Table of Contents

File FP-1996-114 Name: Grand View - Filing #2 – North of Hawthorne Avenue/East of 28 Rd. – Final Plan

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
		Receipts for fees paid for anything
X	X	***Submittal checklist**
		***General project report**
		Reduced copy of final plans or drawings
X		Reduction of assessor's map.
		Evidence of title, deeds, easements
X	X	***Mailing list to adjacent property owners**
		Public notice cards
		Record of certified mail
X	X	Legal description
		Appraisal of raw land
		Reduction of any maps – final copy
		***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	Correspondence	X	X	Final Plat – not signed – signed copy – GIS Historical Maps - **
X		Chicago Title Ins. Company – 1/14/94	X	X	Grading Plan - not signed – signed copy – GIS Historical Maps - **
X		Treasurer's Certificate of Taxes Due – 5/1/96	X	X	Street and Storm Sewer Plan - not signed – signed copy – GIS Historical Maps - **
X	X	Stormwater Management Plan – 5/96	X	X	Utility Composite Plan – not signed – signed copy – GIS Historical Maps - **
X	X	Subsurface Soils Exploration – 6/29/96	X	X	Sewer and Water Plan– not signed – signed copy – GIS Historical Maps - **
X	X	General Permit Application – Stormwater Discharges – 5/23/96	X	X	Master Drainage Plan – 6/96
X	X	Posting of Public Notice Signs – 6/18/96	X		First /Second Amendment to the Declaration of Covenants, Conditions and Restrictions of Grand View Subdivision – Bk 2244 / Pg 39
X	X	Final Drainage Report – 6/21/96	X		Articles of Incorporation – not recorded, notarized
X		E-mails			

X	X	Planning Commission Minutes - ** 7/2/96, 8/6/96			
X	X	Certification of Plat – 9/9/96			
X	X	DIA – Bk 2268 / Pg 846 - **			
X	X	Ordinance No. 3044 - ** - Bk 2413 / Pg 78			

DEVELOPMENT APPLICATION

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

Receipt _____
Date _____
Rec'd By _____

File No. _____

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	12.3 ac.	N of Hawthorne & E of 28 Road	RSF-5	
☐ Rezone				From: To:	
☐ Planned Development	☐ ODP ☐ Prelim ☐ Final				
☐ Conditional Use					
☒ Zone of Annex					
☐ Variance					
☐ Special Use					
☐ Vacation					☐ Right-of Way ☐ Easement
☐ Revocable Permit					

☒ PROPERTY OWNER	☒ DEVELOPER	☒ REPRESENTATIVE
DONADA, Inc.	See Owner	Tom Logue
Name	Name	Name
634 Avalon Dr.		1225 So. 7th Street
Address	Address	Address
Grand Junction, CO 81504		Grand Jct., CO. 81501
City/State/Zip	City/State/Zip	City/State/Zip
434-6224		242-5370
Business Phone No.	Business Phone No.	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 required 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 — 5-1-96
Signature of Person Completing Application — Date

Donald D. dela Motte

X Donald D. dela Motte, President DONADA, Inc. — 5-1-96
Signature of Property Owner(s) - attach additional sheets if necessary — Date

SUBMITTAL CHECKLIST

MAJOR SUBDIVISION: FINAL

Location: N of Hawthorne Ave | E of 28 Road Project Name: GRAND VIEW FILING #2

Date Received 5-1-96

Receipt # 3942

File # FP-96-114

ITEMS		DISTRIBUTION																												
DESCRIPTION	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 Building Department	[illegible]	● Walker Field	● School Dist. #51	● Irrigation District - GVID	● Drainage District - GTDD	● Water District - UTE	● Sewer District - Central 6V	● U.S. West	● Public Service	○ GVRP	○ CDOT	○ Corps of Engineers	○ Colorado Geologic Survey	● U.S. Postal Service	[illegible]	● TCI Cable			TOTAL REQ'D.
● Application Fee - see reverse	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	1	1		21
● 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		
● 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																									
○ Deeds	VII-1	1			1			1																						
○ Easements	VII-2	1	1	1	1			1													1	1	1					1		
○ Avigation Easement	VII-1	1			1			1							1															
○ ROW	VII-2	1	1	1	1			1													1	1	1					1		
● Covenants, Conditions & Restrictions	VII-1	1	1					1																						
○ Common Space Agreements	VII-1	1	1					1																						
● County Treasurer's Tax Cert.	VII-1	1																												
● Improvements Agreement/Guarantee*	VII-2	1	1	1				1																						
○ 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	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		20
○ 11"X17" Reduction of Final Plat	IX-15	1							8	1	1	1			1	1	1	1	1	1	1	1	1				1			
● Cover Sheet	IX-11	1	2																											
● Grading & Stormwater Mgmt Plan	IX-17	1	2															1						1	1			1		
● Storm Drainage Plan and Profile	IX-30	1	2															1			1	1	1					1		
● Water and Sewer Plan and Profile	IX-34	1	2	1			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 - for common open space	IX-20	2	1	1					8																					
● Geotechnical Report	X-8	1	1																						1					
○ Phase I & II Environmental Report	X-10,11	1	1																											
● Final Drainage Report	X-5,6	1	2															1												2
○ 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~~ Revised Preliminary Plan	IX-29	1	2	1	1		1		8																					

NOTES: * An asterisk in the item description column indicates that a form is supplied by the City.

PRE-APPLICATION CONFERENCE

Date: ~~MARCH 28~~ APRIL 23, 1996
Conference Attendance: T. Logue ; M. Drollinger
Proposal: GRAND VIEW FILING #2
Location: N of Hawthorne Ave & E of 28 Road

Tax Parcel Number: 2943-063-00-088
Review Fee: $720 + $15/acre or fraction + $75 Public Works Fees
(Fee is due at the time of submittal. Make check payable to the City of Grand Junction.)

Additional ROW required? On 28 Road as per eng.
Adjacent road improvements required? As per eng. & prelim plan approval
Area identified as a need in the Master Plan of Parks and Recreation? _____
Parks and Open Space fees required? Yes Estimated Amount: $225/unit
Recording fees required? Yes Estimated Amount: _____
Half street improvement fees/TCP required? As per eng. Estimated Amount: _____
Revocable Permit required? No
State Highway Access Permit required? No
On-site detention/retention or Drainage fee required? As per prelim plan & eng.

Applicable Plans, Policies and Guidelines Devel Code

Located in identified floodplain? FIRM panel # —
Located in other geohazard area? —

Located in established Airport Zone? Clear Zone, Critical Zone, Area of Influence? Area of Influence
Avigation Easement required? As per airport

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.

O Access/Parking	O Screening/Buffering	O Land Use Compatibility
● Drainage	O Landscaping	O Traffic Generation
O Floodplain/Wetlands Mitigation	O Availability of Utilities	O Geologic Hazards/Soils

O Other _____
Related Files: #85-94(2)&(3)

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 _____ X Thomas A. Logue

Signature(s) of Petitioner(s) Signature(s) of Representative(s)

FINAL APPROVAL CHECKLIST
GRAND VIEW FILING #2

✓ 1. Development Improvements Agreement (DIA) #

✓ 2. Improvements Guarantee (type used: DISBURSEMENT AGREEMENT) #

✓ 3. Final Plans #

o 4. Articles of Incorporation of HOA N/A

o 5. CC&Rs N/A

o 6. Plat

o 7. Disk of Plat

o 8. UCC Approval

✓ 9. TCP Credit Request

✓ 10. City Surveyor Certificate

o 11.

: Minimum required for commencement of construction

FEES

Open Space Fees - $_____

TCP - $ _____/lot

School Impact Fee - $ _____/lot

Ed Loshbaugh
662 28 Road
City 81506

Norma Cozzette
664 28 Rd.
City 81506

Emma McCreanor
654 28 Rd.
City 81506

Elijah Hitchcock
652 28 Rd.
City 81506

1st Church of the Nazarene
1000 North 9th St.
City 81501

B&G Investments
P.O. Box 9088
City 81502

Kenneth Matchett
2844 F Road
City 81506

Paul Ouret
1615 N. 18th St.
City 81501

Carolyn Glass
3520 Beechwood St.
City 81506

James Fleming
3530 Beechwood St.
City 81506

David Schumacher
3610 Beechwood St.
City 81506

Amrei Ungaro
3620 Beechwood St.
City 81506

Brian Haut
3630 Beechwood St.
City 81506

Norma Zeiler
3710 Beechwood St.
City 81506

Merle Harris
3720 Beechwood St.
City 81506

Leroy Murray
3730 Beechwood St.
City 81506

Paul Burris
2956 Pheasant Run Circle
City 81506

Graig Burdette
2958 Pheasant Run Circle
City 81506

Jarrel Doudy
2625 Hawthorne Ave.
City 81506

Terance Beyrer
P.O. BOx 361
Grand Junction, CO 81502

Earl Cogdill
2715 Hawthorne Ave.
City 81506

James McConnell
2624 Hawthorne Ave.
City 81506

Norman Hack
2635 Beech Ct.
City 81506

Brent Uilenberg
2640 Beech Ct.
City 81506

Charles Green
2630 Beech Ct.
City 81506

Adolfo Torrez
3210 Beechwood St.
City 81506

Rudolph Hansen
3220 Beechwood St.
City 81506

Steven Poust
3230 Beechwood St.
City 81506

Daniel Lacy
3310 Beechwood St.
City 81506

Tedford Hendrickson
3330 Beechwood St.
City 81506

Carl Pinson
3410 Beechwood St.
City 81506

David Horen
3425 Beechwood St.
City 81506

Gilbert Martin
3420 Beechwood St.
City 81506

Stephen Witsken
3415 Beechwood St.
City 81506

F. Clemens
3430 Beechwood St.
City 81506

V. Kohl
3405 Beechwood St.
City 81506

Bill Ferguson
3215 Beechwood St.
City 81506

Merlin Zimmet
3205 Beechwood St.
City 81506

Pamela Fox
2517 I Rd.
City 81505

Charles Riggs
3325 Beechwood St.
City 81506

PAUL M OURET
3510 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4852

CAROLYN C GLASS
3520 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4852

JAMES F FLEMING
3530 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4852

N KEITH COOMBE
2510 RIDGE DR
GRAND JUNCTION, CO 81506-8468

PATRICK M MILLS
3615 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4849

JOSEPH M TONOZZI
3605 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4849

WILLIAM M BLACKBURN
3535 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4851

DONALD MARK GUTENTAG
3525 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4851

PATRICIA A HILL
2614 HAWTHORNE AVE
GRAND JUNCTION, CO 81506-4872

ROGER L FISCHER
2624 HAWTHORNE AVE
GRAND JUNCTION, CO 81506-4872

JOHN J KAMMERER
2714 HAWTHORNE AVE
GRAND JUNCTION, CO 81506-4886

DAVID W TERRY
3120 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4859

NORMAN H HACK
2635 BEECH CT
GRAND JUNCTION, CO 81506-4842

BRENT R UILENBERG
2640 BEECH CT
GRAND JUNCTION, CO 81506-4842

CHARLES E GREEN
2630 BEECH CT
GRAND JUNCTION, CO 81506-4842

ADOLFO TORREZ
3210 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4833

JOHN L COOKE
3220 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4833

ARNOLD F KRETZMANN
3230 BEECHWOOD ST
GRAND JUNCTION, CO 81506

DANIEL A LACY
3310 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4856

TERANCE A BEYRER
PO BOX 361
GRAND JUNCTION, CO 81502-0361

TEDFORD M HENDRICKSON
3330 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4856

CARL PINSON
3410 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4854

GILBERT L MARTIN
3420 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4854

STEPHEN E CLEMENS
4937 LA RAMADA DR
SANTA BARBARA, CA 93111

DAVID G HJELSTROM
2311 APRICOT CT
GRAND JUNCTION, CO 81506-8459

CHARLES S WHITE
2305 APRICOT CT
GRAND JUNCTION, CO 81506-8459

STEPHEN J WITSKEN
3415 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4853

V WILLIAM KOHL
3405 BEECHWOOD ST
GRAND JUNCTION, CO 81506-4853

LYMAN L VAN HORN
2310 WINTERGREEN DR
GRAND JUNCTION, CO 81506-8404

FIRST CHURCH OF NAZARENE OF GJ
1000 N 9TH ST STE 8
GRAND JUNCTION, CO 81501-3107

Hill Woods

GRAND VIEW #2

RICK LEE CATLIN
656 28 RD
GRAND JUNCTION, CO 81506-4802

EMMA LOUISE MCCREANOR
654 28 RD
GRAND JUNCTION, CO 81506-4802

ELIJAH HITCHCOCK
652 28 RD
GRAND JUNCTION, CO 81506-4802

SKELTON CONSTRUCTION INC
706 IVY PL
GRAND JUNCTION, CO 81506-8341

JEFFREY M MCCLELLAND
3351 C RD
PALISADE, CO 81526-9533

HARRY R MCGUINESS
590 EASTWOOD ST
GRAND JUNCTION, CO 81504

Donada, Inc.
634 Avalon Drive
Grand Junction, CO 81504

Tom Logue
1225 S 7th St.
Grand Junction, CO 81501

City of Grand Junction
Community Development Dept.
250 N 5th Street
Grand Junction, CO 81501

GRAND VIEW #2

Elam CONSTRUCTION, INC.
1225 South 7th Street
Grand Junction, Colorado 81501
(970) 242-5370 • FAX: (970) 245-7716

April 30, 1996

Planning Commission
Community Development Department
City of Grand Junction
250 North 5th. Street
Grand Junction, CO 81501

RE: GRAND VIEW SUBDIVISION, FILING TWO

Dear Members:

Accompanying is the Final Plat and Site Development Documents for the second filing at the Grand View Subdivision located east of 28 Road and Hawthorne Avenue.

Filing Two consists of 36 single family lots and on a total of 12.3 acres. The second phase of development follows the phasing plan which was included with the approved Preliminary Development Plan in May, 1994. Phase Two is part of an overall development plan consisting of 200 units. Most of the first 29 lots within phase one have been build upon.

This application responds to the conditions, where applicable, which were established during the Preliminary Plan review process. Conditions of acceptance for Filing Two follow:

1. A Landscaping Plan has been submitted to the Community Development Department. Staff recommendations for buffering along 28 Road frontage has been illustrated on the Landscape Plan.

2. Identification signage has been relocated as requested by staff and is shown on the Landscape Plan.

3. A Traffic Impact Analysis for the entire development was transmitted to the Community Development and Engineering Departments during the phase one review process.

The only change between Filing Two and the accepted Preliminary Development Plan is the elimination of the center median in Ridge Drive. The landscaping which was in the median has been relocated to a new area between the edge of the street and an expanded right-of-way line for Ridge Drive.

Other conditions of approval not consistent with this filing will be addressed with subsequent plats.

It is the applicant's desire to begin construction for Filing Two immediately upon the acceptance of the Final Plat and Plan by the City. It is anticipated that construction will last approximately 8 weeks.

The applicant, Mr. Don dela Motte, and myself will be in attendance at the scheduled public meeting to discuss the proposal and answer any questions which may arise.

Respectfully,

Thomas A. Logue

Thomas A. Logue

xc: Don dela Motte, President
R.L. Atkins, P.E. & P.L.S

DRAINAGE - GRAND VIEW SUBDIVISION, FILING TWO
Grand Junction, Colorado

Sheet Number 2, Grading Plan; and Sheet Numbers 3,4, and 5 Road and Storm Sewer Plan and Profiles, of the construction documents for Grand View Subdivision, Filing 2, dated 4-30-96 were completed under by supervision and are in substantial accordance with the, *Master Drainage Study of Grand View Subdivision*, prepared by LANDesign LTD., dated 07-29-94.

Richard L. Atkins Date: 5-1-96
Richard L. Atkins
Colorado Registered Professional Engineer No. 12291

STORMWATER MANAGEMENT PLAN

FOR

Grandview Subdivision, Filing No. 2

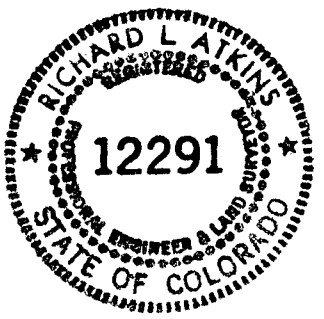
May, 1996

Prepared for:
Donada, Inc, c/o Don Dela Motte
634 Avalon Drive
Grand Junction, CO 81501

Reviewed and Approved by: Richard L Atkins

R.L. Atkins P.E. & P.L.S.

State of Colorado, # 12291



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, South Rim 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 South Rim Subdivision, Recorded in Book 2055, Pages 317 to 414 of the Mesa County Clerk and Recorders Office.

As defined in the detailed drainage study entitled "Flood Hazard Information, Colorado River and Tributaries" Grandview Filing 2 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 along the east edge of the planned detention area adjent to 28 Road. Straw bales shall be installed at 200 foot intervals along the flowline of the detention area. Straw bale outlet barriers will also 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.

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. Two 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 Masster Drainage Reports For Grandview Subdivision identifies 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 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.

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 2 contains a total of 12.3 acres. Construction Phases I through IV will consist of approximately 4.6 acres. Phases V through VII will consist of the residual area of 7.7 acres.

6. Preconstruction and Postconstruction Runoff Coefficients:

As defined in the Master Drainage Report For Grand View Subdivision "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 have been constructed and 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.

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 2 contains approximately 12.3 and contains 36 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 36 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 family building structures as sales and market conditions allow.

Lincoln DeVore, Inc.
Geotechnical Consultants
1441 Motor St.
Grand Junction, CO 81505
TEL: (970) 242-8968
FAX: (970) 242-1561

May 1, 1996

Don Dela Motte
634 Avalon Drive
Grand Junction, CO 81501

Re: Preliminary Information of Subsurface Soils Exploration
Grand View Subdivision, Filing #2, Grand Junction, CO

Gentlemen:

Lincoln DeVore has been retained to perform a Subsurface Soils Exploration for the second filing of the Grand View Subdivision. This Subsurface Soils Exploration will include Recommended Pavement Sections for the interior residential roadways of this filing. Information currently available on this project indicates the subsurface soils profile and the anticipated residential road pavement sections will be very similar to those reported for Filing #1. For purposes of preliminary design and evaluation, it is believed the recommendations will be quite similar to those found in our report of the Subsurface Soils Exploration, Grand View Subdivision, Filing #1, Grand Junction Colorado, Lincoln DeVore Job #81273-J, June 29, 1994.

It is believed that all pertinent points have been addressed. If any further questions arise regarding this project or if we can be of any further assistance, please do not hesitate to contact this office at any time.

Respectfully Submitted,

LINCOLN DeVORE, Inc.

by: Edward M. Morris PE
Engineer/Western Slope Manager

LD Job No.: 85459-J

June 29, 1994

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.

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

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 $\pm$ 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 not 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.

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 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

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.

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
x x x x x x	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_o Natural Moisture Content
	W_x Weathered Material
Free water	Free water table
	γ^o Natural dry density
	T.B. – Disturbed Bulk Sample
	② Soil type related to samples in report
15' W_x Form.	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) USCS (CL)

			A	B	C	D	E
TEST SPECIMAN							
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		
STABILOMETER	P_h at 1000 pounds	psi	66	64	60		
	P_h at 2000 pounds	psi	138	147	132		
	Displacement	turns	4.05	4.14	4.30		
	"R" Value		9	5	11		
CORRECTED "R" VALUE			8				

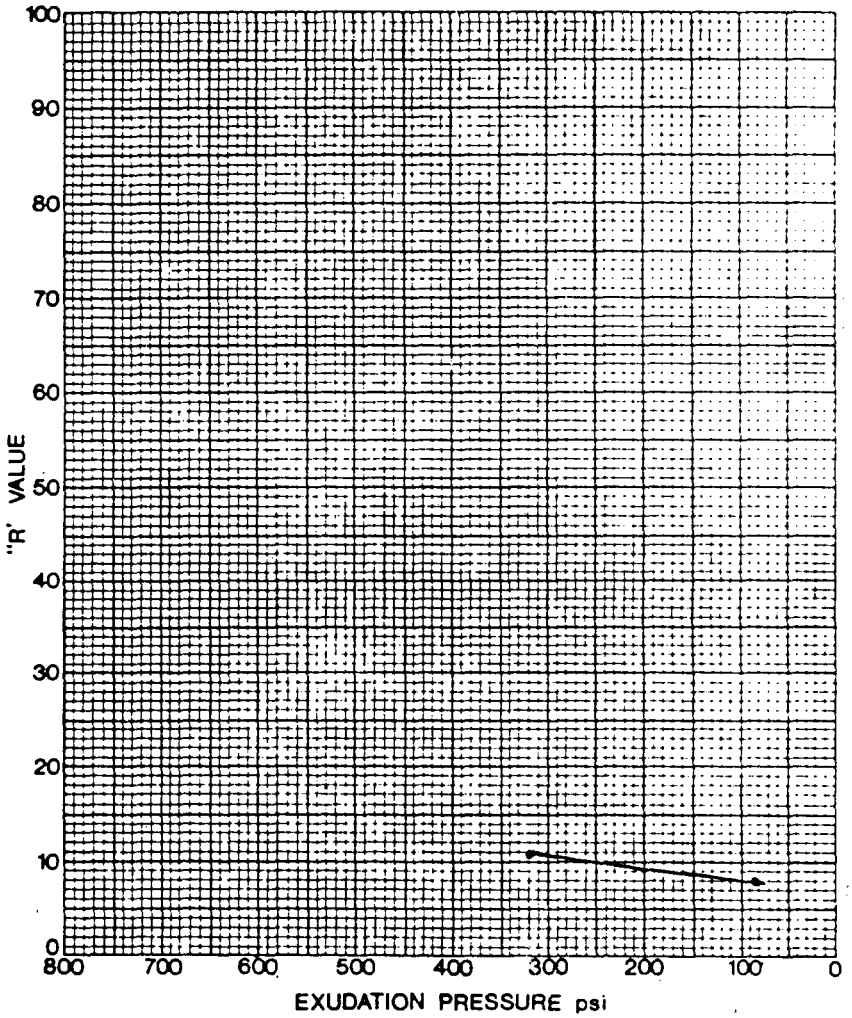
EXPANSION @ 300 PSI EXUDATION PRESSURE 1.3

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

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

Mr. Don Dela Motte

Date: **7-1-94**

Job No.: **81273-J**

Drawn: **EMM**

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**

Lincoln DeVore, Inc.
Geotechnical Consultants
1441 Motor St.
Grand Junction, CO 81505

TEL: (303) 242-8968
FAX: (303) 242-1561

June 29, 1994

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.

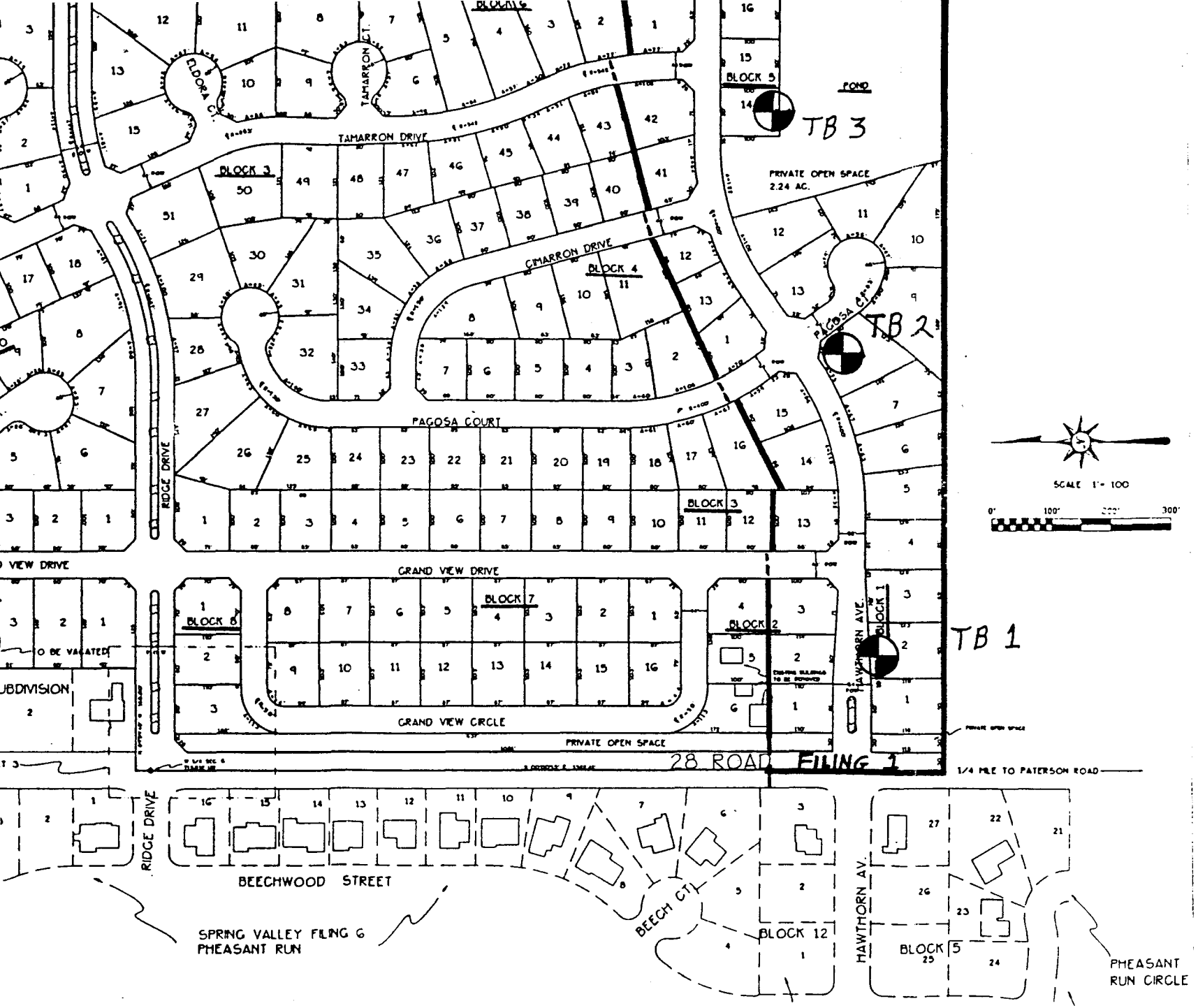
By: _____
Edward M. Morris, E.I.T.
Western Slope Branch Manager
Grand Junction, Office

Reviewed by: _____ 6/30/94
George D. Morris, P.E.
Colorado Springs Office

GEORGE D. MORRIS REGISTERED PROFESSIONAL ENGINEER STATE OF COLORADO

LDTL Job No. 81273-J

EMM/ss



BORING LOCATION DIAGRAM
GRAND VIEW SUBDIVISION

LINCOLN

1441 MOTOR STREET

REVIEW COMMENTS

FILE #FP-96-114 **TITLE HEADING:** Grand View Subdivision, Filing #2

LOCATION: N of Hawthorne, E of 28 Road

PETITIONER: Donada, Inc.

PETITIONER'S ADDRESS/TELEPHONE: 634 Avalon Drive
Grand Junction, CO 81504
434-6224

PETITIONER'S REPRESENTATIVE: Tom Logue

STAFF REPRESENTATIVE: Michael Drollinger

NOTE: THE PETITIONER IS REQUIRED TO SUBMIT FOUR (4) COPIES OF WRITTEN RESPONSE AND REVISED DRAWINGS ADDRESSING ALL REVIEW COMMENTS ON OR BEFORE 5:00 P.M., MAY 23, 1996.

CENTRAL GRAND VALLEY SANITATION **5/6/96**
M. Meyer **434-2276**

This is not in our District.

GRAND JUNCTION DRAINAGE **5/7/96**
John Ballagh **242-4343**

1. This subdivision which is outside the boundaries of the Drainage District, does drain into the Buthorn Drain, a Grand Junction Drainage District facility which is at capacity during storm events. On-site or regional detention is strongly recommended. The surface runoff does not flow through Spring Valley and into one of the irrigation canals, as the Stormwater Management Plan for Grand View Subdivision, Filing No. 2 indicates on page 5, point #11.
2. No overall drainage plans were submitted for review by this office. We need plans to look at in order to comment.

CITY POLICE DEPARTMENT **5/7/96**
Dave Stassen **244-3587**

No additional comments.

WALKER FIELD AIRPORT AUTHORITY **5/6/96**
Dennis Wiss **244-9100**

1. This development lies within the Airport Area of Influence, as well as underlying a common aircraft traffic pattern (runway 4/22), so may be affected by overflight of aircraft.
2. 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 the Walker Field Airport Authority following its recording.
3. 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.

UTE WATER **5/8/96**
Gary R. Mathews **242-7491**

1. The water lines in Ridge Drive and Grand View Drive will be 8" and a 6" in Grand View Circle. Ute Water has an 18" water main in 28 Road.
2. Water mains shall be C-900, class 150. Installation of pipe fittings, valves and services including testing and disinfection shall be in accordance with Ute Water standard specifications and drawings.
3. Developer is responsible for installing meter pits and yokes. Ute will furnish the meter pits and yokes.
4. Construction plans required before development begins.
5. Policies and fees in effect at the time of application will apply.

CITY FIRE DEPARTMENT **5/9/96**
Hank Masterson **244-1414**

Move the hydrant proposed for Lot 26, Block 4 to Lot 24, Block 4. Move the hydrant proposed for Lot 21, Block 4 to Lot 18, Block 4 at Lot 18's northwest corner.

CITY PROPERTY AGENT **5/9/96**
Steve Pace **256-4003**

1. Re-plat this filing #2 to show the remainder of property being subdivided, see attached reduced copy of the assessor map with are to be platted shown thereon.
2. All lots & blocks in each filing to be numbered consecutively.
3. Provide long chord information with all curves.
4. Address only those easements that are shown on the plat (see red-lined plat).
5. In the Surveyors Certificate - also stat the this plat conforms to the requirements for subdivision plats specified in the City of Grand Junction Development Code.
6. Need to show that interior lot corners are going to be set.

PUBLIC SERVICE COMPANY **5/9/96**
John Salazar **244-2781**

GAS & ELECTRIC: No objections. Will require some side-lot easements - exact locations will be determined when power line for project is engineered.

U.S. WEST **5/13/96**
Max Ward **244-4721**

For timely telephone service, as soon as you have a plat and power drawing for your housing development, please.....

MAIL COPY TO:
U.S. West Communications
Developer Contact Group
P.O. Box 1720
Denver, CO 80201

AND

CALL THE TOLL-FREE NUMBER FOR:
Developer Contact Group
1-800-526-3557

We need to hear from you at least 60 days prior to trenching.

T C I CABLEVISION **5/13/96**
Glen Vancil **245-8777**
See attached comments.

CITY DEVELOPMENT ENGINEER **5/15/96**
Jody Kliska **244-1591**
See attached comments.

GRAND VALLEY WATER USERS **5/15/96**
Richard Proctor **242-5065**
Grand Valley Water Users' Association has no comments to offer concerning this second filing of Grand View Subdivision.

CITY UTILITY ENGINEER **5/15/96**
Trent Prall **244-1590**
WATER: Ute

1. Provide a signoff block for Ute on all water related plans.
2. Please obtain Ute Water's standard specifications rather than the City of Grand Junction's Water specifications.

SEWER: City of Grand Junction

3. Please reconfigure sewer service lines for lot 1, blk 8 and lot 1, blk 9 to drain to sewers rather than manholes.
4. Please eliminate sewer line B1 to B5. Reconfigure sewer service lines for: Lot 1, Blk 8 to between B2-B3; Lot 6, Blk 1 to between A1-B1; Lot 5 Blk 1 to between A1-B1 via an easement along back of Lot 6, Blk 1.
5. How is MH B1 to be set in relation to concrete curb-gutter-sidewalk?
6. Please indicate that all sewer/water crossings shall be encased per City of Grand Junction specifications.
7. In addition to the notes already on the sewer plans, please incorporate the following notes to the sewer plan and profile.
   - A. Contractor shall have one signed copy of plans and a copy of the City of Grand Junction's Standard Specifications at the job site at all times.
   - B. No 4" services shall be connected directly into manholes.
   - C. The contractor shall notify the City inspection 48 hours prior to commencement of construction.
   - D. The Contractor is responsible for all required sewer line testing to be completed in the presence of the City Inspector. Pressure testing will be performed after all compaction of street subgrade and prior to street paving. Final lamping will also be accomplished after paving is completed. These tests shall be the basis of acceptance of the sewer line extension.
   - E. The Contractor shall obtain City of Grand Junction Street Cut Permit for all work within existing City road right-of-way prior to construction.
   - F. A clay cut-off wall shall be placed 10 feet upstream from all new manholes unless otherwise noted. The cut-off wall shall extend from 6 inches below to 6 inches above granular backfill material and shall be 2 feet wide. If native material is not suitable, the contractor shall import material approved by the engineer.

G.V.-MD

G. Stub out north of Grand View Drive shall be capped and plugged north of development property line. Stub out shall be identified with a steel fence post buried 1' below finished grade. As-built surveying of stub out required PRIOR to backfill.

H. Benchmark _____

CITY PARKS & RECREATION **5/17/96**
Shawn Cooper **244-3869**

Parks & Open Space fees - 36 units @ $225 = $8,100.

CITY COMMUNITY DEVELOPMENT **5/16/96**
Ronnie Edwards **244-1430**

The name "Grand View Circle" is discouraged. A different prefix is advised due to the proximity in relation to Grand View Drive and its length. It is getting increasingly more difficult for the Postal Service to deliver mail when the same prefix is used over and over in the same subdivision.

CITY COMMUNITY DEVELOPMENT **5/16/96**
Michael Drollinger **244-1439**

See attached comments.

LATE COMMENTS

MESA COUNTY SCHOOL DISTRICT #51 **5/20/96**
Lou Grasso **242-8500**

SCHOOL - CURRENT ENROLLMENT / CAPACITY - IMPACT
Orchard Avenue Elementary - 389 / 375 - 9
East Middle School - 415 / 465 - 4
Grand Junction High School - 1674 / 1630 - 6

TO DATE, COMMENTS NOT RECEIVED FROM:
City Attorney
Mesa County Planning
Grand Valley Irrigation
Colorado Geological Survey
U.S. Postal Service

May 10, 1996

Grand View, Fil. 2
Tom Logue
% Community Development Department
250 North 5th Street
Grand Junction, CO 81501

Ref. No. CON19622

Dear Mr. Logue;

We are in receipt of the plat map for your new subdivision, **Grand View, Fil. 2**. We will be working with the other utilities to provide service to this subdivision in a timely manner.

I would like to take this opportunity to bring to your attention a few details that will help both of us provide the services you wish available to the new home purchasers. These items are as follows:

1. We require the developers to provide, at no charge to TCI Cablevision, an open trench for cable service where underground service is needed and when a roadbore is required, that too must be provided by the developer. The trench and/or roadbore may be the same one used by other utilities so long as there is enough room to accommodate all necessary lines.

2. We require developers to provide, at no charge to TCI Cablevision, fill-in of the trench once cable has been installed in the trench.

3. We require developers to provide, at no charge to TCI Cablevision, a 4" PVC conduit at all utility road crossings where cable TV will be installed. This 4" conduit will be for the sole use of cable TV.

4. Should your subdivision contain cul-de-sac's the driveways and property lines (pins) must be clearly marked prior to the installation of underground cable. If this is not done, any need to relocate pedestals or lines will be billed directly back to your company.

5. TCI Cablevision will provide service to your subdivision so long as it is within the normal cable TV service area. Any subdivision that is out of the existing cable TV area may require a construction assist charge, paid by the developer, to TCI Cablevision in order to extend the cable TV service to that subdivision.

6. TCI will normally not activate cable service in a new subdivision until it is approximately 30% developed. Should you wish cable TV service to be available for the first home in your subdivision it will, in most cases, be necessary to have you provide a construction assist payment to cover the necessary electronics for that subdivision.

Should you have any other questions or concerns please feel free to contact me at any time. If I am out of the office when you call please leave your name and phone number with our office and I will get back in contact with you as soon as I can.

Sincerely,

Glen Vancil

Glen Vancil,
Construction Supervisor 245-8777

GENERAL PERMIT APPLICATION

STORMWATER DISCHARGES ASSOCIATED WITH:

CONSTRUCTION ACTIVITY

(Permit No. COR-030000)

FOR AGENCY USE ONLY									
Certification Number									
C	O	R	-	0	3				

Date Received	Fee Category
Year Month Day	

Please print or type. All items must be completed accurately and in their entirety or the application will be deemed incomplete and processing of the permit will not begin until all information is received. Please refer to the instructions for information about the required items. An original signature of the applicant is required.

1. **Name and address of the permit applicant:**

Name DONADA, INC. Don della Motte, president

Mailing Address 634 AVALON DRIVE

City, State and Zip Code GRAND JUNCTION, CO 81504

Phone Number (970) 434-6224 Taxpayer (or Employer) ID _____

Who is applying? Owner ☑ Developer ☑ Contractor ☐

Entity Type: Private ☑ Federal ☐ State ☐ County ☐ City ☐ Other: _____

Local Contact See applicant

Title _____ Phone Number _____

2. **Location of the construction site:**

Street Address NE 28 Road & Hawthorn Avenue

City, State and Zip Code Grand Junction, CO. 81501

County MESA Name of plan of development GRAND VIEW, Filing TWO

Township, Range, section, 1/4 section T.1S., R.1E., UM, Sec. 6, SW 1/4

Latitude and Longitude _____

3. **Briefly describe the nature of the construction activity:**

Residental Single Family site development

4. **Anticipated construction schedule:**

Commencement date: June 1996 Completion date: Sept. 1996

5. **Area of the construction site:** Total area 12.3 ac.

Area to undergo excavation or grading: 11.5

6. **The name of the receiving stream(s). (If discharge is to a ditch or storm sewer, also include the name of the ultimate receiving water):** Butterne Drain to Colorado River

7. **Other environmental permits held for this construction activity (include permit number):**

None

8. **Stormwater Management Plan Certification:**

I certify under penalty of law that a complete Stormwater Management Plan, as described in Appendix A of this application, has been prepared for my facility. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the Stormwater Management Plan is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for falsely certifying the completion of said SWMP, including the possibility of fine and imprisonment for knowing violations.

Donald D. Della Motte — 5-23-96

Signature of Applicant — Date Signed

Donald D. Della Motte president DONADA, INC.

Name (printed) — Title

9. **Signature of applicant:**

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Donald D. Della Motte — 5-23-96

Signature of Applicant — Date Signed

Donald D. della Motte, President DONADA, INC.

Name (printed) — Title

STAFF COMMENTS

FILE : #FP-96-114
DATE: May 16, 1996
STAFF: Michael T. Drollinger
PROJECT: Grand View Filing #2
REQUEST: Major Subdivision Plat- Final
LOCATION: N. of Hawthorne Ave./E of 28 Road
ZONING: RSF-5

COMMENTS:

1. Landscaping of private open space must be made part of Development Improvements Agreement (DIA).

2. The Preliminary Plan approved for this project shows that adequate ROW exists for the completion of Ridge Drive at the 28 Road intersection. This does not appear to be the case on the Final Plat for Filing #2. Please explain.

3. Please provide a detail for the "rail fence" identified on the Landscape Plan. Also, please detail how the proposed landscape treatement along 28 Road conforms with the requirements of the Preliminary Plan approval.

4. Please remove the reference to the Mesa County Code in the landscaping notes.

Please contact the Community Development Department (244-1430) if you have any questions or require further explanation of any item.

h:\cityfil\1996\96-114.rvc

RESPONSE TO REVIEW COMMENTS

May 23, 1996

Title: GRAND VIEW FILING TWO, Final Plan and Plat

File No: FP-96-114

Location: NW of 28 Road and Hawthorne Ave.

The following agency comments were informational in nature and do not require a specific response:

CENTRAL GRAND VALLEY SANITATION
CITY POLICE DEPARTMENT
PUBLIC SERVICE COMPANY
U.S. WEST
TCI CABLEVISION
GRAND VALLEY WATER USERS
CITY PARKS AND RECREATION

RESPONSE TO GRAND JUNCTION DRAINAGE DIST.:
Overall drainage plans were submitted to the district as part of Filing One review in July of 1994. The drainage plan were submitted with modifications request by the City Engineering Department and responded to the issues raised by the Drainage District at that time.

