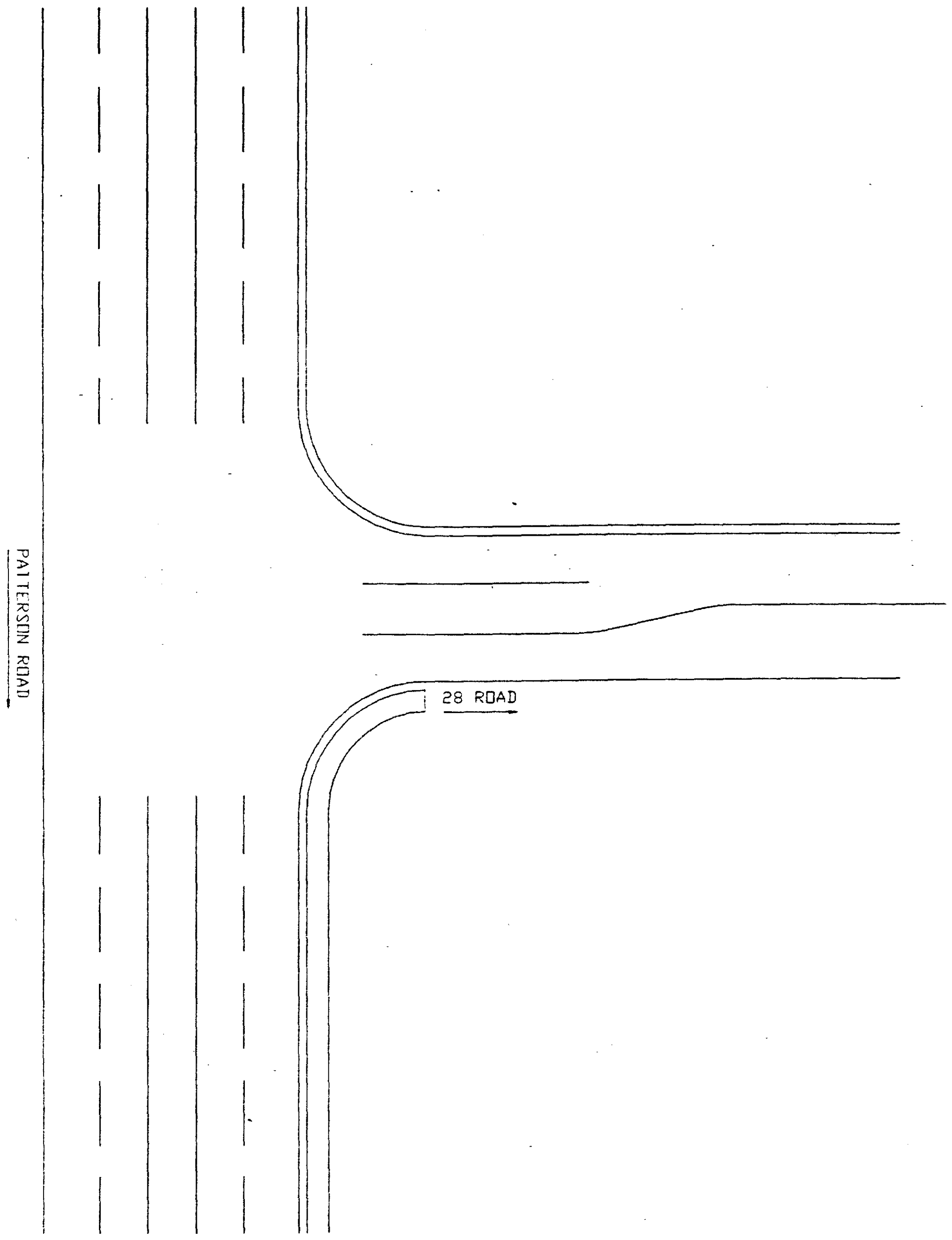


Figure 5
Patterson Road and 28 Road Intersection

C. TRIP GENERATION AND DESIGN HOUR VOLUMES

1. Trip Generation Rates

Trip generation rates are provided in Trip Generation , January 1991, Institute of Transportation Engineers. (see Appendix A)

Assumption is made that 1/2 of the daily trips generated by this development will use Ridge Drive and 1/2 will use Hawthorn Avenue. The resultant pattern provides 100 lots accessing 28 Road by Hawthorn Avenue and 1/2 accessing 28 Road by Ridge Drive.

TRIP GENERATION RATE

Intersection	# of Lots	Ave Day	Ave Day Trips	Peak Hour (am)	Peak Hour (am) Trips	Peak Hour (pm)	Peak Hour (pm) Trips
Hawthorn\28 Road	100	9.55	955	.76	76	1.02	102
Ridge\28 Road	100	9.55	955	.76	76	1.02	102
28 Road\ Patterson	200	9.55	1910	.76	152	1.02	204

Table A

2. Trip Distribution

Trip distribution on the new development was determined my available socioeconomic and demographic data for the influence area and by site visits to determine the current traffic flow and percentages of movements. Emphasis was given to fastest route to and from the traffic generators. Table B, C and D shown below represents the Trip Distribution by percentages for the new development.

Trip Distribution for Hawthorn and 28 Road Intersection

To and From Hawthorn North via 28 Road	2%
To and From Hawthorn South via 28 Road	94%
To and From Hawthorn West via Hawthorn	4%
	100%

Table B

Trip Distribution for Ridge and 28 Road Intersection

To and From Ridge North via 28 Road	2%
To and From Ridge South via 28 Road	94%
To and From Ridge West via Ridge	4%
	100%

Table C

Trip Distribution for 28 Road and Patterson Road Intersection

To and From 28 Road(at new devel.) West via Patterson	29%
To and From 28 Road(at new devel.) East via Patterson	71%

Table D

Note: These percentages determined
by on site traffic count for Ave AM
and Ave PM Peak Hour.

3. Trip Assignment

The following Figure 6 shows the new development traffic assignment in the development vicinity based on the Trip Distribution discussed above.

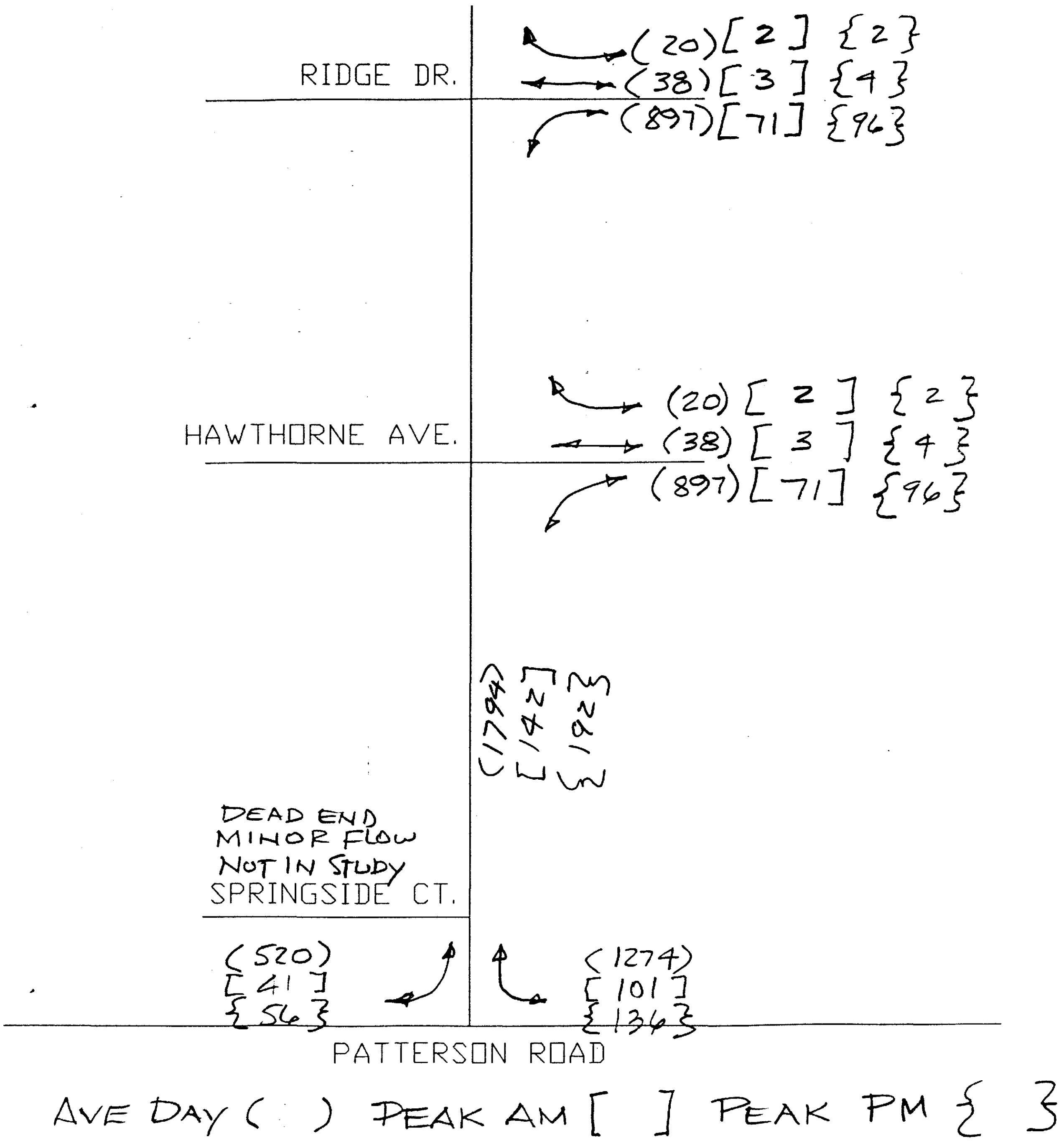


Figure 6

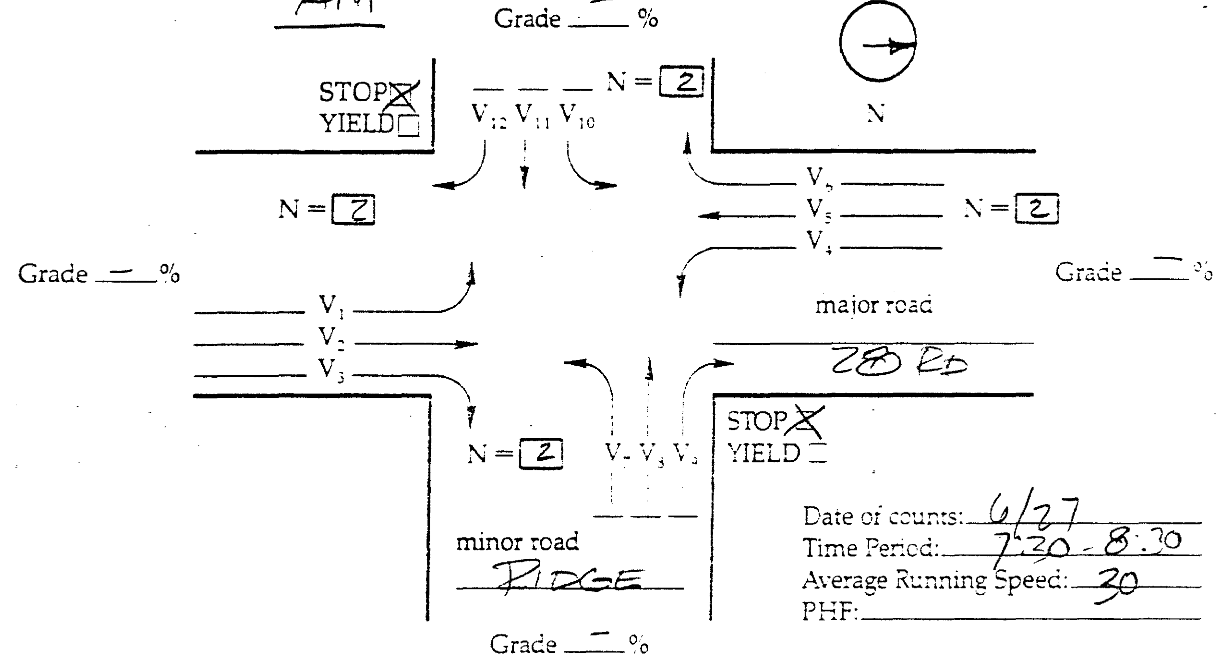
Trip Assignment for the New Development

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: Ridge & 28 Rd Name: P. Hart

HOURLY VOLUMES AM

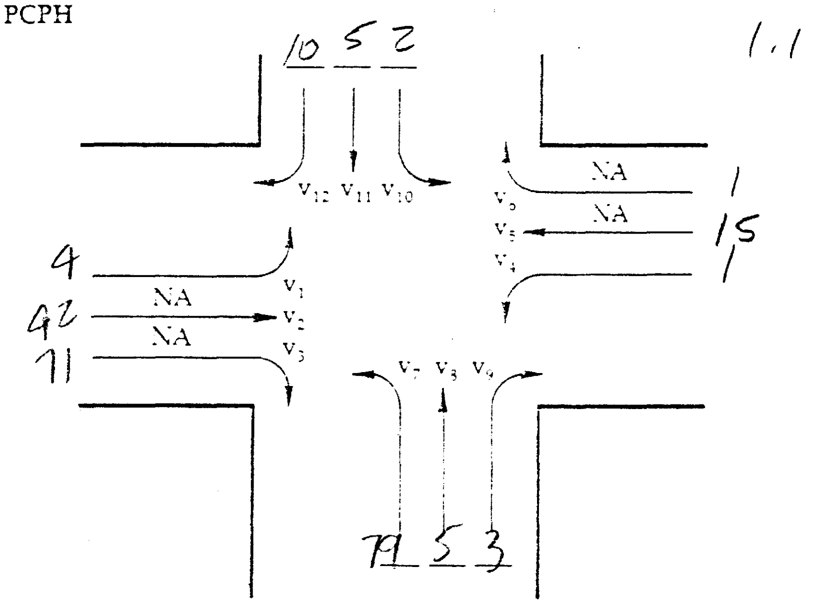


Date of counts: 6/27
Time Period: 7:30 - 8:30
Average Running Speed: 30
PHF:

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	4	42	11	1	15	1	71	4	2	1	4	9
Vol. (pcph), see Table 10-1	5	▤	▤	1	▤	▤	79	5	3	2	5	10

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	↱ V_9	↲ V_{12}
Conflicting Flows, V_c	$1/2\ V_3 + V_2 = V_{c9}$ 35.5 + 42 = 77.5 vph	$1/2\ V_6 + V_5 = V_{c12}$ 0 + 15 = 15 vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = 1000+ pcph	c_{p12} = 1000+ pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100$ = .3 %	$(v_{12}/c_{p12}) \times 100$ = 1.0 %
Impedance Factor, P (Fig. 10-5)	P_9 = .99	P_{12} = .99
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = 1000 pcph	$c_{m12} = c_{p12}$ = 1000 pcph
STEP 2: LT From Major Street	⬐ V_4	⬏ V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ 71 + 42 = 113 vph	$V_6 + V_5 = V_{c1}$ 1 + 15 = 16 vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = 970 pcph	c_{p1} = 1000 pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = .1 %	$(v_1/c_{p1}) \times 100$ = .5 %
Impedance Factor, P (Fig. 10-5)	P_4 = .99	P_1 = .99
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = 970 pcph	$c_{m1} = c_{p1}$ = 1000 pcph
STEP 3: TH From Minor Street	↑ V_8	↓ V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_6+V_5+V_4=V_{c8}$ 36 + 41 + 4 + 1 + 15 + 1 = 98 vph	$1/2V_6+V_5-V_4+V_3+V_2+V_1=V_{c11}$ 1 + 15 - 1 + 71 + 42 - 4 = 134 vph
Critical Gap, T_c (Tab. 10-2)	6.0 (sec)	6.0 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = 900 pcph	c_{p11} = 860 pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = .56 %	$(v_{11}/c_{p11}) \times 100$ = .58 %
Impedance Factor, P (Fig. 10-5)	P_8 = .99	P_{11} = .99
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ 882 = 900 × .99 × .99 (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ 843 = 860 × .99 × .99 (pcph)
STEP 4: LT From Minor Street	↰ V_7	↳ V_{10}
Conflicting Flows, V_c	V_{c8} (step 3) + $V_{11} + V_{12} = V_{c7}$ 98 + 5 + 10 = 113 vph	V_{c11} (step 3) $- V_8 + V_9 = V_{c10}$ 134 + 5 - 3 = 142 vph
Critical Gap, T_c (Tab. 10-2)	6.5 (sec)	6.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = 800 pcph	c_{p10} = 752 pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \times P_1 \times P_4 \times P_{11} \times P_{12}$ 768 = 800 × .99 × .99 × .99 × .99 (pcph)	$c_{m10} = c_{p10} \times P_4 \times P_1 \times P_8 \times P_9$ 720 = 750 × .99 × .99 × .99 × .99 (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_i + v_j}{(v_i/c_{mi}) + (v_j/c_{mj})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_i + v_j + v_k}{(v_i/c_{mi}) + (v_j/c_{mj}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	79	768	771	692	A
8	5	882	771	766	A
9	3	1000	771	768	A

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	2	750	914	912	A
11	5	843	914	909	A
12	10	1000	914	904	A

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	4	1000	996	A
4	1	970	969	A

COMMENTS:

LEVEL OF SERVICE OK
FOR ALL MOVEMENTS WITH
ADDED DEVELOPMENT

3. 28 Road and Patterson Intersection

The 28 Road and Patterson intersection is a "T" intersection and will be analyzed as unchanged from the current configuration using the developed traffic flow.

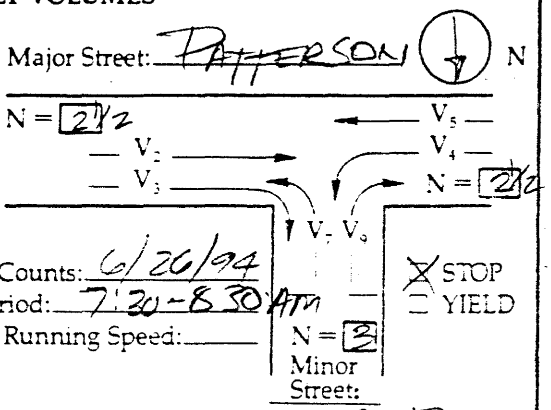
WORKSHEET FOR ANALYSIS OF T-INTERSECTIONS

LOCATION: CURRENT PATTERSON / 28 RD

NAME: P. HART

HOURLY VOLUMES

Major Street: PATTERSON



Grade __%

Date of Counts: 6/26/94

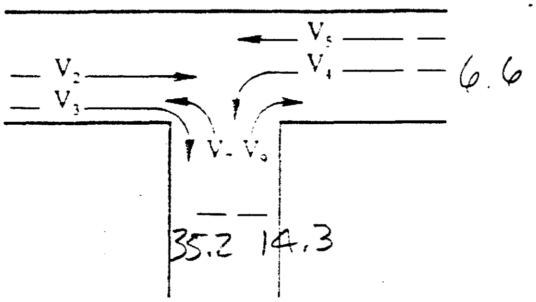
Time Period: 7:30-8:30 AM

Average Running Speed: ______

Minor Street: 28 RD

PHF: ______ Grade ______ %

VOLUMES IN PCPH



VOLUME ADJUSTMENTS

Movement No.	2	3	4	5	7	9
Volume (vph)	1170	46	6	370	32	13
Vol. (pcph), see Table 10-1	▨	▨	6.6	▨	35.2	14.3

STEP 1: RT from Minor Street ↱ V_9

Conflicting Flow, V_c — $1/2\ V_3 - V_2 =$ 23 − 1170 = 1193 vph (V_{c9})

Critical Gap, T_c, and Potential Capacity, c_p — $T_c =$ 5.5 sec (Table 10-2) $c_{p9} =$ 290 pcph (Fig. 10-3)

Actual Capacity, c_m — $c_{m9} = c_{p9} =$ 290 pcph

STEP 2: LT From Major Street V_4

Conflicting Flow, V_c — $V_3 - V_2 =$ 1170 + 46 = 1216 vph (V_{c4})

Critical Gap, T_c, and Potential Capacity, c_p — $T_c =$ 5.5 sec (Table 10-2) $c_{p4} =$ 245 pcph (Fig. 10-3)

Percent of c_p Utilized and Impedance Factor (Fig. 10-5) — $(v_4/c_{p4}) \times 100 =$ 2.5% $P_4 =$ .99

Actual Capacity, c_m — $c_{m4} = c_{p4} =$ 245 pcph

STEP 3: LT From Minor Street V_7

Conflicting Flow, V_c — $1/2\ V_3 - V_2 + V_5 - V_4 =$ 23 + 1170 − 370 − 6 = 1569 vph (V_{c7})

Critical Gap, T_c, and Potential Capacity, c_p — $T_c =$ 7 sec (Table 10-2) $c_{p7} =$ 90 pcph (Fig. 10-3)

Actual Capacity, c_m — $c_{m7} = c_{p7} \times P_4 =$ 90 × .99 = 89 pcph

SHARED-LANE CAPACITY

$$SH = \frac{v_7 - v_9}{(v_7/c_{m7}) - (v_9/c_{m9})}$$ if lane is shared

Movement No.	v(pcph)	c_m (pcph)	c_{SH} (pcph)	c_R	LOS
7	35.2	89	—	53.8	E
9	14.3	290	—	275.7	C
4	6.6	245	—	238	C

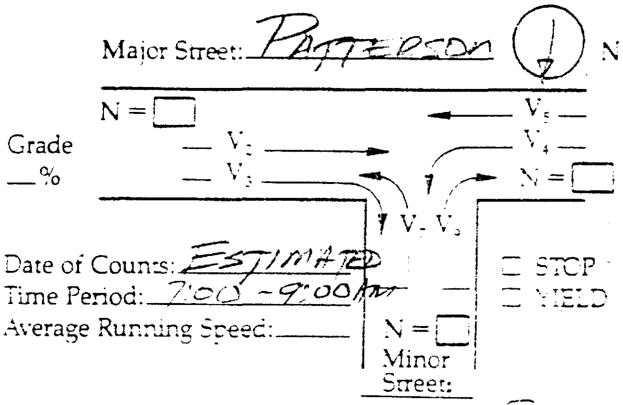
WORKSHEET FOR ANALYSIS OF T-INTERSECTIONS

LOCATION: W/ DEVELOPMENT PATTERSON / 28 RD

NAME: P. HART

HOURLY VOLUMES

Major Street: PATTERSON



Grade __%

Date of Counts: ESTIMATED

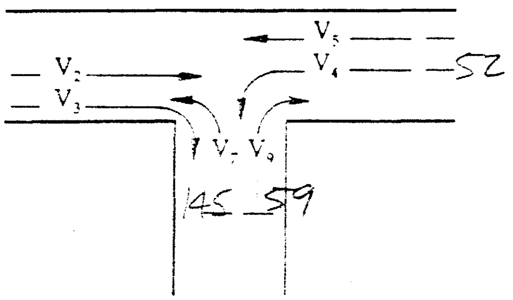
Time Period: 7:00 - 9:00 AM

Average Running Speed: ______

PHF: ______ Grade ______ %

Minor Street: 28 RD

VOLUMES IN PCPH



VOLUME ADJUSTMENTS

Movement No.	2	3	4	5	7	9
Volume (vph)	1170	147	47	370	133	54
Vol. (pcph), see Table 10-1	▨	▨	52	▨	145	59

STEP 1: RT from Minor Street

V_9

Conflicting Flow, V_c — $1/2\, V_3 + V_2 =$ 74 + 1170 = 1244 vph (V_{c9})

Critical Gap, T_c, and Potential Capacity, c_p — $T_c =$ 55 sec (Table 10-2) $c_{p9} =$ 220 pcph (Fig. 10-3)

Actual Capacity, c_m — $c_{m9} = c_{p9} =$ 220 pcph

STEP 2: LT From Major Street

V_4

Conflicting Flow, V_c — $V_3 + V_2 =$ 1170 + 147 = 1317 vph (V_{c4})

Critical Gap, T_c, and Potential Capacity, c_p — $T_c =$ 5.5 sec (Table 10-2) $c_{p4} =$ 215 pcph (Fig. 10-3)

Percent of c_p Utilized and Impedance Factor (Fig. 10-5) — $(v_4/c_{p4}) \times 100 =$ 8.4 % $P_4 =$ .94

Actual Capacity, c_m — $c_{m4} = c_{p4} =$ 215 pcph

STEP 3: LT From Minor Street

V_7

Conflicting Flow, V_c — $1/2\, V_3 + V_2 + V_5 + V_4 =$ 74 + 1170 + 370 + 52 = 1666 vph (V_{c7})

Critical Gap, T_c, and Potential Capacity, c_p — $T_c =$ 7 sec (Table 10-2) $c_{p7} =$ 80 pcph (Fig. 10-3)

Actual Capacity, c_m — $c_{m7} = c_{p7} \times P_4 =$ 80 × .94 = 75 pcph

SHARED-LANE CAPACITY

$$SH = \frac{v_7 + v_9}{(v_7/c_{m7}) + (v_9/c_{m9})}$$ if lane is shared

Movement No.	v(pcph)	c_m (pcph)	c_{SH} (pcph)	c_R	LOS
7	145	75	–	-70	E
9	69.3	220	–	150	D
4	19.8	215	–	195	D

F. TRAFFIC ACCIDENT REPORTS FOR PATTERSON AND 28 ROAD

1. Traffic accident reports for Patterson Road and 28 Road intersection are included in Appendix B of this report.

G. TRAFFIC SIGNAL WARRANT ANALYSIS

A traffic signal warrant analysis is required on the intersection at Patterson Road and 28 Road to determine if a traffic signal is warranted at this intersection. The following warrants analysis contained in the Manual on Uniform Traffic Control Devices, 1989, U.S. Department of Transportation is used to determine this requirement.

