AMENDMENT TO VOLUME II OF II
CONCEPT DESIGN REPORT
DRAINAGE IMPROVEMENTS

84TH STREET AND CHOLLA ROAD ROADWAY IMPROVEMENTS AND 83RD PLACE AND SHEA BOULEVARD NEIGHBORHOOD DRAINAGE IMPROVEMENTS

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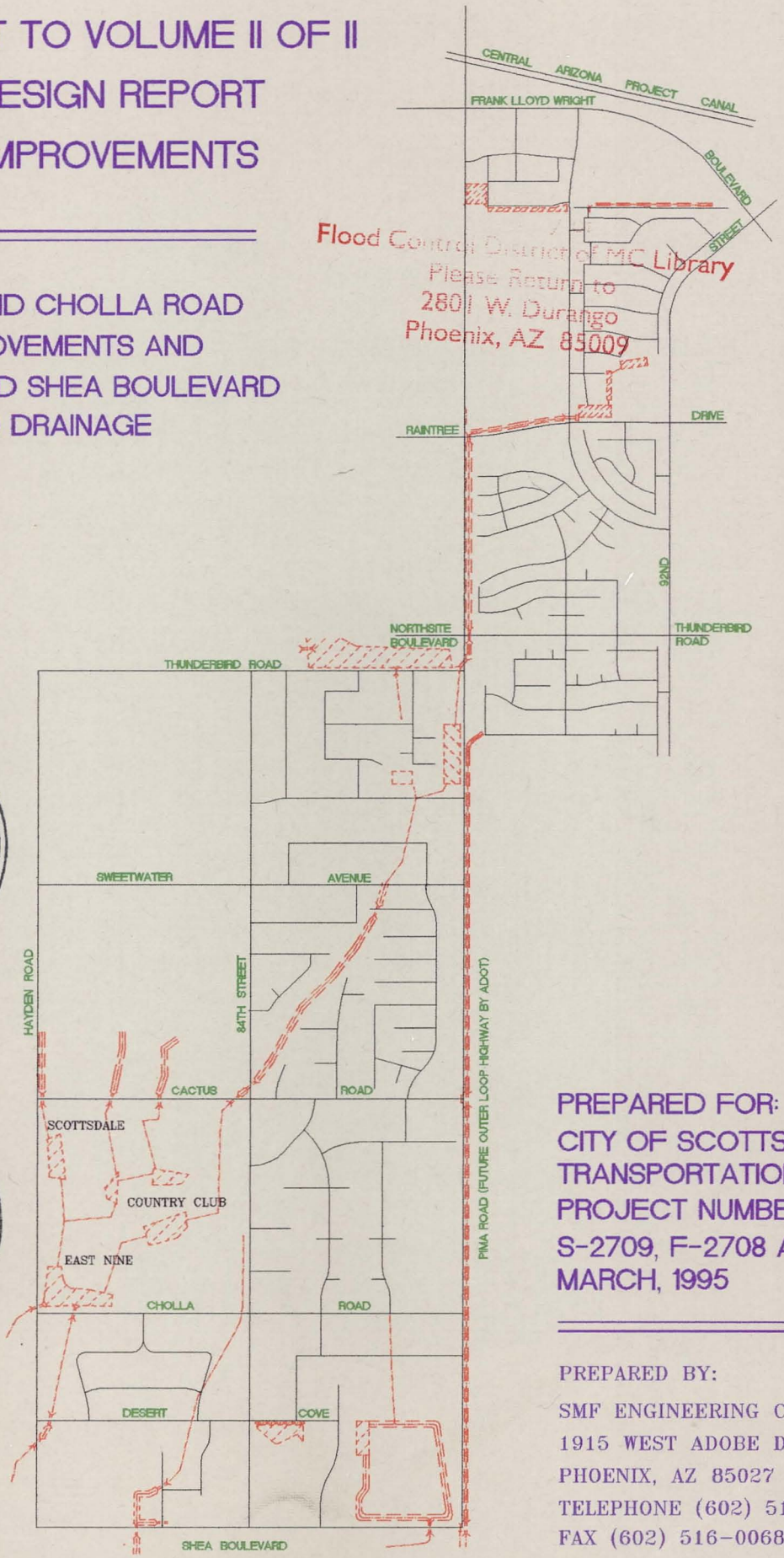

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CERTIFICATE NO. 19240
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ARIZONA, U.S.A.

PREPARED FOR:
CITY OF SCOTTSDALE
TRANSPORTATION DEPARTMENT
PROJECT NUMBERS
S-2709, F-2708 AND F-4702
MARCH, 1995

PREPARED BY:
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SECTION 1

March 15, 1995

I DESCRIPTION OF PROJECT

A. HYDROLOGY

Outer Loop Highway... ADOT's future, depressed, Outer Loop Highway corridor will follow the Pima Road alignment. Construction is planned to be completed by the year 2006. ADOT's General Plan includes a channel to be constructed on the east side of the Outer Loop Highway. For future conditions, this ADOT channel will obviate the proposed, interim Pima Detention Basin (see Selected Improvements Map, page 13).