RESPONSE TO WALKER FIELD:
An Aviation Easement has been transmitted to the Community Development Department for recording with the Final Plat.

The following statement is included in the previously recorded Covenants, "Grand View Subdivision lies within the Walker Field Airport of Influence, it is suggested that additional soundproofing insulation be incorporated within the construction of each dwelling".

RESPONSE TO UTE WATER:
With the exception of a 6 inch line in Grand View Circle all other new lines will be 8 inch in diameter.

RESPONSE TO FIRE DEPARTMENT:
The hydrant located at Lot 26, Block 4 has been relocated to Lot 24, Block 4 and the hydrant located at Lot 21, Block 4 has been relocated to Lot 24, Block 4.

A new overall utility composite has been submitted to the department for review.

RESPONSE TO PROPERTY AGENT:
All of the requested modifications to the Final Plat have been made and a new document has been transmitted to the Community Development Department for distribution to the Property Agent.

RESPONSE TO DEVELOPMENT ENGINEER:
1. Prior to rerunning the HEC program a meeting between the Development Engineer and the preparer of the Master Drainage Plan will be held to discuss in detail the nature of the requested modification to the plan.

2. The sidewalk extension south of Hawthorne Avenue along 28 Road was not installed as part of Filing One in order to allow space for any grade adjustments for future improvements to 28 Road south of Grand View. However, the Street Plans have been modified to include construction a 7 foot curbwalk extending south of Hawthorn Avenue to the south boundary of Grand View.

3. A copy of the Construction Permit Application to the State Health Department for stromwater management has been transmitted to the Community Development Department.

4. A 25 foot right of way was dedicated as part of the Garfield View Subdivision for what now is known as Ridge Drive.

5. The Final Plat has been revised to indicate a drainage easement within the private open space along 28 Road.

6. The Street Plans have been segmented showing the plan and profile in accordance with the SSID Manual requirements.

7. A notation for the 7 foot curbwalk has been added to the street plans.

8. Inlet sizes are indicated on the Storm Sewer profiles. If the HEC program must be re-run, a new summary will be provided indicating the sizing of the drainage facilities in filing two.

9. The location of street lighting and signs have been added to the Street Plans.

10. Street structural sections have been changed on the Detail Sheet to reflect the design by the geotechnical consultant.

11. A copy of a revised Exhibit B of the Improvements Agreement has been transmitted to the Community Development Department.

12. A note has been added to the Final Plat that no access to Ridge Drive will be permitted.

RESPONSE TO UTILITY ENGINEER:
Requested modifications have been made to the Sewer and Water Plans.

RESPONSE TO COMMUNITY DEVELOPMENT:
1. Costs for landscaping the Private Open Space has been added to Exhibit B of the Development Improvements Agreement.

2. A detail for the "rail fence" has been added to the Landscape Plan.

(Addendum #1)
TO THE

MASTER DRAINAGE STUDY
OF
GRAND VIEW SUBDIVISION

JUNE, 1996

Prepared For:

DONADA INC, c/o DON DELA MOTTE
634 Avalon Drive
Grand Junction, Colorado 81501
(303)-434-5224

Prepared By:

LANDesign LLC.
259 Grand Avenue
Grand Junction, Colorado 81501
(303)-245-4099

Prepared by: Monty D. Stroup 06/21/96
Monty D. Stroup

"I hereby certify that this (Addendum #1) to the Master Drainage Study of Grand View Subdivision was prepared under my direct supervision".

Reviewed by: Philip M. Hart 06/21/96
Philip M. Hart P.E.
State of Colorado, # 19346

I. SCOPE OF ADDENDUM

The purpose of this addendum is to re-evaluate selected HEC1 input parameters based on the City of Grand Junction's latest current drainage criteria.

II. BACKGROUND INFORMATION

The original "Master Drainage Study for Grand View Subdivision", dated July 29, 1994, was prepared using the "Mesa County Storm Drainage Criteria Manual", dated March 1992. At the time of preparation the Mesa County manual contained the most complete and comprehensive hydrologic data and approved methodology for the Grand Junction and Mesa County areas. With the submittal of phase two (Filing No. Two) in June, 1996, came a re-review of the original Master Drainage Study. A comparison of the original study against design guidelines contained in the City of Grand Junction's "Stormwater Management Manual", adopted August 17, 1994, two input parameter discrepancies were note. The City Engineering staff has requested an analysis of the impact of these discrepancies as it would relate to the "total peak" discharge from the site and the adequacy of the originally proposed detention volumes.

Based on conversations between LANDesign staff and the City Development Engineer the scope of this analysis shall be limited to the evaluation of the Developed 100 Year Storm Event based on revisions to the following input parameters:

NMIN INPUT VALUE:

The original study used a minimum computation interval of 2 minutes. The HEC1 program allows and absolute minimum of 1 minute. The City of Grand Junction's recommended minimum is 5 minutes (see Exhibit 1.0). This addendum increases the NMIN value to 5 minutes.

SCS CURVE NUMBERS (CN):

Upon further review of the City's Stormwater Management Manual it is apparent that the (CN) values used in the original study for the developed condition were in conflict with those specified in the manual. The original study used those values presented in the Mesa County manual. These values are based on a Antecedent Runoff Condition (ARC) of III. The values prescribed by the City's manual are based on a (ARC) of II. The (CN) values presented herein are derived from the City manual and are based on actual field conditions using a percent of impervious area of 59% and a percent of pervious area of 41%. These values were derived by evaluating typical house, garage, landscaping and one-half roadway improvements as found to be constructed in Filing No. One.

III. CONCLUSIONS AND RESULTS

The result increasing the NMIN value is a long storm duration to peak discharge which increases the peak runoff.

The result of decreasing the (CN) values was to lower the peak runoff value from the entire site. The original 100 Year Storm Event runoff value was originally estimated to be 84 CFS. The revised estimate by this addendum is 41 CFS. The net decrease in calculated flow is 51%. In addition the maximum water surface elevations for the 100 Year maximum water surface are reduced to the levels as shown on the HEC1 output data sheets in the appendix.

Based on these results, the actual required detention volumes would be less than those proposed with the original study. A copy of the original study narrative is found in the appendix.

APPENDIX

ORIGINAL STUDY NARRATIVE

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 performed 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.

JOB# 96035.40
GRAND VIEW MASTER
DRAINAGE STUDY
(Addendum)

APPENDIX "C"
SCS CURVE NUMBERS

1. **General Discussion** The SCS-CN method and limitations have been discussed in Section VI-F-2a. In this Appendix, guidelines in the use of CN values are provided to assist in CN value selection. Also provided are SCS published SCS curve numbers.

2. **Antecedent Moisture/Runoff Conditions** In order to account for varying soil moisture conditions prior to a storm event, three "antecedent moisture conditions" (AMC) or "antecedent runoff conditions" (ARC) as they are now called, were developed.

   ARCs are classified by the conditions shown in Table "C-1" below.

Table "C-1"
Classification of Antecedent Runoff Conditions

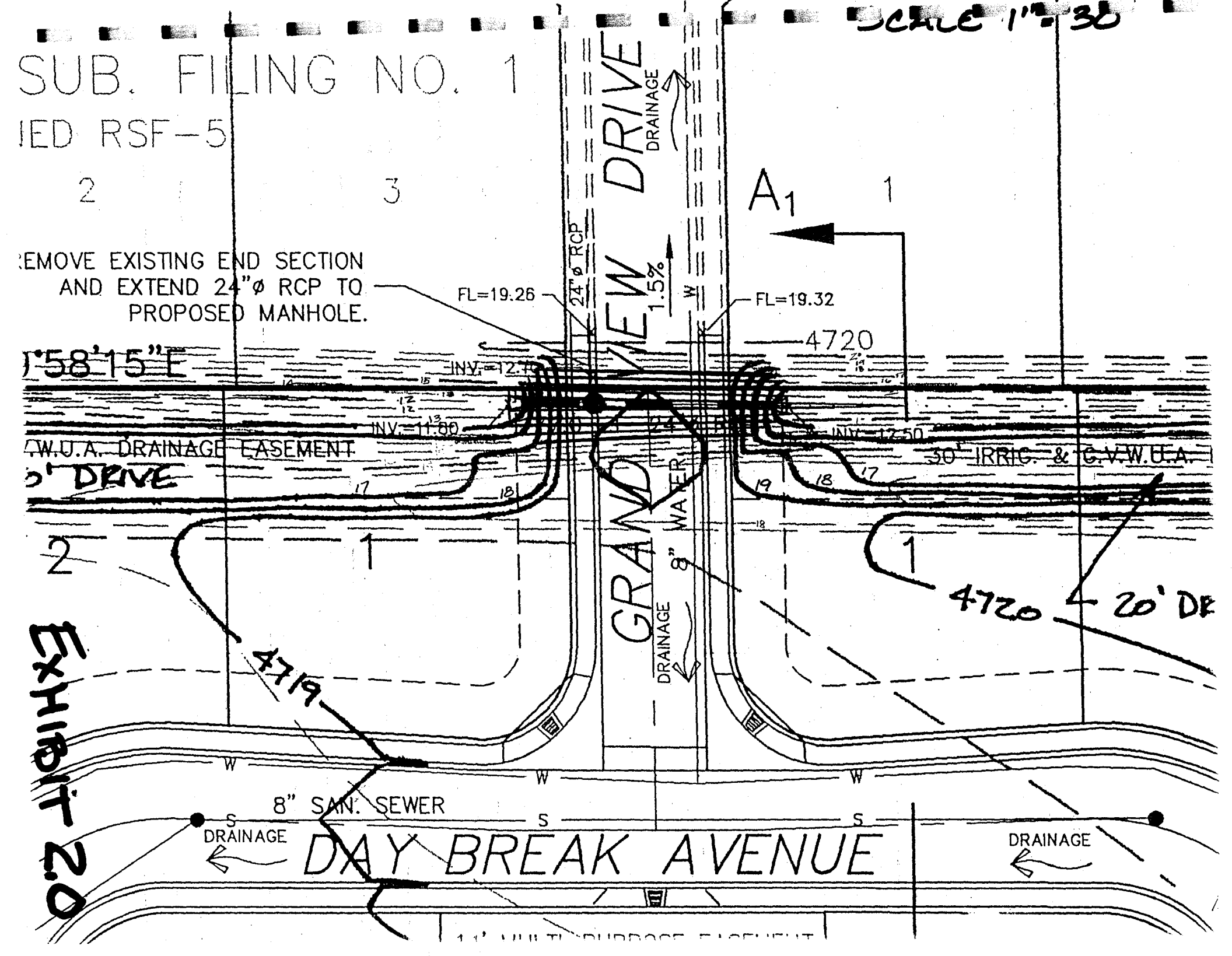
ARC	Total 5-day Antecedent Rainfall (in.)	
	Dormant Season	Growing Season
I	Less than 0.5	Less than 1.4
II	0.5-1.1	1.4-2.1
III	Over 1.1	Over 2.1

In arid and semi-arid regions, it is fair to say that most of the time soils fit the ARC category of I. Having more than 1.4 inches of rain in a 5-day period in arid and semi-arid areas would not be common, and statistically could be shown to be an extremely rare event. Therefore, one might justify using an ARC of I, particularly with the added SCS description that soils which are dry enough for satisfactory plowing or cultivation have an ARC of I.

Notwithstanding the above, use of an ARC of I is not recommended when selecting CN values for design storm analyses. This is because higher intensity storms tend to seal the soil, a phenomenon discussed in the next section.

3. **Impact of Storm Intensity** Published CN values are most applicable for storms of 2-year intensity or less. As expressed in Limitations, Chapter 2, SCS TR-55, modeling accuracy decreases with historical storms, or storms of greater intensity. Also stated is the fact that the CN equation does not account for rainfall intensity. This would indicate that, while CN values provided in SCS TR-55 are very useful for estimating peak flows for frequent storms or for volume and annual yield calculations, they may not be as applicable for typical deign storms used in peak runoff analysis. This is because water absorption rates for soils are limited and,

EXHIBIT 1.0


SCALE 1"=30'
SUB. FILING NO. 1
IED RSF-5
2
3
A1
1
EMOVE EXISTING END SECTION
AND EXTEND 24"ø RCP TO
PROPOSED MANHOLE.
FL=19.26
24"ø RCP
GRANDVIEW DRIVE
1.5%
DRAINAGE
FL=19.32
4720
'58'15"E
INV.=12.70
INV.=11.60
INV.=12.50
W.U.A. DRAINAGE EASEMENT
30' IRRIG. & C.V.W.U.A.
D' DRIVE
8" WATER
DRAINAGE
4719
4720
20' DR
8" SAN. SEWER
DRAINAGE
DAY BREAK AVENUE
DRAINAGE
EXHIBIT 2.0

19-Jun-96

Project: **GRAND VIEW SUBDIVISION MASTER DRAINAGE STUDY (ADDENDUM)**
Job No.:
Subject: RESERVOIR #5 DEDUCTION OF POND VOLUME FOR ROADWAY EXTENTION GRAND VIEW DRIVE

	ELEVATION FEET	CONTOUR AREA SF.	VOLUME CF.	STORAGE CF.
	12.00	0.00		0.00
			209.50	
	13.00	419.00		209.50
			457.00	
	14.00	495.00		666.50
			594.00	
	15.00	693.00		1,260.50
			706.50	
	16.00	720.00		1,967.00
			882.00	
WS. MAX	17.00	1,044.00		2,849.00

DEDUCTION OF POND VOLUME DUE TO ROADWAY CONST.= 2,849.00

CREDIT FOR FULL STORM SEWER PIPE IN GRAND VIEW DRIVE

DIA. -INCHES	LENGHT-FT	VOLUME -CF.
12.00	31.00	24.35
18.00	31.00	54.78
24.00	199.00	625.19
SUM OF CREDIT =		**704.32**

TOTAL DEDUCTION IN CUBIC FEET= 2,144.68

ORIGINAL REQUIRED POND VOLUME= 34,365.00

CURRENT VOLUME AVAILABLE= 32,220.32

EXHIBIT 3.0

DO NOT USE THIS TABLE ALONE. USE IN CONJUNCTION WITH FIGURES "C-2" AND "C-3"[1]

Cover Description Cover Type and Hydrologic Condition	Average Percent Impervious Area[2]	Curve Numbers for Hydrologic Soil Group A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 50%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94
Idle lands (CNs are determined using cover types similar to those in Table "C-2C"		68	79	86	89

[1]Average runoff condition (ARC = II), and I_a = 0.28.

[2]The average percent impervious area shown was used to develop the composite CNs. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CNs for other combinations of conditions may be computed using Figure "C-3A" or "C-3B". See Figure "C-2" for more direction.

[3]CNs shown are equivalent to those of pasture. Composite CNs may be computed for other combinations of open space cover type.

[4]Composite CNs for natural desert landscaping should be computed using Figures "C-3A" or "C-3B" based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CNs are assumed equivalent to desert shrub in poor hydrologic condition.

[5]Composite CNs to use for the design of temporary measures during grading and construction should be computed using Figures "C-3A" or "C-3B", based on the degree of development (impervious area percentage) and the CNs for the newly graded pervious areas.

[Reproduced from TR-55 (SCS 1986)]

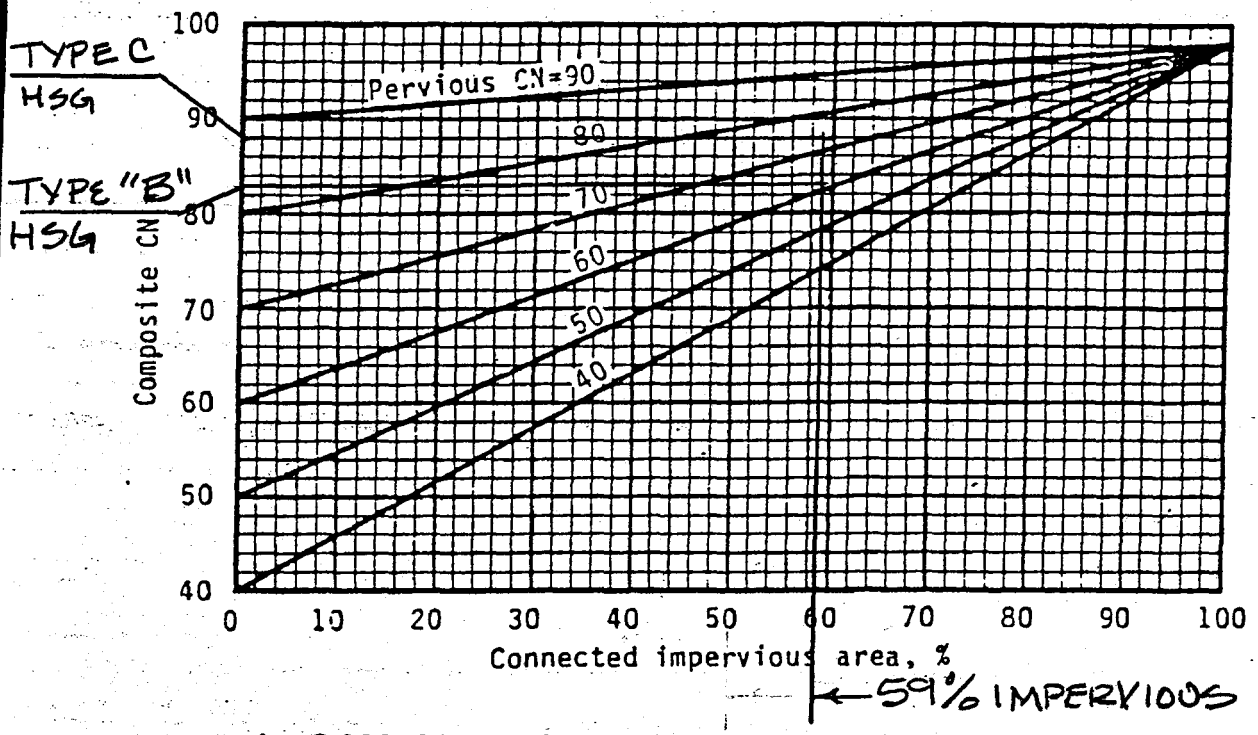
SCS CURVE NUMBERS: Preliminary Values for Urban Areas

TABLE "C-2a"

EXHIBIT 4.0

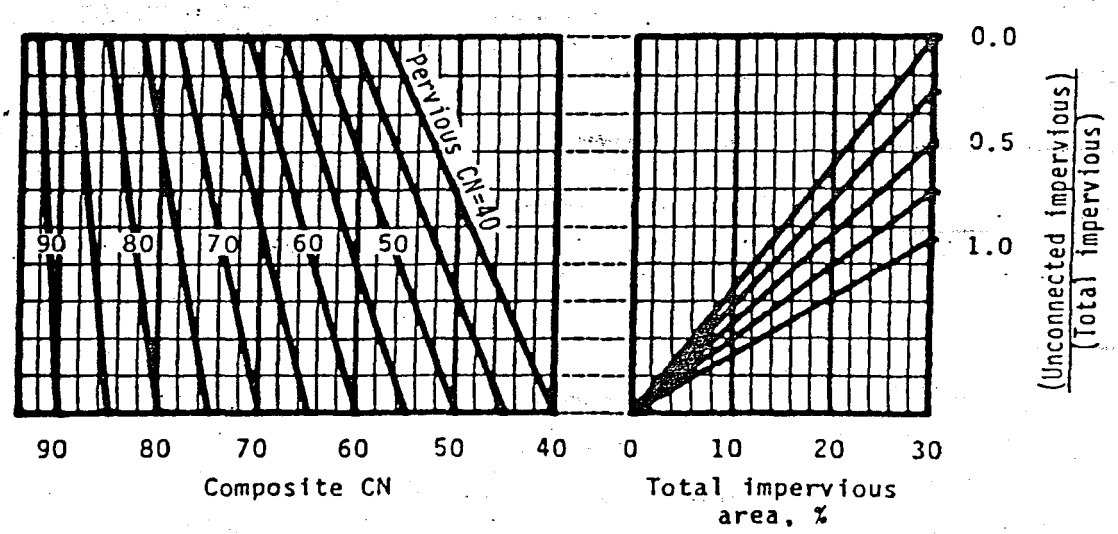
(ADDENDUM #1)
GRAND VIEW SUBDIVISION JUNE, 96
MASTER DRAINAGE STUDY

USE THIS FIGURE ONLY IN ACCORDANCE WITH FIGURE "C-2"



A - COMPOSITE CN WITH CONNECTED IMPERVIOUS AREA.

AVERAGE LOT INCLUDING STREET = 10,870 ft 6,370/10,870 = 59%
IMERVIOUS AREA = 6,370 ft



B - COMPOSITE CN WITH UNCONNECTED IMPERVIOUS AREAS AND TOTAL IMPERVIOUS AREA LESS THAN 30%.

CN ADJUSTMENT DUE TO DIFFERENT CONDITIONS OF IMPERVIOUS AREAS (REPRODUCED FROM TR-55 (SCS 1986))	FIGURE C-3

EXHIBIT 5.0

20-Jun-96

Project: **GRAND VIEW SUBDIVISION MASTER DRAINAGE STUDY (ADDENDUM 1)**
Job No.:
Subject: **COMPOSITE RUNOFF CURVE NUMBER (CN) CALCULATIONS**

Condition: Developed **SUB-BASINS A1, A2 & A3**

SOIL NAME AND HYDROLOGIC GROUP	COVER DESCRIPTION (cover type, treatment, and hydrologic condition; percent impervious; unconnected / connected impervious area ratio)	Table C - 3a CURVE NUMBER (CN)	AREA % PERCENT	PRODUCT OF CN x AREA
(Rf) Ravola, very fine sandy sandy loam. HSG "B"	Residential lots and roadways, 41% pervious, 59% impervious.	83	33	2739
(Bc) Billings silty clay loam. HSG "C"	Residential lots and roadways, 41% pervious, 59% impervious.	88	67	5896
		TOTALS=	100	8635

CN (WEIGHTED) = TOTAL PRODUCT / TOTAL AREA = 8635/100 = **86**

EXHIBIT 6.0

21-Jun-96

Project: GRAND VIEW SUBDIVISION MASTER DRAINAGE STUDY (ADDENDUM 1)
Job No.:
Subject: COMPOSITE RUNOFF CURVE NUMBER (CN) CALCULATIONS

DEVELOPED SUB-BASIN SUMMARY

SUB-BASIN I.D.	AREA AC.	AREA SM.	HYDRO. SOIL GROUP	SCS CN ARC II
OF1	11.22	0.0175	B	79
OF2	12.00	0.0188	B	79
OF3	3.09	0.0048	B	75
A1	18.62	0.0291	B & C	86
A2	3.27	0.0051	B & C	86
A3	3.38	0.0053	B & C	86
B1	0.31	0.0005	C	88
B2	0.29	0.0005	C	88
B3	4.36	0.0068	C	88
B4	3.73	0.0058	C	88
B5	0.40	0.0006	C	88
C1	11.99	0.0187	C	88
C2	3.15	0.0049	C	88
C3	1.24	0.0019	C	88
D1	1.58	0.0025	C	88
D2	9.60	0.0150	C	88
D3	0.75	0.0012	C	88
D4	2.33	0.0036	C	88
E1	0.55	0.0009	C	83
TOTALS	91.86	0.1435		

EXHIBIT 7.0

GRAND VIEW SUB.
(ADDENDUM 1)

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             SEPTEMBER 1990            *
*              VERSION 4.0              *
*                                       *
*  RUN DATE  06/20/1996  TIME  18:13:36 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*          (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 #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       5 20JUN96    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              79
 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              86
 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              86
 41       UD   0.316
          * **********
```

R1-2

```
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            79
  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            75
  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            86
  78      UD   0.510
          * **********
```

RI-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             88
  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             88
 116      UD   0.037
          * **********
```

R1-4

```
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              88
  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
```

R1-5

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*           SEPTEMBER 1990              *
*            VERSION 4.0                *
*                                       *
*  RUN DATE  06/20/1996  TIME  18:13:36 *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (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	5	MINUTES IN COMPUTATION INTERVAL
IDATE	20JUN96	STARTING DATE
ITIME	1200	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	21JUN96	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
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	1	PUNCH COMPUTED HYDROGRAPH
IOUT	21	SAVE HYDROGRAPH ON THIS UNIT

R1-6

ISAV1	1	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

STRTL	.53	INITIAL ABSTRACTION
CRVNBR	79.00	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 = 1.48, TOTAL EXCESS = .53

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
6.	12.42	(CFS)	1.	0.	0.	0.
		(INCHES)	.432	.528	.528	.528
		(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
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	1	PUNCH COMPUTED HYDROGRAPH
IOUT	21	SAVE HYDROGRAPH ON THIS UNIT

R1-7

```
                        ISAV1           1  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
                             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     6.20    750.00        .53       3.66


                                       INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                        MAIN       2.60     1.34      5.00               6.20    750.00        .53


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4930E+00 EXCESS= .0000E+00 OUTFLOW= .4930E+00 BASIN STORAGE= .3153E-03 PERCENT ERROR=    -.1


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

                         HYDROGRAPH AT STATION      CH1

   PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
     (CFS)       (HR)                    6-HR       24-HR      72-HR     24.92-HR
        6.      12.50        (CFS)         1.          0.         0.           0.
                           (INCHES)      .432        .528       .528         .528
                            (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
                         QSCAL         0.  HYDROGRAPH PLOT SCALE
                         IPNCH          1  PUNCH COMPUTED HYDROGRAPH
                          IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
```

R1-8

	ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
	ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
	TIMINT	.083	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	.33	INITIAL ABSTRACTION
CRVNBR	86.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

23 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.29	LAG

***

UNIT HYDROGRAPH
20 END-OF-PERIOD ORDINATES

1.	3.	6.	7.	7.	5.	3.	2.	1.	1.
1.	0.	0.	0.	0.	0.	0.	0.	0.	0.

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

HYDROGRAPH AT STATION A2

TOTAL RAINFALL = 2.01, TOTAL LOSS = 1.15, TOTAL EXCESS = .86

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
3.	12.42	(CFS)	0.	0.	0.	0.
		(INCHES)	.728	.856	.856	.856
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .01 SQ MI

*** ***

```
**************
*            *
*       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        .083  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     24.92-HR
         9.   12.42       (CFS)        1.         0.         0.          0.
                        (INCHES)     .498       .602       .602        .602
                         (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
                    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        .083  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
```

R1-10

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.

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN			3.25	241.50	9.11	754.00	.60	2.67

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN			5.00		9.02	750.00	.60	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7259E+00 EXCESS= .0000E+00 OUTFLOW= .7260E+00 BASIN STORAGE= .7201E-03 PERCENT ERROR= -.1

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

HYDROGRAPH AT STATION ST1

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
9.	12.50	(CFS)	1.	0.	0.	0.
		(INCHES)	.497	.602	.602	.602
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = .02 SQ MI

*** ***

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

R1-11

```
                    TIMINT        .083  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          .33  INITIAL ABSTRACTION
                      CRVNBR        86.00  CURVE NUMBER
                       RTIMP          .00  PERCENT IMPERVIOUS AREA

   41 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG          .32  LAG

                                                              ***

                                                        UNIT HYDROGRAPH
                                                    21 END-OF-PERIOD ORDINATES
                 1.         3.         6.         7.         7.         6.         4.         3.         2.         1.
                 1.         1.         0.         0.         0.         0.         0.         0.         0.         0.
                 0.

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

                     HYDROGRAPH AT STATION       A3

     TOTAL RAINFALL =    2.01, TOTAL LOSS =    1.15, TOTAL EXCESS =     .86

   PEAK FLOW    TIME                         MAXIMUM AVERAGE FLOW
     (CFS)      (HR)                 6-HR        24-HR       72-HR     24.92-HR
        3.     12.42       (CFS)       0.           0.          0.           0.
                        (INCHES)     .728         .856        .856         .856
                         (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
                       QSCAL           0.  HYDROGRAPH PLOT SCALE
                       IPNCH            1  PUNCH COMPUTED HYDROGRAPH
                        IOUT           21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1            1  FIRST ORDINATE PUNCHED OR SAVED
```

R1-12

```
                ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
               TIMINT       .083  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     24.92-HR
    12.      12.50       (CFS)        2.         0.         0.          0.
                         (INCHES)   .540       .650       .650        .650
                         (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
               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       .083  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

                                              STORM AREA =      .02

 51 LS      SCS LOSS RATE
               STRTL         .53  INITIAL ABSTRACTION
              CRVNBR       79.00  CURVE NUMBER
               RTIMP         .00  PERCENT IMPERVIOUS AREA

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

RI-13

***

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 = 1.48, TOTAL EXCESS = .53

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
5.	12.67	(CFS)	1.	0.	0.	0.
		(INCHES)	.431	.528	.528	.528
		(AC-FT)	0.	1.	1.	1.

CUMULATIVE AREA = .02 SQ MI

*** ***

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          **************
          *            *
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	.083	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 (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.72	1.34	2.75	315.00	5.09	761.75	.53	3.60

R1-14

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	2.72	1.34	5.00	5.08	760.00	.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5263E+00 EXCESS= .0000E+00 OUTFLOW= .5260E+00 BASIN STORAGE= .5692E-03 PERCENT ERROR= -.1

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

HYDROGRAPH AT STATION CH2

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
5.	12.67	(CFS)	1.	0.	0.	0.
		(INCHES)	.430	.527	.527	.527
		(AC-FT)	0.	1.	1.	1.

CUMULATIVE AREA = .02 SQ MI

*** ***

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**************
*            *
*      OF3   *
*            *
**************
```

57 KK

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	.083	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	.67	INITIAL ABSTRACTION
CRVNBR	75.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

R1-15

63 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 = 1.62, TOTAL EXCESS = .39

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
1.	12.67	(CFS)	0.	0.	0.	0.
		(INCHES)	.305	.385	.385	.385
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

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              **************
              *            *
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	.083	TIME INTERVAL IN HOURS

67 HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

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

HYDROGRAPH AT STATION OF3

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
6.	12.67	(CFS)	1.	0.	0.	0.
		(INCHES)	.405	.498	.498	.498
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = .02 SQ MI

R1-16

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          **************
          *            *
 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       .083  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     24.92-HR
    17.      12.58       (CFS)        3.          1.          1.          1.
                        (INCHES)     .478        .581        .581        .581
                        (AC-FT)        1.          2.          2.          2.

                       CUMULATIVE AREA =     .05 SQ MI
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*** ***

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          **************
          *            *
 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       .083  TIME INTERVAL IN HOURS


            SUBBASIN RUNOFF DATA

 75 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .03  SUBBASIN AREA
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R1-17

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 .33 INITIAL ABSTRACTION
CRVNBR 86.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

78 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .51 LAG

***

UNIT HYDROGRAPH
33 END-OF-PERIOD ORDINATES

2.	5.	10.	17.	22.	25.	25.	24.	21.	17.
13.	10.	8.	6.	5.	4.	3.	2.	2.	1.
1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
0.	0.	0.							

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

HYDROGRAPH AT STATION A1

TOTAL RAINFALL = 2.01, TOTAL LOSS = 1.15, TOTAL EXCESS = .86

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
13.	12.58	(CFS)	2.	1.	1.	1.
		(INCHES)	.726	.855	.855	.855
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = .03 SQ MI