Warrant 1	Minimum Vehicular Volume
Not Met	Vehicles per hour approaching the intersection from the minor street does exceed 200 vehicles per hour.
Warrant 2	Interupption of Continuous Traffic
Met	Vehicles per hour approaching the intersection from the minor street does exceed 100 vehicles per hour
Warrant 3	Minimum Pedestrian Volume
Not Met	Study shows that during 2- 2 hour periods (7:30 to 9:30AM and 4:30 to 6:30PM) a total of 3 pedestrians used the intersection each period.
Warrant 4	School Crossing
Not Met	No school crossing is located at this intersection, the nearest school is located more than 1 mile from this intersection.
Warrant 5	Progressive Movement
Not Met	Platooning of vehicles on Patterson is provided by the signals at 27 1/2 Road to the west and 28 1/4 Road.

Warrant 6	Accident Experience
Not Met	Accident reports for the intersection show 6 accidents in 3 years which is less than the minimum of 5 accidents in 1 year.
Warrant 7	Systems Warrant
Met	Patterson Road is a part of the highway system which serves as the principal network for through traffic flow.
Warrant 8	Combination of Warrants
Met	Warrant 1 can be met using the .8 factor and Warrant 2 is met
Warrant 9	Four Hour Volumes
Not Met	Volumes fall below the line graph on figure 4-7, MOUTCD
Warrant 10	Peak Hour Delay
Met	All 3 items in this Warrant are met during the AM and PM volumes
Warrant 11	Peak Hour Volume
Met	One Hour Peak AM volume of 187 falls above the the curve on figur 4-5, MOUTCD

Factors governing the selection of type of control show that a traffic actuated control may be the type of control which may assist the left hand turn from the minor street (28 Road) unto Patterson Road during the AM and PM peak hours.

H. CONCLUSIONS AND RECOMMENDATIONS

The intersections an Hawthorn and 28 Road and Ridge and 28 Road are within the LOS A and will provide proper service with no further changes or improvements after the proposed development is completed.

It must be decided by the City if a traffic signal at Patterson Road and 28 Road would improvement of service. The Warrant Analysis shows that 5 of the Warrants are met showing that a traffic signal of some sort be considered. Some movements would be improved by the installation of a signal, others, while somewhat safer, would be adversely effected and delayed. It is recommended that a traffic accuated signal to assist in the left hand turn from 28 Road onto Patterson Road be considered when actual traffic conditions occur after build-out of partial build-out of the Grandview Subdivision.

APPENDIX A

Single-Family Detached Housing (< 300 Units)
(210)

Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

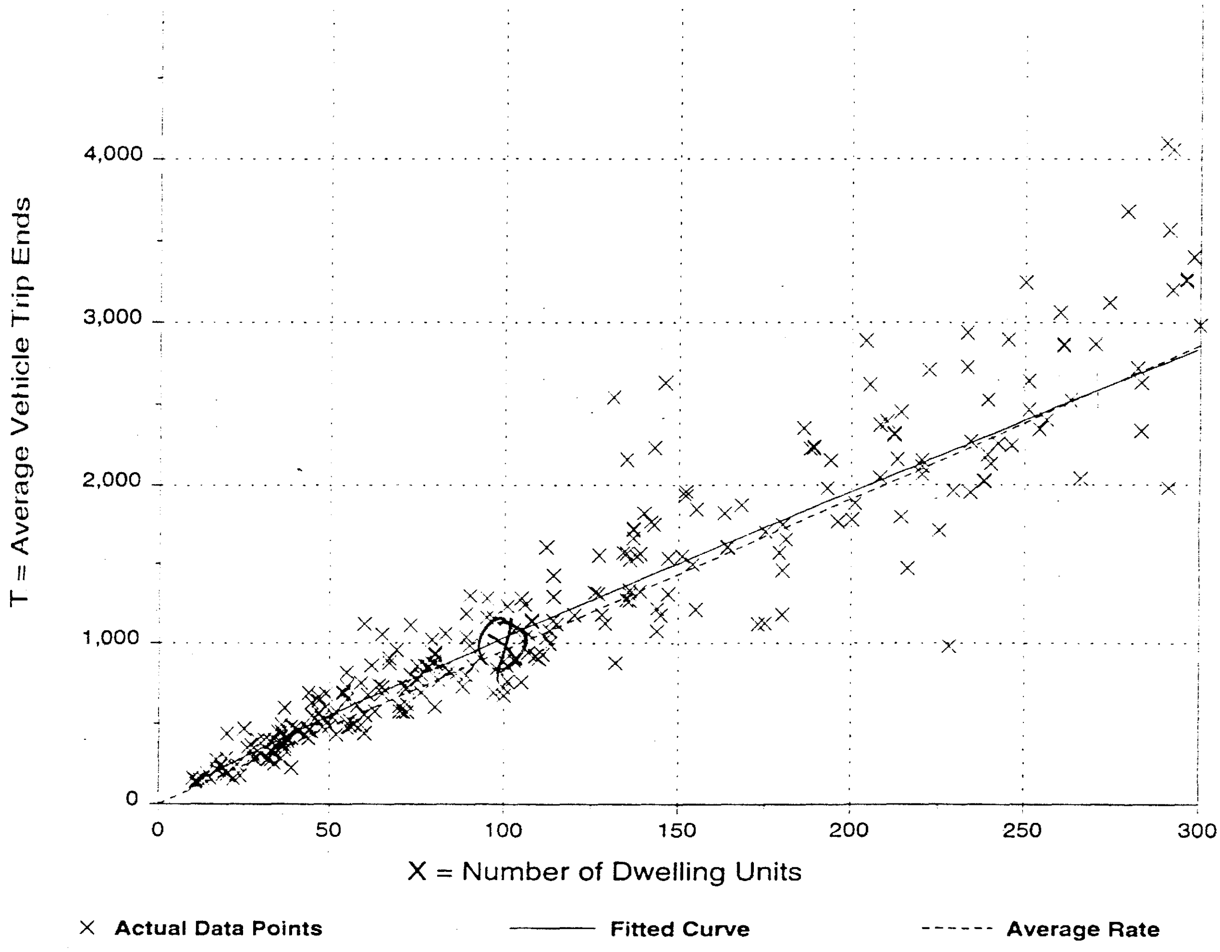
Number of Studies: 348
Average Number of Dwelling Units: 206
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.55	4.31 - 21.85	3.36

Data Plot and Equation

(Subset of Data Plotted on Page 257)



Fitted Curve Equation: $\mathrm{Ln}(T) = 0.921\ \mathrm{Ln}(X) + 2.698$ **$R^2 = 0.96$**

Single-Family Detached Housing (< 300 Units)

(210)

Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
A.M. Peak Hour of Generator

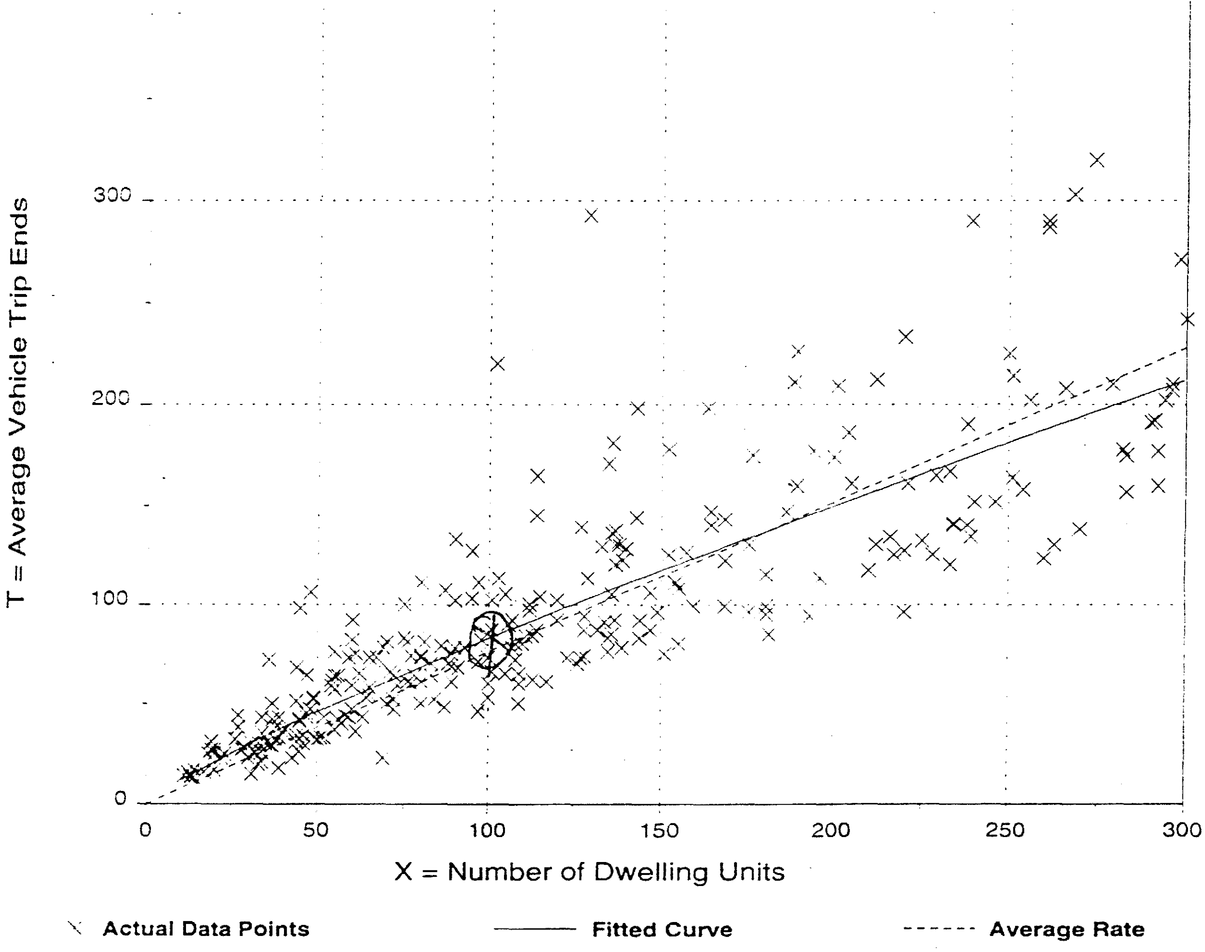
Number of Studies: 339
Average Number of Dwelling Units: 190
Directional Distribution: 26% entering, 74% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.76	0.33 - 2.27	0.91

Data Plot and Equation

(Subset of Data Plotted on Page 263)



Fitted Curve Equation: $Ln(T) = 0.858\ Ln(X) + 0.464$ **$R^2 = 0.89$**

Single-Family Detached Housing (< 300 Units)

(210)

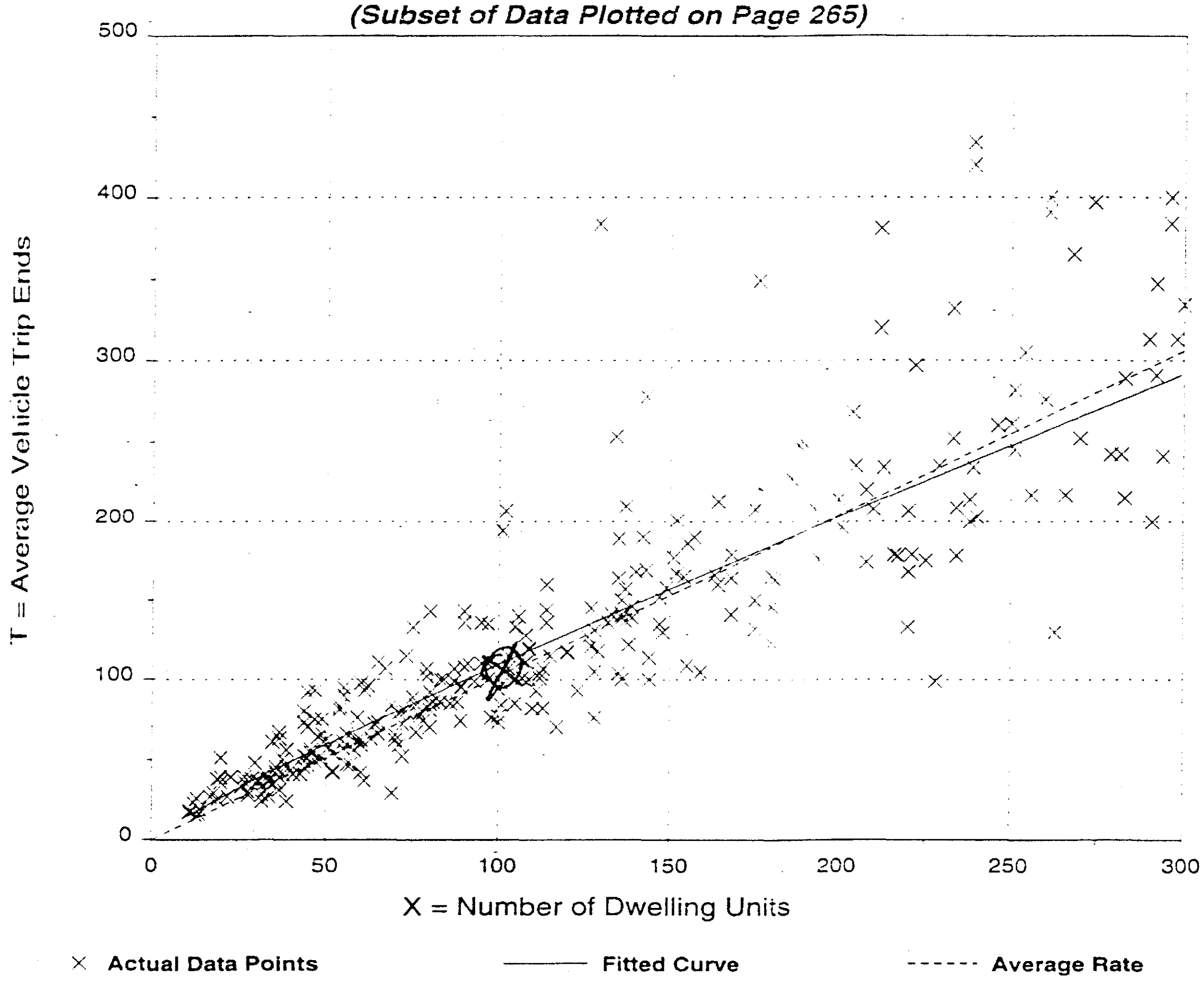
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
P.M. Peak Hour of Generator

Number of Studies: 357
Average Number of Dwelling Units: 183
Directional Distribution: 64% entering, 36% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.02	0.42 - 2.98	1.05

Data Plot and Equation



Fitted Curve Equation: $\mathrm{Ln}(T) = 0.892\ \mathrm{Ln}(X) + 0.590$ **$R^2 = 0.91$**

APPENDIX B

2. Ridge and 28 Road Intersection

The Ridge and 28 Road Intersection is a "T" intersection which will become a standard "Four Leg" intersection when the new development is constructed. It will be analyzed in the constructed condition using the developed traffic flow.

Traffic volume for the left turn warrants a left turn lane from Hawthorn and 28 Road. Volume of left turns are greatest from Ridge Drive onto 28 Road at the AM Peak Hour. Standard criteria dictates a 2 minute storage at the Peak Hour. 2 (71/60) = 2.36 cars therefor a left turn lane which stores 3 cars (75 feet long) is recommended. This would necessitate moving the proposed median on Ridge back to allow a left turn lane in the street section at 28 Road.

D. TRAFFIC VOLUME

1. Peak Hour AM Traffic Volume

The following Figures 7, 8, and 9 depict peak hour am total traffic volume for the existing and for the Build-out condition. Existing traffic counts were taken June 27, 1994 for the peak hour AM. Build-out counts were taken from the trip distribution and trip assignment calculations shown earlier in this report.

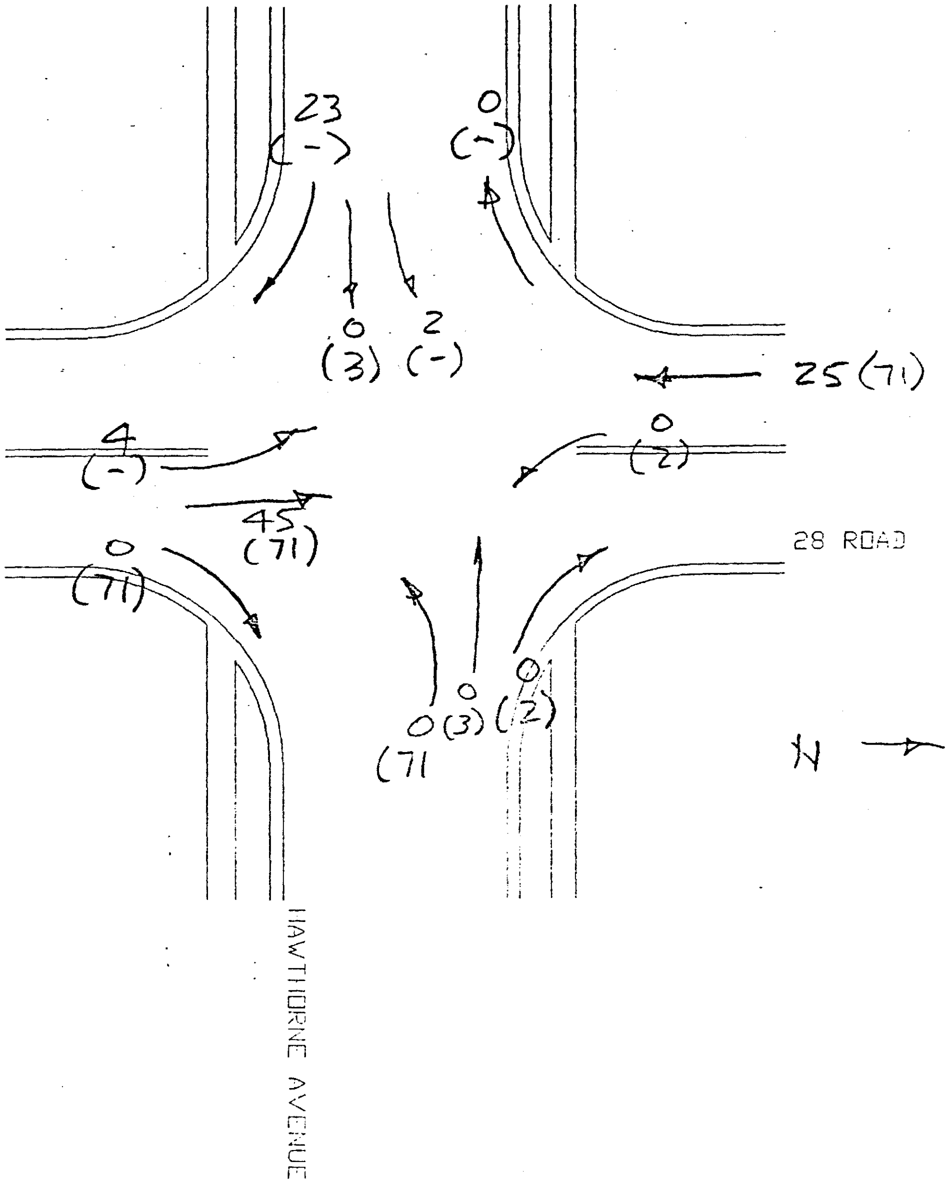


Figure 7

Peak Hour AM traffic Volume (existing and at buildout)

Hawthorn Ave\28 Road

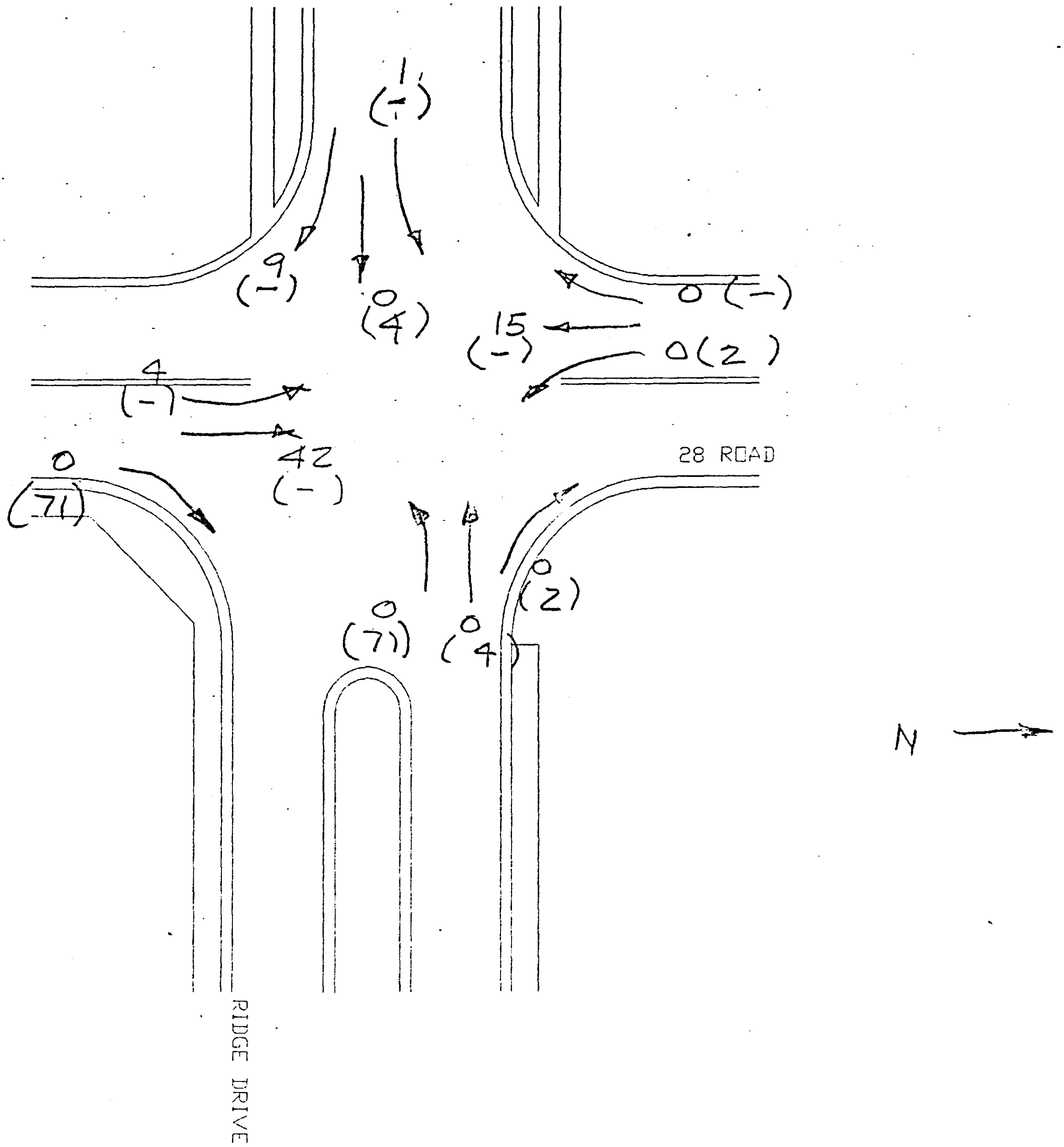


Figure 8

Peak Hour AM Traffic Volume (existing and at buildout)