Design Periods... This study considers three distinct periods, which are:

1. **Existing Conditions Period** - the period prior to construction of the COS proposed drainage improvements.

2. **Interim Conditions Period** - the period subsequent to construction of the COS proposed drainage improvement but prior to ADOT's Outer Loop Highway construction. COS proposed Drainage Improvements include all features shown on page 13 except the Desert Cove Storm Drain.

3. **Future Conditions Period** - the period subsequent to construction of both the COS's proposed drainage improvements including the Desert Cove Storm Drain and ADOT's Outer Loop Highway.

Existing Conditions Hydrology... The Cholla Wash Basin hydrology for existing conditions is presented in "Volume I of II - EXISTING CONDITIONS HYDROLOGY REPORT" for this project. Volume I describes the Cholla sub-basins and existing drainage facilities in the study area; defines the study area; describes drainage patterns; and describes the source of data, criteria, and methodology. Runoff discharge values were calculated at numerous concentration points for the 2, 5, 10, 25, 50, and 100-year return frequency storms with a 6-hour duration. Concentration point numbers are shown on the Volume I Drainage Area Map and Table 4.6 lists the corresponding discharge values in cfs. The map and table of Volume I have been revised to include the Thunderbird Wash/sub-basins and are presented in this addendum on pages 3 through 7.

In Volume I of II, the HEC-1 model included an unrestricted capacity for the Cactus Road / 84th Street box culverts because these culverts were listed for improvement in the Hayden / Shea Master Drainage Plan[1]. For existing conditions, an unplanned diversion now exists at this location for larger storm events. Thus current, existing conditions were not reflected by the Volume I calculated runoff discharge values downstream of the boxes. Therefore, for this addendum, the existing conditions

[1] Boyle Engineering Corporation. Hayden / Shea Area Master Drainage Plan, Pima/Doubletree Area Master Drainage Plan, Addendum No. 2, January 25, 1991, Exhibit 1.

HEC-1 model was revised to include the calculated box capacities; overspillage results which combines with Cactus Road surface flow approaching 84th Street from the east. This combined flow continues south in 84th Street and is intercepted by Cholla Wash along the west side of 84th Street, between Cholla Road and Cortez Street. The existing conditions runoff discharge values in the table on pages 5, 6 & 7 were calculated using this revised HEC-1 model.

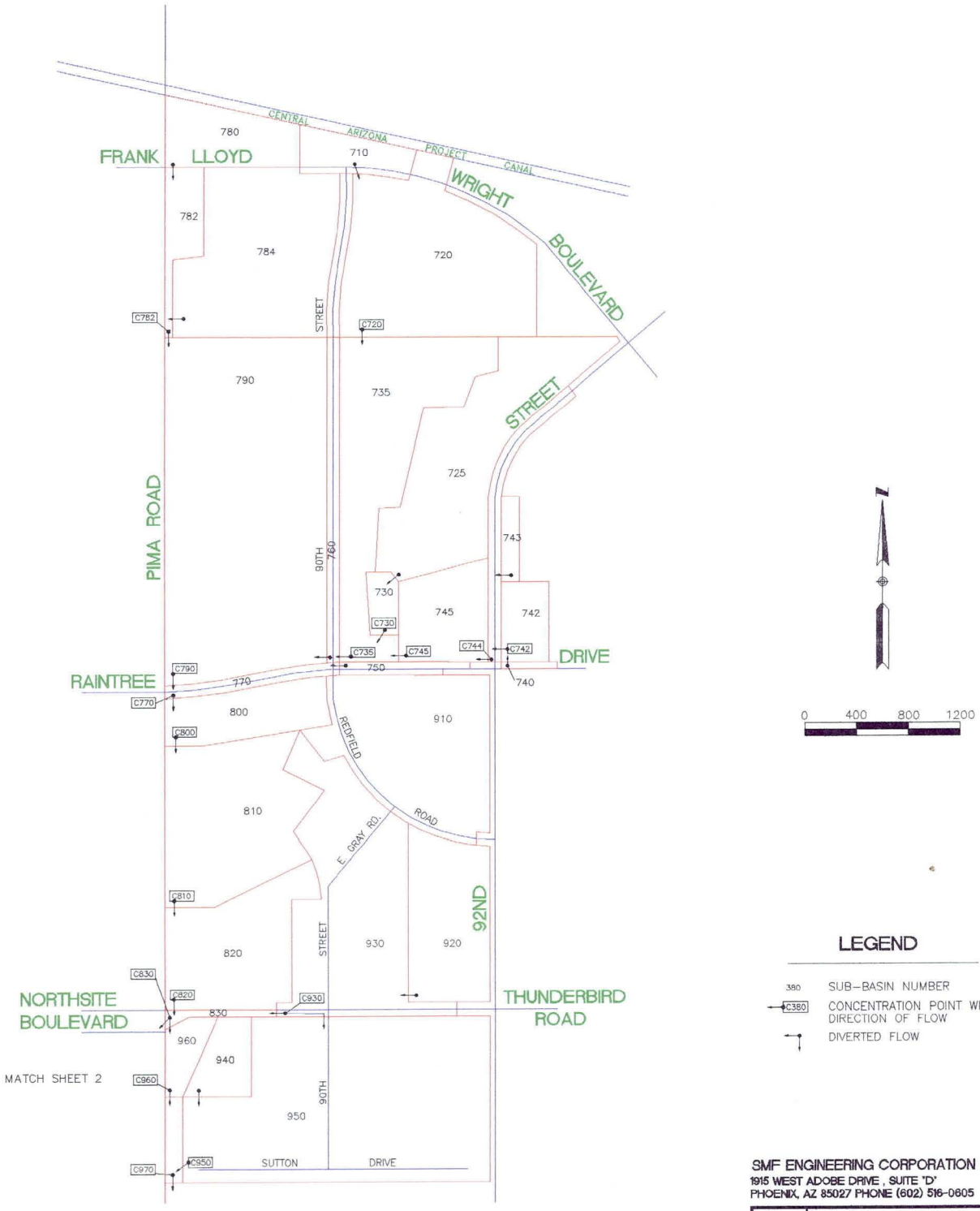
Residential Structure Intrusion Damage... There are no reported incidents on record indicating the floodwaters' surface elevations have exceeded floor elevations and thus, water has entered homes or other buildings, causing damage to them. However, numerous citizen complaints have been received by the City which indicate floodwater has spread through yards and approached floor elevations within inches. The runoff discharge values presented in Volume I and the analysis of this amended Volume II suggest the citizen complaints are warranted.