*** ***

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          **************
          *            *
79 KK     *       A1   *
          *            *
          **************
```

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 .083 TIME INTERVAL IN HOURS

R1-18

82 HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

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

HYDROGRAPH AT STATION A1

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
31.	12.58	(CFS)	5.	1.	1.	1.
		(INCHES)	.567	.680	.680	.680
		(AC-FT)	2.	3.	3.	3.

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	.083	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 (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	4.99	1.25	1.12	262.50	30.36	756.58	.68	7.79

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	4.99	1.25	5.00		30.28	755.00	.68

R1-19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2920E+01 EXCESS= .0000E+00 OUTFLOW= .2919E+01 BASIN STORAGE= .7790E-03 PERCENT ERROR= .0

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

HYDROGRAPH AT STATION P1

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
30.	12.58	(CFS)	5.	1.	1.	1.
		(INCHES)	.567	.680	.680	.680
		(AC-FT)	2.	3.	3.	3.

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
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	.083	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	.27	INITIAL ABSTRACTION
CRVNBR	88.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

93 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.04	LAG

***

UNIT HYDROGRAPH
5 END-OF-PERIOD ORDINATES

3. 1. 0. 0. 0.

R1 - 20

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

                    HYDROGRAPH AT STATION       B1

    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
       1.      12.08      (CFS)        0.           0.           0.            0.
                        (INCHES)     .836         .973         .973          .973
                         (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
                     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       .083  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      24.92-HR
      30.      12.58      (CFS)        5.           1.           1.            1.
                        (INCHES)     .569         .682         .682          .682
                         (AC-FT)       2.           3.           3.            3.

                         CUMULATIVE AREA =     .08 SQ MI


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


          **************
          *            *
  98 KK   *      RES1  *
          *            *
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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	.083	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
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								

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 14. TO 60.
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

R1-22

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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
20	JUN	1200	1	0.	.0	19.6	20	JUN	2020	101	4.	.0	19.6	21	JUN	0440	201	4.	.0	19.6
20	JUN	1205	2	4.	.0	19.6	20	JUN	2025	102	4.	.0	19.6	21	JUN	0445	202	4.	.0	19.6
20	JUN	1210	3	4.	.0	19.6	20	JUN	2030	103	4.	.0	19.6	21	JUN	0450	203	4.	.0	19.6
20	JUN	1215	4	4.	.0	19.6	20	JUN	2035	104	4.	.0	19.6	21	JUN	0455	204	4.	.0	19.6
20	JUN	1220	5	4.	.0	19.6	20	JUN	2040	105	4.	.0	19.6	21	JUN	0500	205	4.	.0	19.6
20	JUN	1225	6	4.	.0	19.6	20	JUN	2045	106	4.	.0	19.6	21	JUN	0505	206	4.	.0	19.6
20	JUN	1230	7	4.	.0	19.6	20	JUN	2050	107	4.	.0	19.6	21	JUN	0510	207	4.	.0	19.6
20	JUN	1235	8	4.	.0	19.6	20	JUN	2055	108	4.	.0	19.6	21	JUN	0515	208	4.	.0	19.6
20	JUN	1240	9	4.	.0	19.6	20	JUN	2100	109	4.	.0	19.6	21	JUN	0520	209	4.	.0	19.6
20	JUN	1245	10	4.	.0	19.6	20	JUN	2105	110	4.	.0	19.6	21	JUN	0525	210	4.	.0	19.6
20	JUN	1250	11	4.	.0	19.6	20	JUN	2110	111	4.	.0	19.6	21	JUN	0530	211	4.	.0	19.6
20	JUN	1255	12	4.	.0	19.6	20	JUN	2115	112	4.	.0	19.6	21	JUN	0535	212	4.	.0	19.6
20	JUN	1300	13	4.	.0	19.6	20	JUN	2120	113	4.	.0	19.6	21	JUN	0540	213	4.	.0	19.6
20	JUN	1305	14	4.	.0	19.6	20	JUN	2125	114	4.	.0	19.6	21	JUN	0545	214	4.	.0	19.6
20	JUN	1310	15	4.	.0	19.6	20	JUN	2130	115	4.	.0	19.6	21	JUN	0550	215	4.	.0	19.6
20	JUN	1315	16	4.	.0	19.6	20	JUN	2135	116	4.	.0	19.6	21	JUN	0555	216	4.	.0	19.6
20	JUN	1320	17	4.	.0	19.6	20	JUN	2140	117	4.	.0	19.6	21	JUN	0600	217	4.	.0	19.6
20	JUN	1325	18	4.	.0	19.6	20	JUN	2145	118	4.	.0	19.6	21	JUN	0605	218	4.	.0	19.6
20	JUN	1330	19	4.	.0	19.6	20	JUN	2150	119	4.	.0	19.6	21	JUN	0610	219	4.	.0	19.6
20	JUN	1335	20	4.	.0	19.6	20	JUN	2155	120	4.	.0	19.6	21	JUN	0615	220	4.	.0	19.6
20	JUN	1340	21	4.	.0	19.6	20	JUN	2200	121	4.	.0	19.6	21	JUN	0620	221	4.	.0	19.6
20	JUN	1345	22	4.	.0	19.6	20	JUN	2205	122	4.	.0	19.6	21	JUN	0625	222	4.	.0	19.6
20	JUN	1350	23	4.	.0	19.6	20	JUN	2210	123	4.	.0	19.6	21	JUN	0630	223	4.	.0	19.6
20	JUN	1355	24	4.	.0	19.6	20	JUN	2215	124	4.	.0	19.6	21	JUN	0635	224	4.	.0	19.6
20	JUN	1400	25	4.	.0	19.6	20	JUN	2220	125	4.	.0	19.6	21	JUN	0640	225	4.	.0	19.6
20	JUN	1405	26	4.	.0	19.6	20	JUN	2225	126	4.	.0	19.6	21	JUN	0645	226	4.	.0	19.6
20	JUN	1410	27	4.	.0	19.6	20	JUN	2230	127	4.	.0	19.6	21	JUN	0650	227	4.	.0	19.6
20	JUN	1415	28	4.	.0	19.6	20	JUN	2235	128	4.	.0	19.6	21	JUN	0655	228	4.	.0	19.6
20	JUN	1420	29	4.	.0	19.6	20	JUN	2240	129	4.	.0	19.6	21	JUN	0700	229	4.	.0	19.6
20	JUN	1425	30	4.	.0	19.6	20	JUN	2245	130	4.	.0	19.6	21	JUN	0705	230	4.	.0	19.6
20	JUN	1430	31	4.	.0	19.6	20	JUN	2250	131	4.	.0	19.6	21	JUN	0710	231	4.	.0	19.6
20	JUN	1435	32	4.	.0	19.6	20	JUN	2255	132	4.	.0	19.6	21	JUN	0715	232	4.	.0	19.6
20	JUN	1440	33	4.	.0	19.6	20	JUN	2300	133	4.	.0	19.6	21	JUN	0720	233	4.	.0	19.6
20	JUN	1445	34	4.	.0	19.6	20	JUN	2305	134	4.	.0	19.6	21	JUN	0725	234	4.	.0	19.6
20	JUN	1450	35	4.	.0	19.6	20	JUN	2310	135	4.	.0	19.6	21	JUN	0730	235	4.	.0	19.6
20	JUN	1455	36	4.	.0	19.6	20	JUN	2315	136	4.	.0	19.6	21	JUN	0735	236	4.	.0	19.6
20	JUN	1500	37	4.	.0	19.6	20	JUN	2320	137	4.	.0	19.6	21	JUN	0740	237	4.	.0	19.6
20	JUN	1505	38	4.	.0	19.6	20	JUN	2325	138	4.	.0	19.6	21	JUN	0745	238	4.	.0	19.6
20	JUN	1510	39	4.	.0	19.6	20	JUN	2330	139	4.	.0	19.6	21	JUN	0750	239	4.	.0	19.6
20	JUN	1515	40	4.	.0	19.6	20	JUN	2335	140	4.	.0	19.6	21	JUN	0755	240	4.	.0	19.6
20	JUN	1520	41	4.	.0	19.6	20	JUN	2340	141	4.	.0	19.6	21	JUN	0800	241	4.	.0	19.6
20	JUN	1525	42	4.	.0	19.6	20	JUN	2345	142	4.	.0	19.6	21	JUN	0805	242	4.	.0	19.6
20	JUN	1530	43	4.	.0	19.6	20	JUN	2350	143	4.	.0	19.6	21	JUN	0810	243	4.	.0	19.6
20	JUN	1535	44	4.	.0	19.6	20	JUN	2355	144	4.	.0	19.6	21	JUN	0815	244	4.	.0	19.6
20	JUN	1540	45	4.	.0	19.6	21	JUN	0000	145	4.	.0	19.6	21	JUN	0820	245	4.	.0	19.6
20	JUN	1545	46	4.	.0	19.6	21	JUN	0005	146	4.	.0	19.6	21	JUN	0825	246	4.	.0	19.6
20	JUN	1550	47	4.	.0	19.6	21	JUN	0010	147	4.	.0	19.6	21	JUN	0830	247	4.	.0	19.6
20	JUN	1555	48	4.	.0	19.6	21	JUN	0015	148	4.	.0	19.7	21	JUN	0835	248	4.	.0	19.6
20	JUN	1600	49	4.	.0	19.6	21	JUN	0020	149	6.	.1	20.8	21	JUN	0840	249	4.	.0	19.6
20	JUN	1605	50	4.	.0	19.6	21	JUN	0025	150	7.	.2	21.7	21	JUN	0845	250	4.	.0	19.6
20	JUN	1610	51	4.	.0	19.6	21	JUN	0030	151	8.	.3	22.6	21	JUN	0850	251	4.	.0	19.6
20	JUN	1615	52	4.	.0	19.6	21	JUN	0035	152	29.	.4	23.1	21	JUN	0855	252	4.	.0	19.6
20	JUN	1620	53	4.	.0	19.6	21	JUN	0040	153	30.	.4	23.2	21	JUN	0900	253	4.	.0	19.6
20	JUN	1625	54	4.	.0	19.6	21	JUN	0045	154	28.	.4	23.1	21	JUN	0905	254	4.	.0	19.6
20	JUN	1630	55	4.	.0	19.6	21	JUN	0050	155	26.	.4	23.1	21	JUN	0910	255	4.	.0	19.6
20	JUN	1635	56	4.	.0	19.6	21	JUN	0055	156	22.	.4	23.0	21	JUN	0915	256	4.	.0	19.6
20	JUN	1640	57	4.	.0	19.6	21	JUN	0100	157	18.	.4	22.9	21	JUN	0920	257	4.	.0	19.6
20	JUN	1645	58	4.	.0	19.6	21	JUN	0105	158	15.	.4	22.9	21	JUN	0925	258	4.	.0	19.6
20	JUN	1650	59	4.	.0	19.6	21	JUN	0110	159	13.	.3	22.8	21	JUN	0930	259	4.	.0	19.6
20	JUN	1655	60	4.	.0	19.6	21	JUN	0115	160	10.	.3	22.7	21	JUN	0935	260	4.	.0	19.6

20 JUN 1700	61	4.	.0	19.6 * 21 JUN 0120 161	9.	.3	22.7 * 21 JUN 0940 261	4.	.0	19.6
20 JUN 1705	62	4.	.0	19.6 * 21 JUN 0125 162	8.	.3	22.6 * 21 JUN 0945 262	4.	.0	19.6
20 JUN 1710	63	4.	.0	19.6 * 21 JUN 0130 163	7.	.3	22.5 * 21 JUN 0950 263	4.	.0	19.6
20 JUN 1715	64	4.	.0	19.6 * 21 JUN 0135 164	7.	.3	22.4 * 21 JUN 0955 264	4.	.0	19.6
20 JUN 1720	65	4.	.0	19.6 * 21 JUN 0140 165	7.	.3	22.2 * 21 JUN 1000 265	4.	.0	19.6
20 JUN 1725	66	4.	.0	19.6 * 21 JUN 0145 166	7.	.2	22.0 * 21 JUN 1005 266	4.	.0	19.6
20 JUN 1730	67	4.	.0	19.6 * 21 JUN 0150 167	7.	.2	21.8 * 21 JUN 1010 267	4.	.0	19.6
20 JUN 1735	68	4.	.0	19.6 * 21 JUN 0155 168	7.	.2	21.6 * 21 JUN 1015 268	4.	.0	19.6
20 JUN 1740	69	4.	.0	19.6 * 21 JUN 0200 169	6.	.1	21.3 * 21 JUN 1020 269	4.	.0	19.6
20 JUN 1745	70	4.	.0	19.6 * 21 JUN 0205 170	6.	.1	21.1 * 21 JUN 1025 270	4.	.0	19.6
20 JUN 1750	71	4.	.0	19.6 * 21 JUN 0210 171	6.	.1	20.8 * 21 JUN 1030 271	4.	.0	19.6
20 JUN 1755	72	4.	.0	19.6 * 21 JUN 0215 172	5.	.1	20.5 * 21 JUN 1035 272	4.	.0	19.6
20 JUN 1800	73	4.	.0	19.6 * 21 JUN 0220 173	5.	.0	20.1 * 21 JUN 1040 273	4.	.0	19.6
20 JUN 1805	74	4.	.0	19.6 * 21 JUN 0225 174	4.	.0	19.7 * 21 JUN 1045 274	4.	.0	19.6
20 JUN 1810	75	4.	.0	19.6 * 21 JUN 0230 175	4.	.0	19.6 * 21 JUN 1050 275	4.	.0	19.6
20 JUN 1815	76	4.	.0	19.6 * 21 JUN 0235 176	4.	.0	19.6 * 21 JUN 1055 276	4.	.0	19.6
20 JUN 1820	77	4.	.0	19.6 * 21 JUN 0240 177	4.	.0	19.6 * 21 JUN 1100 277	4.	.0	19.6
20 JUN 1825	78	4.	.0	19.6 * 21 JUN 0245 178	4.	.0	19.6 * 21 JUN 1105 278	4.	.0	19.6
20 JUN 1830	79	4.	.0	19.6 * 21 JUN 0250 179	4.	.0	19.6 * 21 JUN 1110 279	4.	.0	19.6
20 JUN 1835	80	4.	.0	19.6 * 21 JUN 0255 180	4.	.0	19.6 * 21 JUN 1115 280	4.	.0	19.6
20 JUN 1840	81	4.	.0	19.6 * 21 JUN 0300 181	4.	.0	19.6 * 21 JUN 1120 281	4.	.0	19.6
20 JUN 1845	82	4.	.0	19.6 * 21 JUN 0305 182	4.	.0	19.6 * 21 JUN 1125 282	4.	.0	19.6
20 JUN 1850	83	4.	.0	19.6 * 21 JUN 0310 183	4.	.0	19.6 * 21 JUN 1130 283	4.	.0	19.6
20 JUN 1855	84	4.	.0	19.6 * 21 JUN 0315 184	4.	.0	19.6 * 21 JUN 1135 284	4.	.0	19.6
20 JUN 1900	85	4.	.0	19.6 * 21 JUN 0320 185	4.	.0	19.6 * 21 JUN 1140 285	4.	.0	19.6
20 JUN 1905	86	4.	.0	19.6 * 21 JUN 0325 186	4.	.0	19.6 * 21 JUN 1145 286	4.	.0	19.6
20 JUN 1910	87	4.	.0	19.6 * 21 JUN 0330 187	4.	.0	19.6 * 21 JUN 1150 287	4.	.0	19.6
20 JUN 1915	88	4.	.0	19.6 * 21 JUN 0335 188	4.	.0	19.6 * 21 JUN 1155 288	4.	.0	19.6
20 JUN 1920	89	4.	.0	19.6 * 21 JUN 0340 189	4.	.0	19.6 * 21 JUN 1200 289	4.	.0	19.6
20 JUN 1925	90	4.	.0	19.6 * 21 JUN 0345 190	4.	.0	19.6 * 21 JUN 1205 290	4.	.0	19.6
20 JUN 1930	91	4.	.0	19.6 * 21 JUN 0350 191	4.	.0	19.6 * 21 JUN 1210 291	4.	.0	19.6
20 JUN 1935	92	4.	.0	19.6 * 21 JUN 0355 192	4.	.0	19.6 * 21 JUN 1215 292	4.	.0	19.6
20 JUN 1940	93	4.	.0	19.6 * 21 JUN 0400 193	4.	.0	19.6 * 21 JUN 1220 293	4.	.0	19.6
20 JUN 1945	94	4.	.0	19.6 * 21 JUN 0405 194	4.	.0	19.6 * 21 JUN 1225 294	4.	.0	19.6
20 JUN 1950	95	4.	.0	19.6 * 21 JUN 0410 195	4.	.0	19.6 * 21 JUN 1230 295	4.	.0	19.6
20 JUN 1955	96	4.	.0	19.6 * 21 JUN 0415 196	4.	.0	19.6 * 21 JUN 1235 296	4.	.0	19.6
20 JUN 2000	97	4.	.0	19.6 * 21 JUN 0420 197	4.	.0	19.6 * 21 JUN 1240 297	4.	.0	19.6
20 JUN 2005	98	4.	.0	19.6 * 21 JUN 0425 198	4.	.0	19.6 * 21 JUN 1245 298	4.	.0	19.6
20 JUN 2010	99	4.	.0	19.6 * 21 JUN 0430 199	4.	.0	19.6 * 21 JUN 1250 299	4.	.0	19.6
20 JUN 2015	100	4.	.0	19.6 * 21 JUN 0435 200	4.	.0	19.6 * 21 JUN 1255 300	4.	.0	19.6
				*			*			

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
30.	12.67	(CFS)	7.	5.	4.	4.
		(INCHES)	.761	2.070	2.133	2.133
		(AC-FT)	3.	9.	9.	9.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)	6-HR	24-HR	72-HR	24.92-HR
0.	12.67	0.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
(FEET)	(HR)	6-HR	24-HR	72-HR	24.92-HR
23.17	12.67	20.49	19.82	19.81	19.81

CUMULATIVE AREA = .08 SQ MI

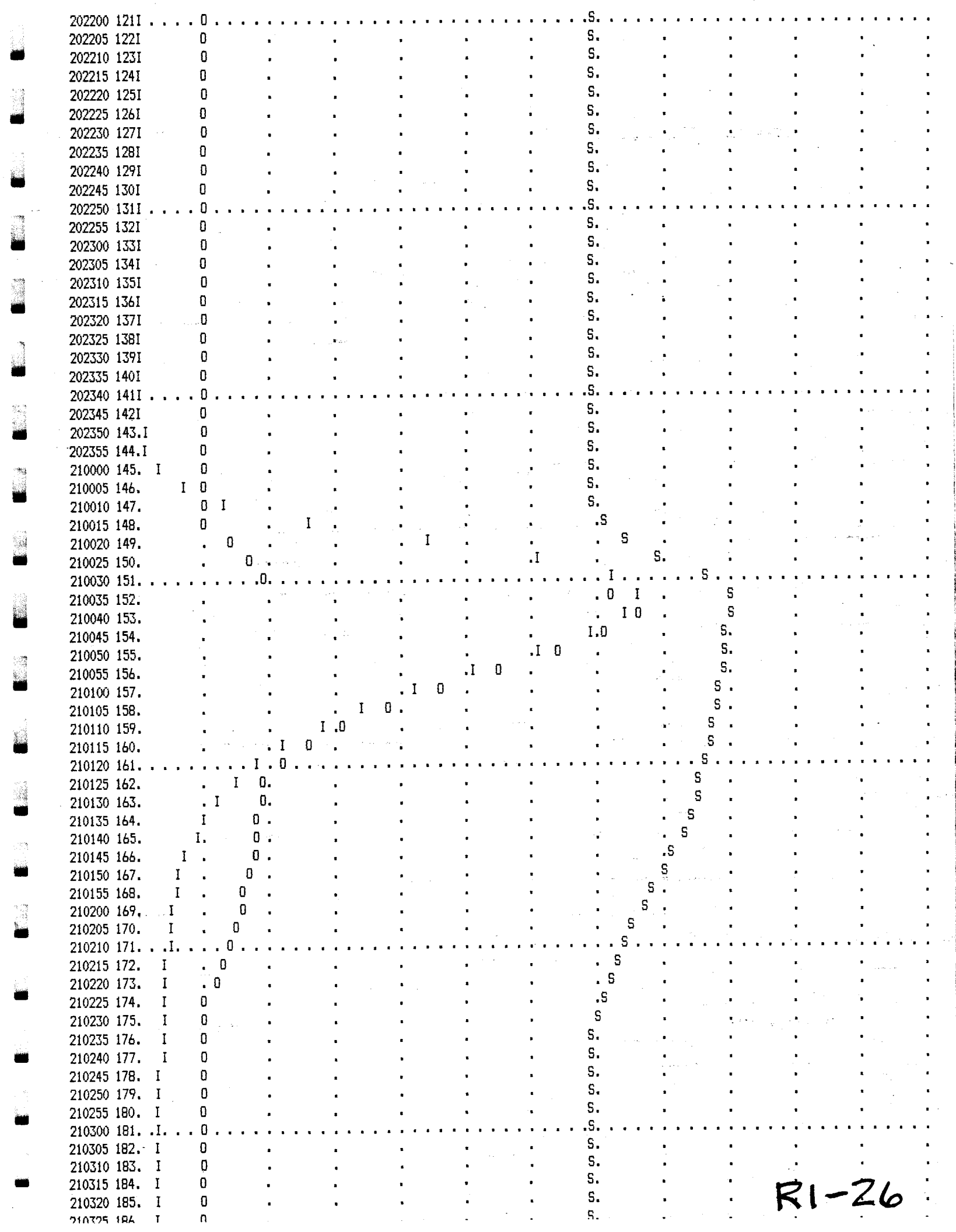
RI-23

STATION RES1

(I) INFLOW, (O) OUTFLOW

	0.	4.	8.	12.	16.	20.	24.	28.	32.	0.	0.	0.	0.
									(S) STORAGE				
	.0	.0	.0	.0	.0	.0	-.2	.0	.2	.4	.0	.0	.0
DAHRMN	PER												
201200	1I							S					
201205	2I	0						S					
201210	3I	0						S.					
201215	4I	0						S.					
201220	5I	0						S.					
201225	6I	0						S.					
201230	7I	0						S.					
201235	8I	0						S.					
201240	9I	0						S.					
201245	10I	0						S.					
201250	11I	0						S.					
201255	12I	0						S.					
201300	13I	0						S.					
201305	14I	0						S.					
201310	15I	0						S.					
201315	16I	0						S.					
201320	17I	0						S.					
201325	18I	0						S.					
201330	19I	0						S.					
201335	20I	0						S.					
201340	21I	0						S.					
201345	22I	0						S.					
201350	23I	0						S.					
201355	24I	0						S.					
201400	25I	0						S.					
201405	26I	0						S.					
201410	27I	0						S.					
201415	28I	0						S.					
201420	29I	0						S.					
201425	30I	0						S.					
201430	31I	0						S.					
201435	32I	0						S.					
201440	33I	0						S.					
201445	34I	0						S.					
201450	35I	0						S.					
201455	36I	0						S.					
201500	37I	0						S.					
201505	38I	0						S.					
201510	39I	0						S.					
201515	40I	0						S.					
201520	41I	0						S.					
201525	42I	0						S.					
201530	43I	0						S.					
201535	44I	0						S.					
201540	45I	0						S.					
201545	46I	0						S.					
201550	47I	0						S.					
201555	48I	0						S.					
201600	49I	0						S.					
201605	50I	0						S.					
201610	51I	0						S.					
201615	52I	0						S.					
201620	53I	0						S.					
201625	54I	0						S.					

201630	55I	0	S.
201635	56I	0	S.
201640	57I	0	S.
201645	58I	0	S.
201650	59I	0	S.
201655	60I	0	S.
201700	61I	0	S.
201705	62I	0	S.
201710	63I	0	S.
201715	64I	0	S.
201720	65I	0	S.
201725	66I	0	S.
201730	67I	0	S.
201735	68I	0	S.
201740	69I	0	S.
201745	70I	0	S.
201750	71I	0	S.
201755	72I	0	S.
201800	73I	0	S.
201805	74I	0	S.
201810	75I	0	S.
201815	76I	0	S.
201820	77I	0	S.
201825	78I	0	S.
201830	79I	0	S.
201835	80I	0	S.
201840	81I	0	S.
201845	82I	0	S.
201850	83I	0	S.
201855	84I	0	S.
201900	85I	0	S.
201905	86I	0	S.
201910	87I	0	S.
201915	88I	0	S.
201920	89I	0	S.
201925	90I	0	S.
201930	91I	0	S.
201935	92I	0	S.
201940	93I	0	S.
201945	94I	0	S.
201950	95I	0	S.
201955	96I	0	S.
202000	97I	0	S.
202005	98I	0	S.
202010	99I	0	S.
202015	100I	0	S.
202020	101I	0	S.
202025	102I	0	S.
202030	103I	0	S.
202035	104I	0	S.
202040	105I	0	S.
202045	106I	0	S.
202050	107I	0	S.
202055	108I	0	S.
202100	109I	0	S.
202105	110I	0	S.
202110	111I	0	S.
202115	112I	0	S.
202120	113I	0	S.
202125	114I	0	S.
202130	115I	0	S.
202135	116I	0	S.
202140	117I	0	S.
202145	118I	0	S.
202150	119I	0	S.
202155	120I	0	S.


202200 121I
202205 122I
202210 123I
202215 124I
202220 125I
202225 126I
202230 127I
202235 128I
202240 129I
202245 130I
202250 131I
202255 132I
202300 133I
202305 134I
202310 135I
202315 136I
202320 137I
202325 138I
202330 139I
202335 140I
202340 141I
202345 142I
202350 143.I
202355 144.I
210000 145. I
210005 146. I
210010 147.
210015 148.
210020 149.
210025 150.
210030 151.
210035 152.
210040 153.
210045 154.
210050 155.
210055 156.
210100 157.
210105 158.
210110 159.
210115 160.
210120 161.
210125 162.
210130 163.
210135 164.
210140 165.
210145 166.
210150 167.
210155 168.
210200 169.
210205 170.
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210220 173.
210225 174.
210230 175.
210235 176.
210240 177.
210245 178.
210250 179.
210255 180.
210300 181.
210305 182.
210310 183.
210315 184.
210320 185.
210325 186.

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210330 187.  I     0                                    S.
210335 188.  I     0                                    S.
210340 189.  I     0                                    S.
210345 190.  I     0                                    S.
210350 191.  I     0                                    S.
210355 192.  I     0                                    S.
210400 193.  I     0                                    S.
210405 194.  I     0                                    S.
210410 195.  I     0                                    S.
210415 196.  I     0                                    S.
210420 197.  I     0                                    S.
210425 198.  I     0                                    S.
210430 199.  I     0                                    S.
210435 200.  I     0                                    S.
210440 201.  I     0                                    S.
210445 202.  I     0                                    S.
210450 203.  I     0                                    S.
210455 204.  I     0                                    S.
210500 205.  I     0                                    S.
210505 206.  I     0                                    S.
210510 207.  I     0                                    S.
210515 208.  I     0                                    S.
210520 209.  I     0                                    S.
210525 210.  I     0                                    S.
210530 211.  I     0                                    S.
210535 212.  I     0                                    S.
210540 213.  I     0                                    S.
210545 214.  I     0                                    S.
210550 215.  I     0                                    S.
210555 216.  I     0                                    S.
210600 217.  I     0                                    S.
210605 218.  I     0                                    S.
210610 219.  I     0                                    S.
210615 220.  I     0                                    S.
210620 221.  I     0                                    S.
210625 222.  I     0                                    S.
210630 223.  I     0                                    S.
210635 224.  I     0                                    S.
210640 225.  I     0                                    S.
210645 226.  I     0                                    S.
210650 227.  I     0                                    S.
210655 228.  I     0                                    S.
210700 229.  I     0                                    S.
210705 230.  I     0                                    S.
210710 231.  I     0                                    S.
210715 232.  I     0                                    S.
210720 233.  I     0                                    S.
210725 234.  I     0                                    S.
210730 235.  I     0                                    S.
210735 236.  I     0                                    S.
210740 237.  I     0                                    S.
210745 238.  I     0                                    S.
210750 239.  I     0                                    S.
210755 240.  I     0                                    S.
210800 241.  I     0                                    S.
210805 242.  I     0                                    S.
210810 243.  I     0                                    S.
210815 244.  I     0                                    S.
210820 245.  I     0                                    S.
210825 246.  I     0                                    S.
210830 247.  I     0                                    S.
210835 248.  I     0                                    S.
210840 249.  I     0                                    S.
210845 250.  I     0                                    S.
210850 251.  I     0                                    S.
210855 252.  I     0                                    S.
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210900 253. I      0 . . . . . S. . . . . .
210905 254. I      0 . . . . . S. . . . . .
210910 255. I      0 . . . . . S. . . . . .
210915 256. I      0 . . . . . S. . . . . .
210920 257. I      0 . . . . . S. . . . . .
210925 258. I      0 . . . . . S. . . . . .
210930 259. I      0 . . . . . S. . . . . .
210935 260. I      0 . . . . . S. . . . . .
210940 261. I . . . 0 . . . . . S. . . . . .
210945 262. I      0 . . . . . S. . . . . .
210950 263. I      0 . . . . . S. . . . . .
210955 264. I      0 . . . . . S. . . . . .
211000 265. I      0 . . . . . S. . . . . .
211005 266. I      0 . . . . . S. . . . . .
211010 267. I      0 . . . . . S. . . . . .
211015 268. I      0 . . . . . S. . . . . .
211020 269. I      0 . . . . . S. . . . . .
211025 270. I      0 . . . . . S. . . . . .
211030 271. I . . . 0 . . . . . S. . . . . .
211035 272. I      0 . . . . . S. . . . . .
211040 273. I      0 . . . . . S. . . . . .
211045 274. I      0 . . . . . S. . . . . .
211050 275. I      0 . . . . . S. . . . . .
211055 276. I      0 . . . . . S. . . . . .
211100 277. I      0 . . . . . S. . . . . .
211105 278. I      0 . . . . . S. . . . . .
211110 279. I      0 . . . . . S. . . . . .
211115 280. I      0 . . . . . S. . . . . .
211120 281. I . . . 0 . . . . . S. . . . . .
211125 282. I      0 . . . . . S. . . . . .
211130 283. I      0 . . . . . S. . . . . .
211135 284. I      0 . . . . . S. . . . . .
211140 285. I      0 . . . . . S. . . . . .
211145 286. I      0 . . . . . S. . . . . .
211150 287. I      0 . . . . . S. . . . . .
211155 288. I      0 . . . . . S. . . . . .
211200 289. I      0 . . . . . S. . . . . .
211205 290. I      0 . . . . . S. . . . . .
211210 291. I . . . 0 . . . . . S. . . . . .
211215 292. I      0 . . . . . S. . . . . .
211220 293. I      0 . . . . . S. . . . . .
211225 294. I      0 . . . . . S. . . . . .
211230 295.I       0 . . . . . S. . . . . .
211235 296.I       0 . . . . . S. . . . . .
211240 297.I       0 . . . . . S. . . . . .
211245 298.I       0 . . . . . S. . . . . .
211250 299.I       0 . . . . . S. . . . . .
211255 300I--------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
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	.083	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 (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.72	1.34	1.28	155.00	29.98	761.52	2.13	4.04
INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL								
MAIN	1.72	1.34	5.00		29.86	760.00	2.13	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9218E+01 EXCESS= .0000E+00 OUTFLOW= .9206E+01 BASIN STORAGE= .1282E-01 PERCENT ERROR= .0

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

HYDROGRAPH AT STATION CH3

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR

```
 30.    12.67       (CFS)        7.         5.         4.         4.
                  (INCHES)      .761      2.070      2.131      2.131
                   (AC-FT)        3.         9.         9.         9.

                  CUMULATIVE AREA =     .08 SQ MI


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


          **************
          *            *
110 KK    *       B2   *
          *            *
          **************

112 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       .083  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        .27  INITIAL ABSTRACTION
                     CRVNBR     88.00  CURVE NUMBER
                     RTIMP        .00  PERCENT IMPERVIOUS AREA

116 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .04  LAG

                                                      ***

                                                  UNIT HYDROGRAPH
                                                5 END-OF-PERIOD ORDINATES
                3.       1.       0.       0.       0.

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

                      HYDROGRAPH AT STATION       B2

  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
    1.      12.08       (CFS)        0.          0.          0.          0.
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           (INCHES)      .836        .973        .973         .973
           (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       .083  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      24.92-HR
      30.     12.67      (CFS)         7.           5.          4.           4.
                       (INCHES)      .761        2.063       2.124        2.124
                       (AC-FT)         3.           9.          9.           9.

                    CUMULATIVE AREA =     .08 SQ MI



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


         **************
         *            *
 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       .083  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
	COQL	.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									

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 10. TO 59.
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

****

HYDROGRAPH AT STATION RES2

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
20	JUN	1200	1	0.	.0	18.0	20	JUN	2020	101	4.	.0	18.0	21	JUN	0440	201	4.	.0	18.0
20	JUN	1205	2	4.	.0	18.1	20	JUN	2025	102	4.	.0	18.0	21	JUN	0445	202	4.	.0	18.0
20	JUN	1210	3	4.	.0	18.0	20	JUN	2030	103	4.	.0	18.0	21	JUN	0450	203	4.	.0	18.0

20 JUN 1215	4	4.	.0	18.0 * 20 JUN 2035 104	4.	.0	18.0 * 21 JUN 0455 204	4.	.0	18.0
20 JUN 1220	5	4.	.0	18.0 * 20 JUN 2040 105	4.	.0	18.0 * 21 JUN 0500 205	4.	.0	18.0
20 JUN 1225	6	4.	.0	18.0 * 20 JUN 2045 106	4.	.0	18.0 * 21 JUN 0505 206	4.	.0	18.0
20 JUN 1230	7	4.	.0	18.0 * 20 JUN 2050 107	4.	.0	18.0 * 21 JUN 0510 207	4.	.0	18.0
20 JUN 1235	8	4.	.0	18.0 * 20 JUN 2055 108	4.	.0	18.0 * 21 JUN 0515 208	4.	.0	18.0
20 JUN 1240	9	4.	.0	18.0 * 20 JUN 2100 109	4.	.0	18.0 * 21 JUN 0520 209	4.	.0	18.0
20 JUN 1245	10	4.	.0	18.0 * 20 JUN 2105 110	4.	.0	18.0 * 21 JUN 0525 210	4.	.0	18.0
20 JUN 1250	11	4.	.0	18.0 * 20 JUN 2110 111	4.	.0	18.0 * 21 JUN 0530 211	4.	.0	18.0
20 JUN 1255	12	4.	.0	18.0 * 20 JUN 2115 112	4.	.0	18.0 * 21 JUN 0535 212	4.	.0	18.0
20 JUN 1300	13	4.	.0	18.0 * 20 JUN 2120 113	4.	.0	18.0 * 21 JUN 0540 213	4.	.0	18.0
20 JUN 1305	14	4.	.0	18.0 * 20 JUN 2125 114	4.	.0	18.0 * 21 JUN 0545 214	4.	.0	18.0
20 JUN 1310	15	4.	.0	18.0 * 20 JUN 2130 115	4.	.0	18.0 * 21 JUN 0550 215	4.	.0	18.0
20 JUN 1315	16	4.	.0	18.0 * 20 JUN 2135 116	4.	.0	18.0 * 21 JUN 0555 216	4.	.0	18.0
20 JUN 1320	17	4.	.0	18.0 * 20 JUN 2140 117	4.	.0	18.0 * 21 JUN 0600 217	4.	.0	18.0
20 JUN 1325	18	4.	.0	18.0 * 20 JUN 2145 118	4.	.0	18.0 * 21 JUN 0605 218	4.	.0	18.0
20 JUN 1330	19	4.	.0	18.0 * 20 JUN 2150 119	4.	.0	18.0 * 21 JUN 0610 219	4.	.0	18.0
20 JUN 1335	20	4.	.0	18.0 * 20 JUN 2155 120	4.	.0	18.0 * 21 JUN 0615 220	4.	.0	18.0
20 JUN 1340	21	4.	.0	18.0 * 20 JUN 2200 121	4.	.0	18.0 * 21 JUN 0620 221	4.	.0	18.0
20 JUN 1345	22	4.	.0	18.0 * 20 JUN 2205 122	4.	.0	18.0 * 21 JUN 0625 222	4.	.0	18.0
20 JUN 1350	23	4.	.0	18.0 * 20 JUN 2210 123	4.	.0	18.0 * 21 JUN 0630 223	4.	.0	18.0
20 JUN 1355	24	4.	.0	18.0 * 20 JUN 2215 124	4.	.0	18.0 * 21 JUN 0635 224	4.	.0	18.0
20 JUN 1400	25	4.	.0	18.0 * 20 JUN 2220 125	4.	.0	18.0 * 21 JUN 0640 225	4.	.0	18.0
20 JUN 1405	26	4.	.0	18.0 * 20 JUN 2225 126	4.	.0	18.0 * 21 JUN 0645 226	4.	.0	18.0
20 JUN 1410	27	4.	.0	18.0 * 20 JUN 2230 127	4.	.0	18.0 * 21 JUN 0650 227	4.	.0	18.0
20 JUN 1415	28	4.	.0	18.0 * 20 JUN 2235 128	4.	.0	18.0 * 21 JUN 0655 228	4.	.0	18.0
20 JUN 1420	29	4.	.0	18.0 * 20 JUN 2240 129	4.	.0	18.0 * 21 JUN 0700 229	4.	.0	18.0
20 JUN 1425	30	4.	.0	18.0 * 20 JUN 2245 130	4.	.0	18.0 * 21 JUN 0705 230	4.	.0	18.0
20 JUN 1430	31	4.	.0	18.0 * 20 JUN 2250 131	4.	.0	18.0 * 21 JUN 0710 231	4.	.0	18.0
20 JUN 1435	32	4.	.0	18.0 * 20 JUN 2255 132	4.	.0	18.0 * 21 JUN 0715 232	4.	.0	18.0
20 JUN 1440	33	4.	.0	18.0 * 20 JUN 2300 133	4.	.0	18.0 * 21 JUN 0720 233	4.	.0	18.0
20 JUN 1445	34	4.	.0	18.0 * 20 JUN 2305 134	4.	.0	18.0 * 21 JUN 0725 234	4.	.0	18.0
20 JUN 1450	35	4.	.0	18.0 * 20 JUN 2310 135	4.	.0	18.0 * 21 JUN 0730 235	4.	.0	18.0
20 JUN 1455	36	4.	.0	18.0 * 20 JUN 2315 136	4.	.0	18.0 * 21 JUN 0735 236	4.	.0	18.0
20 JUN 1500	37	4.	.0	18.0 * 20 JUN 2320 137	4.	.0	18.0 * 21 JUN 0740 237	4.	.0	18.0
20 JUN 1505	38	4.	.0	18.0 * 20 JUN 2325 138	4.	.0	18.0 * 21 JUN 0745 238	4.	.0	18.0
20 JUN 1510	39	4.	.0	18.0 * 20 JUN 2330 139	4.	.0	18.0 * 21 JUN 0750 239	4.	.0	18.0
20 JUN 1515	40	4.	.0	18.0 * 20 JUN 2335 140	4.	.0	18.0 * 21 JUN 0755 240	4.	.0	18.0
20 JUN 1520	41	4.	.0	18.0 * 20 JUN 2340 141	4.	.0	18.0 * 21 JUN 0800 241	4.	.0	18.0
20 JUN 1525	42	4.	.0	18.0 * 20 JUN 2345 142	4.	.0	18.0 * 21 JUN 0805 242	4.	.0	18.0
20 JUN 1530	43	4.	.0	18.0 * 20 JUN 2350 143	4.	.0	18.0 * 21 JUN 0810 243	4.	.0	18.0
20 JUN 1535	44	4.	.0	18.0 * 20 JUN 2355 144	4.	.0	18.0 * 21 JUN 0815 244	4.	.0	18.0
20 JUN 1540	45	4.	.0	18.0 * 21 JUN 0000 145	4.	.0	18.0 * 21 JUN 0820 245	4.	.0	18.0
20 JUN 1545	46	4.	.0	18.0 * 21 JUN 0005 146	4.	.0	18.1 * 21 JUN 0825 246	4.	.0	18.0
20 JUN 1550	47	4.	.0	18.0 * 21 JUN 0010 147	4.	.0	18.1 * 21 JUN 0830 247	4.	.0	18.0
20 JUN 1555	48	4.	.0	18.0 * 21 JUN 0015 148	4.	.0	18.2 * 21 JUN 0835 248	4.	.0	18.0
20 JUN 1600	49	4.	.0	18.0 * 21 JUN 0020 149	4.	.0	18.2 * 21 JUN 0840 249	4.	.0	18.0
20 JUN 1605	50	4.	.0	18.0 * 21 JUN 0025 150	4.	.0	18.4 * 21 JUN 0845 250	4.	.0	18.0
20 JUN 1610	51	4.	.0	18.0 * 21 JUN 0030 151	5.	.1	18.7 * 21 JUN 0850 251	4.	.0	18.0
20 JUN 1615	52	4.	.0	18.0 * 21 JUN 0035 152	6.	.1	19.5 * 21 JUN 0855 252	4.	.0	18.0
20 JUN 1620	53	4.	.0	18.0 * 21 JUN 0040 153	19.	.2	20.4 * 21 JUN 0900 253	4.	.0	18.0
20 JUN 1625	54	4.	.0	18.0 * 21 JUN 0045 154	32.	.3	20.6 * 21 JUN 0905 254	4.	.0	18.0
20 JUN 1630	55	4.	.0	18.0 * 21 JUN 0050 155	26.	.2	20.5 * 21 JUN 0910 255	4.	.0	18.0
20 JUN 1635	56	4.	.0	18.0 * 21 JUN 0055 156	24.	.2	20.5 * 21 JUN 0915 256	4.	.0	18.0
20 JUN 1640	57	4.	.0	18.0 * 21 JUN 0100 157	20.	.2	20.4 * 21 JUN 0920 257	4.	.0	18.0
20 JUN 1645	58	4.	.0	18.0 * 21 JUN 0105 158	17.	.2	20.3 * 21 JUN 0925 258	4.	.0	18.0
20 JUN 1650	59	4.	.0	18.0 * 21 JUN 0110 159	14.	.2	20.3 * 21 JUN 0930 259	4.	.0	18.0
20 JUN 1655	60	4.	.0	18.0 * 21 JUN 0115 160	12.	.2	20.2 * 21 JUN 0935 260	4.	.0	18.0
20 JUN 1700	61	4.	.0	18.0 * 21 JUN 0120 161	10.	.2	20.2 * 21 JUN 0940 261	4.	.0	18.0
20 JUN 1705	62	4.	.0	18.0 * 21 JUN 0125 162	9.	.2	20.1 * 21 JUN 0945 262	4.	.0	18.0
20 JUN 1710	63	4.	.0	18.0 * 21 JUN 0130 163	8.	.2	20.1 * 21 JUN 0950 263	4.	.0	18.0
20 JUN 1715	64	4.	.0	18.0 * 21 JUN 0135 164	8.	.2	20.1 * 21 JUN 0955 264	4.	.0	18.0
20 JUN 1720	65	4.	.0	18.0 * 21 JUN 0140 165	7.	.2	20.1 * 21 JUN 1000 265	4.	.0	18.0
20 JUN 1725	66	4.	.0	18.0 * 21 JUN 0145 166	7.	.2	20.0 * 21 JUN 1005 266	4.	.0	18.0
20 JUN 1730	67	4.	.0	18.0 * 21 JUN 0150 167	7.	.2	20.0 * 21 JUN 1010 267	4.	.0	18.0
20 JUN 1735	68	4.	.0	18.0 * 21 JUN 0155 168	7.	.2	20.0 * 21 JUN 1015 268	4.	.0	18.0
20 JUN 1740	69	4.	.0	18.0 * 21 JUN 0200 169	7.	.2	20.0 * 21 JUN 1020 269	4.	.0	18.0

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20 JUN 1745	70	4.	.0	18.0	*	21 JUN 0205	170	7.	.2	20.0	*	21 JUN 1025	270	4.	.0	18.0
20 JUN 1750	71	4.	.0	18.0	*	21 JUN 0210	171	7.	.2	19.9	*	21 JUN 1030	271	4.	.0	18.0
20 JUN 1755	72	4.	.0	18.0	*	21 JUN 0215	172	6.	.2	19.9	*	21 JUN 1035	272	4.	.0	18.0
20 JUN 1800	73	4.	.0	18.0	*	21 JUN 0220	173	6.	.2	19.8	*	21 JUN 1040	273	4.	.0	18.0
20 JUN 1805	74	4.	.0	18.0	*	21 JUN 0225	174	6.	.2	19.7	*	21 JUN 1045	274	4.	.0	18.0
20 JUN 1810	75	4.	.0	18.0	*	21 JUN 0230	175	6.	.1	19.6	*	21 JUN 1050	275	4.	.0	18.0
20 JUN 1815	76	4.	.0	18.0	*	21 JUN 0235	176	6.	.1	19.4	*	21 JUN 1055	276	4.	.0	18.0
20 JUN 1820	77	4.	.0	18.0	*	21 JUN 0240	177	6.	.1	19.3	*	21 JUN 1100	277	4.	.0	18.0
20 JUN 1825	78	4.	.0	18.0	*	21 JUN 0245	178	6.	.1	19.2	*	21 JUN 1105	278	4.	.0	18.0
20 JUN 1830	79	4.	.0	18.0	*	21 JUN 0250	179	5.	.1	19.1	*	21 JUN 1110	279	4.	.0	18.0
20 JUN 1835	80	4.	.0	18.0	*	21 JUN 0255	180	5.	.1	18.9	*	21 JUN 1115	280	4.	.0	18.0
20 JUN 1840	81	4.	.0	18.0	*	21 JUN 0300	181	5.	.1	18.8	*	21 JUN 1120	281	4.	.0	18.0
20 JUN 1845	82	4.	.0	18.0	*	21 JUN 0305	182	5.	.1	18.7	*	21 JUN 1125	282	4.	.0	18.0
20 JUN 1850	83	4.	.0	18.0	*	21 JUN 0310	183	5.	.0	18.5	*	21 JUN 1130	283	4.	.0	18.0
20 JUN 1855	84	4.	.0	18.0	*	21 JUN 0315	184	5.	.0	18.4	*	21 JUN 1135	284	4.	.0	18.0
20 JUN 1900	85	4.	.0	18.0	*	21 JUN 0320	185	4.	.0	18.4	*	21 JUN 1140	285	4.	.0	18.0
20 JUN 1905	86	4.	.0	18.0	*	21 JUN 0325	186	4.	.0	18.3	*	21 JUN 1145	286	4.	.0	18.0
20 JUN 1910	87	4.	.0	18.0	*	21 JUN 0330	187	4.	.0	18.3	*	21 JUN 1150	287	4.	.0	18.0
20 JUN 1915	88	4.	.0	18.0	*	21 JUN 0335	188	4.	.0	18.2	*	21 JUN 1155	288	4.	.0	18.0
20 JUN 1920	89	4.	.0	18.0	*	21 JUN 0340	189	4.	.0	18.2	*	21 JUN 1200	289	4.	.0	18.0
20 JUN 1925	90	4.	.0	18.0	*	21 JUN 0345	190	4.	.0	18.1	*	21 JUN 1205	290	4.	.0	18.0
20 JUN 1930	91	4.	.0	18.0	*	21 JUN 0350	191	4.	.0	18.1	*	21 JUN 1210	291	4.	.0	18.0
20 JUN 1935	92	4.	.0	18.0	*	21 JUN 0355	192	4.	.0	18.1	*	21 JUN 1215	292	4.	.0	18.0
20 JUN 1940	93	4.	.0	18.0	*	21 JUN 0400	193	4.	.0	18.1	*	21 JUN 1220	293	4.	.0	18.0
20 JUN 1945	94	4.	.0	18.0	*	21 JUN 0405	194	4.	.0	18.1	*	21 JUN 1225	294	4.	.0	18.0
20 JUN 1950	95	4.	.0	18.0	*	21 JUN 0410	195	4.	.0	18.1	*	21 JUN 1230	295	4.	.0	18.0
20 JUN 1955	96	4.	.0	18.0	*	21 JUN 0415	196	4.	.0	18.0	*	21 JUN 1235	296	4.	.0	18.0
20 JUN 2000	97	4.	.0	18.0	*	21 JUN 0420	197	4.	.0	18.0	*	21 JUN 1240	297	4.	.0	18.0
20 JUN 2005	98	4.	.0	18.0	*	21 JUN 0425	198	4.	.0	18.0	*	21 JUN 1245	298	4.	.0	18.0
20 JUN 2010	99	4.	.0	18.0	*	21 JUN 0430	199	4.	.0	18.0	*	21 JUN 1250	299	4.	.0	18.0
20 JUN 2015	100	4.	.0	18.0	*	21 JUN 0435	200	4.	.0	18.0	*	21 JUN 1255	300	4.	.0	18.0
					*						*					