Ridge Drive\28 Road

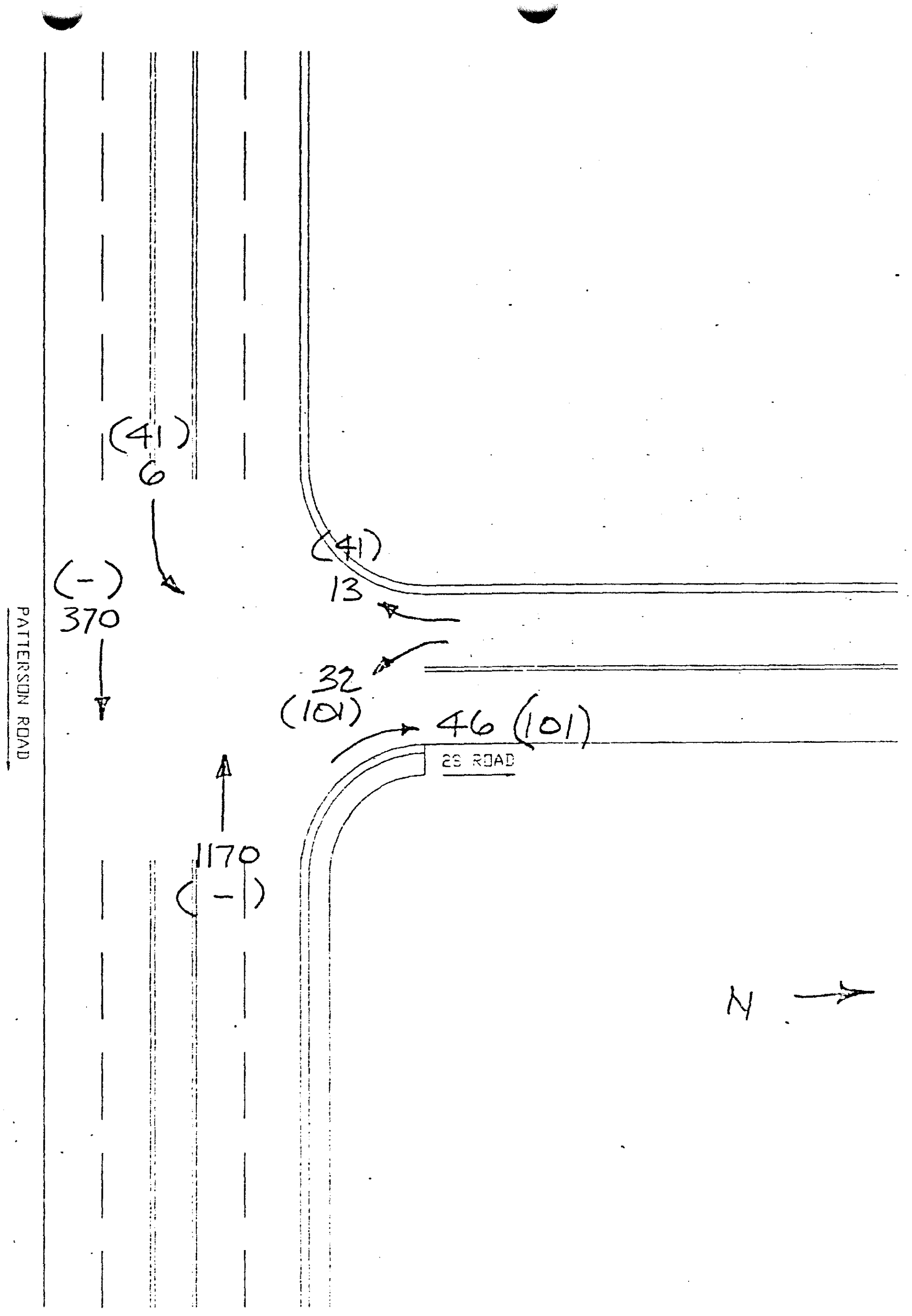


Figure 9

Peak Hour AM Traffic Volume (existing and at buildout)

Patterson Road\28 Road

2. Peak Hour PM Traffic Volume

The following Figures 10, 11 and 12 depict peak hour pm total traffic volume for the existing and for the Build-out condition. Existing traffic counts were taken June 27, 1994 for the peak hour PM. Build-out counts were taken from the trip distribution and trip assignment calculations shown earlier in this report.

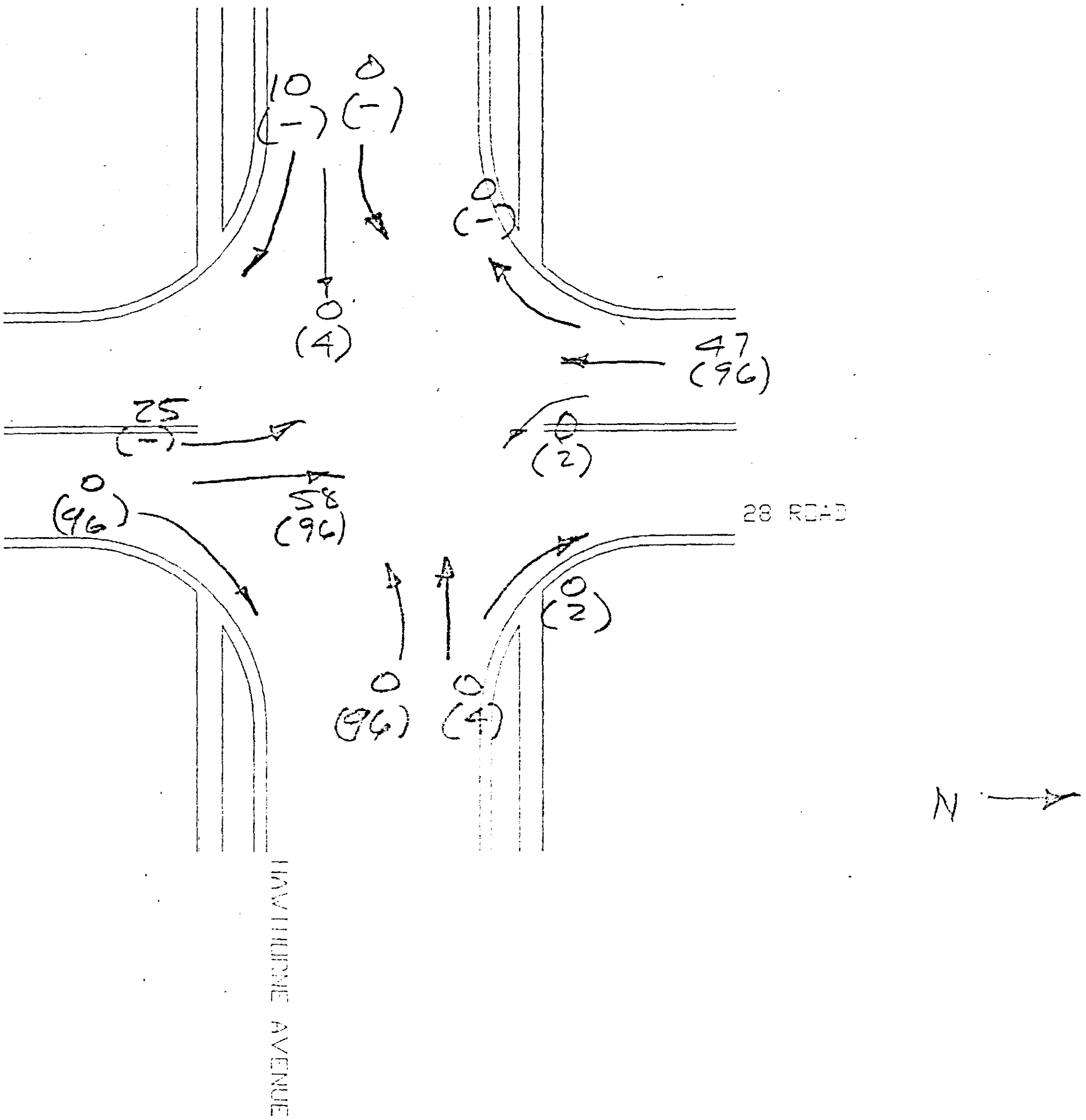


Figure 10

Peak Hour PM traffic Volume (existing and at buildout)

Hawthorn Ave\28 Road

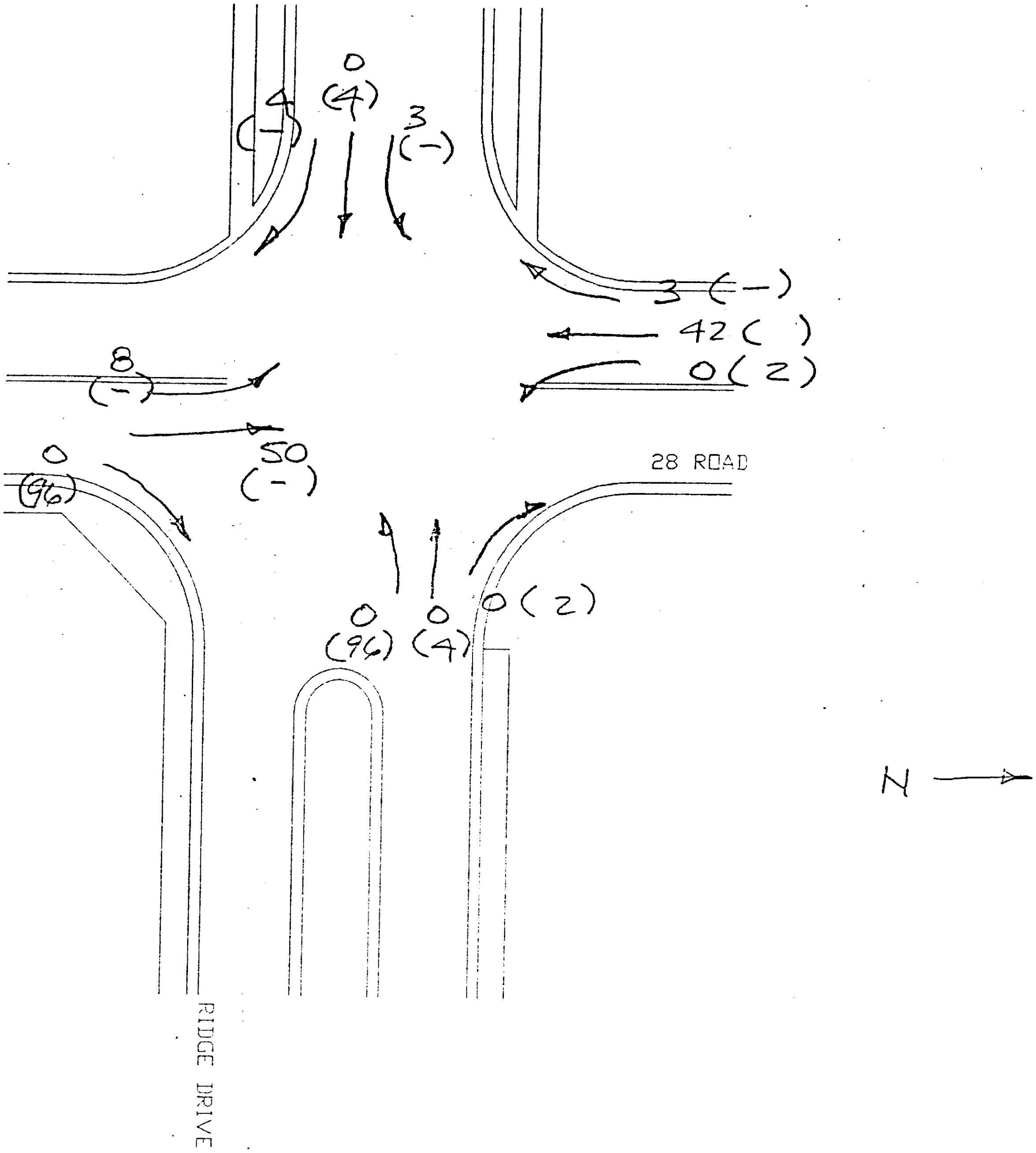


Figure 11

Peak Hour PM Traffic Volume (existing and at buildout)

Ridge Drive\28 Road

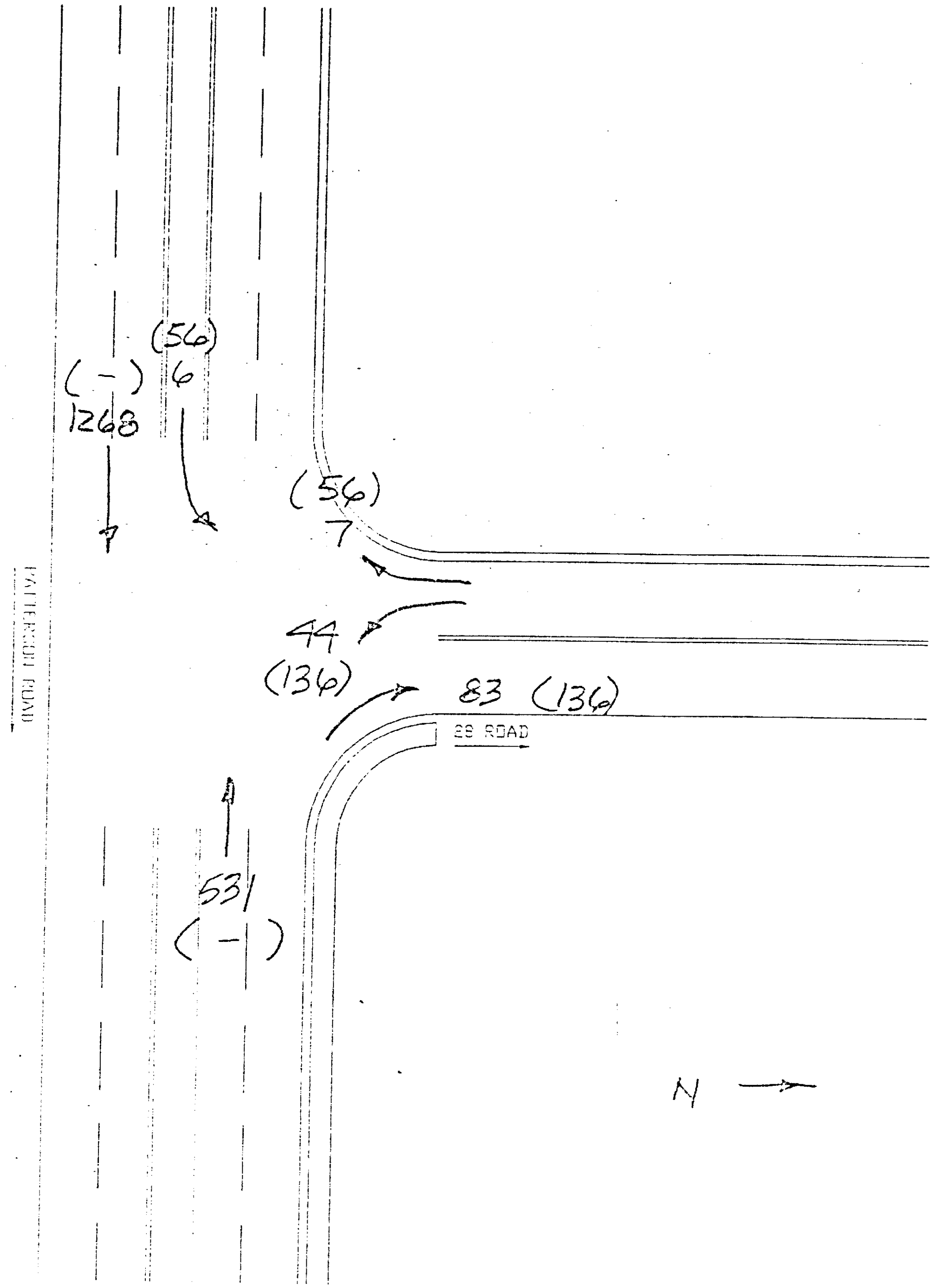


Figure 12

Peak Hour AM Traffic Volume (existing and at buildout)

Patterson Road\28 Road

E. CAPACITY ANALYSIS

1. Hawthorn and 28 Road Intersection

The Hawthorn and 28 Road Intersection is a "T" intersection which will become a standard "Four Leg" intersection when the new development is constructed. It will be analyzed in the constructed condition using the developed traffic flow.

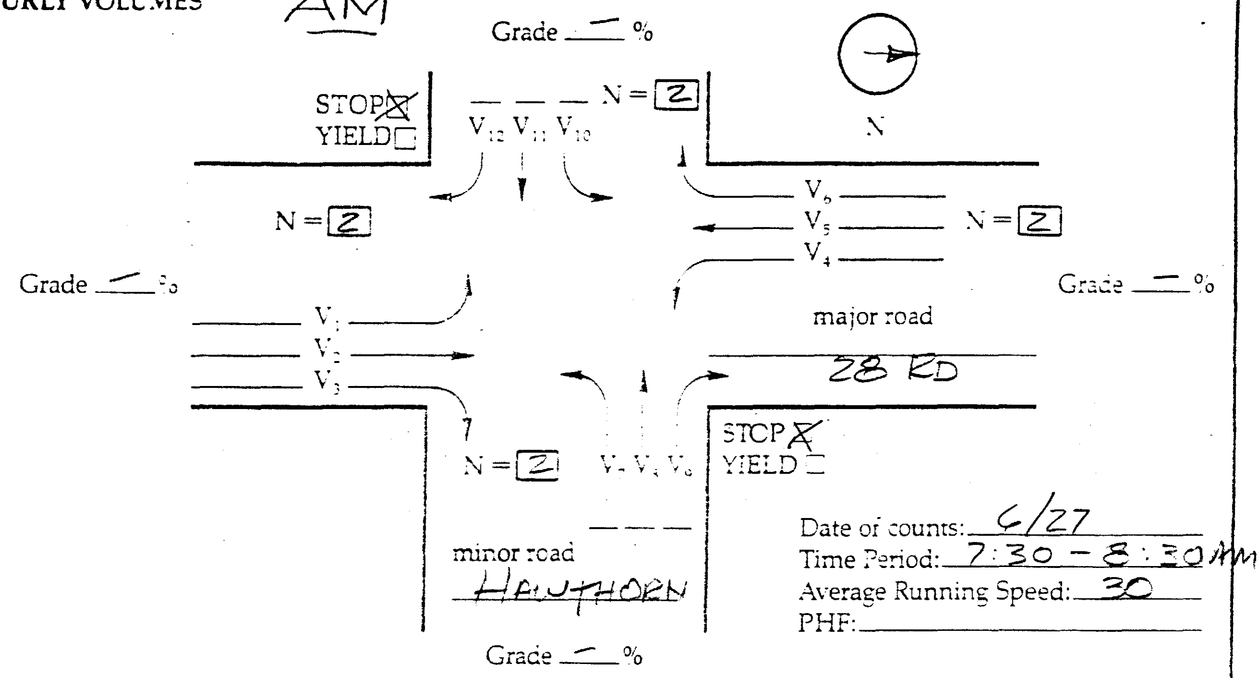
Traffic volume for the left turn warrants a left turn lane from Hawthorn and 28 Road. Volume of left turns are greatest from Hawthorn onto 28 Road at the AM Peak Hour. Standard criteria dictates a 2 minute storage at the Peak Hour. 2 (71/60) = 2.36 cars therefor a left turn lane which stores 3 cars (75 feet long) is recommended.