Erosion and Landscape Damage... During past flooding events, damage to landscaped areas and yards occurred at numerous locations throughout the study area. Some damage and erosion occurred on those properties adjacent to or near the Cholla Wash channel, and to properties along Shea Boulevard, along 85th Street and 84th Place between Desert Cove and Cholla Road, along 84th Street between Shea Boulevard and Cactus Road, and along the north side of Shea Boulevard between 84th Street and the Cholla Wash channel. Again, the runoff discharge values presented in Volume I, and the analysis of this amended Volume II, suggest this potential.

Road Closures... During larger flooding events, road closures have occurred in the Cactus Road / 84th Street intersection, at Cholla Wash in the Cholla Road / 84th Street intersection, and at the 83rd Place / Desert Cove intersection.

Suggested Improvements... Those runoff discharges calculated for existing conditions suggest that drainage improvements should be considered which will increase facility capacity or will reduce existing surface flows to a manageable level at the following locations:

1) Cactus Road from 84th Street to Pima Road
2) 84th Street from Cortez Street to Cactus Road
3) Cholla Wash from Cortez Street to Shea Boulevard
4) Shea Boulevard from 85th Place to the existing point of outfall (2-barrel 12' x 3' box culvert) located just west of 82nd Place in the Cholla channel/Wash
5) 84th Place and 85th Street between Desert Cove and Cholla Road
6) Lake 5 of the Scottsdale Country Club East Nine
7) Thunderbird channel existing box culverts under Cactus Road and 84th Street
8) The existing box culvert under Pima Road at the Pima / Thunderbird Road intersection
9) Pima Road channel (east side) from Thunderbird Road to Voltaire Drive extended
10) Clinton Street/82nd Place box culvert in Cholla Wash