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
32.	12.75	(CFS)	7.	5.	4.	4.
		(INCHES)	.761	2.064	2.127	2.127
		(AC-FT)	3.	9.	9.	9.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)	6-HR	24-HR	72-HR	24.92-HR
0.	12.75	0.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
(FEET)	(HR)	6-HR	24-HR	72-HR	24.92-HR
20.62	12.75	18.87	18.22	18.21	18.21

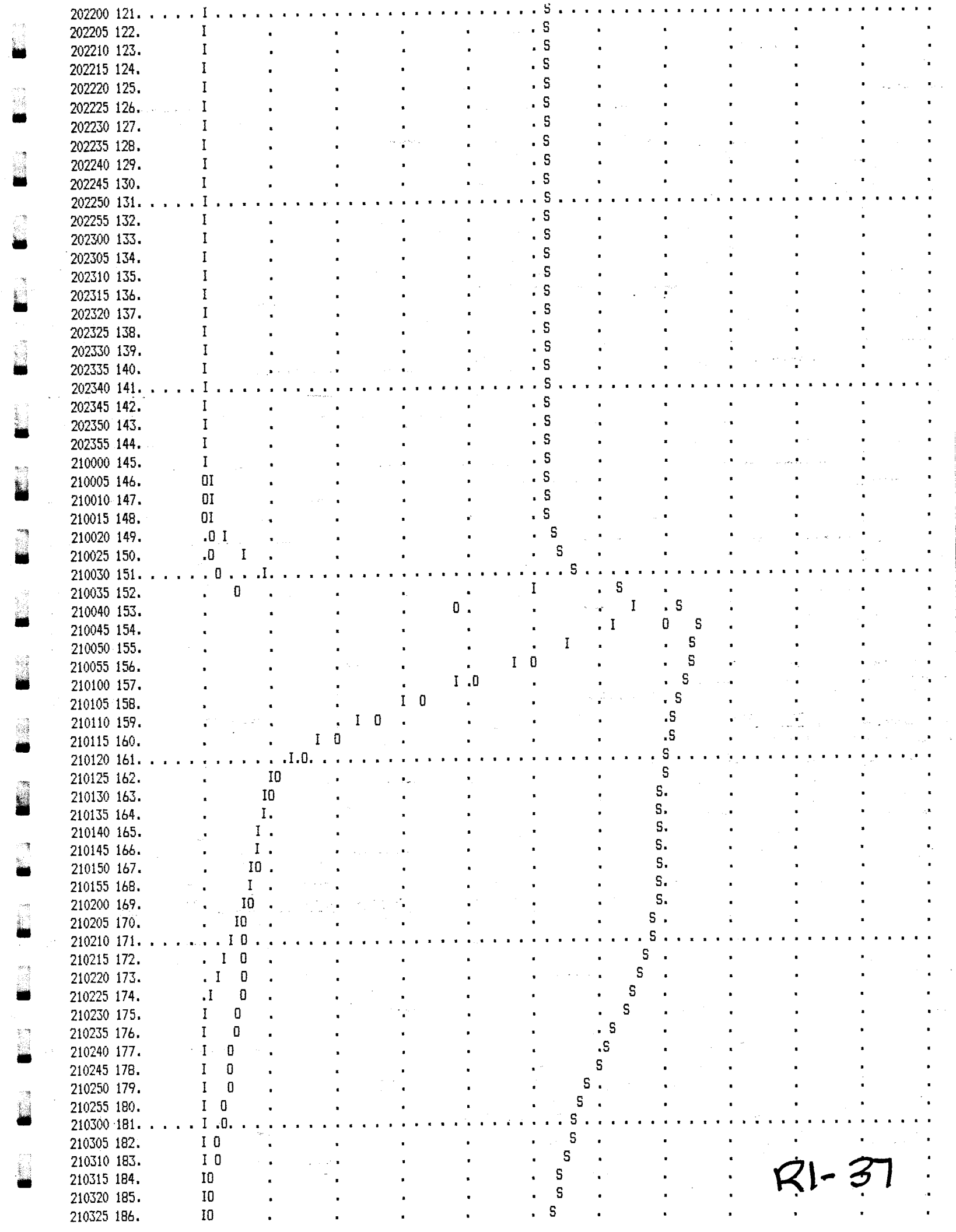
CUMULATIVE AREA = .08 SQ MI

STATION RES2

(I) INFLOW, (O) OUTFLOW

	0.	4.	8.	12.	16.	20.	24.	28.	32.	36.	0.	0.	0.
								(S) STORAGE					
	.0	.0	.0	.0	.0	.0	.0	.1	.2	.3	.0	.0	.0
DAHRMN	PER												
201200	1	I						S					
201205	2.	I O						S					
201210	3.	I						S					
201215	4.	I						S					
201220	5.	I						S					
201225	6.	I						S					
201230	7.	I						S					
201235	8.	I						S					
201240	9.	I						S					
201245	10.	I						S					
201250	11.	I						S					
201255	12.	I						S					
201300	13.	I						S					
201305	14.	I						S					
201310	15.	I						S					
201315	16.	I						S					
201320	17.	I						S					
201325	18.	I						S					
201330	19.	I						S					
201335	20.	I						S					
201340	21.	I						S					
201345	22.	I						S					
201350	23.	I						S					
201355	24.	I						S					
201400	25.	I						S					
201405	26.	I						S					
201410	27.	I						S					
201415	28.	I						S					
201420	29.	I						S					
201425	30.	I						S					
201430	31.	I						S					
201435	32.	I						S					
201440	33.	I						S					
201445	34.	I						S					
201450	35.	I						S					
201455	36.	I						S					
201500	37.	I						S					
201505	38.	I						S					
201510	39.	I						S					
201515	40.	I						S					
201520	41.	I						S					
201525	42.	I						S					
201530	43.	I						S					
201535	44.	I						S					
201540	45.	I						S					
201545	46.	I						S					
201550	47.	I						S					
201555	48.	I						S					
201600	49.	I						S					
201605	50.	I						S					
201610	51.	I						S					
201615	52.	I						S					
201620	53.	I						S					
201625	54.	I						S					

201630 55. I . . . . . S
201635 56. I . . . . . S
201640 57. I . . . . . S
201645 58. I . . . . . S
201650 59. I . . . . . S
201655 60. I . . . . . S
201700 61. I . . . . . S
201705 62. I . . . . . S
201710 63. I . . . . . S
201715 64. I . . . . . S
201720 65. I . . . . . S
201725 66. I . . . . . S
201730 67. I . . . . . S
201735 68. I . . . . . S
201740 69. I . . . . . S
201745 70. I . . . . . S
201750 71. I . . . . . S
201755 72. I . . . . . S
201800 73. I . . . . . S
201805 74. I . . . . . S
201810 75. I . . . . . S
201815 76. I . . . . . S
201820 77. I . . . . . S
201825 78. I . . . . . S
201830 79. I . . . . . S
201835 80. I . . . . . S
201840 81. I . . . . . S
201845 82. I . . . . . S
201850 83. I . . . . . S
201855 84. I . . . . . S
201900 85. I . . . . . S
201905 86. I . . . . . S
201910 87. I . . . . . S
201915 88. I . . . . . S
201920 89. I . . . . . S
201925 90. I . . . . . S
201930 91. I . . . . . S
201935 92. I . . . . . S
201940 93. I . . . . . S
201945 94. I . . . . . S
201950 95. I . . . . . S
201955 96. I . . . . . S
202000 97. I . . . . . S
202005 98. I . . . . . S
202010 99. I . . . . . S
202015 100. I . . . . . S
202020 101. I . . . . . S
202025 102. I . . . . . S
202030 103. I . . . . . S
202035 104. I . . . . . S
202040 105. I . . . . . S
202045 106. I . . . . . S
202050 107. I . . . . . S
202055 108. I . . . . . S
202100 109. I . . . . . S
202105 110. I . . . . . S
202110 111. I . . . . . S
202115 112. I . . . . . S
202120 113. I . . . . . S
202125 114. I . . . . . S
202130 115. I . . . . . S
202135 116. I . . . . . S
202140 117. I . . . . . S
202145 118. I . . . . . S
202150 119. I . . . . . S
202155 120 I . . . . . S


202200 121.
202205 122.
202210 123.
202215 124.
202220 125.
202225 126.
202230 127.
202235 128.
202240 129.
202245 130.
202250 131.
202255 132.
202300 133.
202305 134.
202310 135.
202315 136.
202320 137.
202325 138.
202330 139.
202335 140.
202340 141.
202345 142.
202350 143.
202355 144.
210000 145.
210005 146.
210010 147.
210015 148.
210020 149.
210025 150.
210030 151.
210035 152.
210040 153.
210045 154.
210050 155.
210055 156.
210100 157.
210105 158.
210110 159.
210115 160.
210120 161.
210125 162.
210130 163.
210135 164.
210140 165.
210145 166.
210150 167.
210155 168.
210200 169.
210205 170.
210210 171.
210215 172.
210220 173.
210225 174.
210230 175.
210235 176.
210240 177.
210245 178.
210250 179.
210255 180.
210300 181.
210305 182.
210310 183.
210315 184.
210320 185.
210325 186.
RI-37

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210330 187.      IO . . . . . S . . . . . .
210335 188.      I  . . . . . S . . . . . .
210340 189.      I  . . . . . S . . . . . .
210345 190.      I  . . . . . S . . . . . .
210350 191. . . . I . . . . . . . . . . . . S . . . . . .
210355 192.      I  . . . . . S . . . . . .
210400 193.      I  . . . . . S . . . . . .
210405 194.      I  . . . . . S . . . . . .
210410 195.      I  . . . . . S . . . . . .
210415 196.      I  . . . . . S . . . . . .
210420 197.      I  . . . . . S . . . . . .
210425 198.      I  . . . . . S . . . . . .
210430 199.      I  . . . . . S . . . . . .
210435 200.      I  . . . . . S . . . . . .
210440 201. . . . I . . . . . . . . . . . . S . . . . . .
210445 202.      I  . . . . . S . . . . . .
210450 203.      I  . . . . . S . . . . . .
210455 204.      I  . . . . . S . . . . . .
210500 205.      I  . . . . . S . . . . . .
210505 206.      I  . . . . . S . . . . . .
210510 207.      I  . . . . . S . . . . . .
210515 208.      I  . . . . . S . . . . . .
210520 209.      I  . . . . . S . . . . . .
210525 210.      I  . . . . . S . . . . . .
210530 211. . . . I . . . . . . . . . . . . S . . . . . .
210535 212.      I  . . . . . S . . . . . .
210540 213.      I  . . . . . S . . . . . .
210545 214.      I  . . . . . S . . . . . .
210550 215.      I  . . . . . S . . . . . .
210555 216.      I  . . . . . S . . . . . .
210600 217.      I  . . . . . S . . . . . .
210605 218.      I  . . . . . S . . . . . .
210610 219.      I  . . . . . S . . . . . .
210615 220.      I  . . . . . S . . . . . .
210620 221. . . . I . . . . . . . . . . . . S . . . . . .
210625 222.      I  . . . . . S . . . . . .
210630 223.      I  . . . . . S . . . . . .
210635 224.      I  . . . . . S . . . . . .
210640 225.      I  . . . . . S . . . . . .
210645 226.      I  . . . . . S . . . . . .
210650 227.      I  . . . . . S . . . . . .
210655 228.      I  . . . . . S . . . . . .
210700 229.      I  . . . . . S . . . . . .
210705 230.      I  . . . . . S . . . . . .
210710 231. . . . I . . . . . . . . . . . . S . . . . . .
210715 232.      I  . . . . . S . . . . . .
210720 233.      I  . . . . . S . . . . . .
210725 234.      I  . . . . . S . . . . . .
210730 235.      I  . . . . . S . . . . . .
210735 236.      I  . . . . . S . . . . . .
210740 237.      I  . . . . . S . . . . . .
210745 238.      I  . . . . . S . . . . . .
210750 239.      I  . . . . . S . . . . . .
210755 240.      I  . . . . . S . . . . . .
210800 241. . . . I . . . . . . . . . . . . S . . . . . .
210805 242.      I  . . . . . S . . . . . .
210810 243.      I  . . . . . S . . . . . .
210815 244.      I  . . . . . S . . . . . .
210820 245.      I  . . . . . S . . . . . .
210825 246.      I  . . . . . S . . . . . .
210830 247.      I  . . . . . S . . . . . .
210835 248.      I  . . . . . S . . . . . .
210840 249.      I  . . . . . S . . . . . .
210845 250.      I  . . . . . S . . . . . .
210850 251. . . . I . . . . . . . . . . . . S . . . . . .
210855 252.      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	.083	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 (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.12	1.34	1.39	200.00	31.44	766.62	2.12	4.80

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	2.12	1.34	5.00		28.87	765.00	2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9246E+01 EXCESS= .0000E+00 OUTFLOW= .9233E+01 BASIN STORAGE= .1416E-01 PERCENT ERROR= .0

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

HYDROGRAPH AT STATION CH4

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR

R1-40

29.	12.75	(CFS)	7.	5.	4.	4.
		(INCHES)	.762	2.064	2.125	2.125
		(AC-FT)	3.	9.	9.	9.

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
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	.083	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	.27	INITIAL ABSTRACTION
CRVNBR	88.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

139 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .32 LAG

***

UNIT HYDROGRAPH
21 END-OF-PERIOD ORDINATES

2.	7.	14.	17.	17.	14.	10.	7.	5.	3.
2.	1.	1.	1.	0.	0.	0.	0.	0.	0.
0.									

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

HYDROGRAPH AT STATION B345

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

R1-41

PEAK FLOW TIME MAXIMUM AVERAGE FLOW

(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
9.	12.42	(CFS)	1.	0.	0.	0.
		(INCHES)	.833	.973	.973	.973
		(AC-FT)	1.	1.	1.	1.

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
                    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       .083  TIME INTERVAL IN HOURS

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

HYDROGRAPH AT STATION B345

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
34.	12.75	(CFS)	8.	5.	5.	5.
		(INCHES)	.772	1.912	1.964	1.964
		(AC-FT)	4.	10.	10.	10.

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
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ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	.083	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
	COQL	.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								

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HYDROGRAPH AT STATION RES3

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
20	JUN	1200	1	0.	.1	14.2	*	20	JUN	2020	101	4.	.4	15.9	*	21	JUN	0440	201	4.	.4	16.0
20	JUN	1205	2	0.	.1	14.3	*	20	JUN	2025	102	4.	.4	15.9	*	21	JUN	0445	202	4.	.4	16.0
20	JUN	1210	3	0.	.1	14.4	*	20	JUN	2030	103	4.	.4	15.9	*	21	JUN	0450	203	4.	.4	16.0
20	JUN	1215	4	0.	.1	14.6	*	20	JUN	2035	104	4.	.4	15.9	*	21	JUN	0455	204	4.	.4	16.0
20	JUN	1220	5	0.	.2	14.7	*	20	JUN	2040	105	4.	.4	15.9	*	21	JUN	0500	205	4.	.4	16.0

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20 JUN 1225	6	0.	.2	14.9 *	20 JUN 2045	106	4.	.4	15.9 *	21 JUN 0505	206	4.	.4	16.0
20 JUN 1230	7	0.	.2	15.1 *	20 JUN 2050	107	4.	.4	15.9 *	21 JUN 0510	207	4.	.4	16.0
20 JUN 1235	8	0.	.2	15.2 *	20 JUN 2055	108	4.	.4	15.9 *	21 JUN 0515	208	4.	.4	16.0
20 JUN 1240	9	0.	.3	15.4 *	20 JUN 2100	109	4.	.4	15.9 *	21 JUN 0520	209	4.	.4	16.0
20 JUN 1245	10	0.	.3	15.5 *	20 JUN 2105	110	4.	.4	15.9 *	21 JUN 0525	210	4.	.4	16.0
20 JUN 1250	11	0.	.3	15.6 *	20 JUN 2110	111	4.	.4	15.9 *	21 JUN 0530	211	4.	.4	16.0
20 JUN 1255	12	0.	.3	15.7 *	20 JUN 2115	112	4.	.4	15.9 *	21 JUN 0535	212	4.	.4	16.0
20 JUN 1300	13	1.	.3	15.8 *	20 JUN 2120	113	4.	.4	15.9 *	21 JUN 0540	213	4.	.4	16.0
20 JUN 1305	14	3.	.4	15.9 *	20 JUN 2125	114	4.	.4	15.9 *	21 JUN 0545	214	4.	.4	16.0
20 JUN 1310	15	3.	.4	15.9 *	20 JUN 2130	115	4.	.4	15.9 *	21 JUN 0550	215	4.	.4	16.0
20 JUN 1315	16	4.	.4	15.9 *	20 JUN 2135	116	4.	.4	15.9 *	21 JUN 0555	216	4.	.4	16.0
20 JUN 1320	17	4.	.4	15.9 *	20 JUN 2140	117	4.	.4	15.9 *	21 JUN 0600	217	4.	.4	16.0
20 JUN 1325	18	4.	.4	15.9 *	20 JUN 2145	118	4.	.4	15.9 *	21 JUN 0605	218	4.	.4	16.0
20 JUN 1330	19	4.	.4	15.9 *	20 JUN 2150	119	4.	.4	15.9 *	21 JUN 0610	219	4.	.4	16.0
20 JUN 1335	20	4.	.4	15.9 *	20 JUN 2155	120	4.	.4	15.9 *	21 JUN 0615	220	4.	.4	16.0
20 JUN 1340	21	4.	.4	15.9 *	20 JUN 2200	121	4.	.4	15.9 *	21 JUN 0620	221	4.	.4	16.0
20 JUN 1345	22	4.	.4	15.9 *	20 JUN 2205	122	4.	.4	15.9 *	21 JUN 0625	222	4.	.4	16.0
20 JUN 1350	23	4.	.4	15.9 *	20 JUN 2210	123	4.	.4	15.9 *	21 JUN 0630	223	4.	.4	16.0
20 JUN 1355	24	4.	.4	15.9 *	20 JUN 2215	124	4.	.4	15.9 *	21 JUN 0635	224	4.	.4	16.0
20 JUN 1400	25	4.	.4	15.9 *	20 JUN 2220	125	4.	.4	15.9 *	21 JUN 0640	225	4.	.4	16.0
20 JUN 1405	26	4.	.4	15.9 *	20 JUN 2225	126	4.	.4	15.9 *	21 JUN 0645	226	4.	.4	16.0
20 JUN 1410	27	4.	.4	15.9 *	20 JUN 2230	127	4.	.4	15.9 *	21 JUN 0650	227	4.	.4	16.0
20 JUN 1415	28	4.	.4	15.9 *	20 JUN 2235	128	4.	.4	15.9 *	21 JUN 0655	228	4.	.4	16.0
20 JUN 1420	29	4.	.4	15.9 *	20 JUN 2240	129	4.	.4	15.9 *	21 JUN 0700	229	4.	.4	16.0
20 JUN 1425	30	4.	.4	15.9 *	20 JUN 2245	130	4.	.4	15.9 *	21 JUN 0705	230	4.	.4	16.0
20 JUN 1430	31	4.	.4	15.9 *	20 JUN 2250	131	4.	.4	15.9 *	21 JUN 0710	231	4.	.4	16.0
20 JUN 1435	32	4.	.4	15.9 *	20 JUN 2255	132	4.	.4	15.9 *	21 JUN 0715	232	4.	.4	16.0
20 JUN 1440	33	4.	.4	15.9 *	20 JUN 2300	133	4.	.4	15.9 *	21 JUN 0720	233	4.	.4	16.0
20 JUN 1445	34	4.	.4	15.9 *	20 JUN 2305	134	4.	.4	15.9 *	21 JUN 0725	234	4.	.4	16.0
20 JUN 1450	35	4.	.4	15.9 *	20 JUN 2310	135	4.	.4	15.9 *	21 JUN 0730	235	4.	.4	16.0
20 JUN 1455	36	4.	.4	15.9 *	20 JUN 2315	136	4.	.4	15.9 *	21 JUN 0735	236	4.	.4	16.0
20 JUN 1500	37	4.	.4	15.9 *	20 JUN 2320	137	4.	.4	15.9 *	21 JUN 0740	237	4.	.4	16.0
20 JUN 1505	38	4.	.4	15.9 *	20 JUN 2325	138	4.	.4	15.9 *	21 JUN 0745	238	4.	.4	16.0
20 JUN 1510	39	4.	.4	15.9 *	20 JUN 2330	139	4.	.4	15.9 *	21 JUN 0750	239	4.	.4	16.0
20 JUN 1515	40	4.	.4	15.9 *	20 JUN 2335	140	4.	.4	15.9 *	21 JUN 0755	240	4.	.4	16.0
20 JUN 1520	41	4.	.4	15.9 *	20 JUN 2340	141	4.	.4	15.9 *	21 JUN 0800	241	4.	.4	16.0
20 JUN 1525	42	4.	.4	15.9 *	20 JUN 2345	142	4.	.4	16.0 *	21 JUN 0805	242	4.	.4	16.0
20 JUN 1530	43	4.	.4	15.9 *	20 JUN 2350	143	4.	.4	16.0 *	21 JUN 0810	243	4.	.4	16.0
20 JUN 1535	44	4.	.4	15.9 *	20 JUN 2355	144	4.	.4	16.0 *	21 JUN 0815	244	4.	.4	16.0
20 JUN 1540	45	4.	.4	15.9 *	21 JUN 0000	145	5.	.4	16.0 *	21 JUN 0820	245	4.	.4	16.0
20 JUN 1545	46	4.	.4	15.9 *	21 JUN 0005	146	5.	.4	16.0 *	21 JUN 0825	246	4.	.4	16.0
20 JUN 1550	47	4.	.4	15.9 *	21 JUN 0010	147	7.	.4	16.1 *	21 JUN 0830	247	4.	.4	16.0
20 JUN 1555	48	4.	.4	15.9 *	21 JUN 0015	148	9.	.4	16.1 *	21 JUN 0835	248	4.	.4	16.0
20 JUN 1600	49	4.	.4	15.9 *	21 JUN 0020	149	11.	.4	16.2 *	21 JUN 0840	249	4.	.4	16.0
20 JUN 1605	50	4.	.4	15.9 *	21 JUN 0025	150	13.	.4	16.2 *	21 JUN 0845	250	4.	.4	16.0
20 JUN 1610	51	4.	.4	15.9 *	21 JUN 0030	151	13.	.4	16.2 *	21 JUN 0850	251	4.	.4	16.0
20 JUN 1615	52	4.	.4	15.9 *	21 JUN 0035	152	13.	.4	16.2 *	21 JUN 0855	252	4.	.4	16.0
20 JUN 1620	53	4.	.4	15.9 *	21 JUN 0040	153	16.	.4	16.3 *	21 JUN 0900	253	4.	.4	16.0
20 JUN 1625	54	4.	.4	15.9 *	21 JUN 0045	154	25.	.5	16.5 *	21 JUN 0905	254	4.	.4	16.0
20 JUN 1630	55	4.	.4	15.9 *	21 JUN 0050	155	31.	.5	16.6 *	21 JUN 0910	255	4.	.4	16.0
20 JUN 1635	56	4.	.4	15.9 *	21 JUN 0055	156	30.	.5	16.6 *	21 JUN 0915	256	4.	.4	16.0
20 JUN 1640	57	4.	.4	15.9 *	21 JUN 0100	157	26.	.5	16.5 *	21 JUN 0920	257	4.	.4	16.0
20 JUN 1645	58	4.	.4	15.9 *	21 JUN 0105	158	22.	.5	16.4 *	21 JUN 0925	258	4.	.4	16.0
20 JUN 1650	59	4.	.4	15.9 *	21 JUN 0110	159	19.	.5	16.4 *	21 JUN 0930	259	4.	.4	16.0
20 JUN 1655	60	4.	.4	15.9 *	21 JUN 0115	160	16.	.4	16.3 *	21 JUN 0935	260	4.	.4	16.0
20 JUN 1700	61	4.	.4	15.9 *	21 JUN 0120	161	13.	.4	16.2 *	21 JUN 0940	261	4.	.4	16.0
20 JUN 1705	62	4.	.4	15.9 *	21 JUN 0125	162	11.	.4	16.2 *	21 JUN 0945	262	4.	.4	16.0
20 JUN 1710	63	4.	.4	15.9 *	21 JUN 0130	163	10.	.4	16.1 *	21 JUN 0950	263	4.	.4	16.0
20 JUN 1715	64	4.	.4	15.9 *	21 JUN 0135	164	9.	.4	16.1 *	21 JUN 0955	264	4.	.4	16.0
20 JUN 1720	65	4.	.4	15.9 *	21 JUN 0140	165	8.	.4	16.1 *	21 JUN 1000	265	4.	.4	16.0
20 JUN 1725	66	4.	.4	15.9 *	21 JUN 0145	166	8.	.4	16.1 *	21 JUN 1005	266	4.	.4	16.0
20 JUN 1730	67	4.	.4	15.9 *	21 JUN 0150	167	8.	.4	16.1 *	21 JUN 1010	267	4.	.4	16.0
20 JUN 1735	68	4.	.4	15.9 *	21 JUN 0155	168	7.	.4	16.1 *	21 JUN 1015	268	4.	.4	16.0
20 JUN 1740	69	4.	.4	15.9 *	21 JUN 0200	169	7.	.4	16.1 *	21 JUN 1020	269	4.	.4	16.0
20 JUN 1745	70	4.	.4	15.9 *	21 JUN 0205	170	7.	.4	16.1 *	21 JUN 1025	270	4.	.4	16.0
20 JUN 1750	71	4.	.4	15.9 *	21 JUN 0210	171	7.	.4	16.1 *	21 JUN 1030	271	4.	.4	16.0

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20 JUN 1755	72	4.	.4	15.9 * 21 JUN 0215 172	7.	.4	16.1 * 21 JUN 1035 272	4.	.4	16.0
20 JUN 1800	73	4.	.4	15.9 * 21 JUN 0220 173	7.	.4	16.0 * 21 JUN 1040 273	4.	.4	16.0
20 JUN 1805	74	4.	.4	15.9 * 21 JUN 0225 174	7.	.4	16.0 * 21 JUN 1045 274	4.	.4	16.0
20 JUN 1810	75	4.	.4	15.9 * 21 JUN 0230 175	7.	.4	16.0 * 21 JUN 1050 275	4.	.4	16.0
20 JUN 1815	76	4.	.4	15.9 * 21 JUN 0235 176	6.	.4	16.0 * 21 JUN 1055 276	4.	.4	16.0
20 JUN 1820	77	4.	.4	15.9 * 21 JUN 0240 177	6.	.4	16.0 * 21 JUN 1100 277	4.	.4	16.0
20 JUN 1825	78	4.	.4	15.9 * 21 JUN 0245 178	6.	.4	16.0 * 21 JUN 1105 278	4.	.4	16.0
20 JUN 1830	79	4.	.4	15.9 * 21 JUN 0250 179	6.	.4	16.0 * 21 JUN 1110 279	4.	.4	16.0
20 JUN 1835	80	4.	.4	15.9 * 21 JUN 0255 180	6.	.4	16.0 * 21 JUN 1115 280	4.	.4	16.0
20 JUN 1840	81	4.	.4	15.9 * 21 JUN 0300 181	6.	.4	16.0 * 21 JUN 1120 281	4.	.4	16.0
20 JUN 1845	82	4.	.4	15.9 * 21 JUN 0305 182	5.	.4	16.0 * 21 JUN 1125 282	4.	.4	16.0
20 JUN 1850	83	4.	.4	15.9 * 21 JUN 0310 183	5.	.4	16.0 * 21 JUN 1130 283	4.	.4	16.0
20 JUN 1855	84	4.	.4	15.9 * 21 JUN 0315 184	5.	.4	16.0 * 21 JUN 1135 284	4.	.4	16.0
20 JUN 1900	85	4.	.4	15.9 * 21 JUN 0320 185	5.	.4	16.0 * 21 JUN 1140 285	4.	.4	16.0
20 JUN 1905	86	4.	.4	15.9 * 21 JUN 0325 186	5.	.4	16.0 * 21 JUN 1145 286	4.	.4	16.0
20 JUN 1910	87	4.	.4	15.9 * 21 JUN 0330 187	5.	.4	16.0 * 21 JUN 1150 287	4.	.4	16.0
20 JUN 1915	88	4.	.4	15.9 * 21 JUN 0335 188	5.	.4	16.0 * 21 JUN 1155 288	4.	.4	16.0
20 JUN 1920	89	4.	.4	15.9 * 21 JUN 0340 189	4.	.4	16.0 * 21 JUN 1200 289	4.	.4	16.0
20 JUN 1925	90	4.	.4	15.9 * 21 JUN 0345 190	4.	.4	16.0 * 21 JUN 1205 290	4.	.4	16.0
20 JUN 1930	91	4.	.4	15.9 * 21 JUN 0350 191	4.	.4	16.0 * 21 JUN 1210 291	4.	.4	16.0
20 JUN 1935	92	4.	.4	15.9 * 21 JUN 0355 192	4.	.4	16.0 * 21 JUN 1215 292	4.	.4	16.0
20 JUN 1940	93	4.	.4	15.9 * 21 JUN 0400 193	4.	.4	16.0 * 21 JUN 1220 293	4.	.4	16.0
20 JUN 1945	94	4.	.4	15.9 * 21 JUN 0405 194	4.	.4	16.0 * 21 JUN 1225 294	4.	.4	16.0
20 JUN 1950	95	4.	.4	15.9 * 21 JUN 0410 195	4.	.4	16.0 * 21 JUN 1230 295	4.	.4	15.9
20 JUN 1955	96	4.	.4	15.9 * 21 JUN 0415 196	4.	.4	16.0 * 21 JUN 1235 296	4.	.4	15.9
20 JUN 2000	97	4.	.4	15.9 * 21 JUN 0420 197	4.	.4	16.0 * 21 JUN 1240 297	4.	.4	15.9
20 JUN 2005	98	4.	.4	15.9 * 21 JUN 0425 198	4.	.4	16.0 * 21 JUN 1245 298	4.	.4	15.9
20 JUN 2010	99	4.	.4	15.9 * 21 JUN 0430 199	4.	.4	16.0 * 21 JUN 1250 299	4.	.4	15.9
20 JUN 2015	100	4.	.4	15.9 * 21 JUN 0435 200	4.	.4	16.0 * 21 JUN 1255 300	4.	.4	15.9
				*			*			

****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
31.	12.83	(CFS)	8.	5.	5.	5.
		(INCHES)	.772	1.903	1.908	1.908
		(AC-FT)	4.	10.	10.	10.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	24.92-HR
1.	12.83	0.	0.	0.	0.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	24.92-HR
16.62	12.83	16.07	15.98	15.94	15.94

CUMULATIVE AREA = .09 SQ MI

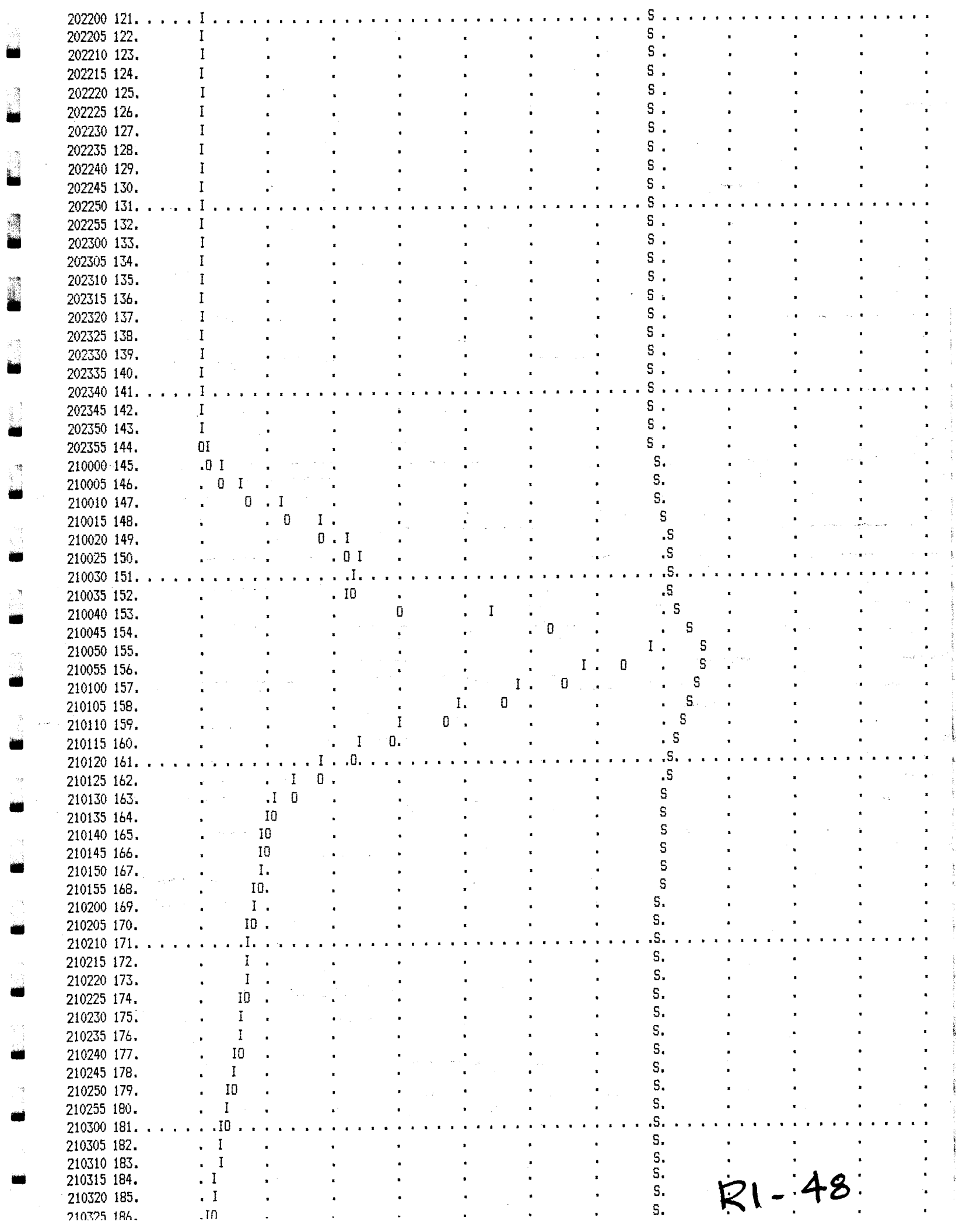
STATION RES3

(I) INFLOW, (O) OUTFLOW

	0.	4.	8.	12.	16.	20.	24.	28.	32.	36.	0.	0.	0.
									(S) STORAGE				
	.0	.0	.0	.0	.0	.0	.0	.2	.4	.6	.0	.0	.0
DAHRMN	PER												
201200	1	I						S					
201205	20	I						S					
201210	3.0		I					S					
201215	4.0		I					S					
201220	5.0		I					S					
201225	6.0		I					S					
201230	7.0		I					S					
201235	8.0		I					S					
201240	9.0		I					S					
201245	10.0		I					S					
201250	11.0		I					S					
201255	12.0		I					S					
201300	13.	O	I					S					
201305	14.	O	I					S					
201310	15.	O	I					S					
201315	16.		OI					S					
201320	17.		OI					S					
201325	18.		OI					S					
201330	19.		OI					S					
201335	20.		OI					S					
201340	21.		OI					S					
201345	22.		I					S					
201350	23.		I					S					
201355	24.		I					S					
201400	25.		I					S					
201405	26.		I					S					
201410	27.		I					S					
201415	28.		I					S					
201420	29.		I					S					
201425	30.		I					S					
201430	31.		I					S					
201435	32.		I					S					
201440	33.		I					S					
201445	34.		I					S					
201450	35.		I					S					
201455	36.		I					S					
201500	37.		I					S					
201505	38.		I					S					
201510	39.		I					S					
201515	40.		I					S					
201520	41.		I					S					
201525	42.		I					S					
201530	43.		I					S					
201535	44.		I					S					
201540	45.		I					S					
201545	46.		I					S					
201550	47.		I					S					
201555	48.		I					S					
201600	49.		I					S					
201605	50.		I					S					
201610	51.		I					S					
201615	52.		I					S					
201620	53.		I					S					
201625	54		I					S					

RI-46

201630 55. I S
201635 56. I S
201640 57. I S
201645 58. I S
201650 59. I S
201655 60. I S
201700 61. I S
201705 62. I S
201710 63. I S
201715 64. I S
201720 65. I S
201725 66. I S
201730 67. I S
201735 68. I S
201740 69. I S
201745 70. I S
201750 71. I S
201755 72. I S
201800 73. I S
201805 74. I S
201810 75. I S
201815 76. I S
201820 77. I S
201825 78. I S
201830 79. I S
201835 80. I S
201840 81. I S
201845 82. I S
201850 83. I S
201855 84. I S
201900 85. I S
201905 86. I S
201910 87. I S
201915 88. I S
201920 89. I S
201925 90. I S
201930 91. I S
201935 92. I S
201940 93. I S
201945 94. I S
201950 95. I S
201955 96. I S
202000 97. I S
202005 98. I S
202010 99. I S
202015 100. I S
202020 101. I S
202025 102. I S
202030 103. I S
202035 104. I S
202040 105. I S
202045 106. I S
202050 107. I S
202055 108. I S
202100 109. I S
202105 110. I S
202110 111. I S
202115 112. I S
202120 113. I S
202125 114. I S
202130 115. I S
202135 116. I S
202140 117. I S
202145 118. I S
202150 119. I S
202155 120. I S


202200 121.
202205 122.
202210 123.
202215 124.
202220 125.
202225 126.
202230 127.
202235 128.
202240 129.
202245 130.
202250 131.
202255 132.
202300 133.
202305 134.
202310 135.
202315 136.
202320 137.
202325 138.
202330 139.
202335 140.
202340 141.
202345 142.
202350 143.
202355 144.
210000 145.
210005 146.
210010 147.
210015 148.
210020 149.
210025 150.
210030 151.
210035 152.
210040 153.
210045 154.
210050 155.
210055 156.
210100 157.
210105 158.
210110 159.
210115 160.
210120 161.
210125 162.
210130 163.
210135 164.
210140 165.
210145 166.
210150 167.
210155 168.
210200 169.
210205 170.
210210 171.
210215 172.
210220 173.
210225 174.
210230 175.
210235 176.
210240 177.
210245 178.
210250 179.
210255 180.
210300 181.
210305 182.
210310 183.
210315 184.
210320 185.
210325 186.