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: HAWTHORN & 28 RD Name: P. HART

HOURLY VOLUMES AM



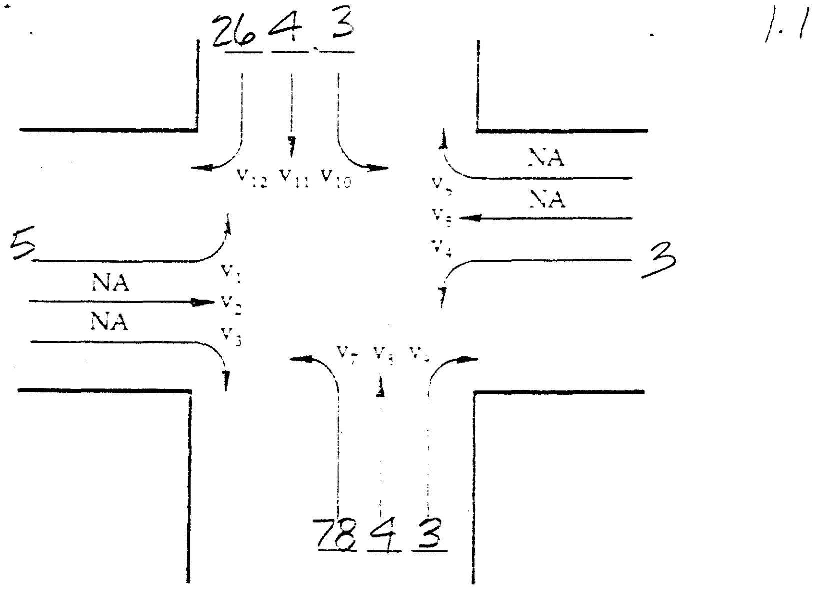
Date of counts: 6/27
Time Period: 7:30 – 8:30 AM
Average Running Speed: 30
PHF:

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	4	116	71	2	96	0	71	3	2	2	3	23
Vol. (pcph), see Table 10-1	5	▨	▨	3	▨	▨	78	4	3	3	4	26

VOLUMES IN PCPH

1.1



WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c Critical Gap, T_c (Tab. 10-2) Potential Capacity, c_p (Fig. 10-3) Percent of c_p Utilized Impedance Factor, P (Fig. 10-5) Actual Capacity, c_m	$1/2\,V_3 + V_2 = V_{c9}$ 14.4 + 116 = 130.4 vph 5.5 (sec) c_{p9} = 960 pcph $(v_9/c_{p9}) \times 100$ = .3 % P_9 = .99 $c_{m9} = c_{p9}$ = 960 pcph	$1/2\,V_6 + V_5 = V_{c12}$ 0 + 96 = 96 vph 5.5 (sec) c_{p12} = 990 pcph $(v_{12}/c_{p12}) \times 100$ = 2.6 % P_{12} = .98 $c_{m12} = c_{p12}$ = 990 pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c Critical Gap, T_c (Tab. 10-2) Potential Capacity, c_p (Fig. 10-3) Percent of c_p Utilized Impedance Factor, P (Fig. 10-5) Actual Capacity, c_m	$V_3 + V_2 = V_{C4}$ 71 + 116 = 187 vph 5.5 (sec) c_{p4} = 920 pcph $(v_4/c_{p4}) \times 100$ = .3 % P_4 = .99 $c_{m4} = c_{p4}$ = 920 pcph	$V_6 + V_5 = V_{c1}$ 0 + 96 = 96 vph 5.5 (sec) c_{p1} = 990 pcph $(v_1/c_{p1}) \times 100$ = .5 % P_1 = .99 $c_{m1} = c_{p1}$ = 990 pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c Critical Gap, T_c (Tab. 10-2) Potential Capacity, c_p (Fig. 10-3) Percent of c_p Utilized Impedance Factor, P (Fig. 10-5) Actual Capacity, c_m	$1/2V_3+V_2+V_1+V_6+V_5+V_4=V_{c8}$ 35.5 + 116 + 5 + 0 + 96 + 3 = 256 vph 6.0 (sec) c_{p8} = 730 pcph $(v_8/c_{p8}) \times 100$ = .55 % P_8 = .99 $c_{m8} = c_{p8} \times P_1 \times P_4$ 715 = 730 × .99 × .99 (pcph)	$1/2V_6+V_5+V_4+V_3+V_2+V_1=V_{c11}$ 0 + 96 + 3 + 71 + 116 + 5 = 291 vph 6.0 (sec) c_{p11} = 700 pcph $(v_{11}/c_{p11}) \times 100$ = .57 % P_{11} = .99 $c_{m11} = c_{p11} \times P_1 \times P_4$ 686 = 700 × .99 × .99 (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c Critical Gap, T_c (Tab. 10-2) Potential Capacity, c_p (Fig. 10-3) Actual Capacity, c_m	V_{c8} (step 3) $+ V_{11} + V_{12} = V_{c7}$ 256 + 4 + 26 = 286 vph 6.5 (sec) c_{p7} = 630 pcph $c_{m7} = c_{p7} \times P_1 \times P_4 \times P_{11} \times P_{12}$ 599 = 630 × .99 × .99 × .99 × .98 (pcph)	V_{c11} (step 3) $+ V_8 + V_9 = V_{c10}$ 291 + 4 + 3 = 298 vph 6.5 (sec) c_{p10} = 630 pcph $c_{m10} = c_{p10} \times P_4 \times P_1 \times P_8 \times P_9$ 605 = 630 × .99 × .99 × .99 × .99 (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_i + v_j}{(v_i/c_{mi}) + (v_j/c_{mj})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_i + v_j + v_k}{(v_i/c_{mi}) + (v_j/c_{mj}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	78	599	515	437	A
8	4	715	515	511	A
9	3	960	515	512	A

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	3	605	825	822	A
11	4	686	825	821	A
12	26	990	825	799	A

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	5	990	985	A
4	3	920	917	A

COMMENTS:

LEVEL OF SERVICE OK FOR
ALL MOVEMENTS WITH
ADDED DEVELOPMENT

Mail to:
Dept. of Revenue
ACCIDENT RECORDS
4201 E. Arkansas Ave.
Denver, Colorado 80222
DR-447 (1/90)

2jk

STATE OF COLORADO INVESTIGATOR's TRAFFIC ACCIDENT REPORT

SHEET 1 OF 1 SHEETS

CITY SERIAL NUMBER 94-02478
STATE SERIAL NUMBER

A 1
ROAD CODE

DATE OF ACCIDENT 031394
TIME 1207
DAY OF WEEK SUNDAY
CITY GRAND JUNCTION
COUNTY MESA
CO. CODE 8

DATE NOTIFIED OF ACCIDENT 031394
TIME 1208
INVESTIGATED AT SCENE X
LAW ENFORCEMENT AGENCY GJPD
REVIEWING OFFICER A Clayton

B 5
DATE ARRIVED AT SCENE 031394
TIME 1210
OFFICER NUMBER 405
NAME A. CLAYTON
SIGNATURE A Clayton
DETAIL P

DATE OF REPORT 031394
LOCATION: ROUTE, STREET, ROAD
____ MILES ____ FEET ____ N ____ S ____ E ____ W OF ROUTE, ST, RD, MILEPOST
NUMBER KILLED 0
NUMBER INJURED 0
PATTERSON RD, X AT THE INTERSECTION WITH 28 RD.

B
PUBLIC PROPERTY PUBLIC EMPLOYEE
TOTAL VEHICLES 2
DISTRICT NUMBER 280FO
PHOTO TAKEN
RAILROAD CROSSING
CONST. ZONE
WILD GAME
PRIVATE PROPERTY
INCOMPLETE REPORT

B

[✓ VEH #1] OR ____ PARKED ____ UNATTENDED ____ PEDESTRIAN # ____
LAST NAME MILLER II FIRST ROBERT MI ROSS
STREET ADDRESS 2214 DOGWOOD CT.
RES. PHONE 2416430
CITY GRAND JCT STATE CO ZIP CODE 81506
BUS. PHONE –
DRIVER LIC. NO. M509109 STATE CO SEX M DATE OF BIRTH 103176

C 2
VIOLATION(S) FAILED YIELD ROW AT STOP SIGN
AGE 17
VIOLATION CODE(S) 28.2.2
CITATION NUMBER(S) B02041
COMMON CODE(S) 373
YEAR 81 MAKE SUBARU MODEL 1600

D 1
LIC. PLATE NO. UFL2012 STATE CO BODY TYPE S/W COLOR BLUE
VEH. IDENT. NO. JF1AM43B2BB416439

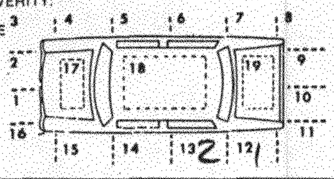
E 1
VEH. OWNER LAST NAME SAME FIRST MI
ADDRESS CITY STATE ZIP CODE

INS. CO. STATE FARM

F 2
POLICY # PENDING
EXP. DATE 032494

G 1
20 Undercarriage ____

DAMAGE SEVERITY:
1-SLIGHT
2-MODERATE
3-EXTREME

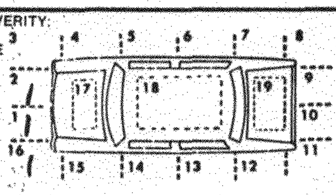


VEH # ____ TOWED BY/TO

OWNER OF DAMAGED PROP. LAST NAME FIRST MI

[✓ VEH #2] OR ____ PARKED ____ UNATTENDED ____ PEDESTRIAN # ____
LAST NAME DARNELL FIRST EDITH MI R
STREET ADDRESS 1550 CRESTVIEW WY
RES. PHONE 2432438
CITY GRAND JCT STATE CO ZIP CODE 81506
BUS. PHONE –
DRIVER LIC. NO. U382568 STATE CO SEX F DATE OF BIRTH 060912
VIOLATION(S)
AGE 81
VIOLATION CODE(S)
CITATION NUMBER(S)
COMMON CODE(S)
YEAR 92 MAKE OLDS MODEL ROYALE
LIC. PLATE NO. ULM525 STATE CO BODY TYPE 4DR COLOR WHITE
VEH. IDENT. NO. 1G3HN53L5NH335349
VEH. OWNER LAST NAME SAME FIRST MI
ADDRESS CITY STATE ZIP CODE
INS. CO. HARTFORD
POLICY # 55PAV475571218O4
EXP. DATE 100694
20 Undercarriage ____

DAMAGE SEVERITY:
1-SLIGHT
2-MODERATE
3-EXTREME



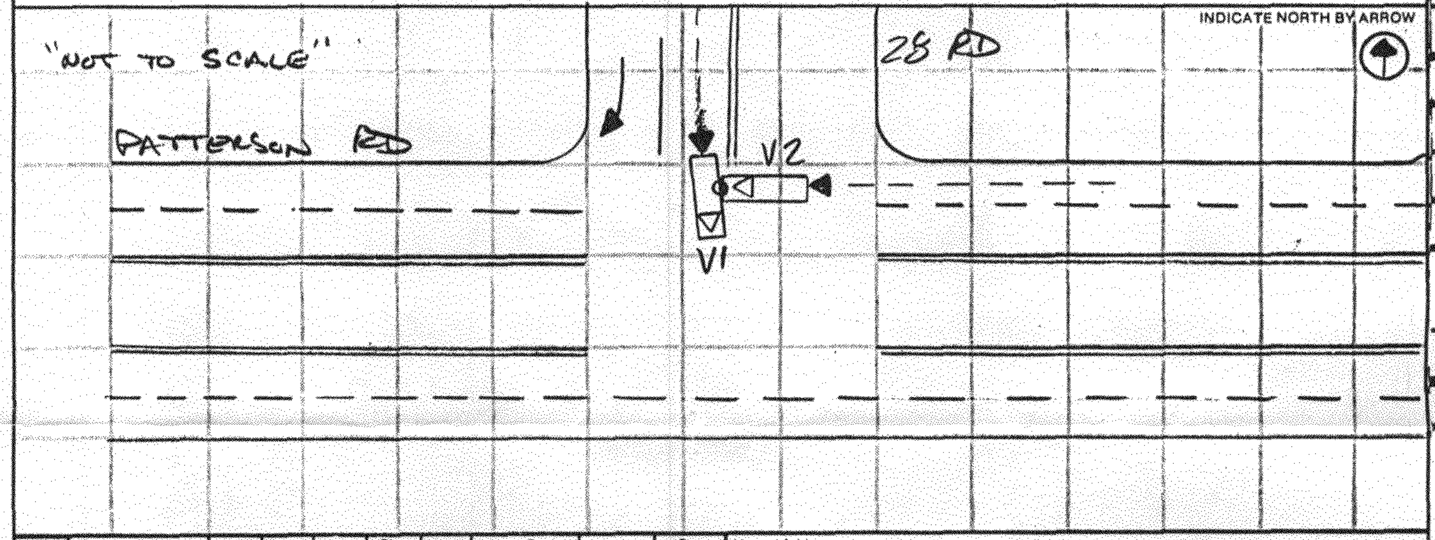
VEH # ____ TOWED BY/TO

ADDRESS CITY STATE ZIP CODE

H 1
J 1

DESCRIBE ACCIDENT
VEH #2 WAS W/B PATTERSON RD AT 28 RD IN #2 LANE. VEH #1 WAS S/B 28 RD AT PATTERSON. VEH #1 ATTEMPTED TO TURN E/B ONTO PATTERSON AND WAS HIT BY VEH #2.

INDICATE NORTH BY ARROW



VEH # (1)	Pos (2)	Res (3)	Ejct (4)	Inj Sev (5)	Phy Inj (6)	Stat (7)	Trp Rpt (8)	Age (9)	Sex (10)	Name/ Add (11)
1	1	1	2	1				17	m	DRIVER #1
2	1	1	2	1				81	F	DRIVER #2

Mail to:
Dept. of Revenue
ACCIDENT RECORDS
4201 E. Arkansas Ave.
Denver, Colorado 80222

DR-447 (1/90)

STATE OF COLORADO INVESTIGATOR's TRAFFIC ACCIDENT REPORT

SHEET 1 OF 1 SHEETS

CITY SERIAL NUMBER 93-31881

CC. D.A.

STATE SERIAL NUMBER

CLEARED

A 3 ROAD CODE

DATE OF ACCIDENT 11-15-93 | TIME 0032 | DAY OF WEEK SUN | CITY G. Jct | COUNTY Mesa | CO. CODE 8

DATE NOTIFIED OF ACCIDENT 11-15-93 | TIME 0032 | INVESTIGATED AT SCENE yes | LAW ENFORCEMENT AGENCY GJPD | REVIEWING OFFICER

B 28 DATE ARRIVED AT SCENE 11-15-93 | TIME 0040 | OFFICER NUMBER 369 | NAME Wolosczuk | SIGNATURE | DETAIL PAT

DATE OF REPORT 11-15-93

NUMBER KILLED 0 | NUMBER INJURED 0

LOCATION: ROUTE, STREET, ROAD Patterson Rd

____ MILES ____ FEET ____ N ____ S ____ E ____ W OF ROUTE, ST, RD, MILEPOST

X AT THE INTERSECTION WITH 28 Rd'

B PUBLIC PROPERTY PUBLIC EMPLOYEE | TOTAL VEHICLES 1 | DISTRICT NUMBER 280F0 | PHOTO TAKEN NO | RAILROAD CROSSING | CONST. ZONE | WILD GAME | PRIVATE PROPERTY | INCOMPLETE REPORT

VEH #1 OR X PARKED ____ UNATTENDED ____ PEDESTRIAN # ____

B LAST NAME West | FIRST Patrick | MI D.

STREET ADDRESS 3223 Chipeta #23 | RES. PHONE —

CITY Clifton | STATE Co | ZIP CODE 81521 | BUS. PHONE 241-6000

DRIVER LIC. NO. NONE | STATE — | SEX M | DATE OF BIRTH 5-12-69

C 2 VIOLATION(S) Careless No Lic, No Ins. | AGE 24

VIOLATION CODE(S) 42-4-1204 | CITATION NUMBER(S) B00137 / B00135 | COMMON CODE(S) 141

YEAR 1979 | MAKE Toy. | MODEL Celica

D 3 LIC. PLATE NO. UEJ8040 | STATE COLO | BODY TYPE 2-Dr | COLOR Blk

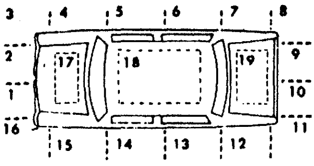
VEH. IDENT. NO. RA42145198

E 1 VEH. OWNER LAST NAME Palmer | FIRST Shawna | MI M.

ADDRESS 1938 N. 1st | CITY G. Jct | STATE Co | ZIP CODE 81501

INS. CO. NONE

DAMAGE SEVERITY:
1-SLIGHT
2-MODERATE
3-EXTREME



F 2 POLICY # —

EXP. DATE —

G 1 20 Undercarriage 1-2

VEH # ____ TOWED BY/TO Bill's Body 243-0323

OWNER OF DAMAGED PROP. LAST NAME | FIRST | MI

VEH #2 OR ____ PARKED ____ UNATTENDED ____ PEDESTRIAN # ____

LAST NAME | FIRST | MI

STREET ADDRESS | RES. PHONE

CITY | STATE | ZIP CODE | BUS. PHONE

DRIVER LIC. NO. | STATE | SEX | DATE OF BIRTH

VIOLATION(S) | AGE

VIOLATION CODE(S) | CITATION NUMBER(S) | COMMON CODE(S)

YEAR | MAKE | MODEL

LIC. PLATE NO. | STATE | BODY TYPE | COLOR

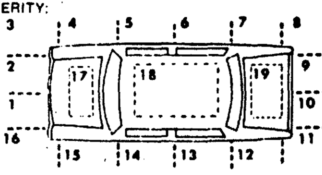
VEH. IDENT. NO.

VEH. OWNER LAST NAME | FIRST | MI

ADDRESS | CITY | STATE | ZIP CODE

INS. CO.

DAMAGE SEVERITY:
1-SLIGHT
2-MODERATE
3-EXTREME



POLICY #

EXP. DATE

20 Undercarriage ____

VEH # ____ TOWED BY/TO

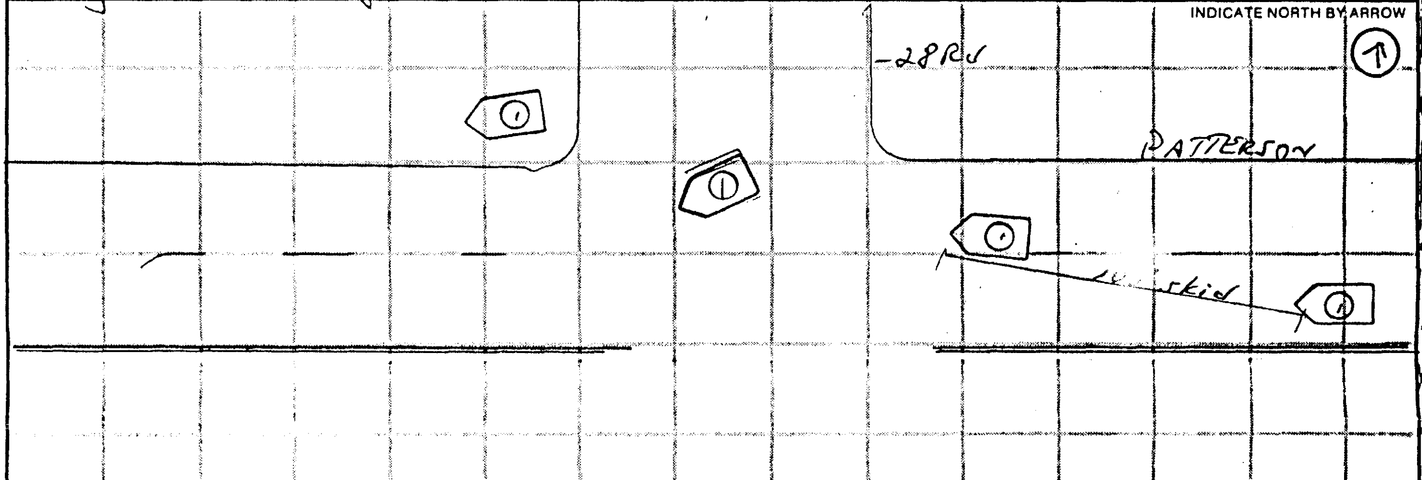
ADDRESS | CITY | STATE | ZIP CODE

H 3 DESCRIBE ACCIDENT Veh #1 W/B 2800 Blk Patterson (left lane) when driver lost control of vehicle. Veh #1 N/W Bound at 28/Patterson, striking curb

J 1 And coming to rest.

Slight-mod damage

INDICATE NORTH BY ARROW



K 1
K —
L 7
L —
M 1
M —
N
N
P +
P —
Q 40/40
Q
R 1
R —
S —
S —
T 1
T —
U —
U —
V —
V —

VEH # (1)	Pos (2)	Res (3)	Ejct (4)	Inj Sev (5)	Phy Inj (6)	Stat (7)	Trp Rpt (8)	Age (9)	Sex (10)	Name/ Add (11)
1	1	1	2	1						same as #1
1	3	1	2	1				22	M	Bradley Kent 3223 Chipeta #23 Clifton

W
W
W
W
W
W

2-
uf

Mail to:
Dept. of Revenue
ACCIDENT RECORDS
4201 E. Arkansas Ave.
Denver, Colorado 80222

DR-447 (1/90)

STATE OF COLORADO
INVESTIGATOR's
TRAFFIC ACCIDENT REPORT

SHEET 1 OF 1 SHEETS

CITY SERIAL NUMBER 93-27870
STATE SERIAL NUMBER

A 1
ROAD CODE
K 3

DATE OF ACCIDENT 07-29-93 | TIME 1314 | DAY OF WEEK Thursday | CITY Grand Jct. | COUNTY Mesa | CO. CODE 8
K 1

DATE NOTIFIED OF ACCIDENT 07-29-93 | TIME 1314 | INVESTIGATED AT SCENE X | LAW ENFORCEMENT AGENCY G.J.P.D | REVIEWING OFFICER

B 5
DATE ARRIVED AT SCENE 07-29-93 | TIME 1320 | OFFICER NUMBER #372 | NAME Moreno | SIGNATURE Moreno | DETAIL PATROL

DATE OF REPORT 07-29-93

LOCATION: ROUTE, STREET, ROAD Patterson Rd. ____MILES ____FEET ____N ____S ____E ____W OF ROUTE, ST, RD, MILEPOST ✓ AT THE INTERSECTION WITH 28 Rd.

NUMBER KILLED 0 | NUMBER INJURED 0

B
PUBLIC PROPERTY PUBLIC EMPLOYEE | TOTAL VEHICLES 2 | DISTRICT NUMBER 280FO | PHOTO TAKEN | RAILROAD CROSSING | CONST. ZONE | WILD GAME | PRIVATE PROPERTY | INCOMPLETE REPORT X
L 1

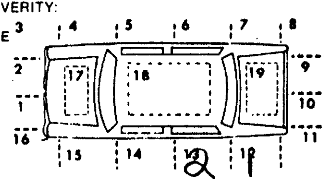
VEH #1 OR 1 PARKED___ UNATTENDED___ PEDESTRIAN #___
VEH #2 OR 2 PARKED___ UNATTENDED___ PEDESTRIAN #___
L 7

B

	VEH #1	VEH #2
LAST NAME / FIRST / MI	McLead Michael N.	Settles, Darlene C.
STREET ADDRESS	2871 ORchard Ave	3850 Mont Vista Ct.
RES. PHONE	241-4964	464-5070
CITY / STATE / ZIP CODE	Grand Jct, CO 81501	Palisade CO 81526
BUS. PHONE	241-5711	434-6024
DRIVER LIC. NO.	U381709	K243491
STATE	CO	CO
SEX	M	F
DATE OF BIRTH	09-14-52	06-02-50
VIOLATION(S)	Failed to yeild Row at Stop Sign	–
AGE	40	43
VIOLATION CODE(S)	28-2-2	
CITATION NUMBER(S)	A06856	–
COMMON CODE(S)	373	–
YEAR	1991	1989
MAKE	GMC	Ford
MODEL	P/U	Tauras
LIC. PLATE NO.	862AJG	UL6271
STATE	NM	CO
BODY TYPE	P/U	4-D
COLOR	BLK	Brown
VEH. IDENT. NO.	2GTFK29KXM1526912	1FABP54Y5KA178572
VEH. OWNER LAST NAME / FIRST / MI	Same	Same
ADDRESS / CITY / STATE / ZIP CODE		
INS. CO.	Continental	Employer's Fire
POLICY #		FTZY61179C
EXP. DATE		12-24-93

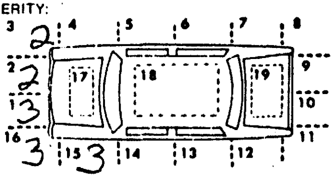
M 5
M 1
C 1
N 1
N 1
D 1
P 1
P 1
E 2
Q 40/5
Q 40/40
F 2

DAMAGE SEVERITY:
1-SLIGHT
2-MODERATE
3-EXTREME



20 Undercarriage ______

DAMAGE SEVERITY:
1-SLIGHT
2-MODERATE
3-EXTREME



20 Undercarriage ______

G 1
R 7

VEH # ____ TOWED BY/TO
VEH # 2 TOWED BY/TO UICS
R 1

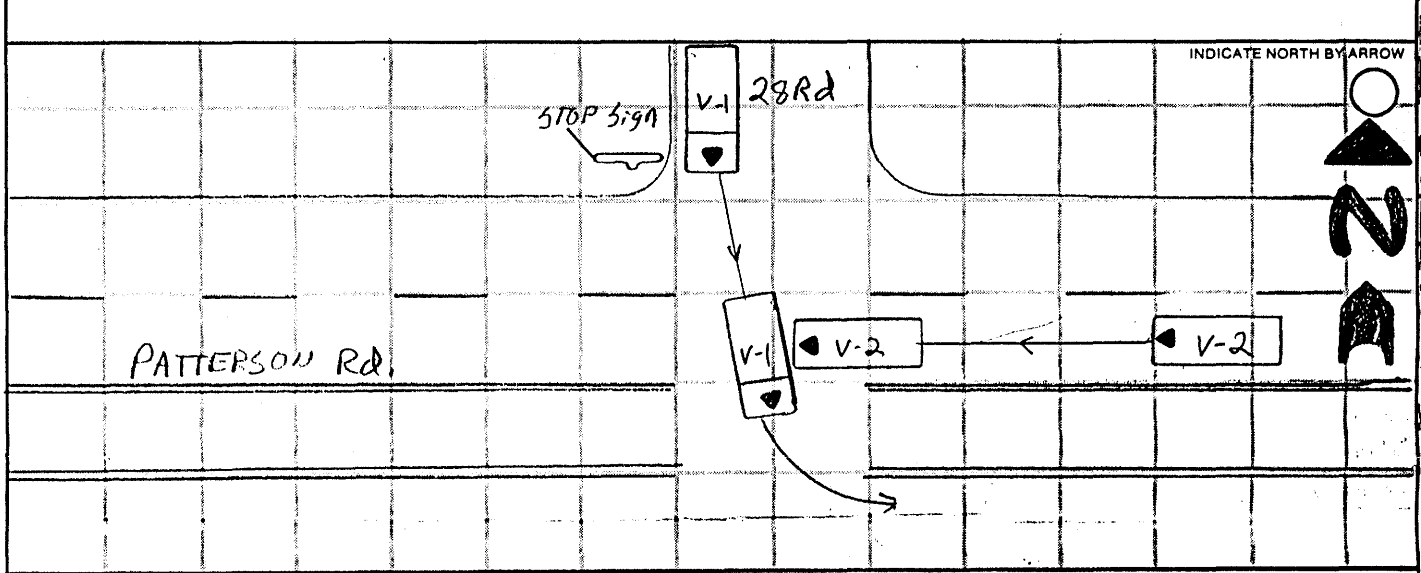
OWNER OF DAMAGED PROP. LAST NAME FIRST MI
ADDRESS CITY STATE ZIP CODE

H 1
J 1

DESCRIBE ACCIDENT Vehicle #1 was stopped at a stop sign facing south at 28 Rd. and Patterson Rd. Vehicle #2 was westbound on Patterson Rd. Vehicle #1 entered the intersection in front of Vehicle #2. Vehicle #2 Broadsided Vehicle #1.