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CITY OF SCOTTSDALE ARIZONA

MANAGEMENT SERVICES DEPARTMENT
CAPITAL PROJECT MANAGEMENT
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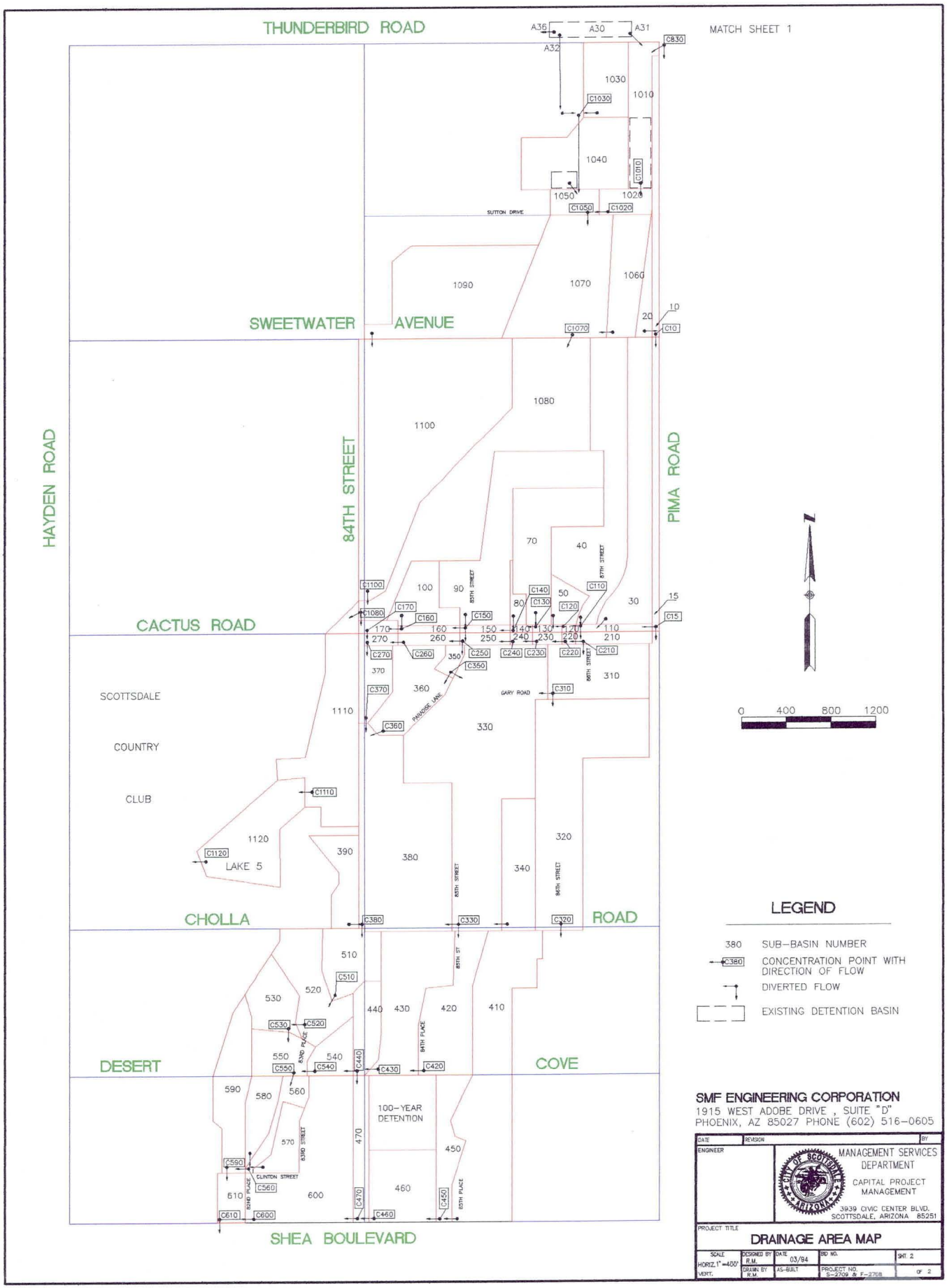
SCOTTSDALE, ARIZONA 85251

PROJECT TITLE
DRAINAGE AREA MAP

SCALE	DESIGNED BY	DATE	BID NO.	SHT. 1
HORIZ. 1"=400'	R.M.	03/94		
VERT.	DRAWN BY M.L.H.	AS-BUILT	PROJECT NO. S-2709 & F-2708	OF 2



100-year detention Sub-B of Desert Cove not included for purpose of

Table 1.1	HEC-1 RUNOFF DISCHARGE SUMMARY - EXISTING CONDITIONS					
LOCATION CONCENTRATION POINT NUMBER	RETURN FREQUENCY - 6-HOUR DURATION					
	2-YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR
C-15	5	9	11	15	19	23
C-210	4	10	16	23	31	39
C-250	9	27	41	55	70	85
C-270	36	61	75	168	237	292
C-330	18	39	52	77	78	127
C-370	40	71	90	183	258	315
C-380	53	99	131	205	287	365
C-440	23	47	63	92	122	155
C-470	32	66	89	130	167	206
C-510	55	102	133	201	288	360
C-530	57	110	142	204	288	364
C-550	65	126	166	237	308	398
C-560	66	130	171	246	316	392
C-600	38	79	106	155	201	248
C-610	106	217	290	416	539	674
C-830	118	256	347	509	676	861
C-970	89	118	134	163	323	536
C-1010	120	259	359	524	588	616
C-1070	80	259	385	563	652	706
C-1080	93	311	432	642	755	839
C-1110	95	319	411	465	495	520
C-1120	95	321	413	467	498	524

For concentration point numbers and location, see Drainage Area Map.