R1-48

```
210330 187.      .I                                                  S.
210335 188.      .I                                                  S.
210340 189.      .I                                                  S.
210345 190.      .I                                                  S.
210350 191.      .I                                                  S.
210355 192.      I0                                                  S.
210400 193.      I                                                   S.
210405 194.      I                                                   S.
210410 195.      I                                                   S.
210415 196.      I                                                   S.
210420 197.      I                                                   S.
210425 198.      I                                                   S.
210430 199.      I                                                   S.
210435 200.      I                                                   S.
210440 201.      I                                                   S.
210445 202.      I                                                   S.
210450 203.      I                                                   S.
210455 204.      I                                                   S.
210500 205.      I                                                   S.
210505 206.      I                                                   S.
210510 207.      I                                                   S.
210515 208.      I                                                   S.
210520 209.      I                                                   S.
210525 210.      I                                                   S.
210530 211.      I                                                   S.
210535 212.      I                                                   S.
210540 213.      I                                                   S.
210545 214.      I                                                   S.
210550 215.      I                                                   S.
210555 216.      I                                                   S.
210600 217.      I                                                   S.
210605 218.      I                                                   S.
210610 219.      I                                                   S.
210615 220.      I                                                   S.
210620 221.      I                                                   S.
210625 222.      I                                                   S.
210630 223.      I                                                   S.
210635 224.      I                                                   S.
210640 225.      I                                                   S.
210645 226.      I                                                   S.
210650 227.      I                                                   S.
210655 228.      I                                                   S.
210700 229.      I                                                   S.
210705 230.      I                                                   S.
210710 231.      I                                                   S.
210715 232.      I                                                   S.
210720 233.      I                                                   S.
210725 234.      I                                                   S.
210730 235.      I                                                   S.
210735 236.      I                                                   S.
210740 237.      I                                                   S.
210745 238.      I                                                   S.
210750 239.      I                                                   S.
210755 240.      I                                                   S.
210800 241.      I                                                   S.
210805 242.      I                                                   S.
210810 243.      I                                                   S.
210815 244.      I                                                   S.
210820 245.      I                                                   S.
210825 246.      I                                                   S.
210830 247.      I                                                   S.
210835 248.      I                                                   S.
210840 249.      I                                                   S.
210845 250.      I                                                   S.
210850 251.      I                                                   S.
210855 252.      I                                                   S.
```

```
210900 253.       I                                                  S
210905 254.       I                                                  S
210910 255.       I                                                  S
210915 256.       I                                                  S
210920 257.       I                                                  S
210925 258.       I                                                  S
210930 259.       I                                                  S
210935 260.       I                                                  S
210940 261.       I                                                  S
210945 262.       I                                                  S
210950 263.       I                                                  S
210955 264.       I                                                  S
211000 265.       I                                                  S
211005 266.       I                                                  S
211010 267.       I                                                  S
211015 268.       I                                                  S
211020 269.       I                                                  S
211025 270.       I                                                  S
211030 271.       I                                                  S
211035 272.       I                                                  S
211040 273.       I                                                  S
211045 274.       I                                                  S
211050 275.       I                                                  S
211055 276.       I                                                  S
211100 277.       I                                                  S
211105 278.       I                                                  S
211110 279.       I                                                  S
211115 280.       I                                                  S
211120 281.       I                                                  S
211125 282.       I                                                  S
211130 283.       I                                                  S
211135 284.       I                                                  S
211140 285.       I                                                  S
211145 286.       I                                                  S
211150 287.       I                                                  S
211155 288.       I                                                  S
211200 289.       I                                                  S
211205 290.       I                                                  S
211210 291.       I                                                  S
211215 292.       I                                                  S
211220 293.       I                                                  S
211225 294.       I                                                  S
211230 295.       I                                                  S
211235 296.       I                                                  S
211240 297.       I                                                  S
211245 298.       I                                                  S
211250 299.       I                                                  S
211255 300.-------I-------.-------.-------.-------.-------.-------.--S-.-------.-------.-------.-------.
```

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	OF1	6.	12.42	1.	0.	0.	.02		
ROUTED TO	CH1	6.	12.50	1.	0.	0.	.02		
HYDROGRAPH AT	A2	3.	12.42	0.	0.	0.	.01		
2 COMBINED AT	A2	9.	12.42	1.	0.	0.	.02		
ROUTED TO	ST1	9.	12.50	1.	0.	0.	.02		
HYDROGRAPH AT	A3	3.	12.42	0.	0.	0.	.01		
2 COMBINED AT	A3	12.	12.50	2.	0.	0.	.03		
HYDROGRAPH AT	OF2	5.	12.67	1.	0.	0.	.02		
ROUTED TO	CH2	5.	12.67	1.	0.	0.	.02		
HYDROGRAPH AT	OF3	1.	12.67	0.	0.	0.	.00		
2 COMBINED AT	OF3	6.	12.67	1.	0.	0.	.02		
2 COMBINED AT	OF3	17.	12.58	3.	1.	1.	.05		
HYDROGRAPH AT	A1	13.	12.58	2.	1.	1.	.03		
2 COMBINED AT	A1	31.	12.58	5.	1.	1.	.08		
ROUTED TO	P1	30.	12.58	5.	1.	1.	.08		
HYDROGRAPH AT	B1	1.	12.08	0.	0.	0.	.00		
2 COMBINED AT	B1	30.	12.58	5.	1.	1.	.08		
ROUTED TO	RES1	30.	12.67	7.	5.	4.	.08	23.17	12.67
ROUTED TO	CH3	30.	12.67	7.	5.	4.	.08		
HYDROGRAPH AT	B2	1.	12.08	0.	0.	0.	.00		
2 COMBINED AT	B2	30.	12.67	7.	5.	4.	.08		
ROUTED TO	RES2	32.	12.75	7.	5.	4.	.08	20.62	12.75
ROUTED TO	CH4	29.	12.75	7.	5.	4.	.08		
HYDROGRAPH AT	B345	9.	12.42	1.	0.	0.	.01		
2 COMBINED AT	B345	34.	12.75	8.	5.	5.	.09		
ROUTED TO	RES3	31.	12.83	8.	5.	5.	.09	16.62	12.83

Add To RUN*2

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
CH1	MANE	2.00	6.20	750.00	.53	5.00	6.20	750.00	.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4930E+00 EXCESS= .0000E+00 OUTFLOW= .4930E+00 BASIN STORAGE= .3153E-03 PERCENT ERROR= -.1

ST1	MANE	3.25	9.11	754.00	.60	5.00	9.02	750.00	.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7259E+00 EXCESS= .0000E+00 OUTFLOW= .7260E+00 BASIN STORAGE= .7201E-03 PERCENT ERROR= -.1

CH2	MANE	2.75	5.09	761.75	.53	5.00	5.08	760.00	.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5263E+00 EXCESS= .0000E+00 OUTFLOW= .5260E+00 BASIN STORAGE= .5692E-03 PERCENT ERROR= -.1

P1	MANE	1.12	30.36	756.58	.68	5.00	30.28	755.00	.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2920E+01 EXCESS= .0000E+00 OUTFLOW= .2919E+01 BASIN STORAGE= .7790E-03 PERCENT ERROR= .0

CH3	MANE	1.28	29.98	761.52	2.13	5.00	29.86	760.00	2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9218E+01 EXCESS= .0000E+00 OUTFLOW= .9206E+01 BASIN STORAGE= .1282E-01 PERCENT ERROR= .0

CH4	MANE	1.39	31.44	766.62	2.12	5.00	28.87	765.00	2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9246E+01 EXCESS= .0000E+00 OUTFLOW= .9233E+01 BASIN STORAGE= .1416E-01 PERCENT ERROR= .0

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

GRAND VIEW SUB.
(ADDENDUM 1)

```
*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE (HEC-1)     *
*           SEPTEMBER 1990              *
*            VERSION 4.0                *
*                                       *
* RUN DATE  06/20/1996  TIME  22:22:10  *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*       609 SECOND STREET               *
*     DAVIS, CALIFORNIA 95616           *
*         (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 " C, D & E
RUN #2

R2-1

```
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       5 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             88
 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             88
 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
          * **********
```

RZ-2

```
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              88
  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              88
  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              83
  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
          * **********
```

R2-3

```
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
```

RZ-4

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*          SEPTEMBER 1990               *
*            VERSION 4.0                *
*                                       *
*  RUN DATE  06/20/1996  TIME  22:22:10 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*   U.S. ARMY CORPS OF ENGINEERS        *
*   HYDROLOGIC ENGINEERING CENTER       *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*          (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	5	MINUTES IN COMPUTATION INTERVAL
IDATE	30JUN94	STARTING DATE
ITIME	1200	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1JUL94	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

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*            *
*      D123  *
*            *
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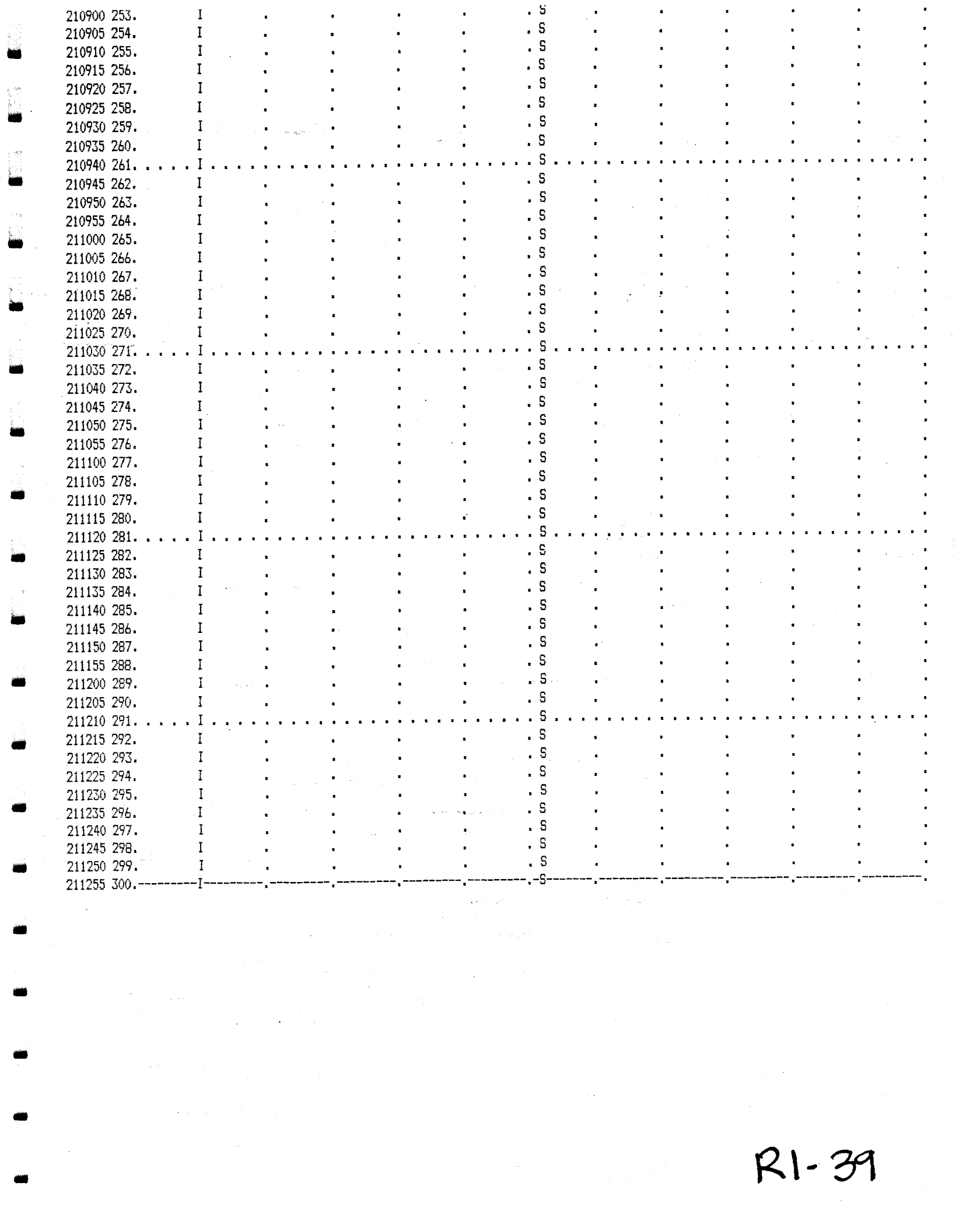
8 KO OUTPUT CONTROL VARIABLES

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

RZ-5


210900 253.
210905 254.
210910 255.
210915 256.
210920 257.
210925 258.
210930 259.
210935 260.
210940 261.
210945 262.
210950 263.
210955 264.
211000 265.
211005 266.
211010 267.
211015 268.
211020 269.
211025 270.
211030 271.
211035 272.
211040 273.
211045 274.
211050 275.
211055 276.
211100 277.
211105 278.
211110 279.
211115 280.
211120 281.
211125 282.
211130 283.
211135 284.
211140 285.
211145 286.
211150 287.
211155 288.
211200 289.
211205 290.
211210 291.
211215 292.
211220 293.
211225 294.
211230 295.
211235 296.
211240 297.
211245 298.
211250 299.
211255 300.

R1-39

	ISAV1	1	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

	STRTL	.27	INITIAL ABSTRACTION
	CRVNBR	88.00	CURVE NUMBER
	RTIMP	.00	PERCENT IMPERVIOUS AREA

12 UD SCS DIMENSIONLESS UNITGRAPH

	TLAG	.46	LAG

***

UNIT HYDROGRAPH
29 END-OF-PERIOD ORDINATES

1.	4.	9.	14.	17.	18.	17.	15.	12.	9.
7.	5.	4.	3.	2.	2.	1.	1.	1.	1.
0.	0.	0.	0.	0.	0.	0.	0.	0.	

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

HYDROGRAPH AT STATION D123

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
10.	12.58	(CFS)	2.	0.	0.	0.
		(INCHES)	.832	.973	.973	.973
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = .02 SQ MI

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*            *
*     CH1A   *
*            *
**************
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13 KK

15 KO OUTPUT CONTROL VARIABLES

	IPRNT	3	PRINT CONTROL
	IPLOT	1	PLOT CONTROL
	QSCAL	0.	HYDROGRAPH PLOT SCALE
	IPNCH	1	PUNCH COMPUTED HYDROGRAPH

RZ-6

IOUT	21	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	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

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 (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.50	1.34	1.90	157.50	10.44	754.36	.97	2.76

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	1.50	1.34	5.00		10.44	755.00	.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9699E+00 EXCESS= .0000E+00 OUTFLOW= .9696E+00 BASIN STORAGE= .4809E-03 PERCENT ERROR= .0

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

HYDROGRAPH AT STATION CH1A

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
10.	12.58	(CFS)	2.	0.	0.	0.
		(INCHES)	.832	.972	.972	.972
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = .02 SQ MI

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*            *
17 KK  *       D4  *
*            *
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19 KO OUTPUT CONTROL VARIABLES

IPRNT	3	PRINT CONTROL
IPLOT	1	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	1	PUNCH COMPUTED HYDROGRAPH

R2-7

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                  IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                 ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                 ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                TIMINT        .083  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         .27  INITIAL ABSTRACTION
                CRVNBR       88.00  CURVE NUMBER
                 RTIMP         .00  PERCENT IMPERVIOUS AREA

  23 UD        SCS DIMENSIONLESS UNITGRAPH
                  TLAG         .48  LAG

                                                  ***

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

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

                    HYDROGRAPH AT STATION       D4

   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
      2.       12.58        (CFS)      0.          0.          0.          0.
                          (INCHES)   .832        .972        .972        .972
                          (AC-FT)      0.          0.          0.          0.

                       CUMULATIVE AREA =     .00 SQ MI


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


             **************
             *            *
  24 KK      *      D4    *
             *            *
             **************

  26 KO        OUTPUT CONTROL VARIABLES
                IPRNT           3  PRINT CONTROL
                IPLOT           1  PLOT CONTROL
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RZ-8

	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	.083	TIME INTERVAL IN HOURS

27 HC HYDROGRAPH COMBINATION

	ICOMP	2	NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION D4

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
12.	12.58	(CFS)	2.	1.	1.	1.
		(INCHES)	.832	.972	.972	.972
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = .02 SQ MI

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*            *
*      RES4  *
*            *
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28 KK

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	.083	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

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

R2-9

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						

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HYDROGRAPH AT STATION RES4

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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	2020	101	0.	.0	18.3	1	JUL	0440	201	1.	.8	23.0
30	JUN	1205	2	0.	.0	18.3	30	JUN	2025	102	0.	.0	18.3	1	JUL	0445	202	1.	.8	23.0
30	JUN	1210	3	0.	.0	18.3	30	JUN	2030	103	0.	.0	18.3	1	JUL	0450	203	1.	.8	23.0
30	JUN	1215	4	0.	.0	18.3	30	JUN	2035	104	0.	.0	18.3	1	JUL	0455	204	1.	.8	23.0
30	JUN	1220	5	0.	.0	18.3	30	JUN	2040	105	0.	.0	18.3	1	JUL	0500	205	1.	.8	23.0
30	JUN	1225	6	0.	.0	18.3	30	JUN	2045	106	0.	.0	18.3	1	JUL	0505	206	1.	.8	22.9
30	JUN	1230	7	0.	.0	18.3	30	JUN	2050	107	0.	.0	18.3	1	JUL	0510	207	1.	.7	22.9
30	JUN	1235	8	0.	.0	18.3	30	JUN	2055	108	0.	.0	18.3	1	JUL	0515	208	1.	.7	22.9
30	JUN	1240	9	0.	.0	18.3	30	JUN	2100	109	0.	.0	18.3	1	JUL	0520	209	1.	.7	22.9
30	JUN	1245	10	0.	.0	18.3	30	JUN	2105	110	0.	.0	18.3	1	JUL	0525	210	1.	.7	22.9
30	JUN	1250	11	0.	.0	18.3	30	JUN	2110	111	0.	.0	18.3	1	JUL	0530	211	1.	.7	22.9
30	JUN	1255	12	0.	.0	18.3	30	JUN	2115	112	0.	.0	18.3	1	JUL	0535	212	1.	.7	22.9
30	JUN	1300	13	0.	.0	18.3	30	JUN	2120	113	0.	.0	18.3	1	JUL	0540	213	1.	.7	22.9
30	JUN	1305	14	0.	.0	18.3	30	JUN	2125	114	0.	.0	18.3	1	JUL	0545	214	1.	.7	22.9
30	JUN	1310	15	0.	.0	18.3	30	JUN	2130	115	0.	.0	18.3	1	JUL	0550	215	1.	.7	22.9
30	JUN	1315	16	0.	.0	18.3	30	JUN	2135	116	0.	.0	18.3	1	JUL	0555	216	1.	.7	22.8
30	JUN	1320	17	0.	.0	18.3	30	JUN	2140	117	0.	.0	18.3	1	JUL	0600	217	1.	.7	22.8
30	JUN	1325	18	0.	.0	18.3	30	JUN	2145	118	0.	.0	18.3	1	JUL	0605	218	1.	.7	22.8
30	JUN	1330	19	0.	.0	18.3	30	JUN	2150	119	0.	.0	18.3	1	JUL	0610	219	1.	.7	22.8
30	JUN	1335	20	0.	.0	18.3	30	JUN	2155	120	0.	.0	18.3	1	JUL	0615	220	1.	.7	22.8
30	JUN	1340	21	0.	.0	18.3	30	JUN	2200	121	0.	.0	18.3	1	JUL	0620	221	1.	.7	22.8
30	JUN	1345	22	0.	.0	18.3	30	JUN	2205	122	0.	.0	18.3	1	JUL	0625	222	1.	.7	22.8
30	JUN	1350	23	0.	.0	18.3	30	JUN	2210	123	0.	.0	18.3	1	JUL	0630	223	1.	.7	22.8
30	JUN	1355	24	0.	.0	18.3	30	JUN	2215	124	0.	.0	18.3	1	JUL	0635	224	1.	.7	22.8
30	JUN	1400	25	0.	.0	18.3	30	JUN	2220	125	0.	.0	18.3	1	JUL	0640	225	1.	.7	22.7
30	JUN	1405	26	0.	.0	18.3	30	JUN	2225	126	0.	.0	18.3	1	JUL	0645	226	1.	.7	22.7
30	JUN	1410	27	0.	.0	18.3	30	JUN	2230	127	0.	.0	18.3	1	JUL	0650	227	1.	.7	22.7

RZ-10

30 JUN 1415	28	0.	.0	18.3 * 30 JUN 2235 128	0.	.0	18.3 * 1 JUL 0655 228	1.	.7	22.7
30 JUN 1420	29	0.	.0	18.3 * 30 JUN 2240 129	0.	.0	18.3 * 1 JUL 0700 229	1.	.7	22.7
30 JUN 1425	30	0.	.0	18.3 * 30 JUN 2245 130	0.	.0	18.3 * 1 JUL 0705 230	1.	.7	22.7
30 JUN 1430	31	0.	.0	18.3 * 30 JUN 2250 131	0.	.0	18.3 * 1 JUL 0710 231	1.	.7	22.7
30 JUN 1435	32	0.	.0	18.3 * 30 JUN 2255 132	0.	.0	18.3 * 1 JUL 0715 232	1.	.7	22.7
30 JUN 1440	33	0.	.0	18.3 * 30 JUN 2300 133	0.	.0	18.3 * 1 JUL 0720 233	1.	.7	22.7
30 JUN 1445	34	0.	.0	18.3 * 30 JUN 2305 134	0.	.0	18.3 * 1 JUL 0725 234	1.	.7	22.7
30 JUN 1450	35	0.	.0	18.3 * 30 JUN 2310 135	0.	.0	18.3 * 1 JUL 0730 235	1.	.7	22.7
30 JUN 1455	36	0.	.0	18.3 * 30 JUN 2315 136	0.	.0	18.3 * 1 JUL 0735 236	1.	.7	22.7
30 JUN 1500	37	0.	.0	18.3 * 30 JUN 2320 137	0.	.0	18.3 * 1 JUL 0740 237	1.	.7	22.7
30 JUN 1505	38	0.	.0	18.3 * 30 JUN 2325 138	0.	.0	18.3 * 1 JUL 0745 238	1.	.7	22.7
30 JUN 1510	39	0.	.0	18.3 * 30 JUN 2330 139	0.	.0	18.3 * 1 JUL 0750 239	1.	.7	22.6
30 JUN 1515	40	0.	.0	18.3 * 30 JUN 2335 140	0.	.0	18.3 * 1 JUL 0755 240	1.	.7	22.6
30 JUN 1520	41	0.	.0	18.3 * 30 JUN 2340 141	0.	.0	18.3 * 1 JUL 0800 241	1.	.7	22.6
30 JUN 1525	42	0.	.0	18.3 * 30 JUN 2345 142	0.	.0	18.3 * 1 JUL 0805 242	1.	.7	22.6
30 JUN 1530	43	0.	.0	18.3 * 30 JUN 2350 143	0.	.0	18.3 * 1 JUL 0810 243	1.	.7	22.6
30 JUN 1535	44	0.	.0	18.3 * 30 JUN 2355 144	0.	.0	18.4 * 1 JUL 0815 244	1.	.7	22.6
30 JUN 1540	45	0.	.0	18.3 * 1 JUL 0000 145	0.	.0	18.4 * 1 JUL 0820 245	1.	.7	22.6
30 JUN 1545	46	0.	.0	18.3 * 1 JUL 0005 146	0.	.0	18.5 * 1 JUL 0825 246	1.	.7	22.6
30 JUN 1550	47	0.	.0	18.3 * 1 JUL 0010 147	0.	.1	18.8 * 1 JUL 0830 247	1.	.7	22.6
30 JUN 1555	48	0.	.0	18.3 * 1 JUL 0015 148	0.	.1	19.2 * 1 JUL 0835 248	1.	.7	22.6
30 JUN 1600	49	0.	.0	18.3 * 1 JUL 0020 149	0.	.1	20.6 * 1 JUL 0840 249	1.	.7	22.6
30 JUN 1605	50	0.	.0	18.3 * 1 JUL 0025 150	0.	.2	20.8 * 1 JUL 0845 250	1.	.6	22.6
30 JUN 1610	51	0.	.0	18.3 * 1 JUL 0030 151	0.	.3	21.0 * 1 JUL 0850 251	1.	.6	22.6
30 JUN 1615	52	0.	.0	18.3 * 1 JUL 0035 152	1.	.4	21.3 * 1 JUL 0855 252	1.	.6	22.6
30 JUN 1620	53	0.	.0	18.3 * 1 JUL 0040 153	1.	.4	21.6 * 1 JUL 0900 253	1.	.6	22.5
30 JUN 1625	54	0.	.0	18.3 * 1 JUL 0045 154	1.	.5	22.0 * 1 JUL 0905 254	1.	.6	22.5
30 JUN 1630	55	0.	.0	18.3 * 1 JUL 0050 155	1.	.6	22.3 * 1 JUL 0910 255	1.	.6	22.5
30 JUN 1635	56	0.	.0	18.3 * 1 JUL 0055 156	1.	.6	22.5 * 1 JUL 0915 256	1.	.6	22.5
30 JUN 1640	57	0.	.0	18.3 * 1 JUL 0100 157	1.	.7	22.7 * 1 JUL 0920 257	1.	.6	22.5
30 JUN 1645	58	0.	.0	18.3 * 1 JUL 0105 158	1.	.7	22.8 * 1 JUL 0925 258	1.	.6	22.5
30 JUN 1650	59	0.	.0	18.3 * 1 JUL 0110 159	1.	.7	22.9 * 1 JUL 0930 259	1.	.6	22.5
30 JUN 1655	60	0.	.0	18.3 * 1 JUL 0115 160	1.	.8	23.0 * 1 JUL 0935 260	1.	.6	22.5
30 JUN 1700	61	0.	.0	18.3 * 1 JUL 0120 161	1.	.8	23.0 * 1 JUL 0940 261	1.	.6	22.5
30 JUN 1705	62	0.	.0	18.3 * 1 JUL 0125 162	1.	.8	23.1 * 1 JUL 0945 262	1.	.6	22.5
30 JUN 1710	63	0.	.0	18.3 * 1 JUL 0130 163	1.	.8	23.1 * 1 JUL 0950 263	1.	.6	22.5
30 JUN 1715	64	0.	.0	18.3 * 1 JUL 0135 164	1.	.8	23.2 * 1 JUL 0955 264	1.	.6	22.5
30 JUN 1720	65	0.	.0	18.3 * 1 JUL 0140 165	1.	.8	23.2 * 1 JUL 1000 265	1.	.6	22.4
30 JUN 1725	66	0.	.0	18.3 * 1 JUL 0145 166	1.	.8	23.2 * 1 JUL 1005 266	1.	.6	22.4
30 JUN 1730	67	0.	.0	18.3 * 1 JUL 0150 167	1.	.8	23.2 * 1 JUL 1010 267	1.	.6	22.4
30 JUN 1735	68	0.	.0	18.3 * 1 JUL 0155 168	1.	.8	23.2 * 1 JUL 1015 268	1.	.6	22.4
30 JUN 1740	69	0.	.0	18.3 * 1 JUL 0200 169	1.	.8	23.2 * 1 JUL 1020 269	1.	.6	22.4
30 JUN 1745	70	0.	.0	18.3 * 1 JUL 0205 170	1.	.8	23.2 * 1 JUL 1025 270	1.	.6	22.4
30 JUN 1750	71	0.	.0	18.3 * 1 JUL 0210 171	1.	.8	23.2 * 1 JUL 1030 271	1.	.6	22.4
30 JUN 1755	72	0.	.0	18.3 * 1 JUL 0215 172	1.	.8	23.2 * 1 JUL 1035 272	1.	.6	22.4
30 JUN 1800	73	0.	.0	18.3 * 1 JUL 0220 173	1.	.8	23.2 * 1 JUL 1040 273	1.	.6	22.4
30 JUN 1805	74	0.	.0	18.3 * 1 JUL 0225 174	1.	.8	23.2 * 1 JUL 1045 274	1.	.6	22.4
30 JUN 1810	75	0.	.0	18.3 * 1 JUL 0230 175	1.	.8	23.2 * 1 JUL 1050 275	1.	.6	22.4
30 JUN 1815	76	0.	.0	18.3 * 1 JUL 0235 176	1.	.8	23.2 * 1 JUL 1055 276	1.	.6	22.4
30 JUN 1820	77	0.	.0	18.3 * 1 JUL 0240 177	1.	.8	23.2 * 1 JUL 1100 277	1.	.6	22.3
30 JUN 1825	78	0.	.0	18.3 * 1 JUL 0245 178	1.	.8	23.2 * 1 JUL 1105 278	1.	.6	22.3
30 JUN 1830	79	0.	.0	18.3 * 1 JUL 0250 179	1.	.8	23.2 * 1 JUL 1110 279	1.	.6	22.3
30 JUN 1835	80	0.	.0	18.3 * 1 JUL 0255 180	1.	.8	23.2 * 1 JUL 1115 280	1.	.6	22.3
30 JUN 1840	81	0.	.0	18.3 * 1 JUL 0300 181	1.	.8	23.2 * 1 JUL 1120 281	1.	.6	22.3
30 JUN 1845	82	0.	.0	18.3 * 1 JUL 0305 182	1.	.8	23.2 * 1 JUL 1125 282	1.	.6	22.3
30 JUN 1850	83	0.	.0	18.3 * 1 JUL 0310 183	1.	.8	23.2 * 1 JUL 1130 283	1.	.6	22.3
30 JUN 1855	84	0.	.0	18.3 * 1 JUL 0315 184	1.	.8	23.1 * 1 JUL 1135 284	1.	.6	22.3
30 JUN 1900	85	0.	.0	18.3 * 1 JUL 0320 185	1.	.8	23.1 * 1 JUL 1140 285	1.	.6	22.3
30 JUN 1905	86	0.	.0	18.3 * 1 JUL 0325 186	1.	.8	23.1 * 1 JUL 1145 286	1.	.6	22.3
30 JUN 1910	87	0.	.0	18.3 * 1 JUL 0330 187	1.	.8	23.1 * 1 JUL 1150 287	1.	.6	22.3
30 JUN 1915	88	0.	.0	18.3 * 1 JUL 0335 188	1.	.8	23.1 * 1 JUL 1155 288	1.	.6	22.2
30 JUN 1920	89	0.	.0	18.3 * 1 JUL 0340 189	1.	.8	23.1 * 1 JUL 1200 289	1.	.6	22.2
30 JUN 1925	90	0.	.0	18.3 * 1 JUL 0345 190	1.	.8	23.1 * 1 JUL 1205 290	1.	.6	22.2
30 JUN 1930	91	0.	.0	18.3 * 1 JUL 0350 191	1.	.8	23.1 * 1 JUL 1210 291	1.	.6	22.2
30 JUN 1935	92	0.	.0	18.3 * 1 JUL 0355 192	1.	.8	23.1 * 1 JUL 1215 292	1.	.6	22.2
30 JUN 1940	93	0.	.0	18.3 * 1 JUL 0400 193	1.	.8	23.1 * 1 JUL 1220 293	1.	.6	22.2

30	JUN	1945	94	0.	.0	18.3	*	1	JUL	0405	194	1.	.8	23.1	*	1	JUL	1225	294	1.	.5	22.2
30	JUN	1950	95	0.	.0	18.3	*	1	JUL	0410	195	1.	.8	23.1	*	1	JUL	1230	295	1.	.5	22.2
30	JUN	1955	96	0.	.0	18.3	*	1	JUL	0415	196	1.	.8	23.0	*	1	JUL	1235	296	1.	.5	22.1
30	JUN	2000	97	0.	.0	18.3	*	1	JUL	0420	197	1.	.8	23.0	*	1	JUL	1240	297	1.	.5	22.1
30	JUN	2005	98	0.	.0	18.3	*	1	JUL	0425	198	1.	.8	23.0	*	1	JUL	1245	298	1.	.5	22.1
30	JUN	2010	99	0.	.0	18.3	*	1	JUL	0430	199	1.	.8	23.0	*	1	JUL	1250	299	1.	.5	22.1
30	JUN	2015	100	0.	.0	18.3	*	1	JUL	0435	200	1.	.8	23.0	*	1	JUL	1255	300	1.	.5	22.1
							*								*							

****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
1.	13.83	(CFS)	1.	0.	0.	0.
		(INCHES)	.272	.555	.555	.555
		(AC-FT)	0.	1.	1.	1.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	24.92-HR
1.	14.08	1.	0.	0.	0.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	24.92-HR
23.20	14.17	23.01	20.60	20.52	20.52

CUMULATIVE AREA = .02 SQ MI

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STATION RES4

(I) INFLOW, (O) OUTFLOW (S) STORAGE

	0.	2.	4.	6.	8.	10.	12.	14.	0.	0.	0.	0.	0.
	.0	.0	.0	.0	.0	.0	.0	.2	.4	.6	.8	1.0	.0
DAHRMN	PER												
301200	1I						S						
301205	2I						S						
301210	3I						S						
301215	4I						S						
301220	5I						S						
301225	6I						S						
301230	7I						S						
301235	8I						S						
301240	9I						S						
301245	10I						S						
301250	11I						S						
301255	12I						S						
301300	13I						S						
301305	14I						S						
301310	15I						S						
301315	16I						S						
301320	17I						S						
301325	18I						S						
301330	19I						S						
301335	20I						S						
301340	21I						S						
301345	22I						S						
301350	23I						S						
301355	24I						S						
301400	25I						S						
301405	26I						S						
301410	27I						S						
301415	28I						S						
301420	29I						S						
301425	30I						S						
301430	31I						S						
301435	32I						S						
301440	33I						S						
301445	34I						S						
301450	35I						S						
301455	36I						S						
301500	37I						S						
301505	38I						S						
301510	39I						S						
301515	40I						S						
301520	41I						S						
301525	42I						S						
301530	43I						S						
301535	44I						S						
301540	45I						S						
301545	46I						S						
301550	47I						S						
301555	48I						S						
301600	49I						S						
301605	50I						S						
301610	51I						S						
301615	52I						S						
301620	53I						S						
301625	54I						S						

R2-13

301630 55I . . . . . S
301635 56I . . . . . S
301640 57I . . . . . S
301645 58I . . . . . S
301650 59I . . . . . S
301655 60I . . . . . S
301700 61I . . . . . S
301705 62I . . . . . S
301710 63I . . . . . S
301715 64I . . . . . S
301720 65I . . . . . S
301725 66I . . . . . S
301730 67I . . . . . S
301735 68I . . . . . S
301740 69I . . . . . S
301745 70I . . . . . S
301750 71I . . . . . S
301755 72I . . . . . S
301800 73I . . . . . S
301805 74I . . . . . S
301810 75I . . . . . S
301815 76I . . . . . S
301820 77I . . . . . S
301825 78I . . . . . S
301830 79I . . . . . S
301835 80I . . . . . S
301840 81I . . . . . S
301845 82I . . . . . S
301850 83I . . . . . S
301855 84I . . . . . S
301900 85I . . . . . S
301905 86I . . . . . S
301910 87I . . . . . S
301915 88I . . . . . S
301920 89I . . . . . S
301925 90I . . . . . S
301930 91I . . . . . S
301935 92I . . . . . S
301940 93I . . . . . S
301945 94I . . . . . S
301950 95I . . . . . S
301955 96I . . . . . S
302000 97I . . . . . S
302005 98I . . . . . S
302010 99I . . . . . S
302015 100I . . . . . S
302020 101I . . . . . S
302025 102I . . . . . S
302030 103I . . . . . S
302035 104I . . . . . S
302040 105I . . . . . S
302045 106I . . . . . S
302050 107I . . . . . S
302055 108I . . . . . S
302100 109I . . . . . S
302105 110I . . . . . S
302110 111I . . . . . S
302115 112I . . . . . S
302120 113I . . . . . S
302125 114I . . . . . S
302130 115I . . . . . S
302135 116I . . . . . S
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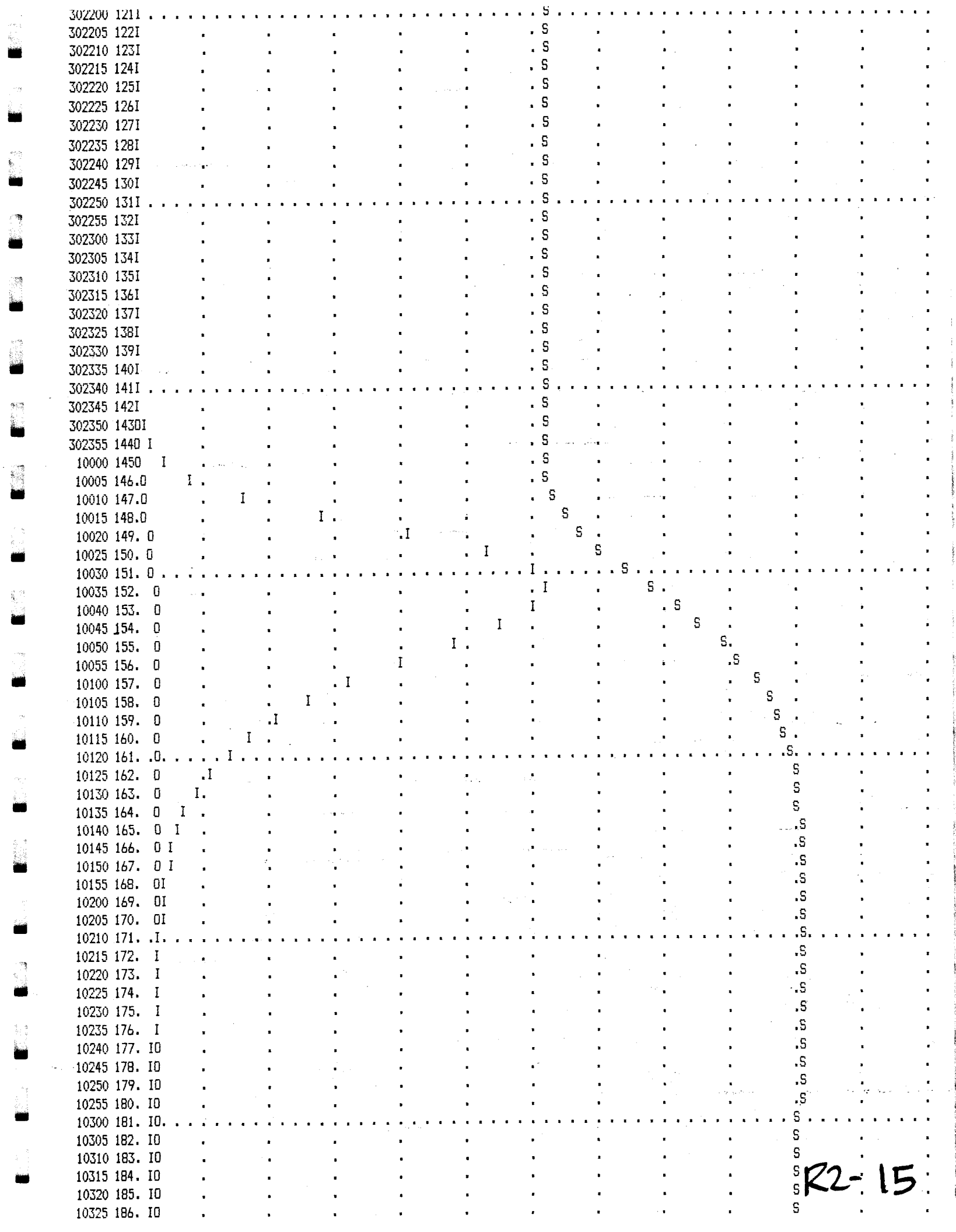
302145 118I . . . . . S
302150 119I . . . . . S
302155 120I . . . . . S

RL-14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302205 122I
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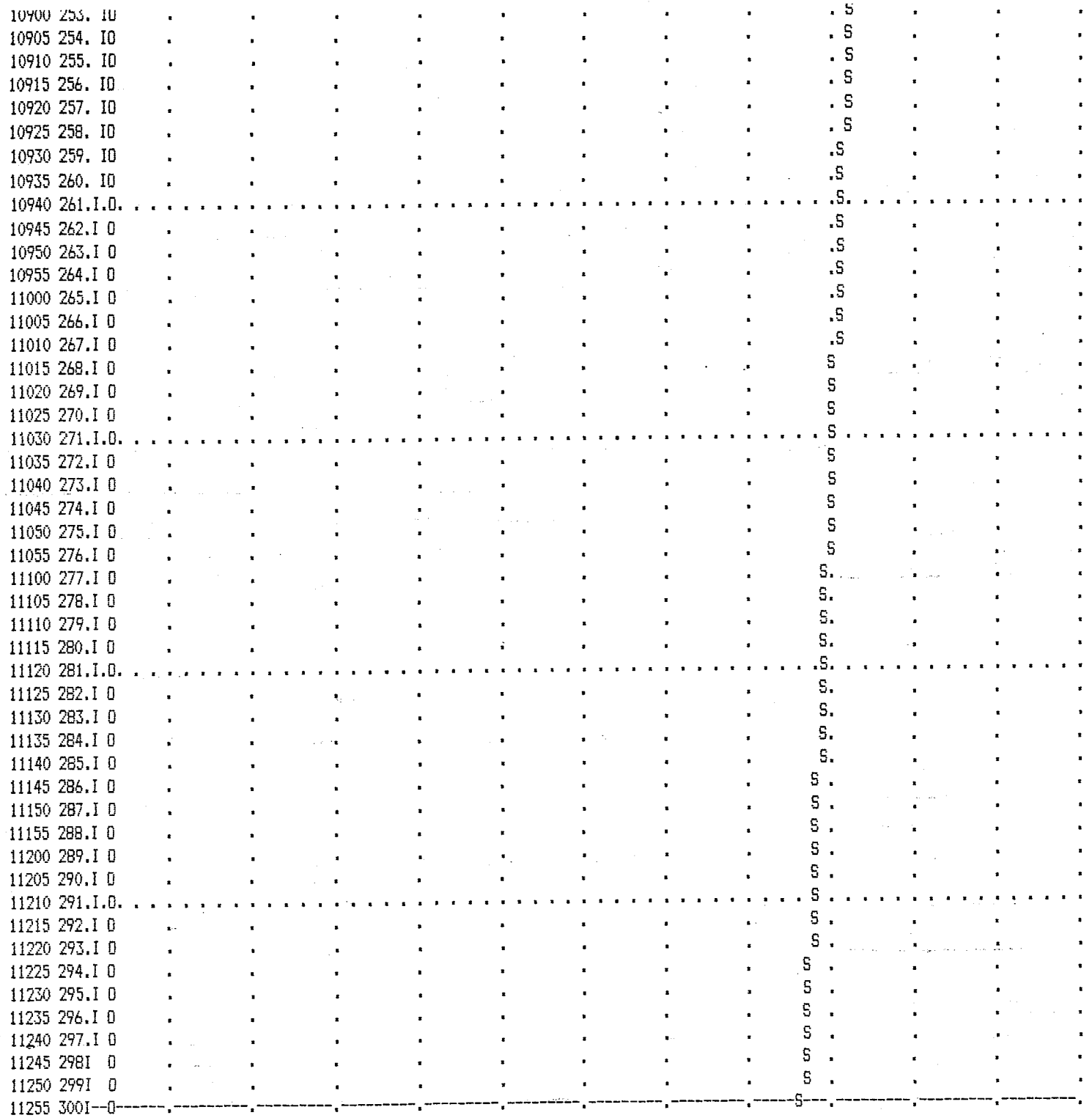
302235 128I
302240 129I
302245 130I
302250 131I
302255 132I
302300 133I
302305 134I
302310 135I
302315 136I
302320 137I
302325 138I
302330 139I
302335 140I
302340 141I
302345 142I
302350 1430I
302355 1440 I
10000 1450 I
10005 146.0 I
10010 147.0 I
10015 148.0 I
10020 149. 0 I
10025 150. 0 I
10030 151. 0 I
10035 152. 0 I
10040 153. 0 I
10045 154. 0 I
10050 155. 0 I
10055 156. 0 I
10100 157. 0 I
10105 158. 0 I
10110 159. 0 I
10115 160. 0 I
10120 161. 0 I
10125 162. 0 I
10130 163. 0 I
10135 164. 0 I
10140 165. 0 I
10145 166. 0 I
10150 167. 0 I
10155 168. 0I
10200 169. 0I
10205 170. 0I
10210 171. I
10215 172. I
10220 173. I
10225 174. I
10230 175. I
10235 176. I
10240 177. I0
10245 178. I0
10250 179. I0
10255 180. I0
10300 181. I0
10305 182. I0
10310 183. I0
10315 184. I0
10320 185. I0
10325 186. I0
S
R2-15