S
S

INDICATE NORTH BY ARROW



T
T
U
U
V
V

VEH # (1)	Pos (2)	Res (3)	Ejct (4)	Inj Sev (5)	Phy Inj (6)	Stat (7)	Trp Rpt (8)	Age (9)	Sex (10)	Name/ Add (11)
1	1	1	2	1						Same as Driver #1
2	1	1	2	1						Same as Driver #2

W
W
W
W
W
W

JK

Mail to:
Dept of Revenue
ACCIDENT RECORDS
4201 E Arkansas Ave.
Denver, Colorado 80222

DR-447 (1/90)

STATE OF COLORADO INVESTIGATOR's TRAFFIC ACCIDENT REPORT

CC: D.A.

SHEET 1 OF 2 SHEETS

CITY SERIAL NUMBER [redacted]

STATE SERIAL NUMBER [redacted]

A 1

ROAD CODE

K 1

DATE OF ACCIDENT 12-16-92 | TIME 1854 | DAY OF WEEK Wednesday | CITY Grand Junction | COUNTY Mesa | CO. CODE 8

K 1

DATE NOTIFIED OF ACCIDENT 12-16-92 | TIME 1854 | INVESTIGATED AT SCENE X | LAW ENFORCEMENT AGENCY Grand Jct. P.D. | REVIEWING OFFICER

B 5

DATE ARRIVED AT SCENE 12-16-92 | TIME 1854 | OFFICER NUMBER 359 | NAME D. Osvalt | SIGNATURE | DETAIL Patrol

DATE OF REPORT 12-16-92

NUMBER KILLED 0 | NUMBER INJURED 1

LOCATION: ROUTE, STREET, ROAD Patterson Road ____MILES ____FEET ____N ____S ____E ____W

x AT THE INTERSECTION WITH 28 Road OF ROUTE, ST, RD, MILEPOST

B

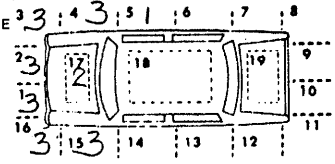
PUBLIC PROPERTY PUBLIC EMPLOYEE | TOTAL VEHICLES 2 | DISTRICT NUMBER 280F0 | PHOTO TAKEN | RAILROAD CROSSING | CONST. ZONE | WILD GAME | PRIVATE PROPERTY | INCOMPLETE REPORT

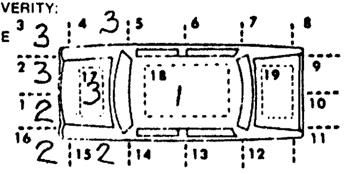
L 5

L 7

B

VEH #1 OR___ PARKED___ UNATTENDED___ PEDESTRIAN #___	VEH #2 OR___ PARKED___ UNATTENDED___ PEDESTRIAN #___
LAST NAME Galyesn FIRST Danny MI H.	LAST NAME Brady FIRST Joleen MI R.
STREET ADDRESS 2828 Orchard Ave. #63	STREET ADDRESS 508 Blevins Rd.
RES. PHONE 243-4578	RES. PHONE 241-7756
CITY Grand Jct, STATE CO ZIP CODE 81501	CITY Grand Jct, STATE CO ZIP CODE 81501
BUS. PHONE 241-2996	BUS. PHONE 245-0900
DRIVER LIC. NO. J613983 STATE CO SEX M	DRIVER LIC. NO. P9379937 STATE CO SEX F
DATE OF BIRTH 09-28-54	DATE OF BIRTH 12-11-73
VIOLATION(S) D.W.A.I.D. / Failed to Yield ROW. AGE 38	VIOLATION(S) AGE 19
VIOLATION CODE(S) 42-4-1202/42-4-603	VIOLATION CODE(S)
CITATION NUMBER(S) A 07948	CITATION NUMBER(S)
COMMON CODE(S)	COMMON CODE(S)
YEAR 1985 MAKE Plymouth MODEL Reliant	YEAR 1986 MAKE Honda MODEL Prelude
LIC. PLATE NO. UKP 445 STATE CO BODY TYPE 4 DR COLOR Blue	LIC. PLATE NO. ULM202 STATE CO BODY TYPE 2 DR COLOR Red
VEH. IDENT. NO. 1P3BP46D1FF292043	VEH. IDENT. NO. JHMBB5233GC035596
VEH. OWNER LAST NAME Galyean FIRST Howard MI	VEH. OWNER LAST NAME Brady FIRST Scott MI L.
ADDRESS 539 Sparn St. CITY Grand Jct, STATE CO ZIP CODE 81501	ADDRESS Same CITY STATE ZIP CODE
INS. CO. Mid-Century	INS. CO. Mid-Century
POLICY # 07 11445 97 26	POLICY # 07 13002 07 97
EXP. DATE 04-29-93	EXP. DATE 05-19-93
DAMAGE SEVERITY: 1-SLIGHT 2-MODERATE 3-EXTREME	DAMAGE SEVERITY: 1-SLIGHT 2-MODERATE 3-EXTREME
20 Undercarriage ______	20 Undercarriage ______
VEH # 1 TOWED BY/TO Vic's / 2150 North Ave.	VEH # 2 TOWED BY/TO All Truck / 1007 S. 5th St.
OWNER OF DAMAGED PROP. LAST NAME FIRST MI	ADDRESS CITY STATE ZIP CODE





C 1

D 1

E 2

F 2

G 1

M 4

M 1

N 1

N 1

P 1

P 1

Q 35/10

Q 49/40

R 9

R 1

H 3

DESCRIBE ACCIDENT Vehicle #2 W/B, #1 lane, 2800 Block Patterson Road. Vehicle #1 S/B on 28 Road and turned E/B onto Patterson Road Striking Vehicle #2.

J 1

S

S

INDICATE NORTH BY ARROW

T 3

T 1

U

U

V

V

Diagram on Back

VEH # (1)	Pos (2)	Res (3)	Ejct (4)	Inj Sev (5)	Phy Inj (6)	Stat (7)	Trp Rpt (8)	Age (9)	Sex (10)	Name/ Add (11)
1	1	1	2	1						Driver
2	1	2	2	2	4					Driver

W

W

W

W

W

W

W

1/8

Mail to:
Dept. of Revenue
ACCIDENT RECORDS
4201 E. Arkansas Ave.
Denver, Colorado 80222
DR-447 (1/90)

STATE OF COLORADO INVESTIGATOR's TRAFFIC ACCIDENT REPORT

SHEET 1 OF 1 SHEETS

CITY SERIAL NUMBER 91-43814
STATE SERIAL NUMBER

CC: DA's OFFICE VICTIM-WITNESS COORDINATOR

A 1
ROAD CODE
K 1
K 1

DATE OF ACCIDENT 10-24-91
TIME 1610
DAY OF WEEK Thur
CITY Grand Jct.
COUNTY Mesa
CO. CODE 8

DATE NOTIFIED OF ACCIDENT 10-24-91
TIME 1612
INVESTIGATED AT SCENE X
LAW ENFORCEMENT AGENCY Grand Jct. PD
REVIEWING OFFICER S Cowgill

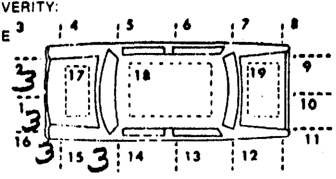
B 5
DATE ARRIVED AT SCENE 10-24-91
TIME 16 20
OFFICER NUMBER 361
NAME S. Cowgill
SIGNATURE S. Cowgill
DETAIL Patrol

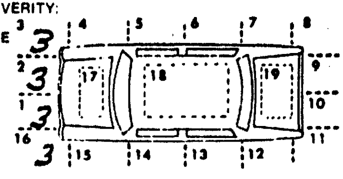
DATE OF REPORT 10-24-91
LOCATION: ROUTE, STREET, ROAD 28 Rd
____MILES ____FEET ____N ____S ____E ____W OF ROUTE, ST, RD, MILEPOST
X AT THE INTERSECTION WITH F Rd.
NUMBER KILLED 0
NUMBER INJURED 3

B
PUBLIC PROPERTY PUBLIC EMPLOYEE
TOTAL VEHICLES 2
DISTRICT NUMBER 391
PHOTO TAKEN
RAILROAD CROSSING
CONST. ZONE
WILD GAME
PRIVATE PROPERTY
INCOMPLETE REPORT
L 5
L 1

VEH #1 OR__ PARKED__ UNATTENDED__ PEDESTRIAN #__	VEH #2 OR__ PARKED__ UNATTENDED__ PEDESTRIAN #__
LAST NAME Shawcroft FIRST Donna MI F	LAST NAME Purdy FIRST Donald MI H
STREET ADDRESS 568 Sunvalley	STREET ADDRESS 2897 F¼ Rd.
RES. PHONE 434-8176	RES. PHONE 242-7311
CITY Grand Jct. STATE Colo. ZIP CODE 81504	CITY Grand Jct. STATE Colo ZIP CODE 81506
BUS. PHONE 243-5236	BUS. PHONE none
DRIVER LIC. NO. L 433973 STATE Colo SEX F	DRIVER LIC. NO. J 29920 STATE Colo SEX M
DATE OF BIRTH 07-18-57	DATE OF BIRTH 04-16-29
VIOLATION(S) Failed to yield ROW from stop sign. AGE 34	VIOLATION(S) AGE 62
VIOLATION CODE(S) 2-2 CITATION NUMBER(S) 29985 COMMON CODE(S) 373	VIOLATION CODE(S) CITATION NUMBER(S) COMMON CODE(S)
YEAR 89 MAKE Pontiac MODEL Sunbird	YEAR 91 MAKE Mer MODEL Tracer
LIC. PLATE NO. NR2515 STATE Colo BODY TYPE 4dr COLOR Grey	LIC. PLATE NO. NIH305 STATE Colo BODY TYPE 4dr COLOR Silver
VEH. IDENT. NO. 1G2JB51K7K7537202	VEH. IDENT. NO. 3MAPM15J6MR644098
VEH. OWNER LAST NAME Same FIRST MI	VEH. OWNER LAST NAME Same FIRST MI
ADDRESS CITY STATE ZIP CODE	ADDRESS CITY STATE ZIP CODE
INS. CO. Civil Service	INS. CO. Hartford Ins.
POLICY # COA-0022590	POLICY # 55PH0368758-
EXP. DATE 03-23-92	EXP. DATE 07-26-92
DAMAGE SEVERITY: 1-SLIGHT 2-MODERATE 3-EXTREME	DAMAGE SEVERITY: 1-SLIGHT 2-MODERATE 3-EXTREME
20 Undercarriage ____	20 Undercarriage ____
VEH # 1 TOWED BY/TO Vic Towing	VEH # __ TOWED BY/TO A-1 Towing
OWNER OF DAMAGED PROP. LAST NAME FIRST MI	ADDRESS CITY STATE ZIP CODE

B
C 1
D 1
E 1
F 2
G 1
M 1
M 1
N 1
N 1
P 1
P 1
Q 35/15
Q 35/3
R 1
R 1

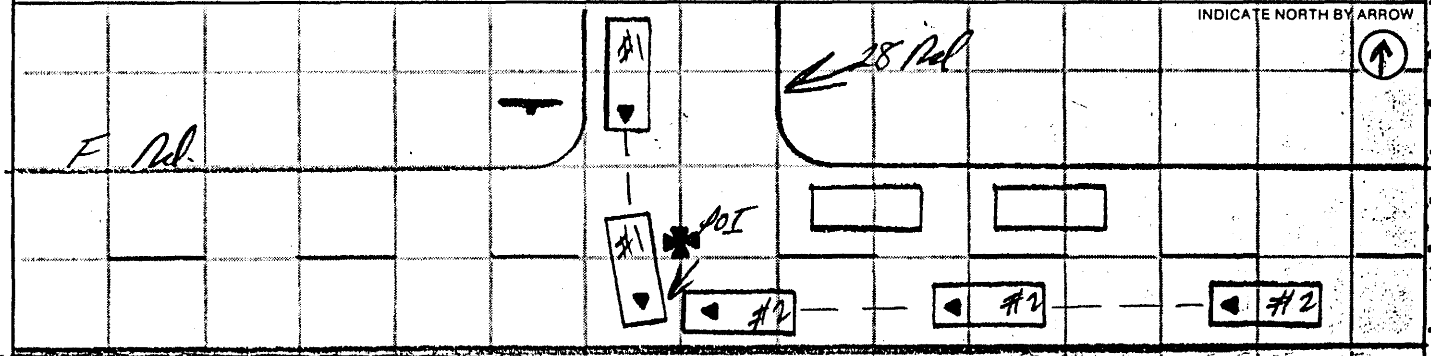




H 1
J 1

DESCRIBE ACCIDENT V#1 was SB on 28 Rd and stopped at a stop sign at 28 Rd & F Rd. V#1 then proceeded through the intersection and was struck by V#2 which was WB on F Rd in the left lane.

S
S



T 1
T 1
U
U
V
W

VEH # (1)	Pos (2)	Res (3)	Ejct (4)	Inj Sev (5)	Phy Inj (6)	Stat (7)	Trp Rpt (8)	Age (9)	Sex (10)	Name/ Add (11)
1	1	1	2	1				F	34	Driver
1	4	1	2	2	1	1	N/A	5	F	Laura Shawcroft, 568 Sunvalley GJ Colo
1	5	1	2	1				9mos	M	Cody Shawcroft 568 Sunvalley GJ Co
2	1	1	2	4	4	1	91-05063	M	62	Driver
2	3	1	2	4	4	1	91-05063	F	60	Bonnell Purdy 2897 F¼ Rd GJ Colo

Mail to:
Dept. of Revenue
ACCIDENT RECORDS
4201 E. Arkansas Ave.
Denver, Colorado 80222

2pm

DR-447 (1/90)

STATE OF COLORADO
INVESTIGATOR's
TRAFFIC ACCIDENT REPORT

SHEET 1 OF 1 SHEETS

CITY SERIAL NUMBER 91-31641
STATE SERIAL NUMBER

A 1
ROAD CODE

DATE OF ACCIDENT 08-10-91
TIME 0900
DAY OF WEEK SAT
CITY GRAND JUNCTION
COUNTY MESA
CO. CODE 08

DATE NOTIFIED OF ACCIDENT 08-10-91
TIME 0906
INVESTIGATED AT SCENE YES
LAW ENFORCEMENT AGENCY GRAND JUNCTION POLICE
REVIEWING OFFICER

B 39
DATE ARRIVED AT SCENE 08-10-91
TIME 0915
OFFICER NUMBER 352
NAME JOHN M. BAKER
SIGNATURE John M. Baker
DETAIL 352

DATE OF REPORT 08-10-91
LOCATION: ROUTE, STREET, ROAD
____MILES ____FEET ____N ____S ____E ____W OF ROUTE, ST, RD, MILEPOST
F ROAD X AT THE INTERSECTION WITH 28 RD

NUMBER KILLED 0
NUMBER INJURED 0

B
PUBLIC PROPERTY PUBLIC EMPLOYEE
TOTAL VEHICLES 2
DISTRICT NUMBER 391
PHOTO TAKEN
RAILROAD CROSSING
CONST. ZONE
WILD GAME
PRIVATE PROPERTY
INCOMPLETE REPORT

K 3
K 1
L 7
L 3

VEH #1 OR___ PARKED___ UNATTENDED___ PEDESTRIAN #___	VEH #2 OR___ PARKED___ UNATTENDED___ PEDESTRIAN #___
LAST NAME SCHMALZ FIRST RICHARD MI A	LAST NAME BROWN FIRST ERNEST MI W
STREET ADDRESS 463 32 1/8 RD. #2	STREET ADDRESS 2160 TEXAS AVE
RES. PHONE 434-6686	RES. PHONE 241-1008
CITY CLIFTON STATE CO ZIP CODE 81520	CITY GRAND JUNCTION STATE CO ZIP CODE 81501
BUS. PHONE NONE	BUS. PHONE NONE
DRIVER LIC. NO. P-924616 STATE CO SEX M	DRIVER LIC. NO. H-241212 STATE CO SEX M
DATE OF BIRTH 07-26-73	DATE OF BIRTH 10-26-21
VIOLATION(S) NO INSURANCE	VIOLATION(S) RECORDS
AGE 18	AGE 69
VIOLATION CODE(S) 42-4-1213(1)	VIOLATION CODE(S)
CITATION NUMBER(S) Z-4093	CITATION NUMBER(S)
COMMON CODE(S) 954	COMMON CODE(S)
YEAR 69 MAKE DODGE MODEL 1/2 TON	YEAR 87 MAKE OLDSMOBILE MODEL 98
LIC. PLATE NO. 0652 NM STATE CO BODY TYPE P/U COLOR WHITE	LIC. PLATE NO. NH-1789 STATE CO BODY TYPE 4/D COLOR GOLD
VEH. IDENT. NO. 118188729 7	VEH. IDENT. NO. 1G3CW5130H4311174
VEH. OWNER LAST NAME SCHMALZ FIRST DAVID MI	VEH. OWNER LAST NAME SAME FIRST MI
ADDRESS 2910 NORTH 13TH CITY GRN JUN STATE CO ZIP CODE 81506	ADDRESS CITY STATE ZIP CODE
INS. CO. NONE	INS. CO. HARTFORD
POLICY # -	POLICY # 55PHS5793715
EXP. DATE -	EXP. DATE 08-18-91
DAMAGE SEVERITY: 1-SLIGHT 2-MODERATE 3-EXTREME NONE	DAMAGE SEVERITY: 1-SLIGHT 2-MODERATE 3-EXTREME 680 1
20 Undercarriage ____	20 Undercarriage ____
VEH # ____ TOWED BY/TO	VEH # ____ TOWED BY/TO
OWNER OF DAMAGED PROP. LAST NAME FIRST MI	ADDRESS CITY STATE ZIP CODE

B
C 2
D 4
E 1
F 2
G 1

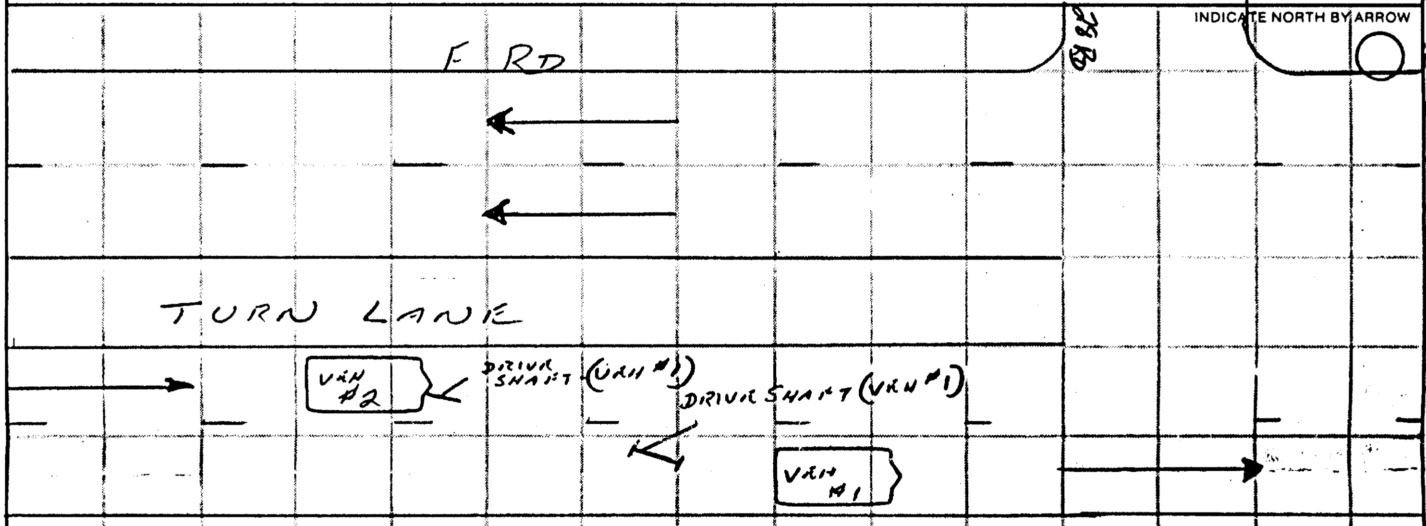
M 1
M 1
N 9
N 1
P 1
P 1
Q 40/40
Q 40/40
R 1
R 1

H 1
J 1

DESCRIBE ACCIDENT
VEH #1 WAS E/B F RD WEST OF 28 RD. VEH #1 LOST THE
DRIVE SHAFT WHICH FALL FROM AND WAS STRUCK BY
VEH #2. VEH #2 WAS BEHIND VEH #1 IN THE #1 LANE

S
S 1

INDICATE NORTH BY ARROW



T 1
T 1
U
U
V
V

VEH # (1)	Pos (2)	Res (3)	Ejct (4)	Inj Sev (5)	Phy Inj (6)	Stat (7)	Trp Rpt (8)	Age (9)	Sex (10)	Name/ Add (11)
1	1	1	2	1						DRIVER #1
2	1	1	2	1						DRIVER #2

W
W
W
W
W
W

APPENDIX B

LANDSCAPING STANDARDS

CSU COOPERATIVE EXTENSION SERVICE

619 Main
Grand Junction, Colorado 81501
244-1834

1001 North 2nd
Friendship Hall
Montrose, Colorado 81401
249-3935

County Courthouse Annex
5th & Palmer
Delta, Colorado 81416
874-3519

Address Reply to
Grand Junction
Office

TRI RIVER AREA

November 7, 1983 - Updated

MESA COUNTY LANDSCAPE SPECIFICATIONS (GUIDELINES)

DEVELOPED BY:

CURTIS E. SWIFT, HORTICULTURIST
TRI RIVER AREA EXTENSION SERVICE

These specifications were developed to update landscaping specifications presently in use. The attached are not designed to totally replace specifications presently in use, but to supplement and update those sections deficient. These guidelines are designed to be used by developers, landscape architects/designers/contractors and others involved with the designing and installation of landscape plant materials.

These specifications provide the most up-to-date guidelines available. Updates will be provided as needed. These specifications were developed in cooperation with Dr. James Feucht, Professor - Horticulture, C.S.U., Golden, Co., and Dr. Jack Butler, Professor - Horticulture, C.S.U., Ft. Collins, Co., and area landscape architects/contractors. The detail drawings were done by Angeline Barrett.

CONTENTS

APPENDIX A (cont'd.)

APPENDIX B - Recommended Reading/Lists

LANDSCAPING SPECIFICATIONS
FOR
MESA COUNTY, COLORADO

SECTION I - GENERAL REQUIREMENTS

1. QUALITY CONTROL

a) Developer Responsibilities

1) Submit landscape and irrigation design plans during the review process. These plans will show actual location and plants selected.

2) Select and utilize plant materials (to include grass) based on soluble salt tests (soil test analysis), and available irrigation.