Table 1.2	HEC-1 RUNOFF DISCHARGE SUMMARY - INTERIM CONDITIONS					
LOCATION CONCENTRATION POINT NUMBER	RETURN FREQUENCY - 6-HOUR DURATION					
	2-YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR
C-15	6	11	15	20	25	30
C-210	14	24	29	38	53	68
C-250	36	59	73	98	121	146
C-270	41	68	84	112	138	165
C-330	18	37	50	71	91	111
C-370	7	14	19	28	37	84
C-380	25	53	71	104	137	172
C-440	13	27	37	53	68	85
C-470	26	54	73	104	134	165
C-510	7	13	18	27	35	43
C-530	14	28	38	55	71	87
C-550	19	40	54	78	103	129
C-560	23	51	68	97	125	157
C-600	32	70	93	133	172	214
C-610	57	120	163	240	317	399
C-830	118	256	347	509	676	861
C-970	89	118	134	163	323	536
C-1010	120	259	359	524	588	616
C-1070	35	81	111	161	208	370
C-1080	40	86	118	177	236	400
C-1110	90	182	233	314	403	492
C-1120	93	201	253	331	424	501

For concentration point numbers and location, see Drainage Area Map.

Table 1.3	HEC-1 RUNOFF DISCHARGE SUMMARY - ULTIMATE CONDITIONS					
LOCATION CONCENTRATION POINT NUMBER	RETURN FREQUENCY - 6-HOUR DURATION					
	2-YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR
C-15 1)						
C-210	14	23	28	37	46	54
C-250	33	55	69	94	116	139
C-270	39	64	79	106	131	157
C-330	18	37	50	71	91	111
C-370	7	14	19	28	37	71
C-380	25	53	71	104	137	172
C-440	13	27	37	53	68	85
C-470	18	36	47	67	86	126
C-510	7	13	18	27	35	43
C-530	14	28	38	55	71	87
C-550	4	9	12	18	24	43
C-560	5	10	14	20	26	48
C-600	25	51	67	97	126	160
C-610	60	123	165	241	312	389
C-830 1)						
C-970 1)						
C-1010	1	9	14	21	27	32
C-1070	10	31	44	68	91	116
C-1080	39	87	121	190	249	307
C-1110	87	180	231	308	402	501
C-1120	90	198	248	324	419	515

For concentration point numbers and location, see Drainage Area Map.

1) Outside study area due to construction of Pima Freeway.

B. DESIGN STANDARDS AND CRITERIA

The design standards used for this project are City of Scottsdale Design Procedures and Criteria; Section 2 - Drainage Report Presentation; Section 2.2 - Hydrology (Revised March, 1994); Section 3 - Design of Facilities to Manage Storm Water Runoff; and the City of Scottsdale code requirements.

C. DRAINAGE BASINS AND DIVERSION CONCEPTS

Study Area... The study area is shown on the "Drainage Area Map" (Pages 3 & 4); It consists of the Thunderbird Wash and Cholla Wash tributary sub-basins. The location of Thunderbird Wash and Cholla Wash are shown on the "Existing Drainage Facilities Map" (pages 9 & 10). Generally, the study area north of Thunderbird Road is located between Pima Road and 92nd Street; it is bordered on the north by the CAP canal. Between Shea Boulevard and Thunderbird Road, the study area is located between 82nd Street and Pima Road.