```
10330 187. IO                                                    S
10335 188. IO                                                    S
10340 189. IO                                                    S
10345 190. IO                                                    S
10350 191. IO                                                    S
10355 192. IO                                                    S
10400 193. IO                                                    S
10405 194. IO                                                    S
10410 195.I O                                                    S
10415 196.I O                                                    S
10420 197.I O                                                    S
10425 198.I O                                                    S
10430 199.I O                                                   S
10435 200.I O                                                   S
10440 201.I.O                                                   S
10445 202.I O                                                   S
10450 203.I O                                                   S
10455 204.I O                                                   S
10500 205.I O                                                   S
10505 206.I O                                                   S
10510 207.I O                                                  S
10515 208.I O                                                  S
10520 209.I O                                                  S
10525 210.I O                                                  S
10530 211.I.O                                                  S
10535 212.I O                                                  S
10540 213.I O                                                  S
10545 214.I O                                                 S
10550 215.I O                                                 S
10555 216.I O                                                 S
10600 217.I O                                                 S
10605 218.I O                                                 S
10610 219.I O                                                 S
10615 220.I O                                                 S
10620 221.I.O                                                 S
10625 222.I O                                                  S
10630 223.I O                                                  S
10635 224.I O                                                  S
10640 225. IO                                                  S
10645 226. IO                                                  S
10650 227. IO                                                  S
10655 228. IO                                                  S
10700 229. IO                                                 S
10705 230. IO                                                 S
10710 231. IO                                                 S
10715 232. IO                                                  S
10720 233. IO                                                  S
10725 234. IO                                                  S
10730 235. IO                                                  S
10735 236. IO                                                  S
10740 237. IO                                                  S
10745 238. IO                                                  S
10750 239. IO                                                  S
10755 240. IO                                                 S
10800 241. IO                                                 S
10805 242. IO                                                  S
10810 243. IO                                                  S
10815 244. IO                                                  S
10820 245. IO                                                  S
10825 246. IO                                                  S
10830 247. IO                                                  S
10835 248. IO                                                  S
10840 249. IO                                                  S
10845 250. IO                                                 S
10850 251. IO                                                 S
10855 252. IO                                                 S
```

RZ-16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10925 258. IO
10930 259. IO
10935 260. IO
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10945 262.I O
10950 263.I O
10955 264.I O
11000 265.I O
11005 266.I O
11010 267.I O
11015 268.I O
11020 269.I O
11025 270.I O
11030 271.I.O.
11035 272.I O
11040 273.I O
11045 274.I O
11050 275.I O
11055 276.I O
11100 277.I O
11105 278.I O
11110 279.I O
11115 280.I O
11120 281.I.O.
11125 282.I O
11130 283.I O
11135 284.I O
11140 285.I O
11145 286.I O
11150 287.I O
11155 288.I O
11200 289.I O
11205 290.I O
11210 291.I.O.
11215 292.I O
11220 293.I O
11225 294.I O
11230 295.I O
11235 296.I O
11240 297.I O
11245 298I O
11250 299I O
11255 300I--O

R2-17

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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	.083	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 (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	4.92	1.25	3.04	327.50	.67	851.14	.55	3.59
			INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL					
MAIN	4.92	1.25	5.00		.67	855.00	.55	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6587E+00 EXCESS= .0000E+00 OUTFLOW= .6560E+00 BASIN STORAGE= .2736E-02 PERCENT ERROR= .0

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

HYDROGRAPH AT STATION P1A

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR

R2-18

```
  1.    13.92      (CFS)        1.         0.         0.         0.
                 (INCHES)     .272       .552       .552       .552
                  (AC-FT)       0.         1.         1.         1.

                 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        .083  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          .27  INITIAL ABSTRACTION
                  CRVNBR        88.00  CURVE NUMBER
                   RTIMP          .00  PERCENT IMPERVIOUS AREA

 46 UD        SCS DIMENSIONLESS UNITGRAPH
                    TLAG          .61  LAG

                                                    ***

                                             UNIT HYDROGRAPH
                                         38 END-OF-PERIOD ORDINATES
              0.        1.        1.        2.        3.        3.        4.        4.        3.        3.
              3.        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       C2

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

R2-19

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
2.	12.75	(CFS)	0.	0.	0.	0.
		(INCHES)	.830	.971	.971	.971
		(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	.083	TIME INTERVAL IN HOURS

50 HC HYDROGRAPH COMBINATION

ICOMP	2	NUMBER OF HYDROGRAPHS TO COMBINE

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                                                  ***

    ***           ***           ***           ***           ***
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HYDROGRAPH AT STATION C2

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
3.	12.75	(CFS)	1.	0.	0.	0.
		(INCHES)	.362	.628	.628	.628
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = .03 SQ MI

*** ***

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          **************
          *            *
51 KK     *       C13  *
          *            *
          **************
```

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	.083	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	.27	INITIAL ABSTRACTION
CRVNBR	88.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

57 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.47	LAG

***

UNIT HYDROGRAPH
30 END-OF-PERIOD ORDINATES

1.	4.	9.	14.	18.	19.	19.	17.	14.	10.
8.	6.	5.	4.	3.	2.	2.	1.	1.	1.
1.	0.	0.	0.	0.	0.	0.	0.	0.	0.

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

HYDROGRAPH AT STATION C13

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
11.	12.58	(CFS)	2.	1.	1.	1.
		(INCHES)	.832	.972	.972	.972
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = .02 SQ MI

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*            *
*      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

R2-21

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                   IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                  ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                  ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                 TIMINT        .083  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     24.92-HR
      14.     12.58     (CFS)        3.          1.          1.           1.
                      (INCHES)     .561        .776        .776         .776
                       (AC-FT)       1.          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        .083  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

                                                          ***
                         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       .72     138.50    13.98    755.76       .78       6.40
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RZ-22

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	4.73	1.25	5.00	13.93	755.00	.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1979E+01 EXCESS= .0000E+00 OUTFLOW= .1978E+01 BASIN STORAGE= .1287E-02 PERCENT ERROR= .0

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

HYDROGRAPH AT STATION P2A

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
14.	12.58	(CFS)	3.	1.	1.	1.
		(INCHES)	.561	.776	.776	.776
		(AC-FT)	1.	2.	2.	2.

CUMULATIVE AREA = .05 SQ MI

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          ***************
          *             *
66 KK     *       E1    *
          *             *
          ***************
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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	.083	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

STORM AREA = .00

71 LS SCS LOSS RATE

STRTL	.41	INITIAL ABSTRACTION
CRVNBR	83.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

R2-23

72 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .13 LAG

***

UNIT HYDROGRAPH
10 END-OF-PERIOD ORDINATES

1.	3.	2.	1.	0.	0.	0.	0.	0.	0.

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

HYDROGRAPH AT STATION E1

TOTAL RAINFALL = 2.01, TOTAL LOSS = 1.31, TOTAL EXCESS = .70

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
1.	12.17	(CFS)	0.	0.	0.	0.
		(INCHES)	.590	.702	.702	.702
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

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         **************
         *            *
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	.083	TIME INTERVAL IN HOURS

76 HC HYDROGRAPH COMBINATION

ICOMP	2	NUMBER OF HYDROGRAPHS TO COMBINE

***

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

HYDROGRAPH AT STATION E1

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
14.	12.58	(CFS)	3.	1.	1.	1.
		(INCHES)	.562	.775	.775	.775
		(AC-FT)	1.	2.	2.	2.

CUMULATIVE AREA = .05 SQ MI

RZ-24

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          **************
          *            *
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       .083  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

      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
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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	2020	101	0.	.0	12.0	1	JUL	0440	201	1.	.5	16.1
30	JUN	1205	2	0.	.0	12.0	30	JUN	2025	102	0.	.0	12.0	1	JUL	0445	202	1.	.5	16.0
30	JUN	1210	3	0.	.0	12.0	30	JUN	2030	103	0.	.0	12.0	1	JUL	0450	203	1.	.5	16.0
30	JUN	1215	4	0.	.0	12.0	30	JUN	2035	104	0.	.0	12.0	1	JUL	0455	204	1.	.5	16.0
30	JUN	1220	5	0.	.0	12.0	30	JUN	2040	105	0.	.0	12.0	1	JUL	0500	205	1.	.5	16.0
30	JUN	1225	6	0.	.0	12.0	30	JUN	2045	106	0.	.0	12.0	1	JUL	0505	206	1.	.5	16.0
30	JUN	1230	7	0.	.0	12.0	30	JUN	2050	107	0.	.0	12.0	1	JUL	0510	207	1.	.5	16.0
30	JUN	1235	8	0.	.0	12.0	30	JUN	2055	108	0.	.0	12.0	1	JUL	0515	208	1.	.5	16.0
30	JUN	1240	9	0.	.0	12.0	30	JUN	2100	109	0.	.0	12.0	1	JUL	0520	209	1.	.5	16.0
30	JUN	1245	10	0.	.0	12.0	30	JUN	2105	110	0.	.0	12.0	1	JUL	0525	210	1.	.5	16.0
30	JUN	1250	11	0.	.0	12.0	30	JUN	2110	111	0.	.0	12.0	1	JUL	0530	211	1.	.5	16.0
30	JUN	1255	12	0.	.0	12.0	30	JUN	2115	112	0.	.0	12.0	1	JUL	0535	212	1.	.5	16.0
30	JUN	1300	13	0.	.0	12.0	30	JUN	2120	113	0.	.0	12.0	1	JUL	0540	213	1.	.5	16.0
30	JUN	1305	14	0.	.0	12.0	30	JUN	2125	114	0.	.0	12.0	1	JUL	0545	214	1.	.5	16.0
30	JUN	1310	15	0.	.0	12.0	30	JUN	2130	115	0.	.0	12.0	1	JUL	0550	215	1.	.5	16.0
30	JUN	1315	16	0.	.0	12.0	30	JUN	2135	116	0.	.0	12.0	1	JUL	0555	216	1.	.5	16.0
30	JUN	1320	17	0.	.0	12.0	30	JUN	2140	117	0.	.0	12.0	1	JUL	0600	217	1.	.5	16.0
30	JUN	1325	18	0.	.0	12.0	30	JUN	2145	118	0.	.0	12.0	1	JUL	0605	218	1.	.5	16.0
30	JUN	1330	19	0.	.0	12.0	30	JUN	2150	119	0.	.0	12.0	1	JUL	0610	219	1.	.5	16.0
30	JUN	1335	20	0.	.0	12.0	30	JUN	2155	120	0.	.0	12.0	1	JUL	0615	220	1.	.5	16.0
30	JUN	1340	21	0.	.0	12.0	30	JUN	2200	121	0.	.0	12.0	1	JUL	0620	221	1.	.5	16.0
30	JUN	1345	22	0.	.0	12.0	30	JUN	2205	122	0.	.0	12.0	1	JUL	0625	222	1.	.5	16.0
30	JUN	1350	23	0.	.0	12.0	30	JUN	2210	123	0.	.0	12.0	1	JUL	0630	223	1.	.5	16.0
30	JUN	1355	24	0.	.0	12.0	30	JUN	2215	124	0.	.0	12.0	1	JUL	0635	224	1.	.5	16.0
30	JUN	1400	25	0.	.0	12.0	30	JUN	2220	125	0.	.0	12.0	1	JUL	0640	225	1.	.5	16.0
30	JUN	1405	26	0.	.0	12.0	30	JUN	2225	126	0.	.0	12.0	1	JUL	0645	226	1.	.5	16.0
30	JUN	1410	27	0.	.0	12.0	30	JUN	2230	127	0.	.0	12.0	1	JUL	0650	227	1.	.5	16.0
30	JUN	1415	28	0.	.0	12.0	30	JUN	2235	128	0.	.0	12.0	1	JUL	0655	228	1.	.5	16.1
30	JUN	1420	29	0.	.0	12.0	30	JUN	2240	129	0.	.0	12.0	1	JUL	0700	229	1.	.5	16.1
30	JUN	1425	30	0.	.0	12.0	30	JUN	2245	130	0.	.0	12.0	1	JUL	0705	230	1.	.5	16.1
30	JUN	1430	31	0.	.0	12.0	30	JUN	2250	131	0.	.0	12.0	1	JUL	0710	231	1.	.5	16.1
30	JUN	1435	32	0.	.0	12.0	30	JUN	2255	132	0.	.0	12.0	1	JUL	0715	232	1.	.5	16.1
30	JUN	1440	33	0.	.0	12.0	30	JUN	2300	133	0.	.0	12.0	1	JUL	0720	233	1.	.5	16.1
30	JUN	1445	34	0.	.0	12.0	30	JUN	2305	134	0.	.0	12.0	1	JUL	0725	234	1.	.5	16.1
30	JUN	1450	35	0.	.0	12.0	30	JUN	2310	135	0.	.0	12.0	1	JUL	0730	235	1.	.5	16.1
30	JUN	1455	36	0.	.0	12.0	30	JUN	2315	136	0.	.0	12.0	1	JUL	0735	236	1.	.5	16.1
30	JUN	1500	37	0.	.0	12.0	30	JUN	2320	137	0.	.0	12.0	1	JUL	0740	237	1.	.5	16.1
30	JUN	1505	38	0.	.0	12.0	30	JUN	2325	138	0.	.0	12.0	1	JUL	0745	238	1.	.5	16.1
30	JUN	1510	39	0.	.0	12.0	30	JUN	2330	139	0.	.0	12.0	1	JUL	0750	239	1.	.5	16.1
30	JUN	1515	40	0.	.0	12.0	30	JUN	2335	140	0.	.0	12.0	1	JUL	0755	240	1.	.5	16.1
30	JUN	1520	41	0.	.0	12.0	30	JUN	2340	141	0.	.0	12.0	1	JUL	0800	241	1.	.5	16.1
30	JUN	1525	42	0.	.0	12.0	30	JUN	2345	142	0.	.0	12.0	1	JUL	0805	242	1.	.5	16.1
30	JUN	1530	43	0.	.0	12.0	30	JUN	2350	143	0.	.0	12.1	1	JUL	0810	243	1.	.5	16.1
30	JUN	1535	44	0.	.0	12.0	30	JUN	2355	144	0.	.0	12.1	1	JUL	0815	244	1.	.5	16.1
30	JUN	1540	45	0.	.0	12.0	1	JUL	0000	145	0.	.0	12.2	1	JUL	0820	245	1.	.5	16.1
30	JUN	1545	46	0.	.0	12.0	1	JUL	0005	146	0.	.0	12.5	1	JUL	0825	246	1.	.5	16.1
30	JUN	1550	47	0.	.0	12.0	1	JUL	0010	147	0.	.1	12.9	1	JUL	0830	247	1.	.5	16.1
30	JUN	1555	48	0.	.0	12.0	1	JUL	0015	148	0.	.1	13.3	1	JUL	0835	248	1.	.5	16.1
30	JUN	1600	49	0.	.0	12.0	1	JUL	0020	149	0.	.2	13.9	1	JUL	0840	249	1.	.5	16.1
30	JUN	1605	50	0.	.0	12.0	1	JUL	0025	150	0.	.2	14.4	1	JUL	0845	250	1.	.5	16.1
30	JUN	1610	51	0.	.0	12.0	1	JUL	0030	151	0.	.3	15.0	1	JUL	0850	251	1.	.5	16.1
30	JUN	1615	52	0.	.0	12.0	1	JUL	0035	152	1.	.4	15.4	1	JUL	0855	252	1.	.5	16.1
30	JUN	1620	53	0.	.0	12.0	1	JUL	0040	153	1.	.5	15.9	1	JUL	0900	253	1.	.5	16.1
30	JUN	1625	54	0.	.0	12.0	1	JUL	0045	154	4.	.6	16.2	1	JUL	0905	254	1.	.5	16.1
30	JUN	1630	55	0.	.0	12.0	1	JUL	0050	155	8.	.6	16.4	1	JUL	0910	255	1.	.5	16.1
30	JUN	1635	56	0.	.0	12.0	1	JUL	0055	156	10.	.6	16.4	1	JUL	0915	256	1.	.5	16.1

RZ-26

30 JUN 1640 57	0.	.0	12.0	*	1 JUL 0100 157	9.	.6	16.4	*	1 JUL 0920 257	1.	.5	16.1
30 JUN 1645 58	0.	.0	12.0	*	1 JUL 0105 158	8.	.6	16.4	*	1 JUL 0925 258	1.	.5	16.1
30 JUN 1650 59	0.	.0	12.0	*	1 JUL 0110 159	7.	.6	16.3	*	1 JUL 0930 259	1.	.5	16.1
30 JUN 1655 60	0.	.0	12.0	*	1 JUL 0115 160	6.	.6	16.3	*	1 JUL 0935 260	1.	.5	16.1
30 JUN 1700 61	0.	.0	12.0	*	1 JUL 0120 161	5.	.6	16.3	*	1 JUL 0940 261	1.	.5	16.0
30 JUN 1705 62	0.	.0	12.0	*	1 JUL 0125 162	5.	.6	16.2	*	1 JUL 0945 262	1.	.5	16.0
30 JUN 1710 63	0.	.0	12.0	*	1 JUL 0130 163	4.	.6	16.2	*	1 JUL 0950 263	1.	.5	16.0
30 JUN 1715 64	0.	.0	12.0	*	1 JUL 0135 164	3.	.6	16.2	*	1 JUL 0955 264	1.	.5	16.0
30 JUN 1720 65	0.	.0	12.0	*	1 JUL 0140 165	3.	.6	16.2	*	1 JUL 1000 265	1.	.5	16.0
30 JUN 1725 66	0.	.0	12.0	*	1 JUL 0145 166	3.	.6	16.2	*	1 JUL 1005 266	1.	.5	16.0
30 JUN 1730 67	0.	.0	12.0	*	1 JUL 0150 167	2.	.6	16.1	*	1 JUL 1010 267	1.	.5	16.0
30 JUN 1735 68	0.	.0	12.0	*	1 JUL 0155 168	2.	.6	16.1	*	1 JUL 1015 268	1.	.5	16.0
30 JUN 1740 69	0.	.0	12.0	*	1 JUL 0200 169	2.	.6	16.1	*	1 JUL 1020 269	1.	.5	16.0
30 JUN 1745 70	0.	.0	12.0	*	1 JUL 0205 170	2.	.6	16.1	*	1 JUL 1025 270	1.	.5	16.0
30 JUN 1750 71	0.	.0	12.0	*	1 JUL 0210 171	2.	.5	16.1	*	1 JUL 1030 271	1.	.5	16.0
30 JUN 1755 72	0.	.0	12.0	*	1 JUL 0215 172	2.	.5	16.1	*	1 JUL 1035 272	1.	.5	16.0
30 JUN 1800 73	0.	.0	12.0	*	1 JUL 0220 173	2.	.5	16.1	*	1 JUL 1040 273	1.	.5	16.0
30 JUN 1805 74	0.	.0	12.0	*	1 JUL 0225 174	2.	.5	16.1	*	1 JUL 1045 274	1.	.5	16.0
30 JUN 1810 75	0.	.0	12.0	*	1 JUL 0230 175	1.	.5	16.1	*	1 JUL 1050 275	1.	.5	16.0
30 JUN 1815 76	0.	.0	12.0	*	1 JUL 0235 176	1.	.5	16.1	*	1 JUL 1055 276	1.	.5	16.0
30 JUN 1820 77	0.	.0	12.0	*	1 JUL 0240 177	1.	.5	16.1	*	1 JUL 1100 277	1.	.5	16.0
30 JUN 1825 78	0.	.0	12.0	*	1 JUL 0245 178	1.	.5	16.1	*	1 JUL 1105 278	1.	.5	16.0
30 JUN 1830 79	0.	.0	12.0	*	1 JUL 0250 179	1.	.5	16.1	*	1 JUL 1110 279	1.	.5	16.0
30 JUN 1835 80	0.	.0	12.0	*	1 JUL 0255 180	1.	.5	16.1	*	1 JUL 1115 280	1.	.5	16.0
30 JUN 1840 81	0.	.0	12.0	*	1 JUL 0300 181	1.	.5	16.1	*	1 JUL 1120 281	1.	.5	16.0
30 JUN 1845 82	0.	.0	12.0	*	1 JUL 0305 182	1.	.5	16.1	*	1 JUL 1125 282	1.	.5	16.0
30 JUN 1850 83	0.	.0	12.0	*	1 JUL 0310 183	1.	.5	16.1	*	1 JUL 1130 283	1.	.5	16.0
30 JUN 1855 84	0.	.0	12.0	*	1 JUL 0315 184	1.	.5	16.1	*	1 JUL 1135 284	1.	.5	16.0
30 JUN 1900 85	0.	.0	12.0	*	1 JUL 0320 185	1.	.5	16.1	*	1 JUL 1140 285	1.	.5	16.0
30 JUN 1905 86	0.	.0	12.0	*	1 JUL 0325 186	1.	.5	16.1	*	1 JUL 1145 286	1.	.5	16.0
30 JUN 1910 87	0.	.0	12.0	*	1 JUL 0330 187	1.	.5	16.1	*	1 JUL 1150 287	1.	.5	16.0
30 JUN 1915 88	0.	.0	12.0	*	1 JUL 0335 188	1.	.5	16.1	*	1 JUL 1155 288	1.	.5	16.0
30 JUN 1920 89	0.	.0	12.0	*	1 JUL 0340 189	1.	.5	16.1	*	1 JUL 1200 289	1.	.5	16.0
30 JUN 1925 90	0.	.0	12.0	*	1 JUL 0345 190	1.	.5	16.1	*	1 JUL 1205 290	1.	.5	16.0
30 JUN 1930 91	0.	.0	12.0	*	1 JUL 0350 191	1.	.5	16.1	*	1 JUL 1210 291	1.	.5	16.0
30 JUN 1935 92	0.	.0	12.0	*	1 JUL 0355 192	1.	.5	16.1	*	1 JUL 1215 292	1.	.5	16.0
30 JUN 1940 93	0.	.0	12.0	*	1 JUL 0400 193	1.	.5	16.1	*	1 JUL 1220 293	1.	.5	16.0
30 JUN 1945 94	0.	.0	12.0	*	1 JUL 0405 194	1.	.5	16.1	*	1 JUL 1225 294	1.	.5	16.0
30 JUN 1950 95	0.	.0	12.0	*	1 JUL 0410 195	1.	.5	16.1	*	1 JUL 1230 295	1.	.5	16.0
30 JUN 1955 96	0.	.0	12.0	*	1 JUL 0415 196	1.	.5	16.1	*	1 JUL 1235 296	1.	.5	16.0
30 JUN 2000 97	0.	.0	12.0	*	1 JUL 0420 197	1.	.5	16.1	*	1 JUL 1240 297	1.	.5	16.0
30 JUN 2005 98	0.	.0	12.0	*	1 JUL 0425 198	1.	.5	16.1	*	1 JUL 1245 298	1.	.5	16.0
30 JUN 2010 99	0.	.0	12.0	*	1 JUL 0430 199	1.	.5	16.1	*	1 JUL 1250 299	1.	.5	16.0
30 JUN 2015 100	0.	.0	12.0	*	1 JUL 0435 200	1.	.5	16.1	*	1 JUL 1255 300	1.	.5	16.0
				*					*				

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
10.	12.92	(CFS)	2.	1.	1.	1.
		(INCHES)	.380	.578	.578	.578
		(AC-FT)	1.	2.	2.	2.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)	6-HR	24-HR	72-HR	24.92-HR
1.	12.92	1.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
(FEET)	(HR)	6-HR	24-HR	72-HR	24.92-HR
16.41	12.92	16.10	14.14	14.06	14.06

CUMULATIVE AREA = .05 SQ MI

STATION RES5

(I) INFLOW, (O) OUTFLOW

	0.	2.	4.	6.	8.	10.	12.	14.	16.	0.	0.	0.	0.
								(S) STORAGE					
	.0	.0	.0	.0	.0	.0	.0	.2	.4	.6	.8	.0	.0
DAHRMN	PER												
301200	1	I						S					
301205	2	I						S					
301210	3	I						S					
301215	4	I						S					
301220	5	I						S					
301225	6	I						S					
301230	7	I						S					
301235	8	I						S					
301240	9	I						S					
301245	10	I						S					
301250	11	I						S					
301255	12	I						S					
301300	13	I						S					
301305	14	I						S					
301310	15	I						S					
301315	16	I						S					
301320	17	I						S					
301325	18	I						S					
301330	19	I						S					
301335	20	I						S					
301340	21	I						S					
301345	22	I						S					
301350	23	I						S					
301355	24	I						S					
301400	25	I						S					
301405	26	I						S					
301410	27	I						S					
301415	28	I						S					
301420	29	I						S					
301425	30	I						S					
301430	31	I						S					
301435	32	I						S					
301440	33	I						S					
301445	34	I						S					
301450	35	I						S					
301455	36	I						S					
301500	37	I						S					
301505	38	I						S					
301510	39	I						S					
301515	40	I						S					
301520	41	I						S					
301525	42	I						S					
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301540	45	I						S					
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301615	52	I						S					
301620	53	I						S					
301625	54	I						S					

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301630 55I
301635 56I
301640 57I
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301650 59I
301655 60I
301700 61I
301705 62I
301710 63I
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301720 65I
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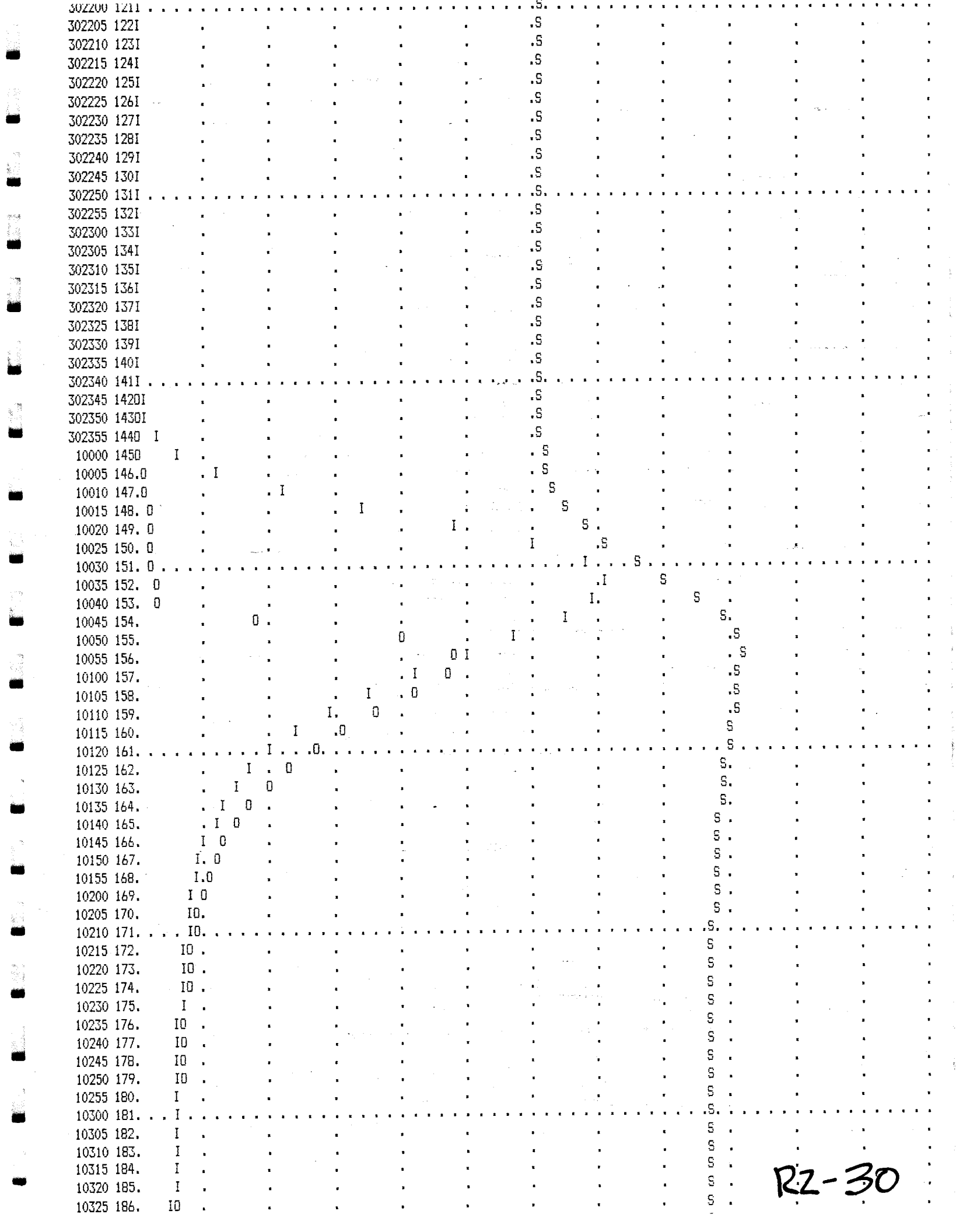
RZ-29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302335 140I
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10320 185. I
10325 186. IO
S

RZ-30

10330 187. IO . . . . . S . . . .
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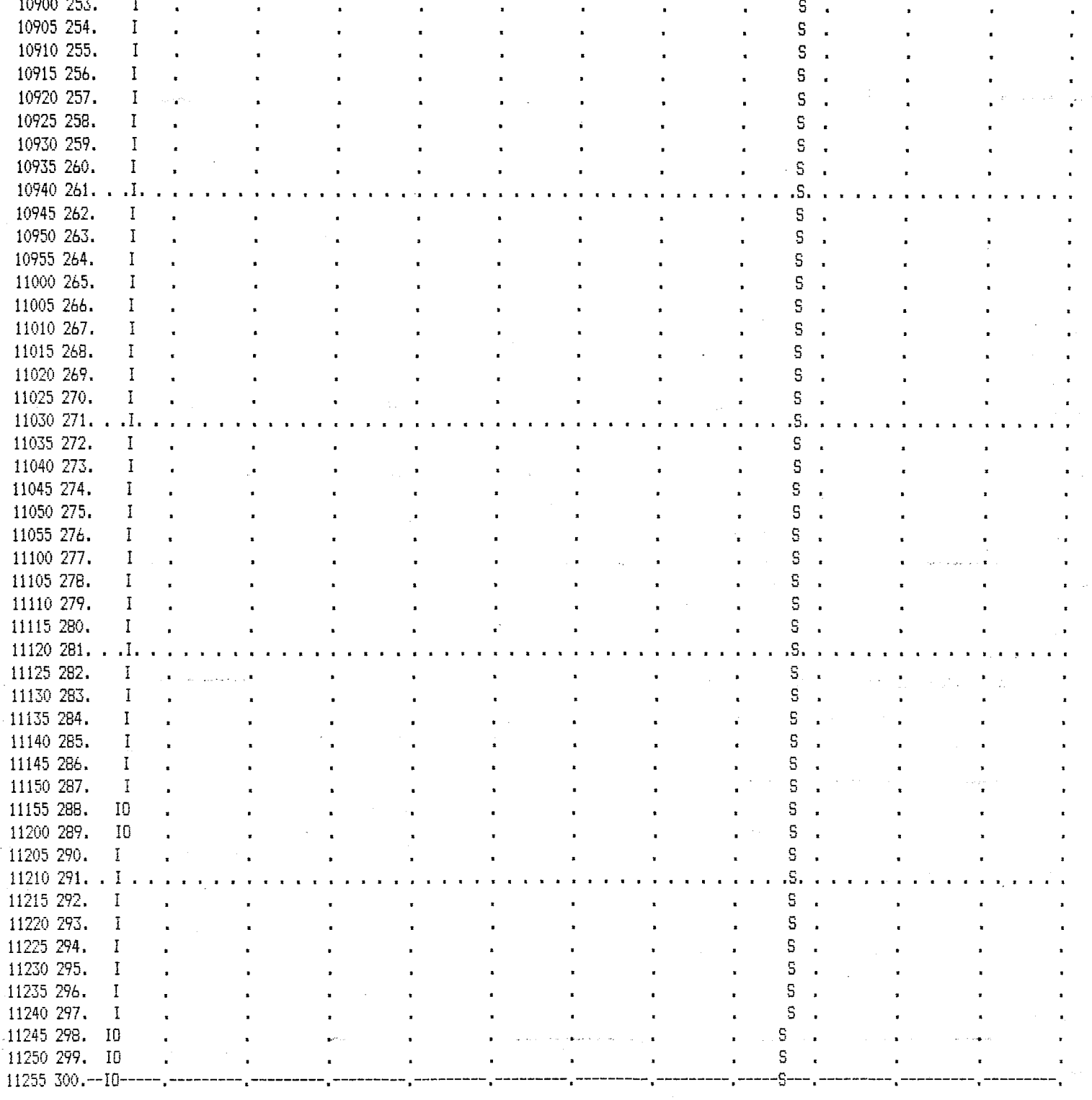
RZ-31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11230 295. I S
11235 296. I S
11240 297. I S
11245 298. IO S
11250 299. IO S
11255 300. IO S

RL-32

100 YEAR

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	D123	10.	12.58	2.	0.	0.	.02		
ROUTED TO	CH1A	10.	12.58	2.	0.	0.	.02		
HYDROGRAPH AT	D4	2.	12.58	0.	0.	0.	.00		
2 COMBINED AT	D4	12.	12.58	2.	1.	1.	.02		
ROUTED TO	RES4	1.	13.83	1.	0.	0.	.02	23.20	14.17
ROUTED TO	P1A	1.	13.92	1.	0.	0.	.02		
HYDROGRAPH AT	C2	2.	12.75	0.	0.	0.	.00		
2 COMBINED AT	C2	3.	12.75	1.	0.	0.	.03		
HYDROGRAPH AT	C13	11.	12.58	2.	1.	1.	.02		
2 COMBINED AT	C12	14.	12.58	3.	1.	1.	.05		
ROUTED TO	P2A	14.	12.58	3.	1.	1.	.05		
HYDROGRAPH AT	E1	1.	12.17	0.	0.	0.	.00		
2 COMBINED AT	E1	14.	12.58	3.	1.	1.	.05		
ROUTED TO	RES5	10.	12.92	2.	1.	1.	.05	16.41	12.92

RUN #1

10 CFS + 31 CFS = 41 CFS

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
CH1A	MANE	1.90	10.44	754.36	.97	5.00	10.44	755.00	.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9699E+00 EXCESS= .0000E+00 OUTFLOW= .9696E+00 BASIN STORAGE= .4809E-03 PERCENT ERROR= .0

P1A	MANE	3.04	.67	851.14	.55	5.00	.67	855.00	.55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6587E+00 EXCESS= .0000E+00 OUTFLOW= .6560E+00 BASIN STORAGE= .2736E-02 PERCENT ERROR= .0

P2A	MANE	.72	13.98	755.76	.78	5.00	13.93	755.00	.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1979E+01 EXCESS= .0000E+00 OUTFLOW= .1978E+01 BASIN STORAGE= .1287E-02 PERCENT ERROR= .0

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

R2-34

MTJ

Grand Junction Community Development Department
Planning • Zoning • Code Enforcement
250 North Fifth Street
Grand Junction, Colorado 81501-2668
(970) 244-1430 FAX (970) 244-1599

June 5, 1996

Tom Logue
Elam Construction, Inc.
1225 S. 7th Street
Grand Junction CO 81501

RE: Grand View Filing #2 (Our File #FP-96-114)

Dear Mr. Logue:

As requested I am providing you with a summary of outstanding issues for the above referenced project to detail why the project was pulled from the June 11th Planning Commission agenda. Only after all issues are resolved to the satisfaction of City staff will the item be placed on the July Planning Commission agenda.

One of the two principal issues which remains outstanding is that to date no documentation has been provided to this office to indicate that an easement has been obtained to accommodate the drainage structures and stormwater which are located on the property to the south (the Dawn Subdivision property). The required drainage easement was to be obtained with the Filing #1 approval and was not. Stormwater from both Filing #1 and Filing #2 discharges into the subject drainage facility. If no easement is obtained, the petitioner is responsible for an alternative design to accommodate the stormwater for both filings. The alternative design must be reviewed and approved by City staff.

The second major issue is the required revisions to the HEC-1 run. We have not been provided with the revised document for review and no longer had sufficient time to review the report prior to the June 11th meeting. As you know, the HEC run is significant in that the results may impact the calculated runoff and required storage volumes. The Development Engineer also requested a revised drainage report which has also not been provided.

There are a number of the Development Engineer's other comments which were not adequately addressed with your response to comments. The outstanding item are numbered to correspond with the Development Engineer's original comments:

1. See discussion of the HEC-1 run above.

2. A profile, grades and a cross-section drawing are required and were not provided; the existing and proposed pavement needs to be shown as well.

3. OK

4. The improvements to the northern part of the Ridge Drive ROW are still not indicated on the plans. Also, please indicate the driveway relocation for the adjacent existing house (as required with the preliminary approval) and indicate the extent of the vertical curb along Ridge Drive. If curb returns are to be provided on Ridge Drive at 28 Road please indicate; if not proposed, please explain why.

5. OK

6. OK

7. See comments in #4 related to vertical curb; also see red-lined drawings for required correction to Ridge Drive detail on Sheet 13.

8. The inlet sizes must also be shown on the street plans; the size and type of inlets are not indicated on the plans. A stand-alone drainage report for Filing #2 is required which details the sizing of the inlets, culverts, street flows and any modifications to the detention facilities.

9. The location of the street lighting is not adequate. Please refer to the Transportation Engineering Design Standards (TEDS) Manual, page 48 regarding required spaces and locations of street lights and revise plans accordingly.

10. OK

11. OK

12. OK

In addition to the above, the southern end of Grand View Drive is required to be extended to the property line. Since the extension involves the crossing of the ditch, we would suggest that you coordinate with the developer of the property to the south concerning the completion of the stub street.

I would also refer you to the attached red-lined drawings for additional required changes to the plat and the engineering drawings.

The City Utility Engineer has informed me that your response to comments did not adequately his comments #2, 5 & 6. Please contact Trent directly if you have any questions regarding his comments.

For reference, in all future responses to staff comments all items must be addressed individually, blanket statements which state that "all modifications have been made" with a reference to the plans is unacceptable.

I trust that the above information is of use to you in revising the plans. Please call to discuss resubmittal dates and hearing schedules. Please do not hesitate to contact me should you have any questions or if you require further explanation of any item.

Sincerely yours,

Michael T. Drollinger
Senior Planner

Encls.

cc: Jody Kliska, City Development Engineer
Don dela Motte, Donada Inc.

h:\cityfil\1996\96-114.lt1

POSTING OF PUBLIC NOTICE SIGNS

The posting of the Public Notice Sign is to make the public aware of development proposals. The requirement and procedure for public notice sign posting are required by the City of Grand Junction Zoning and Development Code.

To expedite the posting of public notice signs the following procedure list has been prepared to help the petitioner in posting the required signs on their properties.

1. All petitioners/representatives will receive a copy of the Development Review Schedule for the month advising them of the date by which the sign needs to be posted. **IF THE SIGN HAS NOT BEEN PICKED UP AND POSTED BY THE REQUIRED DATE, THE PROJECT WILL NOT BE SCHEDULED FOR THE PUBLIC HEARING.**
2. A deposit of $50.00 per sign is required at the time the sign is picked up.
3. You must call for utility locates before posting the sign. Mark the location where you wish to place the sign and call 1-800-922-1987. You must allow two (2) full working days after the call is placed for the locates to be performed.
4. Sign(s) shall be posted in a location, position and direction so that:
   a. It is accessible and readable, and
   b. It may be easily seen by passing motorists and pedestrians.
5. Sign(s) MUST be posted at least **10 days** before the Planning Commission hearing date and, if applicable, shall stay posted until after the City Council Hearing(s).
6. **After the Public Hearing(s) the sign(s) must be taken down and returned to the Community Development Department within FIVE (5) working days to receive a full refund of the sign deposit.** For each working day thereafter the petitioner will be charged a $5.00 late fee. After eight working days Community Development Department staff will retrieve the sign and the sign deposit will be forfeited in its' entirety.

The Community Development Department staff will field check the property to ensure proper posting of the sign. If the sign is not posted, or is not in an appropriate place, the item will be pulled from the public hearing agenda.

I have read the above information and agree to its terms and conditions.

Tom Logue ~~5/20/96~~ 6-18-96

SIGNATURE DATE

FILE #/NAME #FP-96-114 Grand View Fil2 RECEIPT # 4031

PETITIONER/REPRESENTATIVE: Tom Logue PHONE # 242-5370

DATE OF HEARING: ~~6-11-96~~ & 7-2-96 POST SIGN(S) BY: ~~5-31-96~~ 6-21-96

DATE SIGN(S) PICKED-UP ~~5-20-96~~ 6-18-96 RETURN SIGN(S) BY: ~~6-18-96~~ 7-9-96

DATE SIGN(S) RETURNED 8-9-96 RECEIVED BY: MC

✓#4000669

June 21, 1996

Michael Drollinger
City of Grand Junction
Community Development Dept.
250 North 5th St.
Grand Junction, CO 81501

RE: Grand View Drainage Easement

Dear Michael,

I have reached an agreement with Don della Motte, the developer of the Grand View Subdivision, to provide a 8 foot drainage easement along the north boundary of Dawn Subdivision. Our agreement is contingent upon the following items:

1. The City must approve this use as part of their approval of the next phase to Grand View Subdivision.

2. No detrimental results will accrue to Dawn Subdivision other than the occasional wetting of the easement ground.

3. The "100-year flood" level shall not top the bank of the Grand Valley Water Users Association access road as shown on the Dawn Grading and Drainage Plan, 6/3/96.

4. The Grand View Home Owners Association shall be responsible for maintenance of the drain ditch resulting from its use by Grand View as a detention facility.

5. Mr. della Motte shall be responsible for all costs to construct all Grand View Drive required road improvements to the Dawn subdivision boundary and for the cost of the drain pipe under this road but on the Dawn property. On or before 3 working days after Mr. della Motte has been given a Parkerson Construction, Inc. estimate for the aforesaid costs, he will put in place an improvements guarantee satisfactory to the City for the amount of the estimate. In the event that I wish to complete the above improvements before Grand View has completed them, I will notify Mr. della Motte, he shall make payment to me for the amount of the estimate within 5 working days, and I will complete the improvements within 30 days.

6. Other financial payment to me by Mr. della Motte by separate agreement.

I anticipate recording the Dawn plat prior to the City's approval of the next phase of Grand View. Upon completion of the above contingencies, I will within 7 working days record the 8 ft. easement for the benefit of the Grand View Home Owners Association. Any prospective purchasers of Dawn lots or homes will be given notice of the 8 ft. easement, and it will be recorded before any home sales are closed.

We are hopeful that the above provides you with the information necessary to allow Grand View Subdivision to proceed to hearing before the Planning Commission. If you have any further questions do not hesitate to contact me or Ward Scott.

Sincerely,

John Davis

cc: Tom Logue

FINAL DRAINAGE REPORT FOR: GRAND VIEW SUBDIVISION, FILING NO. TWO

June, 1996

Prepared by: Atkins and Associates, 321 7th. Street, Meeker, Colorado 81641 Phone (970) 878-4041
Prepared for: DONADA, Inc., 634 Avalon Drive, Grand Junction, Colorado (970) 434-6224

PURPOSE - the purpose of this study is to present hydraulic design calculations for the drainage improvements required for Grand View Subdivision, Filing No. Two. The calculations included herein are based on data contained within the *Master Drainage Study for Grand View Subdivision,* and the First Addendum to the study. Information contained herein is intended to augment data contained within the master study. The reader is encouraged to carefully review the master study prior to this report.

LOCATION - Filing Two is the second phase of a multi-phased single family development located SE of Ridge Drive and 28 Road. Filing One forms part of the southerly boundary of Filing Two. The accompanying Exhibit 16 & 17 shows the location of 33 single family lots on 12.3 acres and its relationship to Filing One.

HYDROLOGIC CALCULATIONS - This report analyses the developed storm water runoff from sub-basins OF 1, 2, & 3, and basins A-1,2, & 3: B1 thru B-5 from the Master Study to and through storm inlets 1,2, 3, 4 5 & 6. A HEC-1 computer program was utilized in implementing the parameter within the Master Study.

HYDRAULIC CALCULATIONS - The City of Grand Junction's Stromwater Management Manual, June 1994 was used to size the various elements of the stormwater conveyance system within Filing Two.

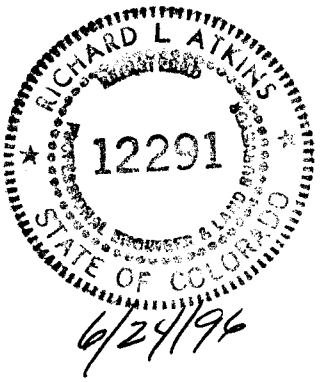
DETENTION CALCULATIONS - Filing Two will be the last phase of construction for the detention reservoirs required for Grand View. The first phase included the construction of two of the five reservoirs and outlet control structures. Filing Two construction will include the completion of Reservoirs 1, 2 and 3. These 3 reservoirs convey approximately 3.53 cfs of irrigation tailwater based on field observations. A summary of the storage volume provided based on the final construction plans for Filing 2 follows:

RESERVOIR	2 yr. required	2 yr. provided	100 yr. required	100 yr. provided
1	2,614 cf	2,750 cf	17,424 cf	18,752 cf
2	2,178 cf	2,648 cf	11,761 cf	12,058 cf
3	17,860	19,222	24,394 cf	26,113 cf

CONCLUSIONS - The results of the report meet or exceed the minimum requirements for detention storage as required in the *Master Drainage Study for Grand View Subdivision* and the First Addendum.

CERTIFICATION - I hereby certify that the Drainage Report for Grand View Subdivision, Filing Two was prepared under my direct supervision.

R.L. Atkins, P.E.- P.L.S
Colorado No. 12291



6/24/96

GRAND VIEW SUB. (ADDENDUM #1) 2 YEAR STORM EVENT

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
	HYDROGRAPH AT									
+		OF1	1.	12.58	0.	0.	0.	.02		
	ROUTED TO									
+		CH1	1.	12.67	0.	0.	0.	.02		
	HYDROGRAPH AT									
+		A2	1.	12.58	0.	0.	0.	.01		
	2 COMBINED AT									
+		A2	2.	12.67	0.	0.	0.	.02		
	ROUTED TO									
+		ST1	2.	12.75	0.	0.	0.	.02		
	HYDROGRAPH AT									
+		A3	1.	12.58	0.	0.	0.	.01		
	2 COMBINED AT									
+		A3	2.	12.75	1.	0.	0.	.03		
	HYDROGRAPH AT									
+		OF2	1.	13.00	0.	0.	0.	.02		
	ROUTED TO									
+		CH2	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	3.	12.75	1.	0.	0.	.05		
	HYDROGRAPH AT									
+		A1	3.	12.92	1.	0.	0.	.03		
	2 COMBINED AT									
+		A1	6.	12.83	2.	1.	0.	.08		
	ROUTED TO									

EXHIBIT 1