3) Provide a listing of recommended salt tolerant and/or drought tolerant plant materials to prospective buyers if moderate to high salt conditions (above 4 mmhos/cm)exist, or if insufficient irrigation water is available.

4) Developers will avoid mass plantings (monocultures) of single cultivars/varieties of trees and shrubs to reduce endemic disease and insect problems.

5) Select disease/insect resistant plants if feasible.

b) Laboratory Testing Services

Tests called for shall be made by approved laboratories with the full cooperation of the contractor. The laboratory charges, unless otherwise specified, shall be borne by the owner.

c) Inspections

In addition to normal progress inspections, schedule and conduct the following formal inspections, giving the owner or representative at least 24 hours prior notice of readiness for inspection:

1) Inspection of plants prior to planting.

2) Inspection of plant locations to verify compliance with the drawings.

3) Final inspection after completion of planting. Schedule this inspection sufficiently in advance, and in cooperation with the owner or representative so that the final inspection may be conducted within 24 hours after completion of planting.

4) Final inspection at the end of the maintenance period, provided that all previous deficiences have been corrected.

END OF SECTION

SECTION II - SITE CLEARING

1. CLEARING

a) Remove from the site trees, shrubs, etc. as indicated on the drawings. Arborists doing the work shall be licensed by the City of Grand Junction Forestry Board.

b) Clearing work shall be restricted to area within property lines or within construction limits indicated on drawings.

c) No burning is allowed on site. All trees, shrubs, etc. will be transported to an approved disposal site.

2. PROTECTING EXISTING TREES

a) Heavy equipment will be kept off root zone areas of trees as much as possible. Snow fence will be used, if necessary, to delineate this area.

b) Excavations necessary for curbing, irrigation lines, etc. will be done with minimal damage to roots. Large roots defined as 2" or more in caliper will not be cut.

c) Sprinkling lines will be installed under roots if necessary.

3. PRUNING EXISTING TREES

a) Trees to be saved as shown on drawings will be pruned to remove dead wood and reshape where needed.

b) Arborist hired will be licensed by the Grand Junction Forestry Board. A Class 'A' license is required. (Appendix A1).

c) Guidelines of the National Arborist Association will be followed. These include the following:

1) Remove dead, dying, diseased, interferring and weak branches.

2) All cuts must be made sufficiently close to the parent stem so that the wound may heal. The branch collar will be taken into account.

3) Cuts on all limbs one inch or more in diameter shall be done in three stages to prevent splitting.

4) All branches 3½ or more in diameter shall be lowered to the ground with ropes.

5) Pruning tools shall be disinfected after each tree before moving on to the next. Denatured alcohol, a 10 per cent bleach solution, or other disinfectant will be used.

6) If tops or large side branches must be reduced, the drop crotch method shall be used. The leader shall be cut back to a strong lateral branch 1/3 or more the size of the leader, avoiding any stub.

7) No spikes will be used for climbing live trees.

8) Pruning paints will not be used.

9) Pruning cuts made in stone fruits will be treated with Mertect 340F or a paste made of water and benomyl (Benlate) to help prevent Cytospora canker.

END OF SECTION

SECTION III - EARTHWORK

1. SOIL PREPARATION

a) Topsoil shall be a sandy loam, clay loam, loam, silt loam or sandy clay loam. It shall not have a mixture of subsoil and shall contain no slag, cinders, stones, lumps of soil, sticks, roots, trash or other extraneous materials larger than 1 inch in any dimension.

b) Soil preparation will consist of the addition of good quality organic matter and nutrients (by means of commercial fertilizers), and tilling to a depth of 4 to 6 inches. All areas to be seeded, sodded or used as planting beds will receive this treatment.

c) Good quality organic matter will be applied to the soil at the rate of 3 cubic yards per 1,000 square feet of area (2.3 cu. meters/90 square meters). Canadian/Michigan sphagnum peat moss is preferred, however, manure or mountain peat can be used. Manure should be well composted and NOT from a feedlot. Manures or mountain peat should be shredded.

d) If mountain peat or barnyard manure is used, a soluble salt test will be done. Materials with a salt reading (EC=mmhos/cm) above 3 shall not be used.

e) Phosphorus will be tilled into the soil (unless otherwise shown by soil test) at a rate per 1,000 square feet as follows:

Superphosphate (0-18-0) - 20 to 30 lbs.

or

Treble Superphosphate (0-46-0) - 10 to 15 lbs.

f) Additional nutrients will be added according to soil test results submitted through C.S.U. or a private lab.

g) Stones and other debris over one (1) inch in diameter will be removed.

h) The use of heavy equipment will be kept to a minimum to avoid root and trunk damage to existing trees.

2. TOPSOIL

a) Topsoil brought to site shall be free of noxious weeds.

b) Topsoil shall have a low salt content. Samples will be tested by C.S.U. Soil Laboratory, or private laboratory for soluble salts at the expense of the contractor. Soil with an Ec (mmhos/cm) above 3 will not be used without explicit written permission of consulting horticulturist.

3. EXCAVATION

a) Areas to be sodded shall be graded 1¼ - 1½" below grade to allow space for sod. The final grade with sod in place shall be ½ to 1" below sidewalks and drives.

b) Areas to be seeded shall be graded ½ to 1" below sidewalks and drives.

c) Areas to be planted will be graded as shown on planting and grading details.

d) Stockpile topsoil - first 2 inches taken off in separate pile and replace as topsoil after final grading.

e) Stockpile excavated soil material satisfactory for backfill or fill until required. Place, grade and shape stockpiles for proper drainage.

f) Remove and dispose of material unsatisfactory for backfill or fill, trash and debris, and all excess material in appropriate off-site landfills or dumping areas.

g) Keep excavations free of water while work is being performed.

h) Where underground streams or springs are found, provide temporary drainage and notify owner or representative.

i) Excavate so that banks of excavation will not be undercut and strata for foundations will not be disturbed.

j) Excavate unsatisfactory soil materials encountered that extend below required elevations to the additional depth as directed by the owner or representative.

k) Remove shoring and all form materials upon completion of the work.

4. EXCAVATION FOR TRENCHES

Care will be taken to prevent damage to large roots. See Section II - SITE CLEARING.

END OF SECTION

SECTION IV - CONCRETE FORM WORK

1. GENERAL

a) Care will be taken to prevent damage to large roots (2" or over in diameter)

END OF SECTION

SECTION V - CAST-IN-PLACE CONCRETE

1. CURBING - MOWING STRIPS, ETC.

a) Concrete curbing will be installed in such a manner as to prevent damage to large roots (2" or over) of existing trees. Notching forms may be necessary

b) Deep roots interfering with proposed curbing will be wrapped with a minimum of two (2) inches of biodegradable material prior to pouring concrete. This will allow future root expansion.

c) Large shallow roots interfering with proposed curbing will be protected if at all possible. In these instances, an opening (gap) will be left in curbing in lieu of cutting the root.

END OF SECTION

SECTION VI - FINISH GRADE

1. FINISH GRADE

a) All finish grading will be performed to the tolerances described.

b) Concrete, lumber, large stones and other debris will be removed to a depth of 12 inches.

c) Fine Grading

Upon completion of finish grading, perform all fine grading required in planting areas.

d) Shrub and ground cover planting areas:

Level of planting areas shall be 2 - 4" below grade level of lawn, sidewalk, edging, etc. See Drawings for specific information. Planting areas will be covered with 2 - 4" of bark mulch to bring up to grade. (Appendix A2)

END OF SECTION

SECTION VII - PLANTS & PLANTING

1. SOIL TESTS

1) A soil analysis will be done in accordance with C.S.U. S.A.# .500 to determine soluble salt and nutrient levels. Test will be done by C.S.U. or a private laboratory facility. (Appendix A3).

2) Deficient nutrients will be corrected with the addition of the appropriate fertilizer materials.

3) Ornamentals and turf will be selected based on the soluble salt level determined by the soil test. (Appendix A4a & 4b).

2. QUALITY ASSURANCE

a) STANDARDS

1) All plants and planting material shall meet or exceed the specifications of Federal, State and County laws requiring inspection for plant disease, insect control and weeds. All plants will be free of insect and disease problems and guaranteed healthy. Any misshapen insect or disease infested, or non-thrifty plants will be rejected.

2) Quality and size of woody plants shall conform with the current edition of 'Horticultural Standards' for number one grade nursery stock as adopted by the American Association of Nurserymen.

3) All specifications of Article 26, Colorado Nursery Act, pertaining to root spread, definitions, etc. will be followed.

4) All plants shall be true to name and one of each bundle or lot shall be tagged with the name and size of plants in accordance with the standards of practice of the American Association of Nurserymen. In all cases, botanical names shall take precedence over common names.

3. PRODUCT HANDLING

a) DELIVERY AND STORAGE

1) Deliver all items to the site in their original containers with all labels intact and legible at time of owner or representative's inspection.

2) Immediately remove from the site all plants which are not true to name and all materials which do not comply with the provisions of this Section of the Specifications.

3) Use all means necessary to protect plant materials before, during and after installation and to protect the installed work and materials of all other trades.

4) Specific treatments of plants include the following:

   a) Trees and shrubs will be delivered in the early morning. Efforts will be taken to prevent wind burn of plant material during transit from nursery to planting site.

   b) Plant material will be placed in shade when arriving at destination.

   c) Care will be taken by nursery personnel to avoid damage to root ball, trunk and branches. This will include rubbing due to improper handling.

   d) Broken branches will be properly pruned by nursery personnel using the drop crotch method.

b) REPLACEMENTS

In the event of damage or rejection, immediately make all repairs and replacements necessary to the approval of the owner or representative and at no additional cost to the owner.

4. LAWN GRASSES

a) GENERAL

1) Grasses will be selected according to salt tolerance as determined by soil test.

2) Seeding mixes for salt-affected (alkali) sites will be in accordance with Colorado State University Extension Service SA #7.227 titled "Growing Turf on Salt-Affected (Alkali) sites". (Appendix A4b)

3) Seeding of cool season grasses will be done in late summer when possible. Proper irrigation will be provided to allow establishment.

4) General soil preparation will be done in accordance with Section III, sub paragraph 1 'Soil Preparation'. Additional specs for seeding and sodding will be done in accordance with following guidelines.

5) Specifications for buffalograss and grasses for naturalized areas will be based on C.S.U. SA's #7.224 and $7.227. (Appendix A5 & 4b)

6) Sod will be selected in accordance with salt level and tolerances of sod selected (See Appendix A6).

b) KILLING EXISTING SOD

1) Actively growing sod will be treated with glyphosate four weeks prior to soil preparation work commencing.

2) Two treatments will be made. These will be made at 7 to 10 day intervals.

3) Dead sod can be stripped and removed from location, tilled under or cut with a verticut machine (before seeding).

4) Soil will be prepared in accordance with section on Soil Preparation, Seeding and/or Sodding.

c) SODDING - SOIL PREPARATION/INSTALLING

1) GENERAL

Preparatory to sodding, all irregularities in the ground surface shall be corrected. Sticks, stones, debris and other similar material more than one inch (1") in diameter shall be removed. Any objectionable depressions or other variances from a smooth grade shall be corrected. Areas to be sodded shall be smooth before any sodding is done. The soil will be worked well and left firm, but not tightly packed. If walking over the lawn leaves foot prints more than 1" deep after the final working, the soil shall be firmed with a roller.

2) The first strip of sod will be laid in a straight line. Thereafter, the sod will be butted together tightly and laid in the manner of bricks in a wall. See figure on detail sheet. (Appendix A7).

3) Fertilizing - nutrients will be added during soil preparation in accordance with Section III-Earthwork. After laying sod, periodic fertilizer applications will be made to maintain an attractive and healthy lawn.

4) If sod and soil are moist, the sod can be lightly rolled after it is laid; if dry, rolling should be delayed until just before the second watering.

5) The sod will be soaked thoroughly as soon as possible after it is laid. Sprinkler system, either new or old, will be in good working order before any sod is planted. This will be demonstrated to owner by contractor. As soon as watering is completed the first time, a few strips of sod will be turned back and the sod and soil examined to be sure they have been soaked.

6) If weather is hot and dry, sod will be soaked as necessary. The soil will be wet to 5-6" deep at each watering. In cool weather, sod may not have to be watered more than once every two or three days.

7) Sod will be checked 14 days after being laid to see how well it has knit. If sod is well knit, the grass will be watered as needed. If blue areas occur, the lawn will be watered immediately.

d) SOD - KENTUCKY BLUEGRASS

1) Kentucky Bluegrass (*Poa pratensis*) sod will not be used if a soil analysis indicates a salt level above 4 mmhos/cm and poor subsurface drainage exists

2) Sod will be selected according to disease resistance to Melting Out disease, Dollar Spot Fungi, Stripe Smut and Fusarium Blight. The percentage of bluegrass cultivars will be presented with bid to assist in selecting sod. The percentage of grasses (determined from seed planted) other than bluegrass will also be presented.

3) Sod will be cut, delivered and installed within 24 hours of harvesting.

4) Provide sod that is strongly rooted, free of weeds including undesirable grasses. Provide only sod that is capable of growth and development when planted (not dormant).

5) Standard size sections of sod shall be strong enough to support their own weight when suspended vertically from a firm grasp on the upper 10% of section.

6) When delivered, sod will be stored in the shade and the exposed sod surfaces lightly watered. A moist burlap cover will be used to keep the sod from drying.

7) Sod shall be free of glass, stones, diseases, nematodes, weeds and insect problems.

8) Soil thickness of sod shall not be less than 3/4" nor more than 1".

e) SOD - SALT TOLERANT

1) Sod will be selected based on salt level as determined by soil analysis. C.S.U. SA#7.227 will be used as a guide in selecting grass types. (See Appendix A4b).

2) Sod will be selected according to disease resistance to Melting Out disease, Dollar Spot Fungi, Stripe Smut and Fusarium Blight. The percentage of bluegrass cultivars will be presented with bid to assist in selecting sod. The percentage of grasses (determined from seed planted) other than bluegrass will also be presented.

3) Sod will be cut, delivered and installed within 24 hours of harvesting.

4) Provide sod that is strongly rooted, free of weeds including undesirable grasses. Provide only sod that is capable of growth and development when planted (not dormant).

5) Standard size sections of sod shall be strong enough to support their own weight when suspended vertically from a firm grasp on the upper 10% of section.

6) When delivered, sod will be stored in the shade and the exposed sod surfaces lightly watered. A moist burlap cover will be used to keep the sod from drying.

7) Sod shall be free of glass, stones, diseases, nematodes, weeds and insect problems.

f) SEEDING

1) Bluegrass (*Poa pratensis*) alone will not be used if a soil test shows an electrical conductivity in excess of 4 mmhos/cm and poor subsurface drainage exists. Grasses will be selected in accordance with C.S.U. SA#7.227 (Appendix A4b). Colorado Department of Agriculture specifications will be followed in regards to viability and weed seed content.

2) Sprinkler system (if present) shall be tested and demonstrated to owner as to effectiveness of water coverage.

3) Soil preparation - preparatory to seeding, all areas that have been excavated will be thoroughly soaked to settle fill dirt. After settling, top soil will be added and firmed before seeding.

   A disk, rototiller or other appropriate piece of equipment will be used to work the soil to a depth of five to six inches. The soil surface will be smooth with few clods bigger than one inch in diameter remaining.

   The soil will be well worked and left firm, but not packed. If walking over the lawn site leaves footprints more than one inch deep after the final working, the soil can be firmed with a roller.

4) Fertilizing - a starter fertilizer (e.g. 18-46-0) will be applied at the rate recommended on the bag. The fertilizer will be raked or otherwise worked into the soil surface before seeding.

5) Watering - frequent light watering will be made - as many as 3 or 4 a day - until seed has germinated.

5 TREES, SHRUBS AND GROUNDCOVERS

a) GENERAL

1) Standards/quality of plant materials will be in accordance with Section VII - Plants & Planting Subsection - 2 - Quality Assurance

2) Plant nursery stock immediately upon delivery to site and approval by the owner or representative.

3) Regularly water all nursery stock in containers and place them in a cool area protected from the sun and drying winds.

4) Do not fertilize young trees or shrubs until the following spring. Do not add fertilizer to backfill.

5) Backfill soil will be prepared by thoroughly mixing 1/3 coarse decomposed organic matter or Canadian/Michigan spaghnum peat to the existing soil. This backfill will be tested to determine the soluble salt level before use.

b) CONTAINER GROWN AND BALLED AND BURLAPED

1) The planting hole will be made 2 - 4" shallower than the soil ball - refer to detail drawings (Appendix A8).

2) Container grown plants - Containers will be slit on at least three (3) sides if made of papermache, peat or wood slats (baskets); containers will be removed if made of metal, tarpaper or plastic. Bottoms do not need to be removed. Papermache rims will be removed to prevent any portion from protruding above ground and acting as a wick, drying the soil ball.

3) For plants wrapped in burlap, leave the burlap in place except for the top portion. Make sure twine around trunk is cut and removed. Plastic burlap should be removed if possible to avoid root girdling.

4) Wire and plastic netting used to hold soil ball together will be removed from the top 2/3rd of the soil ball. (Appendix A9)

5) Rootballs will be scored with a knife vertically every 2 to 3 inches (circumference) equidistant around the ball. Cut to a depth not to exceed 1".

c) BARE-ROOT PLANTS

Bare-root plants should be planted in spring only.

1) Holes for bare-root plants will be large enough to permit the roots to spread out without crowding or curving around wall of hole. See detail drawing (Appendix A10a & A10b).

2) Backfill soil will be prepared by thoroughly mixing 1/3 coarse decomposed organic matter to existing soil (if needed).

3) Plant will be set so that crown is at least 2 inches and no more than 4 inches ABOVE surrounding soil or lawn level.

4) Add backfill until plant is anchored and will stand by itself. Apply water slowly, using hose to work out large air pockets.

5) Add remaining backfill, sloping level up to crown. Settle soil with water. DO NOT TAMP backfill.

6) Form a water basin just beyond edge of planting hole if in planting beds. If in lawn area, DO NOT build basins. Basins can be used in those instances where trees and shrubs are watered with sprinklers independently of the lawn (i.e. on a separate valve).

x) LIGHTWEIGHT SOIL MIXES - CONTAINER GROWN STOCK

1) Dig a wide but shallow hole.

2) Remove container and split rootball with a sharp spade from the bottom half-way up (Appendix 8h).

3) 'Butterfly' the split ball and plant being sure that no air space occurs in the 'V' beneath the split ball. Be sure the crown of plant is above final grade of lawn/planting area (Appendix 8h).

4) Backfill and water. Do NOT tamp backfill.

d) PLANTING

1) Put enough backfill into the hole to hold plant in place. Add water slowly, using a hose to work out large air pockets. When water has receded, add remaining backfill and soak slowly again with water. DO NOT TAMP backfill. Form a water basin just beyond the edge of the planting hole if in planting beds. If in lawn area, do NOT build basins.

2) In 5 - 7 days, fill the reservoir with water and resoak. Reapply water only when the soil begins to feel dry at a 2" depth. Avoid frequent, light waterings.

3) After planting, apply bark mulch to a depth of 3-5". See Drawings. Do not use plastic over roots unless of type that allows air to reach roots (e.g. Propex®).

e) STAKING, GUY WIRES AND TREE WRAP

1) Note drawing details for specifics required for tree staking (Appendix A8 and A10).

2) All deciduous trees will be wrapped from the ground to the second whorl of branches. A commercial treated wrap will be used.

3) Wrap will be applied on November 1 and removed April 1 (approximate dates). Trees will not be wrapped in summer.

4) Wrap will be attached with a single tack and staple at top and bottom or masking tape will be used. Twistems, wire, twine or strapping tape will not be used.

5) All B&B/container grown trees will be guyed using 2-3" wide strips of carpet, nylon or indoor-outdoor carpet. Straps will be attached as diagrammed (Appendix A8 & A10). Three wires will be used or all B&B/container grown deciduous trees will be guyed using two stakes in accordance with the drawings (Appendix A8d and e).

6) B&B conifers will be guyed using three wires in accordance with detail drawing (Appendix A8f).

7) Bare root trees - less than 2 inches in diameter will be supported with two wooden stakes driven into solid ground below planting hole. Ties of broad, soft strapping such as a strip of indoor-outdoor carpeting will be used to guy trees to guying wire. See drawing for details. (Appendix A10).

Trees over 2 inches in diameter will be supported with 3 guys. Guys will be attached to broad, soft strapping such as strips of indoor-outdoor carpeting. See drawing for details. (Appendix 4).

8) Guys will be flagged to warn pedestrians. These will be of a reflective quality visible at night.

f) EXISTING TREES

Tile Aeration System - raising grade and hard surfacing.

1) Aeration system will be used around all existing trees when the grade is to be raised, or a hard surface, i.e. concrete or asphalt, is to be put over any area within a radius of ½ the height of the tree.

2) Drain tiles or perforated drain tubes will be placed as shown in the Drawings (Appendix All). Care will be taken so as to not damage the roots of the trees that will remain.

Sample Specs #1

3) Tile - aeration system - under concrete, asphalt and any other hard surface.

   a) Grading and preparation of areas to be hard surface will be done in such a manner that minimal crushing/damage of roots will occur.

   b) Areas after grading soil will be raked to ensure good air infiltration.

   c) Perforated corrugated pipe or perforated PVC - 2" diameter or larger - will be used. The pipe will be laid on the raked soil as indicated on diagram (Appendix All). Uprights (outlets) will be installed where indicated. Uprights (outlets) will be installed where indicated. Uprights will be PVC and extend 4 inches above finished grade. All joints will be glued together using the proper materials.

   d) Street outlets will consist of 4" solid PVC.

   e) Wire mesh caps will be installed on all outlets and uprights. This mesh will be fine and strong enough to prevent trash from plugging aeration system.

   f) All lines will be installed so that they drain water away from the tree trunk. Lines will be raised or lowered to accomplish this.

   g) The aeration system will be sunk 2" into the graded soil. A 2" layer of 3/4" gravel will be added. Eight inch wide strips of Propex ®) or other woven plastic material will be put over the drainage system to prevent the poured concrete from plugging the system.

   h) Care will be taken to prevent crushing of the perforated pipe. Damaged pipe will be replaced.

   i) Only approved 'sterilants' will be used under hard surfaces to control regrowth of weeds. Label directions will be followed in regards to application rates and uses. Casoron ®) is recommended for this use.

Sample Specs #2

4) Tile - aeration system - when grade is raised

   a) Grading and preparation of areas to be raised in grade will be done in such a manner that minimal crushing/damage of roots will occur.

   b) Areas after grading soil will be raked to ensure good air infiltration.

   c) Perforated corrugated pipe (2") or 2" perforated PVC will be used. The pipe will be laid on raked soil as indicated on diagram (Appendix A12). These will tie in to a drywall at the trunk and extend radially beyond the drip line.

   d) Ends near drip zone will extend 4 inches above finished grade. All joints will be glued using proper materials.

   e) Wire mesh caps will be installed on all outlets and uprights. This mesh will be fine yet strong enough to prevent trash from plugging aeration system.

   f) Perforated pipe will open into drywall every foot around well's circumference. This pipe will be laid directly on disked original grade.

   g) With large trees a second set of radials will extend from drip line halfway back to tree. These will be open to surface at drip line end.

   h) All lines will be installed to drain water away from tree trunk. Line will be raised or lowered to accomplish this.

   i) Two inch (2") diameter gravel will be spread between and over the tile system to a depth of _____ inches. Care will be taken to prevent the crushing of the perforated pipe. Damaged pipe will be replaced. A final layer of 3/4 inch gravel will be spread and topped with a permeable material that will prevent soil from filtering into the gravel layer and clogging the pores necessary for air distribution. Propex ® or other such material will be used for this purpose.

   j) Fill dirt and top soil will be added to this tile/gravel system according to the architect's specifications.

g) EXISTING TREES - LOWERING GRADE

   1) Trees will be evaluated on site by a qualified horticulturist as to survivability based on amount of grade change.