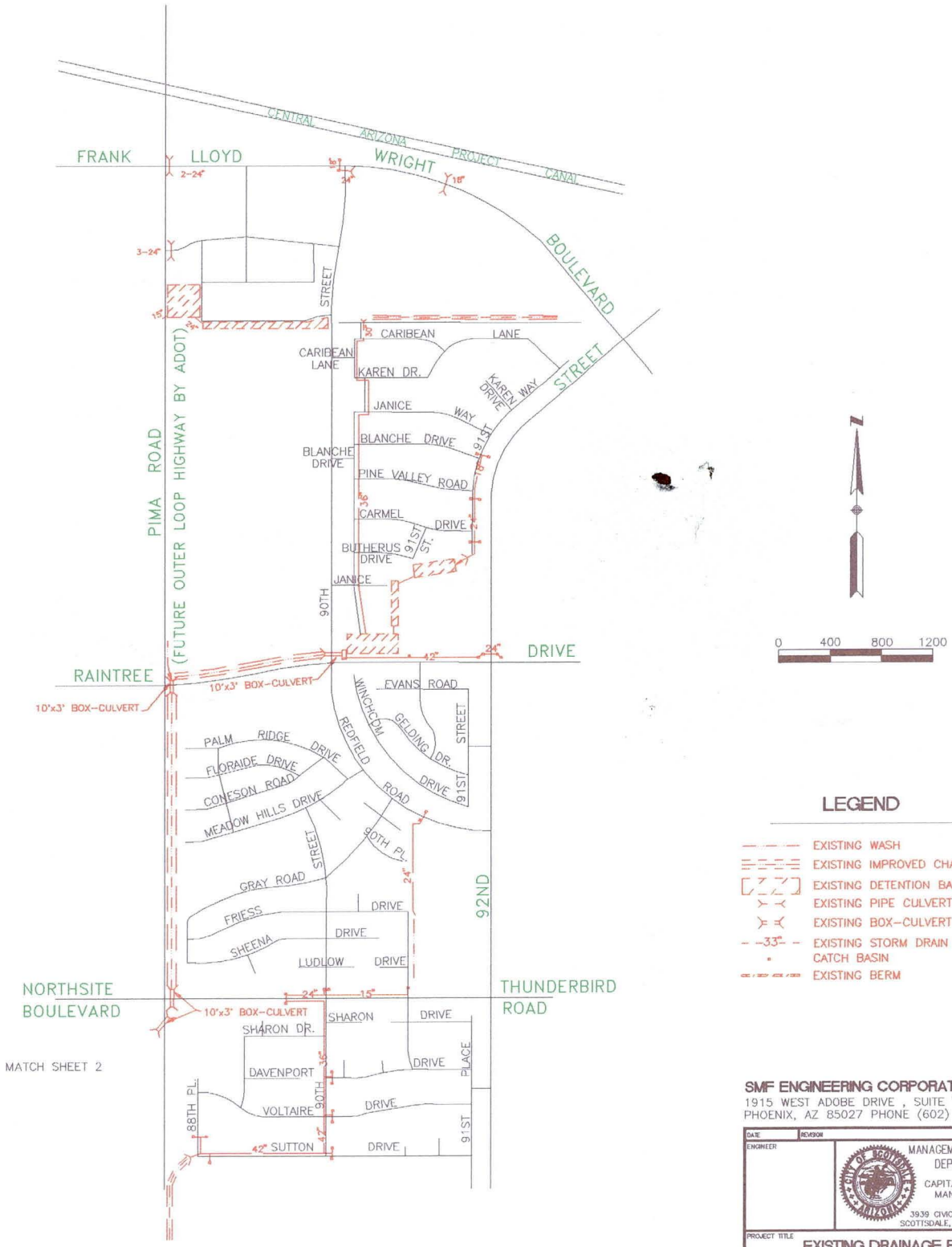
Planned Diversions... If a planned diversion were to be considered, sufficient design/modeling must be performed to demonstrate that the affected, downstream areas are provided with at least the same level of flood protection as existed prior to the diversion. In the event that the level of protection which existed prior to the diversion improvement is considered undesirable or unacceptable, then a serious uncertainty would exist as to the validity or acceptability of the proposed diversion concept. In that event, a total solution is necessary, including the area downstream of the diversion and that facility should be improved to City Standards.

Drainage Basin Overspillage... The study area as described in Volume I, Section 3, has been expanded in this amended report to include the Thunderbird Wash sub-basins. The study area is separated into two parts by Thunderbird channel; Cholla Basin lies south of it and Thunderbird Basin is located on the north side of it. Observation of storm events and calculations shows that overspillage from Thunderbird Basin occurs for existing conditions, during larger storms at:

1. The Cactus Road / 84th Street existing box culverts (overspillage into the Cholla Drainage Basin)
2. Thunderbird Channel on the east side of Pima Road (overspillage in the Pima Road Channel)
3. Thunderbird channel on the west side of Pima Road (overspillage into the Cholla Drainage Basin)

The HEC-1 models developed in this addendum study account for the overspillage at those three locations.

Pima Detention Basin... Pima Detention Basin is a planned, temporary, interim period facility and will be obviated by ADOT's future Outer Loop Channel. The location is shown on the Selected Improvements Map, Page 13. A part of the runoff discharge from the areas north of Thunderbird Road (700, 800 & 900 series sub-