```
+              P1      6.  12.83      2.      1.      0.     .08

     HYDROGRAPH AT
+              B1      0.  12.08      0.      0.      0.     .00

     2 COMBINED AT
+              B1      6.  12.83      2.      1.      0.     .08

     ROUTED TO
+              RES1    5.  13.17      4.      4.      4.     .08
+                                                    20.35   13.17

     ROUTED TO
+              CH3     5.  13.25      4.      4.      4.     .08

     HYDROGRAPH AT
+              B2      0.  12.08      0.      0.      0.     .00

     2 COMBINED AT
+              B2      5.  13.25      4.      4.      4.     .08

     ROUTED TO
+              RES2    5.  13.50      4.      4.      4.     .08
+                                                    18.49   13.50

     ROUTED TO
+              CH4     5.  13.58      4.      4.      4.     .08

     HYDROGRAPH AT
+              B345    2.  12.58      0.      0.      0.     .01

     2 COMBINED AT
+              B345    6.  12.58      4.      4.      4.     .09

     ROUTED TO
+              RES3    6.  12.67      4.      4.      4.     .09
+                                                    16.04   12.67
1
```

2 YEAR WS

2 YEAR WS

2 YEAR WS

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
CH1	MANE	3.00	1.10	762.00	.17	5.00	1.09	760.00	.17

INTERPOLATED TO COMPUTATION INTERVAL

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1577E+00 EXCESS= .0000E+00 OUTFLOW= .1576E+00 BASIN STORAGE= .3005E-03 PERCENT ERROR= -.1

ST1	MANE	5.00	1.76	765.00	.20	5.00	1.76	765.00	.20

EXHIBIT 2

GRAND VIEW SUB. (ADDENDUM #1) 100 YEAR STORM EVENT

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
	HYDROGRAPH AT									
+		OF1	6.	12.42	1.	0.	0.	.02		
	ROUTED TO									
+		CH1	6.	12.50	1.	0.	0.	.02		
	HYDROGRAPH AT									
+		A2	3.	12.42	0.	0.	0.	.01		
	2 COMBINED AT									
+		A2	9.	12.42	1.	0.	0.	.02		
	ROUTED TO									
+		ST1	9.	12.50	1.	0.	0.	.02		
	HYDROGRAPH AT									
+		A3	3.	12.42	0.	0.	0.	.01		
	2 COMBINED AT									
+		A3	12.	12.50	2.	0.	0.	.03		
	HYDROGRAPH AT									
+		OF2	5.	12.67	1.	0.	0.	.02		
	ROUTED TO									
+		CH2	5.	12.67	1.	0.	0.	.02		
	HYDROGRAPH AT									
+		OF3	1.	12.67	0.	0.	0.	.00		
	2 COMBINED AT									
+		OF3	6.	12.67	1.	0.	0.	.02		
	2 COMBINED AT									
+		OF3	17.	12.58	3.	1.	1.	.05		
	HYDROGRAPH AT									
+		A1	13.	12.58	2.	1.	1.	.03		
	2 COMBINED AT									
+		A1	31.	12.58	5.	1.	1.	.08		
	ROUTED TO									
+		P1	30.	12.58	5.	1.	1.	.08		

CAPACITY OF SINGLE COMBINATION INLET = 13 CFS

FLOW TO INLET #2
CAPACITY OK

FLOW TO INLET #3
CAPACITY OK

FLOW TO INLET #1
CAPACITY OK

EXHIBIT 3

HYDROGRAPH AT
+ B1 1. 12.08 0. 0. 0. .00

2 COMBINED AT
+ B1 30. 12.58 5. 1. 1. .08

ROUTED TO
+ RES1 30. 12.67 7. 5. 4. .08
+ 23.17 12.67

100 WS ELEV. YEAR

ROUTED TO
+ CH3 30. 12.67 7. 5. 4. .08

HYDROGRAPH AT
+ B2 1. 12.08 0. 0. 0. .00

2 COMBINED AT
+ B2 30. 12.67 7. 5. 4. .08

ROUTED TO
+ RES2 32. 12.75 7. 5. 4. .08
+ 20.62 12.75

100 WS ELEV. YEAR

ROUTED TO
+ CH4 29. 12.75 7. 5. 4. .08

HYDROGRAPH AT
+ B345 9. 12.42 1. 0. 0. .01

FLOW TO INLETS #5 & 6 CAPACITY OK

2 COMBINED AT
+ B345 34. 12.75 8. 5. 5. .09

ROUTED TO
+ RES3 31. 12.83 8. 5. 5. .09
+ 16.62 12.83
1

100 year WS ELEV.

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	PEAK	TIME TO PEAK	VOLUME
		INTERPOLATED TO COMPUTATION INTERVAL							
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
CH1	MANE	2.00	6.20	750.00	.53	5.00	6.20	750.00	.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4930E+00 EXCESS= .0000E+00 OUTFLOW= .4930E+00 BASIN STORAGE= .3153E-03 PERCENT ERROR= -.1

ST1	MANE	3.25	9.11	754.00	.60	5.00	9.02	750.00	.60

EXHIBIT 4

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: INLET 1 TO INLET 2

Comment: INLET 1 TO INLET 2

Solve For Full Flow Capacity

Given Input Data:

Diameter.....	2.00	ft — 24"
Slope.....	0.0060	ft/ft
Manning's n.....	0.013	— RCP
Discharge.....	17.52	cfs

Computed Results:

Full Flow Capacity.....	17.52	cfs > 13 CFS OK
Full Flow Depth.....	2.00	ft
Velocity.....	5.58	fps
Flow Area.....	3.14	sf
Critical Depth.....	1.51	ft
Critical Slope.....	0.0071	ft/ft
Percent Full.....	100.00	%
Full Capacity.....	17.52	cfs
QMAX @.94D.....	18.85	cfs
Froude Number.....	FULL	

$Q_{100} = 13$ CFS

Open Channel Flow Module, Version 3.16 (c) 1990
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

EXHIBIT 5

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: INLET 2 TO INLET 3

Comment: INLET 2 TO INLET 3

Solve For Full Flow Capacity

Given Input Data:

Diameter.....	2.50 ft — 30"
Slope.....	0.0060 ft/ft
Manning's n.....	0.013 — RCP
Discharge.....	31.77 cfs

Computed Results:

Full Flow Capacity.....	31.77 cfs > 25 CFS OK
Full Flow Depth.....	2.50 ft
Velocity.....	6.47 fps
Flow Area.....	4.91 sf
Critical Depth....	1.92 ft
Critical Slope....	0.0068 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	31.77 cfs
QMAX @.94D.....	34.18 cfs
Froude Number.....	FULL

$Q_{100} = 25$ CFS

Open Channel Flow Module, Version 3.16 (c) 1990
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

EXHIBIT 6

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: INLET 3 TO INLET 4

Comment: INLET 3 TO INLET 4 TO OUTLET

Solve For Full Flow Capacity

Given Input Data:

Diameter.....	3.00	ft — 36"
Slope.....	0.0060	ft/ft
Manning's n.....	0.013	— RCP
Discharge.....	51.66	cfs

Computed Results:

Full Flow Capacity.....	51.66	cfs > 34.53 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	

Q_{100} = 31 CFS + 3.53 CFS (IRRIGATION TAILWATER)

EXHIBIT 7

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: INLET 4 TO INLET 5

Comment: INLET 4 TO INLET 5

Solve For Full Flow Capacity

Given Input Data:

Diameter.....	1.50	ft — 18"
Slope.....	0.0100	ft/ft
Manning's n.....	0.013	— RCP
Discharge.....	10.50	cfs

Computed Results:

Full Flow Capacity.....	10.50	cfs > 4.5 CFS OK
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	

$Q_{100} = 4.5$ CFS

Open Channel Flow Module, Version 3.16 (c) 1990
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

EXHIBIT 8

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: INLET 5 TO OUTLET

Comment: INLET 5 TO OUTLET

Solve For Full Flow Capacity

Given Input Data:

Diameter.....	1.50 ft
Slope.....	0.0100 ft/ft
Manning's n.....	0.013
Discharge.....	10.50 cfs

Computed Results:

Full Flow Capacity.....	10.50 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

EXHIBIT 9

RES #1 2 YEAR STORM

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

← 0.06 AC.FT.

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								

t MAX WS = 20.35

VOLUME REQUIRED = 2,614 CF

EXHIBIT 10

REC #2 2 YEAR STORM

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
COQL .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

≤ 0.05 AC. FT.

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

t MAX WS = 18.49

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

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 10. TO 59.

VOLUME REQUIRED = 2,178 C.F.

EXHIBIT 11

RES #2 2 YEAR STORM

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
COQL .60 COEFFICIENT
EXPL .50 EXPONENT OF HEAD

151 SS SPILLWAY
CREL 15.75 SPILLWAY CREST ELEVATION
SPWID 12.30 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	.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

← 0.41 AC.FT.

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

MAX. WS = 16.04

STORAGE	.60	.66
OUTFLOW	42.83	58.54
ELEVATION	16.92	17.20

****

VOLUME REQUIRED = 17,860 C.F.

EXHIBIT 12

RES. #1 100 YEAR STORM

IOUT	21	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	.083	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

12"Ø RCP
LOW FLOW OUTLET

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
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

0.40 AC.FT.

MAX WS. = 23.17

VOLUME REQUIRED = 17,424 C.F.

EXHIBIT 13

RES #2 100 YEAR STORM

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 — 12"Ø RCP LOW FLOW OUTLET
COQL .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

← 0.27 AC.FT.

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

MAX W.S. = 20.62

STORAGE	.29
OUTFLOW	58.90
ELEVATION	21.00

VOLUME REQUIRED = 11,761 C.F.

EXHIBIT 14

RES #3 100 YEAR STORM

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
COQL .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

↙ 0.56 AC.FT.

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

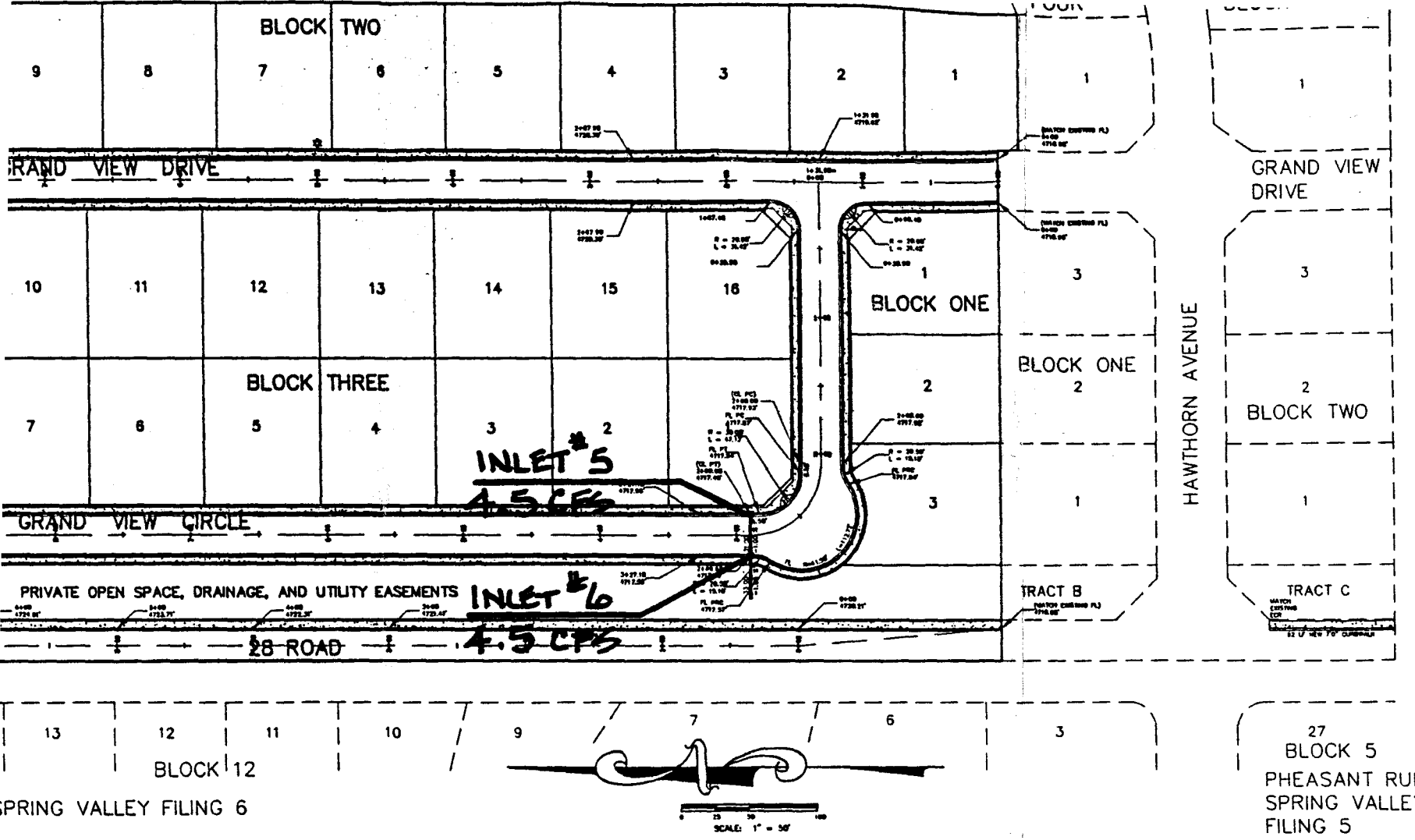
↑ MAX W.S. = 16.62

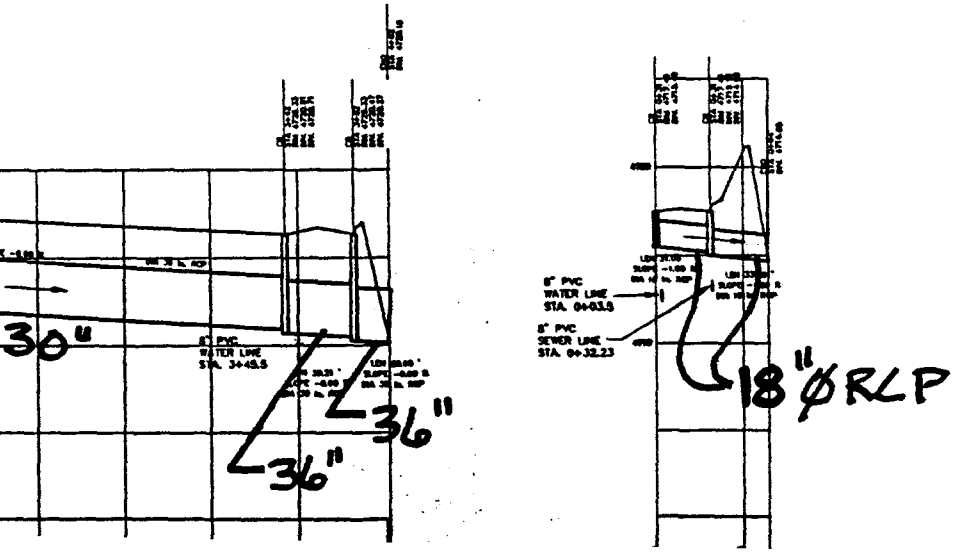
STORAGE	.60	.66
OUTFLOW	48.67	66.55
ELEVATION	16.92	17.20

****

VOLUME REQUIRED = 24,394 C.F.

EXHIBIT 15





STOP SIGN
2 STREET SIGNS
(TYP. 5 PLACES)

AREA LIGHT
PER PSCO SPEC.
(TYP. 3 PLACES)

APPROVED FOR CONSTRUCTION

CITY OF GRAND JUNCTION

TITLE DATE

GRAND VIEW SUBDIVISION
FILING NO. TWO

STREET AND STORM SEWER PLAN

FUTURE FILINGS GRAND VIEW SUBDIVISION

GRAND VIEW SUBDIVISION
FILING NO. ONE

BLOCK SIX

BLOCK TWO

BLOCK FOUR

BLOCK THREE

BLOCK ONE

BLOCK FIVE

BLOCK FOUR

BLOCK ONE

BLOCK THREE

BLOCK TWO

INLET #1
13 CFS

INLET #2
12 CFS

INLET #3
6 CFS

INLET #4

INLET #5
4.5 CFS

INLET #6
4.5 CFS

3.53 CFS IRR. TAILWATER

GRAND VIEW DRIVE

GRAND VIEW CIRCLE

RIDGE DRIVE

HAWTHORN AVENUE

28 ROAD

GARFIELD VIEW SUBDIVISION

PRIVATE OPEN SPACE, DRAINAGE, AND UTILITY EASEMENTS

TRACT B

TRACT C

24"

30"

36"

1 16 15 14 13 12 11 10 9 7 6 3

BLOCK 12

PHEASANT RUN SPRING VALLEY FILING 6

27
BLOCK 5
PHEASANT RUN
SPRING VALLEY
FILING 5

SCALE: 1" = 50'

BENCHMARK:

WEST 1/4 CORNER
SECTION 8, T1S, R1E, U.M.
ELEVATION = 4727.33

SCALE:
HORIZONTAL 1" = 50'
VERTICAL 1" = 5'

8" PVC WATER LINE STA. 0+03.5

8" PVC SEWER LINE STA. 0+18.64

8" PVC WATER LINE STA. 3+48.5

24"

30"

30"

36"

36"

STORM SEWER RIDGE DRIVE

8" PVC WATER LINE STA. 0+03.5

8" PVC SEWER LINE STA. 0+32.23

18" ØRCP

STORM SEWER
GRAND VIEW CIRCLE

STOP SIGN
2 STREET SIGNS
(TYP. 5 PLACES)

AREA LIGHT
PER PSCO SPEC.
(TYP. 3 PLACES)

APPROVED FOR CONSTRUCTION

CITY OF GRAND JUNCTION

TITLE DATE

DATE	REVISIONS	BY
5-31-00	PER SEWER COMMENTS	SEC

GRAND VIEW SUBDIVISION
FILING NO. TWO

STREET AND STORM SEWER PLAN

A DESIGN – BUILD CONCEPT

ELAM CONSTRUCTION, INC.

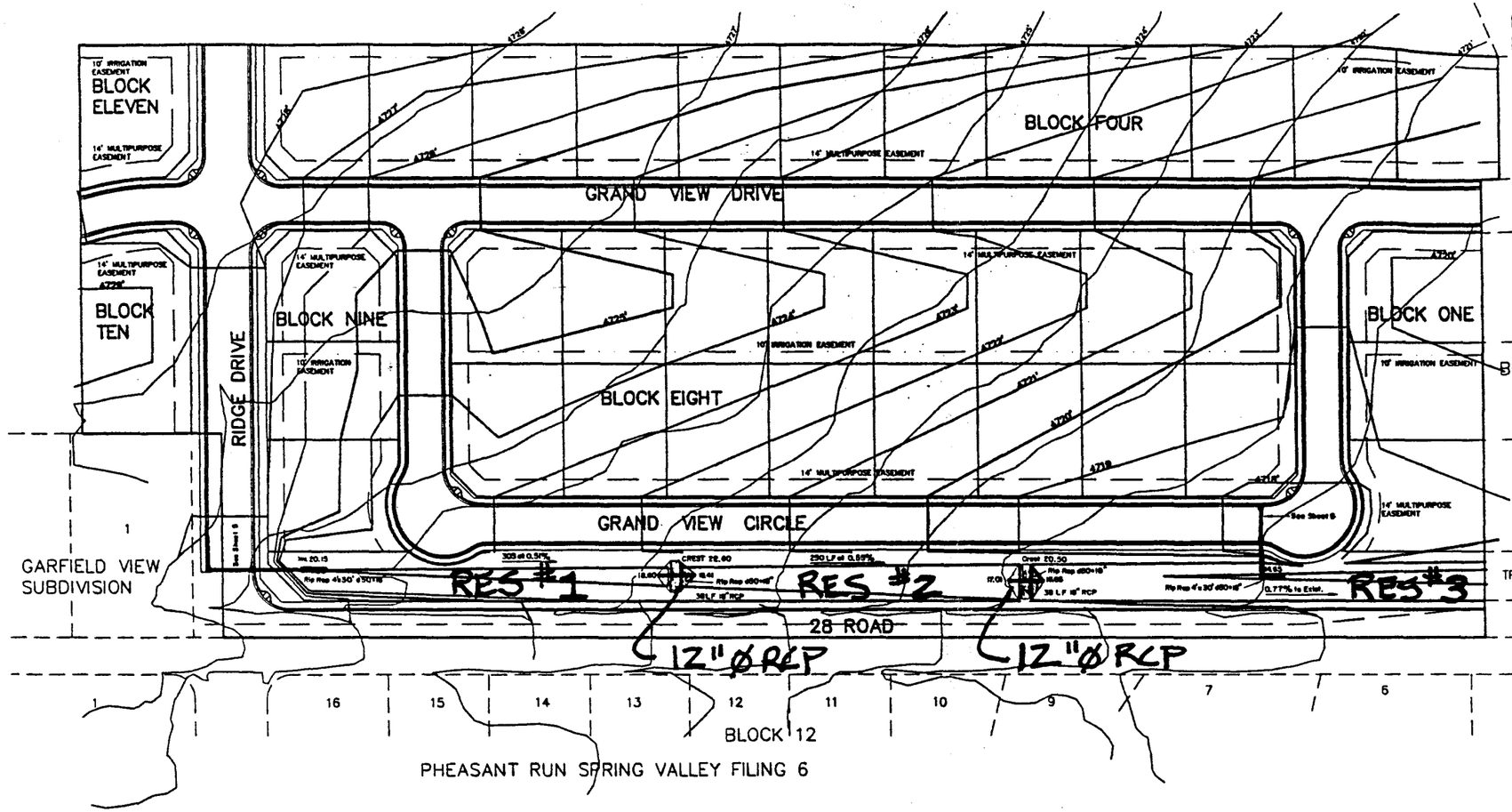
ATKINS AND ASSOCIATES, INC.

DRAWN BY SEC
DATE 4-20-00
JOB NO. 98008
SHEET 2 OF 17

EXHIBIT 16

GRAND VIEW SUBDIVISION
FILING NO. TWO

FUTURE FILINGS GRAND VIEW SUBDIVISION



SCALE: 1" = 50'

GRAND VIEW SUBDIVISION FILING NO. TWO	
GRADING PLAN	
A DESIGN – BUILD CONCEPT	
ELAM CONSTRUCTION, INC.	DRAWN BY: SEC
	DATE: 4-30-99
ATKINS AND ASSOCIATES, INC.	JOB NO.: 98008
	SHEET: 1 OF 10

EXHIBIT 17

STREET CARRING CAPACITY (2 YEAR)

PROJECT: GRAND VIEW SUB., FILING NO. TWO
LOCATION: CITY OF GRAND JUNCTION, COLORADO
DATE: Jun-96

Street Information:				
	R.O.W. Width =	44.00	FT.	Flow Area = 3.76 SF.
	Flowline Width =	31.00	FT.	
	Classification =	URBAN		
	Mannings =	0.015		
	Max. Depth =	0.42	FT.	Above Gutter Flowline
	Str/ X-Slope =	1.00	%	
	Gutter Slope =	8.33	%	Drive Over Curb, Gutter and Walk
	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.
0.50	0.60	5.83	1.55
0.86	0.80	10.20	2.71
1.00	0.80	11.00	2.93

MAX 2 YEAR FLOW = 6.0 CFS
FROM TWO SEPERATE DIRECTIONS OK

Formula: $Qa = F \times (1.49/N) \times R^{2/3} \times S^{1/2} \times A$

F = Reduction Factor For Slope
N = Mannings Coefficient = 0.0150
R = Hydraulic Radius = A/WP = 0.2234
A = Cross Sectional Area Sq.Ft. = 3.760
WP = Wetted Perimeter Ft. = 16.83
S = Street Slope FT./FT.

EXHIBIT 18

STREET CARRING CAPACITY (100 YEAR)

PROJECT: GRAND VIEW SUB., FILING NO. TWO
LOCATION: CITY OF GRAND JUNCTION, COLORADO
DATE: Jun-96

Street Information:					
	R.O.W. Width =	44.00	FT.	Flow Area =	15.49 SF.
	Flowline Width =	31.00	FT.		
	Classification =	URBAN			
	Mannings =	0.015			
	Max. Depth =	1.00	FT.	Above Gutter Flowline	
	Str/ X-Slope =	1.00	%		
	Gutter Slope =	8.33	%	Drive Over Curb, Gutter and Walk	
	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.
0.50	0.60	51.81	3.34
0.86	0.80	90.59	5.85
1.00	0.80	97.69	6.31

MAX 100 YEAR FLOW = 13.0CFS OK

Formula: $Qa = F \times (1.49/N) \times R^{2/3} \times S^{1/2} \times A$

F = Reduction Factor For Slope
N = Mannings Coefficient = 0.0150
R = Hydraulic Radius = A/WP = 0.7070
A = Cross Sectional Area Sq.Ft. = 15.490
WP = Wetted Perimeter Ft. = 21.91
S = Street Slope FT./FT.

EXHIBIT 19

Elam CONSTRUCTION, INC.
1225 South 7th Street
Grand Junction, Colorado 81501
(970) 242-5370 • FAX: (970) 245-7716

June 21, 1996

Michael T. Drollinger, Sr. Planner
City of Grand Junction
Community Development Department
250 Main Street
Grand Junction, CO 81501

RE: GRAND VIEW, FILING 2, File No. FP-96-114

Dear Mr. Drollinger:

In response to your letter dated June 5, 1996, the following is provided:

1. A letter from the developer of Dawn Subdivision indicating their willingness to dedicate a 12 foot drainage easement across their northerly property line.

2. Copies of the revised HEC-1 drainage study are attached.

3. Cross Sections for 28 Road have been included with the accompanying revised construction plans and plat. Additionally, the limits of the proposed pavement widen along 28 Road have also been added to the plans.

4. The plans have been modified to reflect a paved return on the north side of Ridge Drive at 28 Road. Concrete returns have not been indicated. By doing so will allow the designer of future 28 Road improvement additional flexibility in establishing new grades at the intersection. If it is the City's desire to construct a concrete return, the applicant will do so.

5. The vertical curb detail has been changed on sheet 13. Notations of the extent of the vertical curb and gutter have been "highlighted" on the returned set of red lined drawing which are attached.

6. The inlet sizes and types are also highlighted on the returned set of red line drawings.

7. The street lighting plan has been modified to conform to the requirements of the City standards.

8. A detail has been added to the Sewer and Water Plan indicating the exact location of Manhole B-1 in relationship to the sidewalk. A new Water Detail sheet has been added to the plans reflecting Ute Waters current specifications.

We are hopeful that the accompanying responds to the items which needed addressed and the project can now be schedule before the Planning Commission for hearing. Do not hesitate to contact me if you have any further questions or require any additional information. We will commit our available resources to the project in order that any future requests are responded to promptly.

Respectfully,
ELAM CONSTRUCTION, INC.

Thomas A. Logue
Governmental Affairs Manager

xc: Richard Atkins
Donald della Motte

FILE

Memorandum

DATE: June 24, 1996

TO: Trenton Prall

FROM: Michael T. Drollinger

RE: Grand View Filing #2 - Response to comments

Please review the attached plans and written response and advise whether the remaining outstanding issues have been addressed to your satisfaction. It appears that the item will be pulled from the July PC agenda but I would like to summarize the remaining items for the petitioner so that they can try again for August. I will need a written (e-mail is OK) response no later than 12 noon on Tuesday 6/25.

Grand Junction Community Development Department
Planning • Zoning • Code Enforcement
250 North Fifth Street
Grand Junction, Colorado 81501-2668
(970) 244-1430 FAX (970) 244-1599

June 25, 1996

Tom Logue
Elam Construction, Inc.
1225 S. 7th Street
Grand Junction CO 81501

RE: Grand View Filing #2 (Our File #FP-96-114)

Dear Mr. Logue:

As requested I am providing you with a summary of outstanding issues for the above referenced project to detail why the project was pulled from the July 2nd Planning Commission agenda. Only after all issues are resolved to the satisfaction of City staff will the item be placed on the August Planning Commission agenda.

There remain a number of the Development Engineer's comments which were not adequately addressed with your latest response to comments and revised plans as follows:

1. Revised roadway plans and profiles for Grand View Drive and Ridge Drive were not provided for review with the resubmittal.

2. Left and right flow line profiles as per the SSID manual and the original comments for all streets have not been provided.

3. Notations for inlet sizes and types are still not indicated on the roadway plans. Please identify the above on the plans with a reference to the standard City detail sheet. Include detail sheet in plan set.

4. Grading Plan shall identify reservoirs consistent with the Drainage Report. A plan shall be submitted for each reservoir as per SSID sheet IX-16, items #6-#10. Also refer to SWMM manual regarding grading of slopes and slope erosion treatment for the reservoirs and provide details on plans as required.

5. The plat is still under review by the City property agent's office, however, to date the following corrections have been identified (1) Tract A should be relabeled "Outlot A"

(this was incorrectly labeled on our red-lined drawings); and (2) please correct the spelling of "acreage."

The Utility Engineer has informed me that his comments have been adequately addressed.

For reference, in all future responses a complete set of plans shall be submitted which allows us to more efficiently review the project without reference to earlier plans.

I trust that the above information is of use to you in revising the plans. Please call to discuss resubmittal dates and hearing schedules. Please do not hesitate to contact me should you have any questions or if you require further explanation of any item.

Sincerely yours,

Michael T. Drollinger
Senior Planner

cc: Jody Kliska, City Development Engineer
Trenton Prall, City Utility Engineer
[redacted]

h:\cityfil\1996\96-114.lt2

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

FAXED 7/19/96

RECEIVED GRAND JUNCTION PLANNING DEPARTMENT JUL 22 1996

DEPARTMENT OF NATURAL RESOURCES

July 19, 1996

MA-96-0039

City of Grand Junction
Community Development Department
250 North 5th Street
Grand Junction, Colorado 81501

Re: Proposed Filing 2 of the Grand View Subdivision -- East of the Intersection of 28 Road and Proposed Ridge Drive, Grand Junction

Gentlemen:

At your request, we have reviewed the materials submitted for and made a field inspection of the site of the second filing of Grand View. Thwe following comments summarizes our findings.