   2) Trees to remain (after inspection) will:

a) be treated in such a manner as to prevent damage to trunk and root system. This will include keeping heavy equipment away from trunk and out as far as possible beyond drip zone. Grading in this area will be done by hand or small equipment.

b) have a terrace system designed according to root spread characteristics of tree (Appendix A12).

6. MAINTENANCE

a) GENERAL

Maintain all plantings starting with the planting operations and continuing for 30 calendar days after all planting is complete and approved by the owner or representative.

b) WORK INCLUDED:

1) Maintenance shall include all watering, weeding, cultivation, spraying and pruning necessary to keep the plant materials in a healthy growing condition and to keep the planted areas neat and attractive throughout the maintenance period.

2) Provide all equipment and means for proper application of water to those planted areas not equipped with an irrigation system.

3) Protect all planted areas against damage, including erosion and trespassing and vandalism by providing and maintaining proper safeguards.

c) REPLACEMENTS

1) At the end of the maintenance period, all plant materials shall be in a healthy growing condition.

2) During the maintenance period, should the appearance of any plant indicate weakness and probability of dying, immediately replace that plant with a new and healthy plant of the same type and size without additional cost to the owner.

3) Replacements required because of vandalism or other causes beyond control of the contractor are not part of the contract.

d) EXTENSION OF MAINTENANCE PERIOD:

Continue the maintenance period at no additional cost to the owner until all previously noted deficiencies have been corrected, at which time the final inspection shall be made.

END OF SECTION

STORMWATER MANAGEMENT PLAN

FOR

Grandview Subdivision, Filing No. 1
July 30, 1994

Prepared for:
Donada, Inc, c/o Don Dela Motte
634 Avalon Drive
Grand Junction, CO 81501

Prepared by:
HART GROUP, PC
ENGINEERS DESIGNERS PLANNERS
A DIVISION OF
LANDesign
200 North 6th St.
Grand Junction, Colorado 81501

Prepared by: ______________________
Monty D. Stroup

Reviewed and Approved by: ______________________
Philip M. Hart P.E.
State of Colorado, #19346

A. Site and Project Description

1. Site Location:

Grandview Subdivision is located in the City of Grand Junction, County of Mesa, State of Colorado, more particularly being located in the W 1/2 of Section 6, T.1 S., R.1 E. of the Ute Meridian.

Existing streets within the area of the project include 28 Road to the west and Patterson Road to the south which runs west to east and is to be used as primary access to the site.

Grandview Subdivision is bounded to the west across 28 Road by the Spring Valley Subdivisionand to the east, north and south by undeveloped lands. One quarter mile to the south of the Subdivision is Patterson Road.

2. Description of Property:

The Grandview Subdivision Filing 1 contains approximately 11.4 acres including 3 acres of area designated for open-space. Filing 1 contains 27 single family residential lots.

3. Description of Proposed Construction Activity:

Activity shall include the construction of roadway, water, sanitary sewer, storm sewer, irrigation, dry utility infrastructures followed by the construction of 27 single family residential structures and associated landscaping.

4. Proposed Sequence of Major Construction Activities:

Phase I Clearing and grubbing of proposed roadway alignments, storm water detention facilities and disposal of construction debris.

Phase II Construction of roadways to proposed subgrade elevations including cut and fill activities as required. Excess embankment material to be stockpiled in designated areas.

Phase III Utility infrastructures to be installed including storm sewers and culverts, swales and permanent erosion control features.

Phase IV Curb, gutter and sidewalks installed.

Phase V Clearing, Grubbing and overlot grading of single or multiple lots as sales and market conditions allow.

Phase VI Construction of single or multiple building structures as sales and market conditions allow.

Phase VII Final landscaping of individual lots as required by the project Covenants, Conditions and Restrictions.

5. Estimate of Areas Subject to Clearing, Grubbing and Excavation:

Grandview Subdivision filing 1 contains a total of 11.4 acres. Construction Phases I through IV will consist of approximately 5.15 acres. Phases V through VII will consist of the residual area of 6.25 acres.

6. Preconstruction and Postconstruction Runoff Coefficients:

As defined in the Final Drainage Report For Grandview Filing 1 (References 9) the historic runoff coefficients for the 2 year and 100 year storm events respectively are 0.22 and 0.28. With the construction of proposed roadways coefficients are expected to increase to 0.40 and 0.49 respectively.

7. Soil Erosion Potential:

The site soils are classified as (Bc) Billings Silty Clay loam, 0 to 2 percent slopes which falls within the hydrological soil group "C", (Rf), Ravola very fine sandy loam, 0 to 2 percent slopes which falls within the hydrological soil group "B", and (Fc) Fruita and Ravola loams, 2 to 5 percent slopes which falls in hydrological soil group "B".
Erosion of these soils during construction may be moderate if allowed to remain open with no vegetation.

8. Existing Vegetation:

Vegetation consists primarily of row crops and pockets of grass ground cover. Isolated pockets of wetland vegetation is found to exist within the existing irrigation and drainage channel along the south boundary line of the project.

9. Storage of Fuel Oils, Chemicals, Fertilizers or Other Potential Pollution Sources:

The storage of fuel oils, chemicals, fertilizers or other potential pollutants is prohibited without prior written notice to the owner by the contractor, subcontractor or other persons doing work on the site. In the event in becomes necessary to store such items, storage areas shall be designated. Storage areas shall be located above and away from drainages, waterways and other apparent conveyance elements. Appropriate measures shall be taken to protect such areas from spills or vandalism including but not limited to spill control berms and fencing.

10. Anticipated Non-Stormwater Components of Discharge:

Irrigation facilities include a pressurized under ground system supplied by a storage pond located at the southeast corner of Filing One. Offsite residual irrigation runoff is collected and routed underground to the storage pond upon entering the site.

11. Name and Location of Receiving Waters:

Receiving waters of the runoff from the site is first an existing storm water conveyance system routed through Spring Valley Subdivision and eventually into one of the irrigation canals located south of the site.

As defined in the detailed drainage study entitled "Flood Hazard Information, Colorado River and Tributaries" (Reference 2), Grandview Filing 1 is not within the 100 and 500 year floodplains.

B. Management During Construction

1. Anticipated Problems and Corrective (BMPs) Best Management Practices:

Structural Erosion Control Areas below the toe of fill slopes shall be isolated from fill areas by the installation of prefabricated silt fences as shown on the Drainage and Grading Plan and as detailed on the Erosion Control Plan. Straw bales shall be installed along side and rear yard swales at the locations shown on the plans. Straw bale outlet barriers shall be installed immediately below discharge points and pipe outlets.

Non-Structural Erosion Control Disturbed areas not designated for immediate construction or permanent landscaping shall be temporarily re-vegetated. In the event construction activity ceases for a period of 60 calendar days disturbed areas including cut and fill slopes shall be revegitated with a annual and perennial seed mixture as indicated on the Erosion Control Plan.

Dust Abatement The contractor shall be required to provide a consistent and reliable source of construction water. Watering to prevent dust shall be ongoing for the duration of the project. In the event high winds and heavy traffic loads create a situation where watering by itself is not sufficient the contractor is to apply an approved dust palliative other than or in addition to water.

Soil Tracking Access to Filing No. One shall be from 28 Road which is currently 2 lane asphalt roadway. Where construction traffic enters or exits unimproved areas onto asphalted public roadways a crushed rock construction staging pad shall be installed to minimize soil tracking.

Waste Disposal Construction debris shall be stockpiled in a central location. Debris shall be removed from the site and disposed of at appropriate locations secured by the contractor.

Sedimentation Control The contractor shall be responsible for inspecting the entire site on a weekly basis to ensure compliance and identify existing or potential sedimentation problems. The Final Drainage Reports For Grandview Subdivision (Reference 8 and 9)identifies the 2 existing drainage ditches which will be used for stormwater runoff and detention. Based on field investigations the mannings (N) value for each approaches 0.08. These drainages will provide an excellent sediment control and filtering effect and are to be maintained in their natural state.

Final Stabilization and Long Term Management

The project's Covenants Conditions and Restrictions (Reference 12) obligate each lot owner to fully landscape front yard within 60 days and the rear yard within 1 year from the issuance of a Certificate of Occupancy. Other areas including open-space are to be landscaped by the developer and maintained by the Homeowners Association.

Permanent structural BMP's include pipe outlet protection, rip-rap over filter fabric and grassed swales as shown on the Drainage and Grading Plan.

Inspection and Maintenance

The Contractor shall be ultimately responsible for compliance and maintenance during construction. The owners representative and the contractor shall make weekly inspections of the site to assure compliance and implementation of the proposed BMPs.

V. References

1. Mesa County Storm Drainage Criteria Manual, Final Draft, Mesa County, Colorado, March 1992.

2. Flood Hazard Information, Colorado River and Tributaries, Grand Junction, Colorado, prepared for the City of Grand Junction and Mesa County, by The Department Of The Army, Sacramento District, Corps Of Engineers, Sacramento, California, November, 1976.

3. Flood Insurance Rate Map, Mesa County, Colorado, (Unincorporated Areas), Community Panel Number 080115 0480 C, Federal Emergency Management Agency, Map Revised July 15th, 1992.

4. Soil Survey, Grand Junction Area, Colorado, Series 1940, No. 19, U.S. Department of Agriculture, issued November, 1955.

5. Urban Storm Drainage Criteria Manual, Urban Drainage and Flood Control District, prepared by Wright-McLaughlin Engineers, March 1969, Revised May, 1984.

6. Interim Outline of Grading and Drainage Criteria, City of Grand Junction, July 1992.

7. Douglas County Storm Drainage Design and Technical Criteria, Addendum A, Erosion Control Criteria, prepared by HydroDynamics Incorporated, Parker, Colorado, October, 1992.

8. Grandview Subdivision Filing No. One Hydraulic Calculations prepared by HART GROUP, PC, Engineers Designers Planners, A Division of LANDesign, Grand Junction, Colorado, July, 1994.

9. Master Drainage Report for Grandview Subdivision prepared by HART GROUP, PC, Engineers Designers Planners, A Division Of LANDesign, Grand Junction, Colorado, July, 1994.

10. Subsurface Soils Exploration, Grandview Subdivision, Grand Junction, Colorado, prepared by Lincoln-DeVore, Inc., Grand Junction, Colorado, August 3, 1993.

11. Colorado Department of Transportation, Erosion Control and Stormwater Quality Guide, Draft version, November 27, 1992.

12. Declaration Of Covenants, Conditions, And Restrictions Of Grandview Subdivision, Recorded in Book 2055, Pages 317 to 414 of the Mesa County Clerk and Recorders Office.

APPENDIX

APPENDIX 1

EROSION CONTROL PLAN

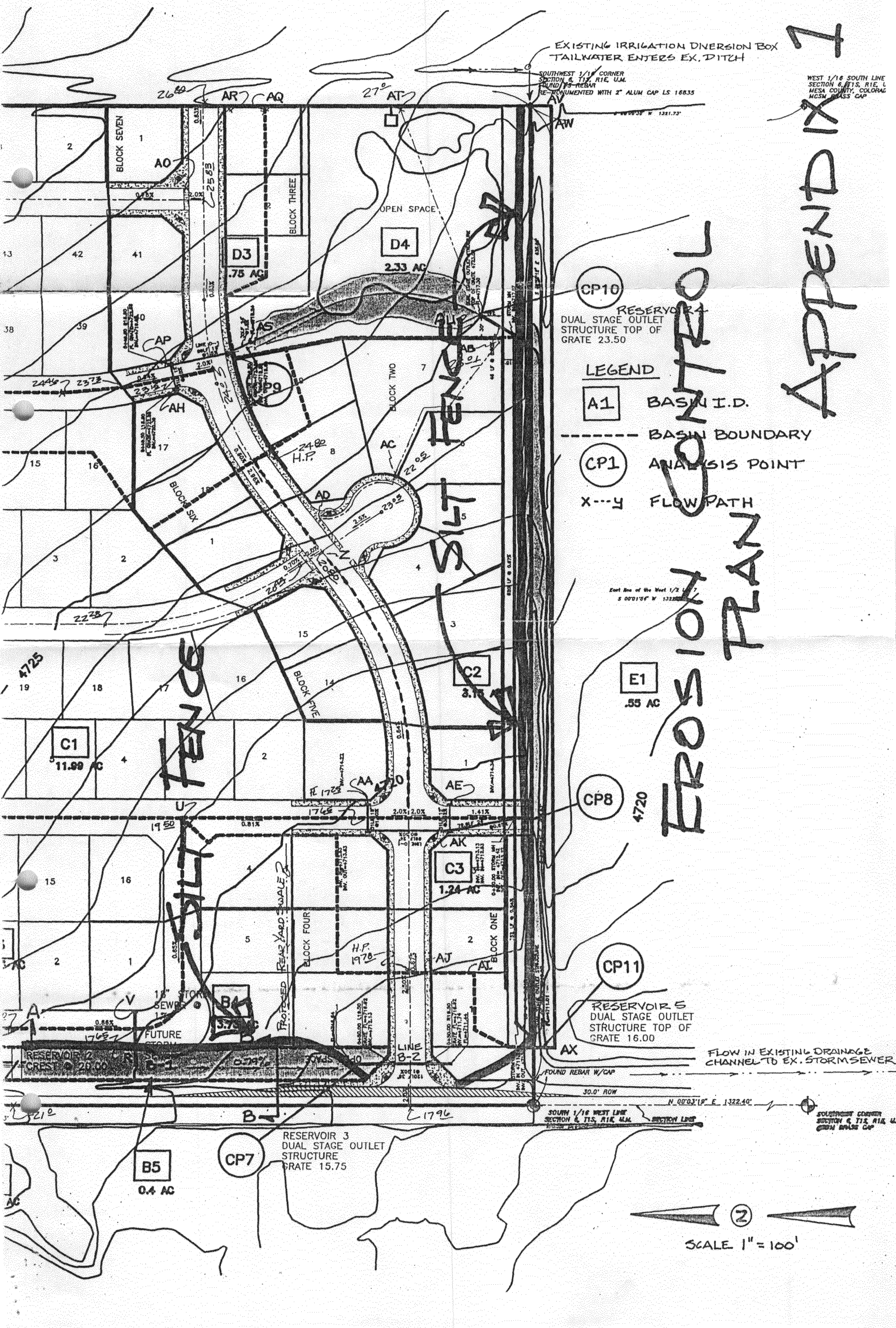


EXHIBIT "A" - GRAND VIEW FILING ONE - August 12, 1994

ROADWAY IMPROVEMENTS

ITEM	DESCRIPTION	UNIT	QUAN.	UNIT PRICE	TOTAL
1	Excavation	CY	7235	$1.25	$9,043.75
2	Sub-Grade Preperation	SY	7624	$1.95	$14,866.80
3	Class 2 Pit Run Gravel	CY	1850	$9.00	$16,650.00
4	Class 6 ABC	CY	1977	$18.50	$36,574.50
5	Overlot Grading	CY	15000	$1.25	$18,750.00
6	Grading C HBP	TON	1140	$25.50	$29,070.00
7	36" RCP Strorm Sewer	LF	219	$42.00	$9,198.00
8	24" RCP Strom Sewer	LF	229	$30.00	$6,870.00
9	18" RCP Strom Sewer	LF	170	$25.00	$4,250.00
10	12" RCP Storm Sewer	LF	62	$22.50	$1,395.00
11	Strom Sewer Manholes	EA	1	$1,200.00	$1,200.00
12	Standard Inlets	EA	9	$1,200.00	$10,800.00
13	Trench Compaction	LF	680	$2.10	$1,428.00
14	18" Rip-Rap	CY	100	$30.00	$3,000.00
15	Flared End Section	EA	3	$200.00	$600.00
16	7'-0" Curbwalk	LF	2028	$16.00	$32,448.00
17	6'-6" Curbwalk	LF	800	$15.50	$12,400.00
18	Fillets and Cross Pans	SF	7736	$3.50	$27,076.00
19	Drainage Control Str.	EA	3	$2,500.00	$7,500.00
20	3' "V" Pan	LF	305	$10.50	$3,202.50
21	Traffic Control Signs	EA	34	$125.00	$4,250.00
22	Adjust MH's & Valves	EA	22	$135.00	$2,970.00
	TOTAL ROADS				**$253,542.55**

EXHIBIT "A" - GRAND VIEW FILING ONE - [illegible]ust 12, 1994

SANITARY SEWER

ITEM	DESCRIPTION	UNIT	QUAN.	UNIT PRICE	TOTAL
1	8" Sanitary Sewer Main	LF	2233	$10.00	$22,330.00
2	4" Sanitary Sewer Main	LF	1270	$8.25	$10,477.50
3	Standard Manhole	EA	9	$1,250.00	$11,250.00
5	Trench Compaction	LF	3503	$3.50	$12,260.50
6	Pipe Bedding	CY	1040	$8.00	$8,320.00
7	Pavement Replacement	LF	135	$24.00	$3,240.00
8	Join Existing	EA	1	$500.00	$500.00
	TOTAL SANITARY SEWER				**$68,378.00**

DOMESTIC WATER

ITEM	DESCRIPTION	UNIT	QUAN.	UNIT PRICE	TOTAL
1	8" PVC Water Main	LF	1844	$14.50	$26,738.00
2	4" PVC Water Main	LF	135	$7.50	$1,012.50
3	8" Gate Valve w/Box	EA	9	$450.00	$4,050.00
4	4" Gate Valve w/Box	EA	1	$250.00	$250.00
5	Join Existing Water Main	EA	1	$3,500.00	$3,500.00
6	Service Connection	EA	28	$335.00	$9,380.00
7	Trench Compaction	LF	2925	$2.00	$5,850.00
8	Fire Hydrant Assembly	EA	3	$1,250.00	$3,750.00
9	Asphalt Replacement	LF	25	$25.00	$625.00
	TOTAL DOMESTIC WATER				**$55,155.50**

MISCELLANEOUS

ITEM	DESCRIPTION	UNIT	QUAN.	UNIT PRICE	TOTAL
1	Design/Engineering	LS			$15,600.00
2	Surveying	LS			$6,000.00
3	Developer's Inspection Cost	LS			$5,000.00
4	Quality Control Testing	LS			$6,000.00
5	City Inspection Fees	LS			$1,000.00
6	General Const. Supervision	EA			$10,000.00
	TOTAL MISCELLANEOUS				**$43,600.00**

GRAND TOTAL	**$420,696.05**

GRAND VIEW SUBDIVISION

LOCATION : 28 Rd N of Patterson

Length of Roadways as measured on centerline on approved "Preliminary Site Development Plan" dated April (revised) 1994 (prepared by Thomas A. Logue)

= 11,300 ft ≈ 2.14 miles

Measured by : MTD 7/5/94

[redacted]

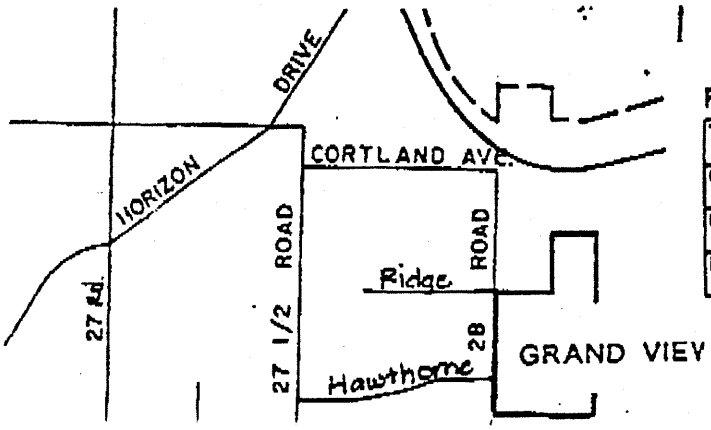
North Area Residents—Here's Something You Should Know . . .

A concerned group of your neighbors have been following the development plans for Matchett's Field (the large parcel of land east of 28 Rd. and north of Patterson Rd.). Grand View, a 200 single family unit subdivision, will begin construction this year (see map below). Please understand that we don't oppose the development. Grand View's density (R3) is less than Spring Valley's, and the development group has a proven local track record. Despite this, we feel that there are serious issues that must be addressed to insure that all of us can maintain the same quality of life we now enjoy. Here are our concerns:

TRAFFIC: Primary access to Grand View will be on 28 Road. Hawthorne Ave. and Ridge Ave. will be extended from Spring Valley into Grand View and will serve as the only two entrances into the subdivision. City planners estimate that a subdivision of this size will add approximately 1,900 daily car trips on 28 Road. This impacts the surrounding areas in four ways: 1) Increased traffic will make the intersection at 28 Rd. and Patterson even more **difficult to negotiate**. 2) **Safety** of young children becomes an issue if residents of Grand View choose to take Hawthorne or Ridge through Spring Valley to use the light at 27½ Rd. and Patterson. 3) The elevated road bed at the south end of 28 Rd. will aggravate an existing **traffic noise** problem for residents in that area. 4) All area streets and intersections will be impacted by an **increase in traffic.**

SCHOOLS: The school district estimates, rather conservatively, that Grand View will **add 111 students** to our already overcrowded schools: 51 to Orchard Avenue (this will push their enrollment to 100 over capacity), 26 to East Middle, and 34 to GJHS. It just seems irresponsible to ask our children to carry the burden of our prosperity.

PLEASE NOTE: The developers have petitioned for and have been primarily approved for annexation to the city. The **final vote** on this will be during the city council meeting on **Wednesday, July 6th at 7pm in the City Auditorium.** This is our **last opportunity** before the annexation to voice our concerns. Residents from Spring Valley, Crestview, Ptarmigan Estates, Applecrest, Mantey Heights, and Crown Heights have agreed to speak on your behalf, BUT your presence is still needed. Our experience shows us that an auditorium full of concerned faces backing up the speakers sends a very powerful message. Would you plan on being there? Because you have chosen to live in these areas, we know that you care about your quality of life.
Questions? Call Janet Terry 245-8998



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To Dave Tharton	From Tom Logue
Co.	Co.
Dept.	Phone # 244-1599
Fax #	Fax #

REVIEW COMMENTS

Page 1 of 3

FILE #85-94 **TITLE HEADING:** Preliminary Plan/Plat - Grand View Subdivision

LOCATION: 28 & F 1/4 Roads

PETITIONER: Ben Carnes & Discovery 76 Corp.

PETITIONER'S ADDRESS/TELEPHONE:
2499 Highway 6 & 50
Grand Junction, CO 81505
243-0456

PETITIONER'S REPRESENTATIVE: Tom Logue

STAFF REPRESENTATIVE: Michael Drollinger

NOTE: WRITTEN RESPONSE BY THE PETITIONER TO THE REVIEW COMMENTS IS REQUIRED ON OR BEFORE 5:00 P.M., MAY 27, 1994.

U.S. WEST **5/4/94**
Leon Peach **244-4964**

New or additional telephone facilities necessitated by this project may result in a "contract" and up-front monies required from developer, prior to ordering or placing of said facilities. For more information, please call: Leon Peach, 244-4964.

U.S. POSTAL SERVICE **5/4/94**
Cheryl Fiegel **244-3435**

1. Delivery options are centralized - preferred - immediate deliver - curbside or behind sidewalk -50% complete prior to delivery.
2. Townhomes will need to be centralized due to parking concerns.
3. Condos must be centralized and customer provides the equipment.

CITY UTILITY ENGINEER **5/9/94**
Bill Cheney **244-1590**

1. Show utilities for "Preliminary Plan" submittal as required in the SSID manual.
2. Sewer lines to be stubbed to the east property line for all future road extensions.
3. A portion of the sewer lines may have to be enlarged to accommodate development to the east. Sewer system will pay for upgrades if needed.
4. More hydrants will be required than are shown on the "Utility Plan" which is O.K. since the submittal is conceptual only.

GRAND JUNCTION FIRE DEPARTMENT 5/6/94
George Bennett 244-1400

The fire hydrant placement for this subdivision needs to be reconfigured to meet with the standards. These standards require that fire hydrants be placed at each intersection and no greater than 500 feet apart thereafter. Please contact our office for assistance in placing the fire hydrants.