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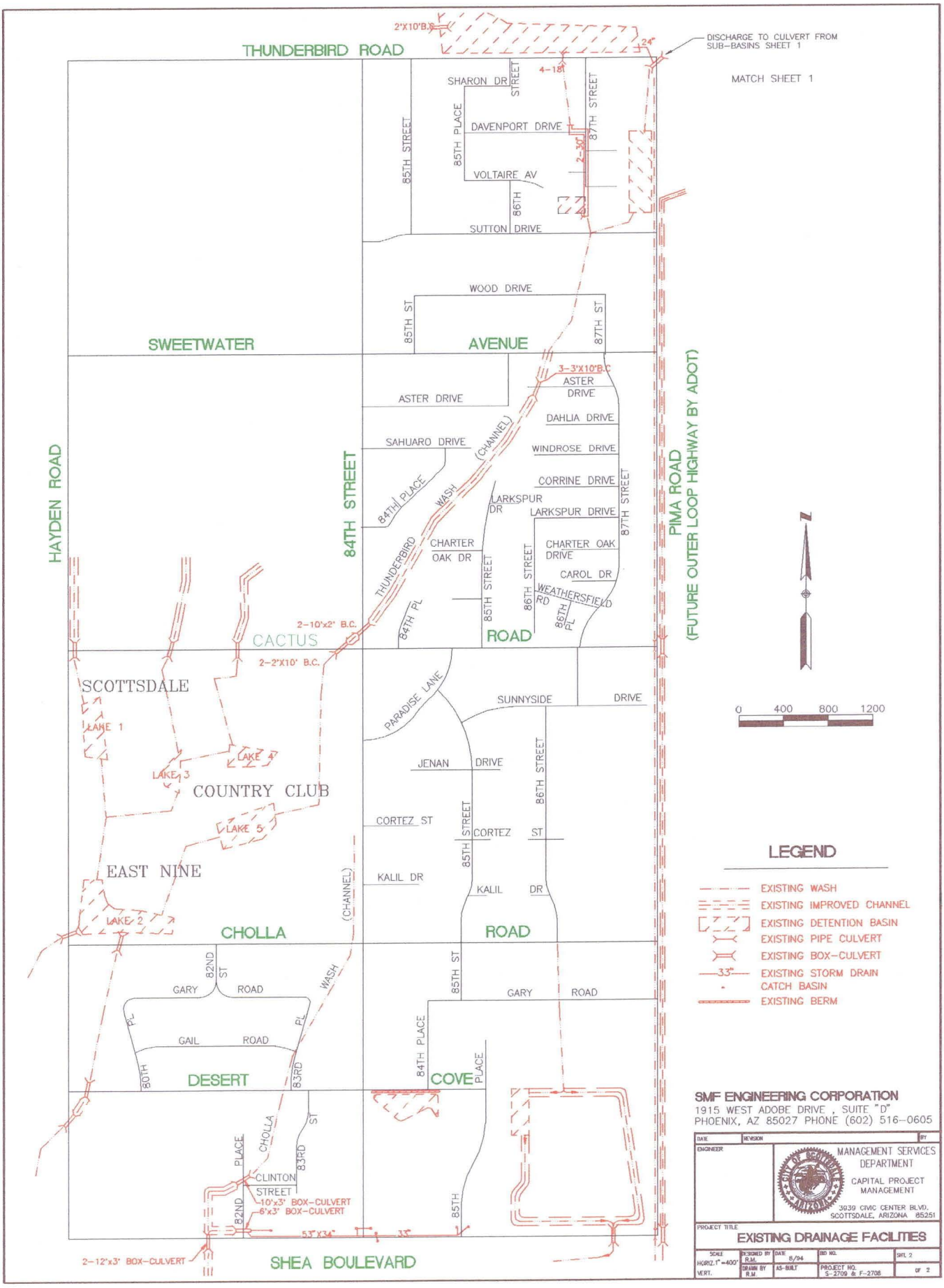
PROJECT TITLE
EXISTING DRAINAGE FACILITIES

SCALE	DESIGNED BY	DATE	BID NO.	SHT. 1
HORIZ. 1"=400' VERT.	R.M.	03/94		
	DRAWN BY M.L.H.	AS-BUILT	PROJECT NO. S-2709 & F-2708	OF 2


THUNDERBIRD ROAD
2'X10'B.C.
24"
DISCHARGE TO CULVERT FROM SUB-BASINS SHEET 1
MATCH SHEET 1
SHARON DR
4-18"
DAVENPORT DRIVE
2-30"
VOLTAIRE AV
SUTTON DRIVE
85TH STREET
85TH PLACE
86TH
87TH STREET
WOOD DRIVE
85TH ST
87TH ST
SWEETWATER
AVENUE
3-3'X10'B.C
ASTER DRIVE
DAHLIA DRIVE
SAHUARO DRIVE
WINDROSE DRIVE
CORRINE DRIVE
LARKSPUR DR
LARKSPUR DRIVE
CHARTER OAK DR
CHARTER OAK DRIVE
CAROL DR
WEATHERSFIELD RD
86TH PL
84TH PL
84TH PLACE
84TH STREET
THUNDERBIRD WASH (CHANNEL)
HAYDEN ROAD
PIMA ROAD
(FUTURE OUTER LOOP HIGHWAY BY ADOT)
2-10'x2' B.C.
2-2'X10' B.C.
CACTUS
ROAD
SCOTTSDALE
LAKE 1
LAKE 2
LAKE 3
LAKE 4
LAKE 5
COUNTRY CLUB
EAST NINE
PARADISE LANE
SUNNYSIDE
DRIVE
JENAN
DRIVE
CORTEZ ST
KALIL DR
KALIL
DR
(CHANNEL)
CHOLLA
ROAD
82ND ST
GARY
ROAD
WASH
PL
GAIL
ROAD
80TH
83RD
DESERT
COVE
PLACE
CLINTON STREET
10'x3' BOX-CULVERT
6'x3' BOX-CULVERT
53"X34"
33"
2-12'x3' BOX-CULVERT
SHEA BOULEVARD
N
0 400 800 1200
LEGEND
EXISTING WASH
EXISTING IMPROVED CHANNEL
EXISTING DETENTION BASIN
EXISTING PIPE CULVERT
EXISTING BOX-CULVERT
33" EXISTING STORM DRAIN
CATCH BASIN
EXISTING BERM
SMF ENGINEERING CORPORATION
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3939 CIVIC CENTER BLVD.
SCOTTSDALE, ARIZONA 85251
PROJECT TITLE
EXISTING DRAINAGE FACILITIES
SCALE
HORIZ. 1" =400'
VERT.
DESIGNED BY R.M.
DATE 8/94
BID NO.
SHT. 2
DRAWN BY R.M.
AS-BUILT
PROJECT NO. S-2709 & F-2708
OF 2