The geologic conditions of this parcel are essentially identical to those in the first filing about which we reported to you in our correspondence of August 30, 1994 (copy attached). At the time of this site visit I inspected excavations for and construction of new houses in the first filing to hopefuly corroborate my earlier observations about potential soil and drainage problems in the area and how construction techniques were dealing with them. I can report that the builders whose housing products were in their early stages of construction are doing an excellent job of quality control (for the most part, it is not possible to inspect below grade construction of buildings without basements after backfilling and framing have been completed or are underway) of foundations, grading, and concrete-flatwork placements. As we indicated in our earlier comments, it will be absolutely critical to maintain good surface drainage control in this area and this will mean that, in addition to proper homeowner on-lot maintenance, the city should carefully maintain the streets and curbs and gutters as well.

If the present construction practices are continuesd in the new filing, then we have no geology-related objection to your approval of it.

Sincerely,

James M. Soule

James M. Soule
Engineering Geologist

FILE COPY

M E M O R A N D U M

DATE: July 24, 1996

TO: Trenton Prall

FROM: Michael T. Drollinger

RE: RESPONSE TO REVIEW COMMENTS
FP-96-114

Please review the attached plans on the above project and advise in writing no later than **Friday, July 26, 1996** whether your department's identified concerns have been met. I'm not sure whether I had already forwarded these plans to you. If no response is received by noon on the above date, I will assume that your department's concerns have been adequately addressed. If you are unable to comply with this deadline, please advise ASAP.

PLANNING COMMISSION STAFF REPORT

FILE: #FP-96-114

DATE: July 31, 1996

STAFF: Michael T. Drollinger

REQUEST: Final Major Subdivision
GRAND VIEW FILING #2

LOCATION: E of 28 Road and N of Hawthorne Avenue

APPLICANT: Donada, Inc.
634 Avalon Avenue
Grand Junction CO 81504

EXECUTIVE SUMMARY:

Petitioner is requesting final major subdivision approval for Grand View Filing #2 located on the east side of 28 Road north of Hawthorne. The proposed development consists of 36 single family lots on about 12.3 acres. Staff recommends approval of the application with conditions.

EXISTING LAND USE: Vacant

PROPOSED LAND USE: Single Family Residential

SURROUNDING LAND USE:

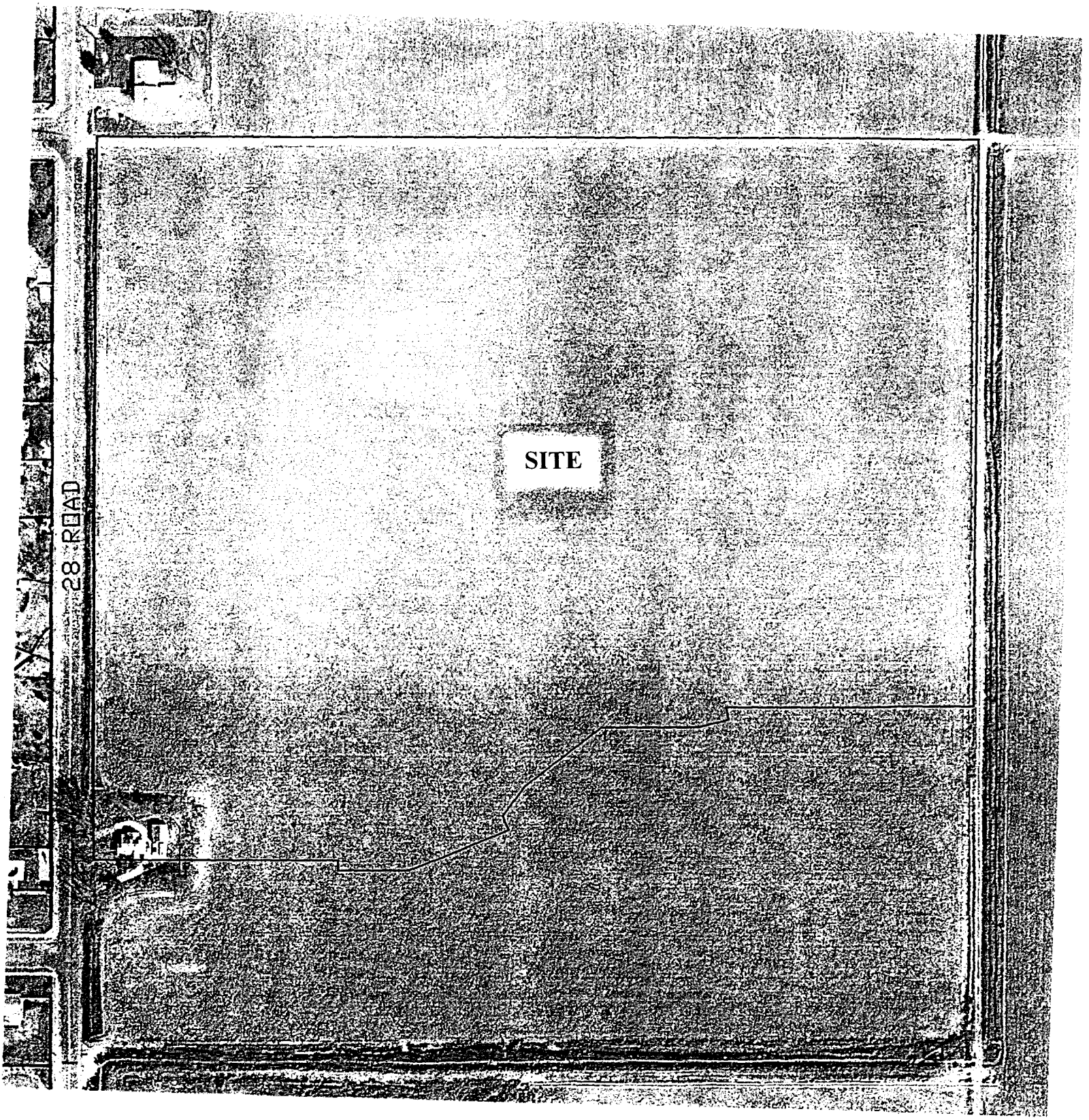
NORTH:	Vacant/ Single Family Residential
SOUTH:	Single Family Residential (Grand View Filing #1)
EAST:	Vacant
WEST:	Single Family Residential (Spring Valley Subdivision)

EXISTING ZONING: RSF-5

PROPOSED ZONING: no change

SURROUNDING ZONING:

NORTH:	RSF-5
SOUTH:	RSF-5
EAST:	R-2 (County)
WEST:	RSF-5



N

AERIAL PHOTOGRAPH
Grand View Filing #2
Final Major Subdivision
FP-96-114

RELATIONSHIP TO COMPREHENSIVE PLAN:

The draft Grand Junction Growth Plan classifies the subject parcel in the "Residential Medium (4-7.9 units/acre) land use category. The proposed density for Grand View Subdivision is consistent with the Growth Plan recommendations.

STAFF ANALYSIS:

The site is located directly north of Grand View Filing #1 on the east side of 28 Road north of Hawthorne Avenue and consists of approximately 12.3 acres. The property is zoned of RSF-5. The petitioner is requesting final major subdivision approval for 36 single family lots to be developed in accordance with the adopted Preliminary Plan for the project. Further details of the proposal are in the attached project narrative. Also, an aerial photograph of the site along with a copy of the subdivision plans are attached to this staff report for orientation and reference.

All major issues related to the subdivision have been addressed to staff's satisfaction, however, the City Development Engineer has as of the date of this staff report not completed a final review of the latest plan set. The final review and approval of the construction drawings by the City Development Engineer should be a condition of subdivision approval.

In summary, staff recommends approval of Grand View Filing #2 subject to the following condition:

1. Final review and acceptance of the latest plan set by the City Development Engineer.

STAFF RECOMMENDATION:

Staff recommends approval of the final major subdivision for Grand View Filing #2 with the above condition.

SUGGESTED PLANNING COMMISSION MOTION:

Mr. Chairman, on item #FP-96-114, a request for final major subdivision approval for Grand View Filing #2, I move that the subdivision be approved with the condition in the staff report dated July 31, 1996.

COPY / FILE

M E M O R A N D U M

DATE: August 10, 1996

TO: Marcia Rabideaux

FROM: Michael T. Drollinger

RE: Grand View Improvements Agreement

Please record the attached Improvements Agreement for the Grand View Subdivision (note: this is for improvements in conjunction with Filing #1). The check for $3,258.50 guaranteeing the improvements is in the envelope in Finance. Please have the check deposited and put the receipt in my box. A check for $36 is attached for the recording of the agreement. I have already made a copy of the agreement for our records. Also, please put the receipt for the $36 and the recording information for the agreement in my box. Thanks.

Elam CONSTRUCTION, INC.
1225 South 7th Street
Grand Junction, Colorado 81501
(970) 242-5370 • FAX: (970) 245-7716

August 9, 1996

Community Development Department
City of Grand Junction
250 North 5th. Street
Grand Junction, CO 81501

RE: GRAND VIEW, FILING TWO, TCP

Dear Staff:

Accompanying you will find a Construction Cost Schedule for improvements to 28 Road adjacent to Grand View Subdivision, Filing Two. The limits of construction are depicted on the construction documents for Filing Two.

The cost schedule indicates that a total of $31,722.50 will be spent for improvements to 28 Road adjacent to Filing Two. According to Section 5-3-1-H, Transpiration Capacity Payment, (TCP) of the City of Grand Junction *Zoning and Development Code*, Grand View, Filing Two would qualify for a credit against the TCP for 63 lots. Since there are more than 63 lots in Filing Two the developer, DONADA, Inc. would like the City to apply the additional credit towards any future filings.

Please notify us upon your acceptance of the credit for the TCP. Further, if you have any questions or required any additional data in regard to this matter, feel free to contact our office.

Respectfully,

Thomas A. Logue

Thomas A. Logue
Governmental Affairs Manger

xc: Don della Motte

CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS & UTILITIES
250 NORTH 5TH STREET
GRAND JUNCTION, CO 81501
(970) 244-4003

TO THE MESA COUNTY CLERK & RECORDER:

THIS IS TO CERTIFY that the herein named Subdivision Plat,

GRAND VIEW SUBDIVISION FILING No. 2,

Situated in the NW¼SW1/4 of Section 6,

Township 1 SOUTH, Range 1 EAST,

of the UTE Meridian in the City of Grand Junction, County of Mesa, State of Colorado, has been reviewed under my direction and, to the best of my knowledge, satisfies the requirements pursuant to C.R.S. 38-51-106 and the Zoning and Development Code of the City of Grand Junction for the recording of subdivision plats in the office of the Mesa County Clerk and Recorder.

This certification makes no warranties to any person for any purpose. It is prepared to establish for the County Clerk and Recorder that City review has been obtained. This certification does not warrant: 1) title or legal ownership to the land hereby platted nor the title or legal ownership of adjoiners; 2) errors and/or omissions, including, but not limited to, the omission(s) of rights-of-ways and/or easements, whether or not of record; 3) liens and encumbrances, whether or not of record; 4) the qualifications, licensing status and/or any statement(s) or representation(s) made by the surveyor who prepared the above-named subdivision plat.

Dated this 9 day of September, 1996.

City of Grand Junction,
Department of Public Works & Utilities

By: James L. Shanks
James L. Shanks, P.E., P.L.S.
Director of Public Works & Utilities

Recorded in Mesa County

Date:

Plat Book: 15 Page: 174+175

Drawer: CC82

1773043 0345PM 10/02/96
MONIKA TODD CLK&REC MESA COUNTY CO

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FEE $20.00 1 @

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (970)244-1599

May 27, 1997

Attn: Don Della Motte
Donada, Inc.
634 Avalon Drive
Grand Junction CO 81504

RE: Grand View Filing #2 - Release of Funds

Dear Mr. Della Motte:

Our records indicate that the public improvements on Grand View Drive adjacent to the Dawn Subdivision have been completed to our satisfaction. Enclosed please find the check in the amount of $ 3,258.50 which represents the guarantee for the improvements and is being returned to you.

Please do not hesitate to contact me if you have any questions or require additional information.

Sincerely yours,

Michael T. Drollinger
Senior Planner

Encl.

cc: File # FP-1996-114

h:\cityfil\1996\96-114.lt3

FP-1996-177

December 29, 1997

Don Dela Motte
634 Avalon Drive
Grand Junction, CO 81504

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (970)244-1599

Subject: Grandview Filing 2 Subdivision

Dear Mr. Dela Motte:

A final inspection of the streets and drainage facilities in Grandview filing 2 Subdivision was conducted on June 18, 1997. As a result of this inspection, a list of remaining items was given to you for completion. These items were reinspected and found to be satisfactorily completed.

"As Built" record drawings and required test results for the streets and drainage facilities were received on September 5, 1997. These have been reviewed and found to be acceptable.

In light of the above, the streets, sewer and drainage improvements in the right of way are eligible to be accepted for future maintenance by the City of Grand Junction one year after the date of substantial completion. The date of substantial completion is July 1, 1997.

Your warranty obligation for all materials and workmanship for a period of one year beginning with the date of substantial completion will expire upon acceptance by the City.
If you are required to replace or correct any defects which are apparent during the period of the warranty, a new acceptance date and extended warranty period will be established by the City.

Thank you for your cooperation in the completion of the work on this project.

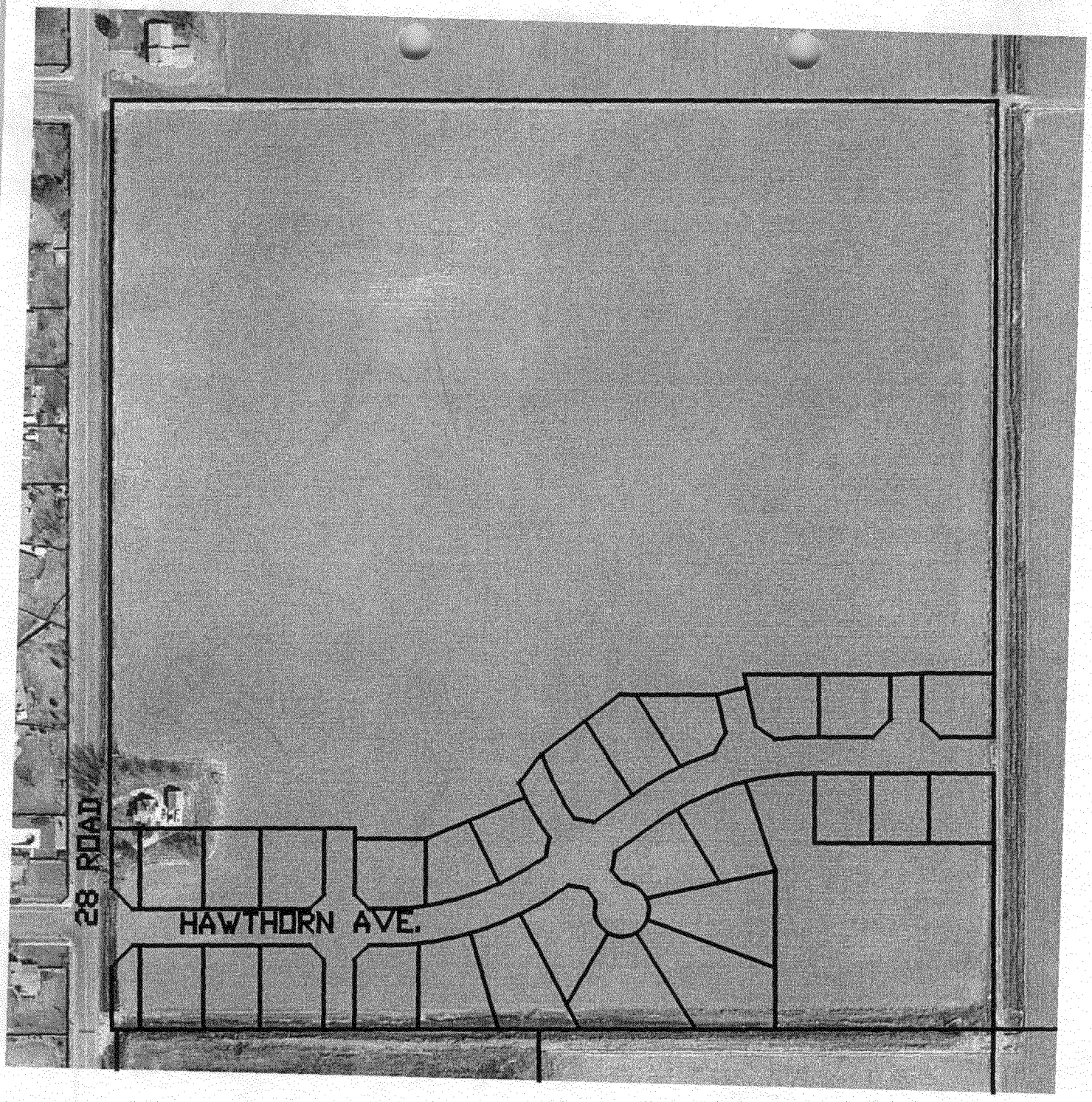
Sincerely,

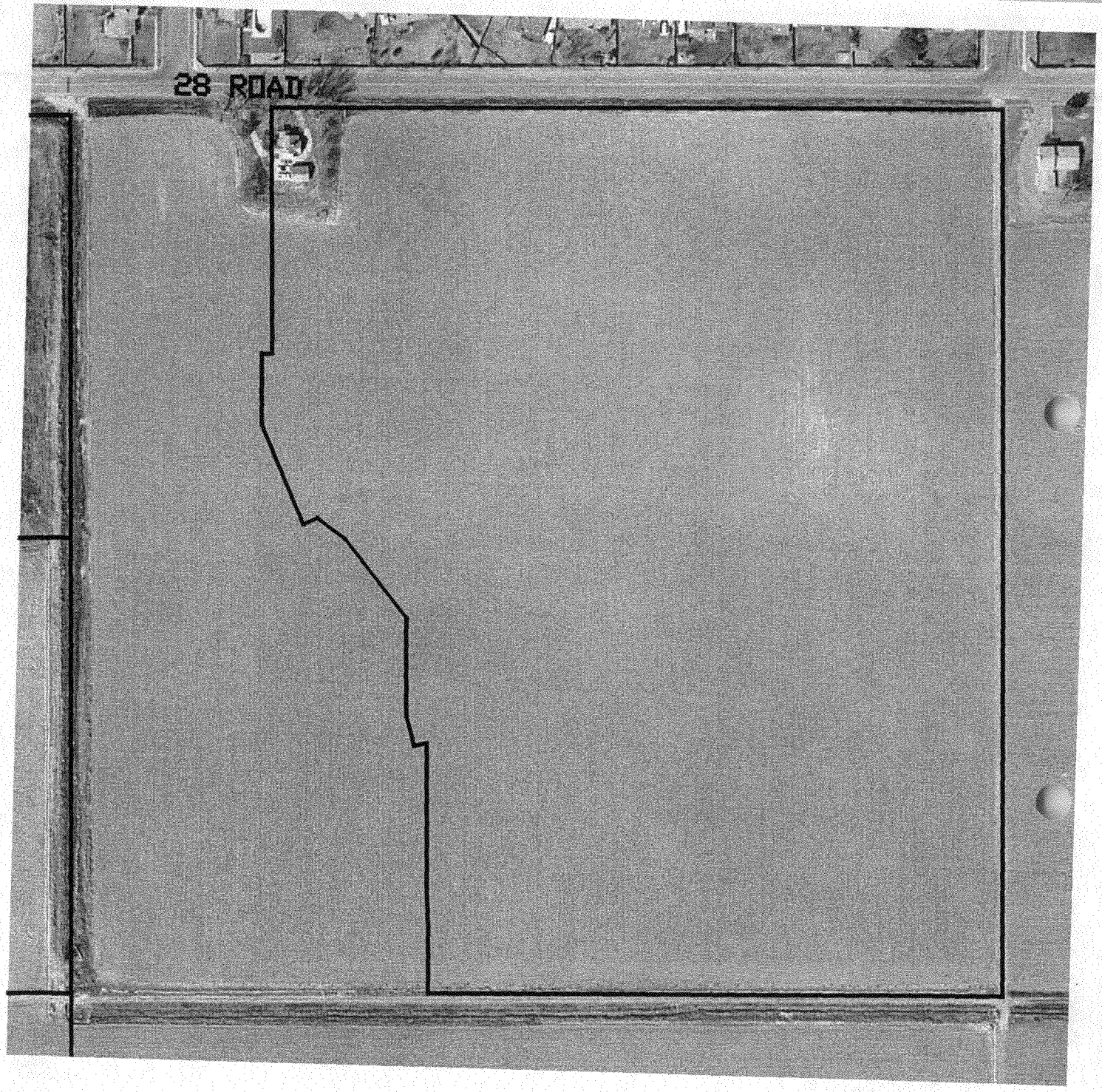
Jody Kliska
City Development Engineer

Sincerely,

Trenton Prall
City Utility Engineer

cc: Don Newton
Doug Cline
Walt Hoyt
Kathy Portner
Atkins & Associates
Jerry O-Brien

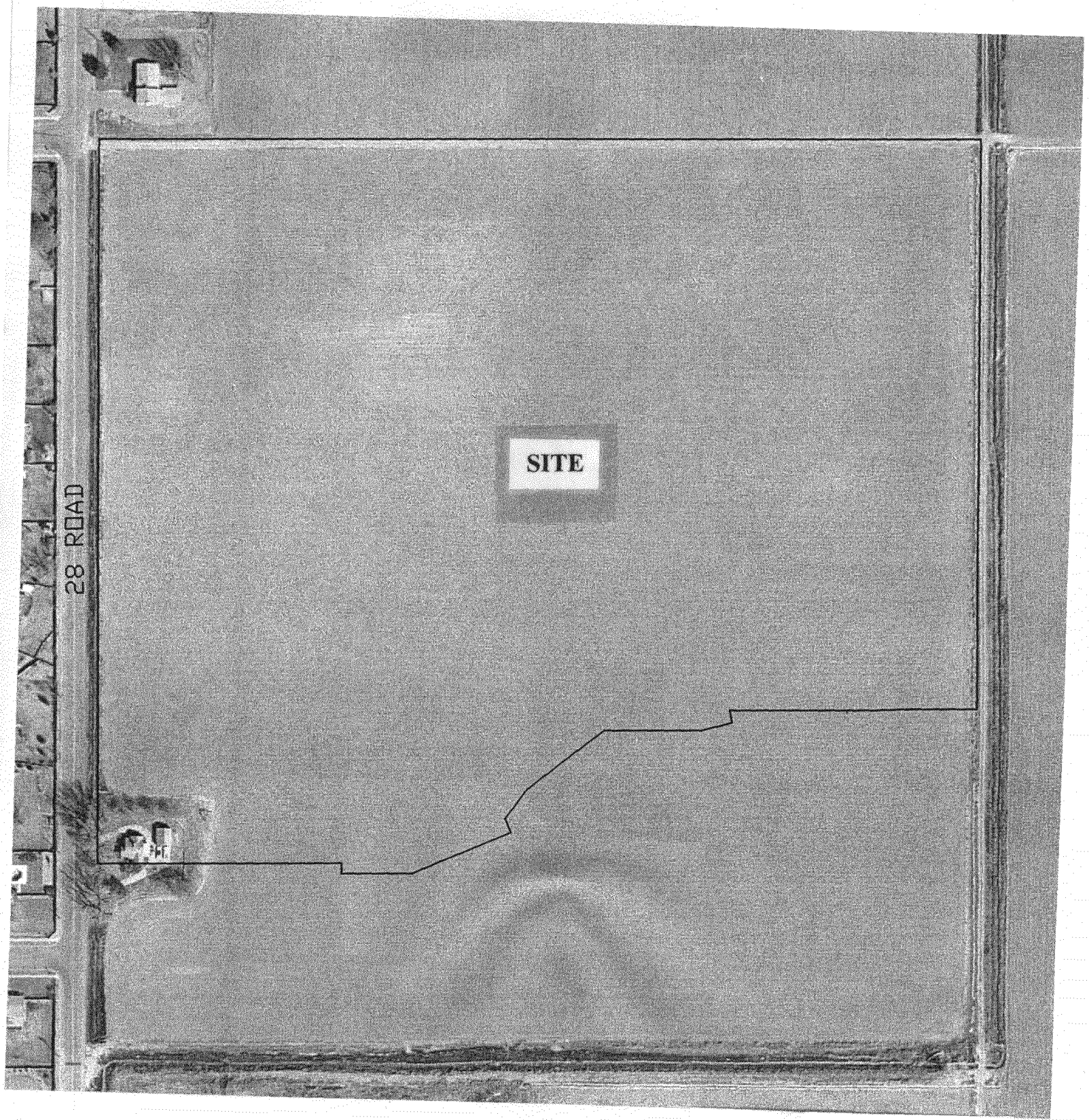

28 ROAD
HAWTHORN AVE.


28 ROAD

28 RUATA

N

AERIAL PHOTOGRAPH
Grand View Filing #2
Final Major Subdivision
FP-96-114



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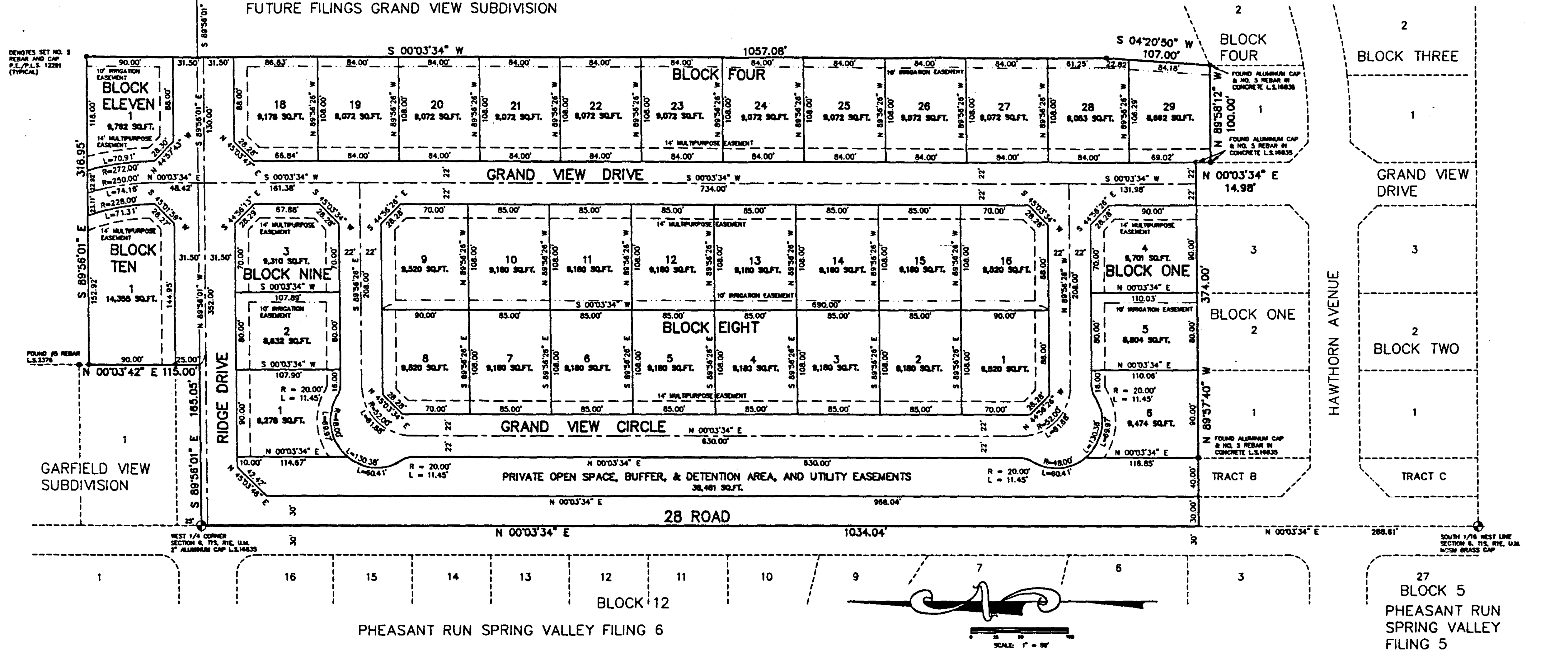
AERIAL PHOTOGRAPH
Grand View Filing #2
Final Major Subdivision
FP-96-114

GRAND VIEW SUBDIVISION
FILING NO. TWO



DEDICATION

KNOW ALL MEN BY THESE PRESENTS:

THAT DONADA, INC. A COLORADO CORPORATION IS THE OWNER OF THAT REAL PROPERTY LOCATED IN PART OF THE NW1/4SW1/4 (WHICH IS ALSO KNOWN AS GOVERNMENT LOT 6) AND THE SW1/4NW1/4 OF SECTION 6, TOWNSHIP 1 SOUTH, RANGE 1 EAST OF THE UTE MERIDIAN, MESA COUNTY, COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: (ORIGINAL WARRANTY DEED BOOK 2078, PAGE 339)

BEGINNING AT THE WEST ONE-QUARTER CORNER (A 2 INCH ALUMINUM CAP L.S.16835) OF SAID SECTION 6, WHENCE THE SOUTH ONE-SIXTEENTH CORNER (MESA COUNTY SURVEY MARKER) ON THE WEST LINE OF SAID SECTION 6, BEARS S00°03'34"W, 1322.65 FEET FOR A BASIS OF BEARINGS, WITH ALL BEARINGS CONTAINED HEREIN RELATIVE THERETO;
THENCE S89°56'01"E, ALONG THE NORTH LINE OF SAID NW1/4SW1/4, 165.05 FEET TO THE SOUTHEAST CORNER OF GARFIELD VIEW SUBDIVISION, WHENCE THE NORTHEAST CORNER (NO. 5 REBAR) OF SAID NW1/4SW1/4 BEARS S89°56'01"E, 1105.51 FEET;
THENCE N00°03'42"E, ALONG THE EAST LINE OF SAID GARFIELD VIEW SUBDIVISION, 115.00 FEET;
THENCE S89°56'01"E, 316.95 FEET;
THENCE S00°03'34"W, 1057.08 FEET;
THENCE S04°20'50"W, 107.00 FEET TO THE NORTHEAST CORNER (ALUMINUM CAP AND NO. 5 REBAR L.S.16835 IN CONCRETE) OF LOT 1 BLOCK FOUR GRAND VIEW SUBDIVISION FILING NO. ONE;
THENCE N89°58'12"W, ALONG THE NORTH LINE OF SAID LOT 1 BLOCK FOUR, 100.00 FEET TO THE NORTHWEST CORNER (ALUMINUM CAP AND NO. 5 REBAR L.S.16835 IN CONCRETE) THEREOF;
THENCE N00°03'34"E, ALONG THE EAST RIGHT-OF-WAY LINE OF GRAND VIEW DRIVE, 14.98 FEET TO A POINT (ALUMINUM CAP AND NO. 5 REBAR L.S.16835) ON THE NORTH LINE OF SAID GRAND VIEW SUBDIVISION FILING NO. ONE;
THENCE N89°57'40"E, ALONG SAID NORTH LINE, 374.00 FEET TO A POINT ON THE WEST LINE OF SAID NW1/4SW1/4;
THENCE N00°03'34"E, ALONG SAID WEST LINE, 1034.04 FEET TO THE POINT OF BEGINNING.
SAID PARCEL CONTAINING 12.30 ACRES AS DESCRIBED.

THAT SAID OWNERS HAVE CAUSED THE REAL PROPERTY TO BE LAID OUT AND PLATTED AS GRAND VIEW SUBDIVISION FILING NO. TWO, A SUBDIVISION OF A PART OF THE CITY OF GRAND JUNCTION, COLORADO, THAT SAID OWNER DOES HEREBY DEDICATE AND SET APART REAL PROPERTY AS SHOWN AND LABELED AS THE ACCOMPANYING PLAT OF GRAND VIEW SUBDIVISION FILING NO. TWO AS FOLLOWS:

ALL STREETS AND RIGHT-OF-WAY TO THE CITY OF GRAND JUNCTION FOR THE USE OF THE PUBLIC FOREVER;

ALL PRIVATE OPEN SPACE TO THE GRAND VIEW HOMEOWNERS ASSOCIATION, A COLORADO NON-PROFIT CORPORATION, FOR THE PURPOSES OF THE ASSOCIATION, INCLUDING BUT NOT LIMITED TO LANDSCAPING AND SIGNS;

ALL MULTI-PURPOSE EASEMENTS TO THE CITY OF GRAND JUNCTION FOR THE USE OF THE PUBLIC UTILITIES AS PERPETUAL NON-EXCLUSIVE EASEMENTS FOR THE INSTALLATION, OPERATION, MAINTENANCE AND REPAIR OF UTILITIES AND APPURTENANCES THERETO INCLUDING, BUT NOT LIMITED TO ELECTRIC LINES, CABLE TV LINES, NATURAL GAS PIPELINES, SANITARY SEWER LINES, WATER LINES, TELEPHONE LINES, AND ALSO FOR THE INSTALLATION AND MAINTENANCE OF TRAFFIC CONTROL FACILITIES, STREET LIGHTING, STREET TREES AND GRADE STRUCTURES;

ALL UTILITY EASEMENTS TO THE CITY OF GRAND JUNCTION FOR THE USE OF PUBLIC UTILITIES AS PERPETUAL NON-EXCLUSIVE EASEMENTS FOR THE INSTALLATION, OPERATION, MAINTENANCE AND REPAIR OF UTILITIES AND APPURTENANCES THERETO INCLUDING, BUT NOT LIMITED TO ELECTRIC LINES, CABLE TV LINES, NATURAL GAS PIPELINES, SANITARY SEWER LINES, WATER LINES, AND TELEPHONE LINES;

ALL IRRIGATION EASEMENTS AS SET FORTH ON THIS PLAT TO THE GRAND VIEW HOMEOWNERS ASSOCIATION, AS PERPETUAL NON-EXCLUSIVE EASEMENTS FOR THE INSTALLATION, OPERATION, MAINTENANCE AND REPAIR OF PRIVATE IRRIGATION SYSTEMS;

ALL PEDESTRIAN EASEMENTS AND RIGHTS-OF-WAY TO THE CITY OF GRAND JUNCTION AS PERPETUAL NON-EXCLUSIVE EASEMENTS FOR INGRESS AND EGRESS USE BY THE GENERAL PUBLIC PEDESTRIAN;

ALL DRAINAGE EASEMENTS HEREBY PLATTED TO THE GRAND VIEW HOMEOWNERS ASSOCIATION INC., AS PERPETUAL NON-EXCLUSIVE EASEMENTS FOR THE CONVEYANCE OF RUNOFF WATER WHICH ORIGINATES WITHIN THE AREA HEREBY PLATTED OR FROM UPSTREAM AREAS, THROUGH NATURAL OR MAN-MADE FACILITIES ABOVE OR BELOW GROUND;

ALL EASEMENTS INCLUDE THE RIGHT OF INGRESS AND EGRESS ON, ALONG, OVER, UNDER, AND THROUGH AND ACROSS BY THE BENEFICIARIES, THEIR SUCCESSORS, OR ASSIGNS, TOGETHER WITH THE RIGHT TO TRIM OR REMOVE INTERFERING TREES AND BRUSH. PROVIDED, HOWEVER THAT THE BENEFICIARIES OF SAID EASEMENTS SHALL UTILIZE THE SAME IN A REASONABLE AND PRUDENT MANNER. FURTHERMORE, THE OWNERS OF LOTS OR TRACTS HEREBY PLATTED SHALL NOT BURDEN NOR OVERBURDEN SAID EASEMENTS BY ERECTING OR PLACING ANY IMPROVEMENTS THEREON WHICH MAY PREVENT REASONABLE INGRESS AND EGRESS TO AND FROM THE EASEMENT.

IN WITNESS WHEREOF, SAID OWNERS, DONADA, INC. A COLORADO CORPORATION, HAS CAUSED THEIR NAMES TO BE HEREUNTO SUBSCRIBED THIS _____ DAY OF __________________, A.D. 1996

BY: ____________________
Don D. dela Motte
PRESIDENT

BY: ____________________
Ada M. dela Motte
SECRETARY

STATE OF COLORADO)ss
COUNTY OF MESA)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME BY DONADA, INC. A COLORADO CORPORATION, THIS _____ DAY OF __________________, A.D., 1996
WITNESS MY HAND AND OFFICIAL SEAL:

MY COMMISSION EXPIRES ____________________

____
NOTARY PUBLIC

CLERK AND RECORDER'S CERTIFICATE

STATE OF COLORADO)ss
COUNTY OF MESA)

I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED IN MY OFFICE AT _____ O'CLOCK ___ .M., ____________________, A.D., 1996 AND WAS DULY RECORDED IN PLAT BOOK NO. __________ PAGE NO. __________.

____
CLERK AND RECORDER

CITY OF GRAND JUNCTION APPROVAL

THIS PLAT OF GRAND VIEW SUBDIVISION FILING NO. TWO, A SUBDIVISON OF A PART OF THE CITY OF GRAND JUNCTION, COUNTY OF MESA, STATE OF COLORADO, IS APPROVED AND ACCEPTED THIS _____ DAY OF __________________, A.D., 1996

____
CITY MANAGER

____
PRESIDENT OF CITY COUNCIL

BASIS OF BEARINGS

BASIS OF BEARING ASSUMES THE WEST LINE OF THE NW1/4SW1/4 OF SECTION 6, T1S, R1E, OF THE UTE MERIDIAN, COUNTY OF MESA, STATE OF COLORADO, TO BEAR S00°03'34"W, 1322.65 FEET BETWEEN THE WEST 1/4 CORNER (A 2" ALUMINUM CAP L.S.16835) OF SAID SECTION 6 AND THE SOUTHWEST CORNER (MESA COUNTY SURVEY MARKER) OF SAID NW1/4SW1/4.

SURVEYOR'S CERTIFICATE

I, RICHARD LOYD ATKINS, DO HEREBY CERTIFY THAT THE ACCOMPANYING PLAT OF GRAND VIEW SUBDIVISION FILING NO. TWO, A SUBDIVISION OF A PART OF THE CITY OF GRAND JUNCTION, COLORADO HAS BEEN PREPARED UNDER MY DIRECT SUPERVISION AND REPRESENTS A FIELD SURVEY OF SAME. THIS PLAT CONFORMS TO THE REQUIREMENTS FOR SUBDIVISION PLATS AND THE APPLICABLE LAWS OF THE STATE OF COLORADO.

BY: ____________________

DATE: ____________________

NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

PRINCIPAL BUILDING SETBACKS – RSF-4	
FRONT – LOCAL STREET	40 FT. FROM CENTERLINE
FRONT – COLLECTOR STREET	50 FT. FROM CENTERLINE
REAR YARD	25 FT.
SIDE YARD	5 FT.
MAXIMUM BUILDING HEIGHT = 32 FEET	

LAND USE SUMMARY			
USE	UNITS	AREA	% OF TOTAL
SINGLE FAMILY AREA	36	7.72	62.8
ROAD		3.70	30.1
PRIVATE OPEN SPACE		0.88	7.1
TOTAL	36	12.30	100.0
DENSITY: 2.9 DWELLING UNITS PER ACRE			

GRAND VIEW SUBDIVISION
FILING NO. TWO

FINAL PLAT

A DESIGN – BUILD CONCEPT

ELAM CONSTRUCTION, INC.

ATKINS AND ASSOCIATES, INC.

DRAWN BY	SEC
DATE	4-30-96
JOB NO.	96008
SHEET	[illegible] OF 13