MESA COUNTY PLANNING 5/11/94
Karl G. Metzner 244-1867

1. A Grand View Drive already exists at C.25 and 31.75.
2. If the cul-de-sac portion of Boeing Street is vacated, all of the street should be vacated.
3. Cortland Avenue right-of-way extension should be provided to connect future 28 1/4 Road to existing Cortland Avenue.
4. Recommend 3 lots adjacent to open space be deleted to create a larger and more useable open space area around the pond.

UTE WATER DISTRICT 5/11/94
Gary R. Mathews 242-7491

1. Fire hydrants should be placed at intersections and no more than 500' apart.
2. Water mains are installed 2-3 foot in oil on the North and East side of the street.
3. All valves are installed at the main line and fire hydrants are required to be valved.
4. Policies and fees in effect at the time of application will apply.

PARKS & RECREATION DEPARTMENT 5/12/94
Don Hobbs 244-1542

Dedication and development, to City standards, of a minimum of 5 continuous acres for a public park should be part of this development. It would be desirable if this could be adjoining to Matchett Village.

GRAND JUNCTION POLICE DEPARTMENT 5/16/94
Dave Stassen 244-3587

In reference to the open space that runs along 28 Road, I would recommend that landscaping be of that type does not totally block vision from 28 Road to the homes (i.e. intermittent trees or shrubs as opposed to a solid wall of green). Keeping with this idea, if fencing is to be used at this location, I would recommend a type that allows for unobstructed vision from the street (wrought iron or similar in nature).

I would also suggest some low, decorative, see through fencing around the irrigation pond to keep children from the water.

CITY UTILITY ENGINEER 5/17/94
Jody Kliska 244-1591

See attached comments, red-lined text and red-lined drawings.

CITY DEVELOPMENT ENGINEER 5/18/94
Michael Drollinger 244-1439

See attached comments.

MESA COUNTY SCHOOL DISTRICT 5/16/94
Lou Grasso 242-8500

See attached comments.

85-94 GRAND VIEW SUBDIVISION - 28 Road and F 1/4 Road
COMMUNITY DEVELOPMENT DEPARTMENT COMMENTS

1. Ridge Drive Boulevard - landscaping should be provided along edges of roadway to provide screening between the roadway and fences (rear yards of adjoining residences). Provide 10 ft. landscaping easement adjacent to roadway along with typical planting detail. Street tree spacing should be no greater than 50 feet. As per the Ordinance, all landscaped areas must have an underground, pressurized irrigation system.

2. A planting detail is required for all proposed landscaped areas including the type and size of all plants.

3. The maintenance of all common private open space areas should be the responsibility of the homeowner's association.

4. The design and location of all landscaping must be such that intersection sight distances are not impaired.

5. The "Entrance Feature" sign proposed is set back over 75 feet from 28 Road. Given the location and distance, it is questionable whether the sign will assist drivers to easily identify the development. The developer should consider an alternative sign location. Also, is a similar sign proposed for Hawthorne Drive?

6. Garfield View Subdivision Lot 1 (adjacent to Ridge Drive) - proposed roadway is immediately adjacent to the lot, no screening is proposed. A fence and/or screening should be provided to buffer adjacent home from Ridge Drive. Issues regarding the driveway location on the adjacent lot also need to be addressed (see Engineer's report). Applicant should attempt to arrange this with homeowner. Details of any arrangement should be indicated on plans.

7. At the time of final, the applicant should attempt to coordinate with adjacent property owners so that arrangements can be made to vacate the entire length of Boring Street.

8. Twenty foot pedestrian access easements should be provided at the ends of Dillon Court (between Lots 38 & 39) and Tamarron Ct. (betw. Lots 7 & 8). The Tamarron Court easement should be coordinated with the adjacent development to provide a linkage to the proposed open space in Matchett Village.

9. "Private Open Space" provided should be relabeled as "Irrigation and Stormwater Detention" unless the applicant has plans to provide open space amenities within the area.

10. "Buffer and Landscape Area" along 28 Road should be redesigned as a berm to adequately screen the homes along Grand View Circle. Detention storage area capacity could be handled in below grade structures (see engineer's report). Area should be relabeled "Detention Storage and Buffer Area". Regarding the police

department comments with reference to this area, we will be in contact with the police to discuss our recommendation.

11. Disposition of small strip of land between Block 9, Lot 8 and 28 Road not indicated on plans.

12. Grand View Drive shall be extended as a stub street to the southern property boundary (through Block 1, Lot 4)

13. A revised project narrative shall be provided.

May 17, 1994

REVIEW COMMENTS FOR: **Grand View Subdivision #85-94**

TYPE OF REVIEW: **Preliminary Plans**

REVIEWED BY: **Jody Kliska**

Site Plan

The median islands on Ridge and Hawthorne need to be dedicated to the homeowner's association and they will have maintenance responsibility.

Please adhere to the attached table for minimum curve radius. The radii on Grand View Circle need to be longer or the curves bulbed out like a cul-de-sac.

Grand View should provide a connection to the south for future development of adjacent property.

Street Details

The intersection of Ridge with 28 Road is of concern, particularly the complications caused by the property immediately to the north. Because this property is not a part of this development, the street intersection is slightly offset, and there is inadequate right-of-way to continue the radius and sidewalk. Access to this property is a concern, since their driveway is so close to the intersection. Is it possible to work with this property owner to resolve this?

An R4-7 sign will be required on the median island. Because of the width of the approach, the final plan should include a striping detail for better intersection definition, at least a stop bar and double yellow stripe. The traffic evaluation for this intersection should also include an analysis of the need for and the design of a left-turn lane, including storage length requirements.

The 50' sight zone from the curb line must be maintained - no trees, no obstructions over 30" in height. Please note on the detail. The 40' sight triangle must be observed at other intersections within the project.

On section B-B, please note trees must be a minimum of 5' from the back of walk.

Please show the dimensions of the entrance sign. The height above the roadway must not exceed 30".

On the final plans, the roadway plans for the 28 Rd. widening must be shown and these should address pavement markings as well.

Grading and Drainage Plan & Report

Page 9 of the interim outline for Storm Drainage allows the Rational Method for areas up to 25 acres. This development exceeds that.

On the final plan, please provide a detail of the buffer and landscape area for use as detention. Because of the proximity of Grand View Circle to 28 Road, the buffering will be important for noise, headlights, and other distractions. The conceptual plan looks like a series of detention areas. If so, how are these connected?

In the final plan and report, please verify the flows at the intersections of Tamarron Drive at Ridge and Hawthorne are such that the v-pans will carry the flow.

At staff field review the suggestion of a regional detention facility in conjunction with Matchett Village development was discussed. This should be considered prior to final submittal.

Traffic

A traffic impact analysis is required for the final plan submittal. The SSID checklist with notes is attached.

FILE COPY

STAFF REVIEW

FILE: 85-94-2

DATE: August 30, 1994

REQUEST: Final Plan/Plat Filing #1
Revised Preliminary Plan
GRAND VIEW SUBDIVISION

LOCATION: 28 Road at Hawthorn Avenue

APPLICANT: Donada Inc. c/o Don della Motte
634 Avalon Dr.
Grand Junction, CO 81501

EXISTING LAND USE: Vacant, except for a single family residence and two accessory buildings

PROPOSED LAND USE: Single Family Residential

SURROUNDING LAND USE:

NORTH:	Vacant/Single Family Residential
SOUTH:	Vacant/Agricultural
EAST:	Vacant/Agricultural
WEST:	Single Family Residential

EXISTING ZONING: RSF-5

PROPOSED ZONING: No change

SURROUNDING ZONING:

NORTH:	R-2 (County)
SOUTH:	R-2/PR-16 (County)
EAST:	R-2 (County)
WEST:	RSF-5

RELATIONSHIP TO COMPREHENSIVE PLAN:

No comprehensive plan exists for this area

STAFF ANALYSIS:

The site is located north of Patterson Road and east of 28 Road and consists of approximately

65 acres. The property was recently annexed into the City and is zoned RSF-5.

The petitioner is requesting Final Plat/Plan approval for Filing #1 consisting of 27 single family lots. The street layout in Filing #1 (and in the remainder of the development) has been modified since Preliminary Plan approval was granted in June (File #85-94). Section 6-8-1(F) of the Zoning and Development Code permits the Administrator to require submittal of materials to adequately review any changes to the to the plan and specify the process for approval of the modifications (based on the scope of the change). The petitioner has been advised that a revised Preliminary Plan will be required to be approved by Planning Commission illustrating all proposed changes. The applicant has submitted a revised Preliminary Plan for the project for consideration by Planning Commission.

Revised Preliminary Plan

The major changes to the Preliminary Plan from the original are as follows:

1. The number of units has increased from 200 to 204 as a result of road realignments. The gross density of the site remains at 3.1 units/acre
2. Tamarron Court cul-de-sac now designed as an "eyebrow".
3. Pagosa Court cul-de-sac (south of Hawthorn) shortened
4. Peak Court cul-de-sac eliminated, now an "eyebrow".
5. Cimarron Court/Pagosa Court (north of Hawthorn) reconfigured to loop road, renamed Pagosa Drive.

There are also a number of other minor realignments/reconfiguration of the street network. The plan should be revised to show a 30 ft. half-street ROW for Courtland Avenue consistent with a draft Major Street Plan for the area.

The applicant has addressed other staff comments/recommendations regarding this submittal.

Final Plan - Filing #1

Filing #1 consists of 27 lots on 11.4 acres. An irrigation and drainage facility will also be constructed in conjunction with Filing #1. The applicant has adequately addressed staff comments/recommendations regarding this submittal.

STAFF RECOMMENDATION:

Staff recommends approval of the revised Preliminary Plan and Final Plan for Filing #1 subject to the items identified above.

SUGGESTED PLANNING COMMISSION MOTION:

Mr. Chairman, on item #85-94-2, a request for revised preliminary approval and final approval for Filing #1, I move that the application be approved subject to the conditions in the staff report.

STATE OF COLORADO

COLORADO GEOLOGICAL SURVEY
Division of Minerals and Geology

Department of Natural Resources
1313 Sherman Street, Room 715
Denver, Colorado 80203
Phone (303) 866-2611
FAX (303) 866-2461

DEPARTMENT OF
NATURAL
RESOURCES

Roy Romer
Governor

James S. Lochhead
Executive Director

Michael B. Long
Division Director

Vicki Cowart
State Geologist
and Director

FAXED 8/30/94

August 30, 1994

MA-95-0009

Mr. Michael Drollinger
City of Grand Junction
Community Development Department
250 North 5th Street
Grand Junction, Colorado 81501

Re: Proposed Grand View Subdivision Filing 1 -- North of Patterson Road and East of 28 Road, Northeast of the Hawthhorne Avenue Alignment, Grand Junction

Dear Mr. Drollinger:

At your request, we have reviewed the materials submitted for and made a field inspectiuon of the site of the proposed first filing of the residential subdivision indicated above. The following comments summarize our findings.

(1) The geologic conditions of this site are simple and straightforward, but may present serious problems for housing construction if not considered adequately in overall development planning and structural designs. The near-surface "soils" present are typically relatively low density clayey materials derived from alluvium. These soils are subject to settlement if loaded with relatively heavy or concentrated loads. These surficial materials overlie Mancos Shale bedrock. The Mancos exhibits low permeability and, because of past and present irrigation in the vicinity, a shallow perched water table occurs on the shale bedrock. This condition can be expected to persist after subdivision buildout because of landscaping irrigation in this and nearby contiguous subdivisions.

(2) Because of the conditions indicated above, the most suitable type of house design in this subdivision will be a single story frame structure without a basement. Such buildings can be safely founded on correctly sized conventional spread footings. Heavier structures will require more elaborate (and expensive) foundation systems. Various options are adequately discussed in the submitted Lincoln-Devore, Inc., report. In all cases, we recommend that

individual building sites be investigated by a qualified soils and foundation engineer prior to selection of (each) foundation design.

(3) It will be most important to maintain good positive drainage away from houses. Roof runoff and irrigation water should not be allowed to pond or puddle near foundations and proper grades in the streets should be maintained to carry away storm runoff. This site in its undeveloped condition is susceptible to shallow flooding during heavy storms and some initial site regrading will be necessary to improve drainage prior to development as a housing subdivision. If it has not been done already, a drainage plan that not only considers drainage of this parcel, but also in contiguous properties should be made.

The recommendations made in the submitted Lincoln Devore, Inc., report are valid and thorough and should be followed. If the recommendations made above are followed and made conditions of approval of this proposal, then we have no geology-related objection to it.

Sincerely,

James M. Soule

James M. Soule
Engineering Geologist

#85-94-2

FINAL PLAN/PLAT, REVISED PRELIMINARY PLAN
GRAND VIEW SUBDIVISION: 28 Rd. at Hawthorn Ave.
COMMUNITY DEVELOPMENT DEPARTMENT COMMENTS

Revised Preliminary Plan

1. The title of the drawing should be amended to read "Revised Preliminary Plan."

2. Items 12 and 18 on the Preliminary Plan Drawing Standards Checklist (copy attached) must be indicated on the revised Preliminary Plan. These items were shown on the original drawing.

3. The tracts which will be under common ownership shall be appropriately labeled to reflect their intended use. The tract between Grand View Circle and 28 Road shall be labeled as "Detention Storage and Buffer Area." Tract "A" shall be relabeled "Private Open Space/Detention/ Irrigation"; Tracts "B" & "C" shall be relabeled "Detention Storage and Buffer Area."

4. Twenty (20) foot pedestrian easements shall be identified on the Plan at the end of Dillon Court between Lots 38 & 39 and between Lots 7 & 8 in Block 7 as required during the preliminary approval process.

5. The full Ridge Drive ROW is not identified on the plans adjacent to 28 Road and shall be indicated on the plans.

6. The existing Boeing Street cul-de-sac ROW should be identified on the plans and be labeled as "to be vacated."

7. The zoning district for the property should be identified on the plans (RSF-5).

8. The project density in the "Land Use Summary" table should be corrected to read "3.1".

9. The "Principal Building Setbacks" table incorrectly identifies the RSF-5 zone setbacks. The table should be revised as follows:

RSF-5

Front yard: Local street - 45 ft. from ROW centerline
Collector street - 50 ft. from ROW centerline
Side Yard - 5 ft.
Rear yard - 25 ft.
NO lots permitted to front on Ridge Drive

Final Plat - Filing #1

1. Setback table on plat incorrect, should be revised as per comment #9 above.

2. Based on the revised preliminary plan submitted, will the name for Cimmaron Drive remain?

3. Landscape Plan (Sheet LS-2) -

  a. General Notes - reference to "Mesa County Land Development Code" should be deleted
  b. "Type C" wall detail should be clearly labeled for identification

Russell

WALKER FIELD AIRPORT AUTHORITY 8/04/94
Mike Sutherland 244-9100

This development lies within the Airport Area of Influence, as well as underlying common aircraft traffic patterns, so may be affected by overflight of aircraft. An Avigation Easement is required to be recorded at or before filing of the subdivision plat. Please send a copy of the recorded document to Walker Field Airport Authority following recording.

It is our recommendation that, due to this residential development's proximity to aircraft flight paths and the airport proper, that additional soundproofing insulation - as well as planned landscape features - be designed into each residence and site to help mitigate potential sound-level perceptions.

CITY FIRE DEPARTMENT 8/04/94
Hank Masterson 244-1400

A hydrant needs to be placed at the intersection of 28 Road and Hawthorne Avenue. Also, move the hydrant located at block 4, lot 3 to block 5, lot 1.

Since the overall development plan layout has changed from the April, 1994 submittals, a new overall utility composite needs to be submitted showing all hydrant locations.

MESA COUNTY PLANNING DEPT. 8/03/94
Linda Dannenberger 244-1771

Connection to church property is desirable for future neighborhood interconnection with the Matchett property.

Will Grandview Drive be wide enough?

No other concerns.

U.S. POST OFFICE 8/05/94
Cheryl Fiegel 244-3435

Mail delivery will be: centralized
curbside
behind sidewalk - paired at lot lines

Option #'s 2 & 3 cannot receive mail delivery until 14 houses are complete.

Street name of Cimarron is also proposed for Valley Meadow Subdivision & North Valley Subdivision - duplicate street names cause a lot of confusion.

GRAND VALLEY WATER USERS 8/16/94
G.W. Klapwyk 242-5065

See attached comments.

Re: Grand ~~Valley~~ View Filing One Proposal

There remain questions to be clarified and further addressed relative to the drainage channel located along the south boundary of Grand View Filing One, as well as above and below such location.

Item #11 of the "Storm Management Plan" is not entirely correct as said conveyance system is used to carry a combination of seepage water, irrigation return flows and storm water and is not exclusively for storm water. Also, the conveyance beyond Spring Valley Subdivision never discharges into any irrigation canal(s), but rather is mostly underground pipeline with a modest amount of open channel until it reaches the Colorado River. Without regard to the total fore-said system, the immediate controlling limit is the pipeline under Spring Valley Subdivision. Planning for run-off should assure that historic inflow at the 28 Road inlet to such pipeline is not exceeded, as we are advised that the conveyance system beyond Spring Valley has been previously loaded to and/or beyond its capacity.

This Association will be glad to continue to discuss and work toward resolution of our questions concerning the drainage channel in the vicinity of Grand View Subdivision - Filing One. However, we will be unable to approve final plan for the subdivision until such questions are suitably resolved.

We look forward to working with subdivision's representatives to reach settlement on our questions and concerns.

Thank You

Grand Valley Water Users' Assn.

RECEIVED GRAND JUNCTION
PLANNING DEPARTMENT

AUG 17 1994

Revised

SCHOOL DISTRICT NO. 51 8/14/94
Lou Grasso 242-8500

See attached.

GRAND JUNCTION DRAINAGE DISTRICT 8/16/94
John L. Ballagh 242-4343

The site is outside the boundaries of the Grand Junction Drainage District but the surface runoff flows into the District maintained Buthorn Drain. The "downstream major drainway" is not an irrigation canal. The crossing under the GVIC canal at 1001 F Road is a 24" CMP. The Buthorn Drain follows Little Bookcliff Dr. to Bookcliff, along a meandering rear lot line alignment to First & Orchard, through West Park to behind Sam's Club.

The system has been upgraded in the last 8 years by the City and the Drainage District. However there is a significant base flow of return flow irrigation water. The system cannot stand increases in flow. Detention outside the District in the upper reaches of the basin is warranted and justifiable.

See attachment.

CITY DEVELOPMENT ENGINEER 8/15/94
Jody Kliska 244-1591

See attached comments and red-lined drawings.

COMMUNITY DEVELOPMENT DEPARTMENT 8/15/94
Michael Drollinger 244-1439

See attached comments.

CITY UTILITY ENGINEER 8/17/94
Bill Cheney 244-1590

Water: Ute water uses corporation stops at meter pit instead of curb stops.
Sewer: Extend line further into Pagosa Ct. to reduce length of service lines to lots 5, 6 and 7.
Show water line on profile for Lines "F" and "G".
Provide information pertaining to sewer line elevations for future filings.

CITY POLICE DEPT. 8/12/94
Dave Stassen 244-3587

The only question I have is whether there is going to be any type of safety fencing around the irrigation pond. This fencing would add a measure of safety as well as provide some security against vandalism to this facility.

*Revised

PUBLIC SERVICE **8/13/94**
Dale Clawson **244-2695**

Electric and Gas: Require Tract B and Tract C be designated as utility easement so that utilities can be installed across them. If water meter pits are installed close to side property lines as shown on sewer and water plan, electrical pedestals and transformers as well as phone and television pedestals will have to be located more into the center of the lots!

AVIGATION EASEMENT

THIS EASEMENT is made and entered into by and between the WALKER FIELD, COLORADO, PUBLIC AIRPORT AUTHORITY, a body corporate and politic and constituting a political subdivision of the State of Colorado, hereinafter called GRANTEE, and Donada, Inc.

hereinafter, GRANTOR;

WHEREAS, Grantee is the owner and operator of Walker Field Airport situated in the County of Mesa, State of Colorado, and in close proximity to the land of Grantor, and Grantee desires to obtain and preserve for the use and benefit of the public a right of free and unobstructed flight for aircraft landing upon, taking off from, or maneuvering about said airport; and

WHEREAS, Grantor is the owner in fee simple of that certain parcel of land situated in the County of Mesa, State of Colorado, to wit:

See Exhibit "A"

NOW, THEREFORE, in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, the Grantor, for himself, his heirs, administrators, executors, successors and assigns, does hereby grant, bargain, sell and convey unto the Grantee, its successors and assigns, for the use and benefit of the public, an easement and right of way appurtenant to Walker Field Airport, for the passage of all aircraft ("aircraft" being defined for the purposes of this instrument as any device known or hereafter invented, used or designed for navigation or flight in the air) by whomsoever owned and operated, in the navigable airspace above the surface of Grantor's Property to an infinite height above said Grantor's property, together with the right to cause in said airspace such noise and vibrations, smoke, fumes, glare, dust, fuel particles and all other effects that may be caused by the normal operation of aircraft landing at or taking off from or operating at or on said Walker Field Airport, and Grantor hereby waives, remises and releases any right or cause of action which Grantor now has or which Grantor may have in the future against Grantee, its successors and assigns, due to such noise, vibrations, smoke, fumes, glare, dust, fuel particles and all other effects caused by the normal operation of such aircraft.

FURTHER, Grantor hereby covenants, for and during the life of this easement, that Grantor:

(a) shall not hereafter construct, permit or suffer to maintain upon said land any obstruction that extends into navigable airspace required for use of said airport runway surfaces; (Navigable airspace is defined for the purpose of this instrument as airspace at and above the minimum flight altitudes, including take off and landing, as prescribed in Federal Aviation Administration Federal Air Regulations Part 91, and as such regulations are amended.)

(b) shall not hereafter use or permit or suffer use of said land in such a manner as to create electrical or electronic interference with radio communication or radar operation between the installation upon Walker Field Airport and aircraft, or to make it difficult for flyers to distinguish between airport lights and others or to result in glare in the eyes of flyers using the said airport, or to impair visibility in the vicinity of the airport, or otherwise to endanger the landing, taking off or maneuvering of aircraft.

Grantor agrees the aforesaid covenants and agreements shall run with the land for the benefit of Grantee, its successors and assigns, until said airport shall be abandoned and shall cease to be used for public airport purposes.

IN WITNESS WHEREOF, the Grantor has hereunto set his hand and seal on this 25th day of AUGUST, A.D. 1994.

DONADA, Inc.

Don dela Motte

Pres.
(Title)

STATE OF COLORADO)
) ss.
COUNTY OF MESA)

The foregoing instrument was acknowledged before me this 25th day of August, A.D. 1994, by Don dela Motte president of DONADA, Inc.

My Commission expires: 11/26/97.

Thomas A. Logue
Notary Public

THOMAS A. LOGUE
NOTARY PUBLIC

EXHIBIT "A"

DESCRIPTION OF PROPERTY

Being the portions of Section 6, Township 1 South, Range 1 East, Ute Meridian, described as follows:

The NE1/4, SW1/4, NW1/4, Section 6,

The SE1/4, SW1/4, NW1/4, Section 6,

The NW1/4, SW1/4, Section 6,

The SW1/4, SW1/4, NW1/4, EXCEPT: Beginning at a point being the West 1/4, Section 6, T1S, R1E, Ute Meridian, thence North 536.25 feet, thence East 165.0 feet, thence South 210.25 feet, thence 261.8 feet along the arc of a 50 foot radius curve to the right, the chord of which bears South 50 feet, thence South 276.0 feet to the South line of the NW1/4 of Section 6, T1S, R1W, Ute Meridian, thence West 165.00 feet to the Point of Beginning,

ALSO EXCEPT: Beginning at the Northwest corner of the SW1/4, SW1/4, NW1/4, Section 6, T1S, R1W, Ute Meridian, thence East 165 feet, thence South 125 feet, thence West 165 feet, thence North 125 feet to the Point of Beginning.