basins) will be detained in the Pima Detention Basin, thus reducing the downstream discharge in Thunderbird Wash.

The area north of Thunderbird Road is relatively large (435 acres) and is expected to contribute a significant discharge, for existing conditions, to the downstream Scottsdale Country Club (SCC) East Nine drainage facilities. The peak discharges and total volume of flow which reach those facilities will be reduced by the Pima Detention Basin.

Cactus Road Diversion Component... As stated in Volume I, the existing Cactus Road from 84th Street to Pima Road collects flows from those areas north of Cactus Road and diverts those flows to 84th Street where it turns south and continues in 84th Street to Cholla Wash at Cortez Street. The hydraulic capacity of Cholla Wash is considerably less than the runoff flows which enter into it. Also, the surface runoff flows experienced in Cactus Road and 84th Street are considerably greater than the street's water conveyance capacity.

Therefore, a new storm sewer pipe alternative is proposed for study in Cactus Road from about 87th Street to 84th Street. For the selected Improvement Plan, the storm sewer pipe design concept outfalls into the SCC East Nine drainage facilities along 84th Street just south of Cactus Road. The proposed Pima Detention Basin will reduce the flows reaching the outfall facilities at the SCC East Nine from Thunderbird Wash, and the Cactus Road storm sewer will increase those flows. Final design of the Cactus Road storm sewer includes modeling the SCC East Nine drainage facilities to ensure a proper balance with the Pima Detention Basin. This balance ultimately resulted in improved conditions at the SCC East Nine.

Cholla Road Diversion Component... Drainage improvements are needed at the Cholla Road / 85th Street intersection, and in 85th Street, 84th Place, and Desert Cove south of that intersection. Therefore, the Cholla Road storm sewer from 85th Street to Cholla Wash is included in the selected Improvement Plan. The proposed Pima and Cholla Detention Basins and the Cactus Road storm sewer will reduce those runoff flows in Cholla Wash, thus excess capacity is available in Cholla Wash to receive these diverted flows from the Cholla Road storm sewer. These diverted flows will accumulate and be stored in the Cholla Detention Basin and the outflow regulated to provide a significantly reduced flow rate into Cholla Wash, thus minimizing the impact on the Cholla Wash system.

D. BENEFITTING COMMUNITY

Residential Area... The primary benefitting area of the proposed improvements of this project is that area bound by Shea Boulevard on the south, Cholla Road on the north, 82nd Street on the west and 86th Street on the east; and, the area bound by Cholla Road on the south, Cactus Road on the north, 84th Street on the west and 86th Street on the east. The primary beneficial impacts will be to those properties near and adjacent to Cholla Wash, 84th Street, Cactus Road, and 85th Street.

Scottsdale Country Club East Nine... For the selected Improvement Plan, post-construction impacts to this area will be beneficial. Essentially, runoff discharges flowing into the SCC East Nine drainage facilities will be reduced. The purpose of the proposed Pima Detention Basin is to reduce flows in Thunderbird channel, reduce the storage requirement for Lake 5 of the SCC East Nine, and reduce the outflow from Lake 2 of the SCC East Nine into the communities downstream.

Secondary benefits will be effected by the Pima Detention Basin for downstream areas along Cholla channel south of Shea Boulevard and along Thunderbird channel south of the SCC East Nine. Also, all areas along Thunderbird channel which lie south of the proposed Pima Detention Basin will benefit.

E. CAPITAL IMPROVEMENT PROGRAM (CIP), LEVEL OF PROTECTION AND NEEDED IMPROVEMENTS

Level of Protection and Budget... Construction is planned for mid-1995. The total funds available for this project (Project Number F2708), including engineering, construction and inspection is $838,900; total funds available for the related street improvement project (Project Number S2709) is $925,000; the total funds available for the Pima Detention Basin (project number F4702) is $150,000; Bottleneck fund (T-0703) consists of $100,000; waterline oversize funds (W-0710) consists of $10,000; and the IGA with MCFCD is providing $750,000 for drainage improvements.

The Concept Design Report for the companion street improvement project of Cholla Road and 84th Street is a separate bound report.[2]

For each of the preferred drainage alternates studied, runoff discharges were calculated for selected return frequency storms and alternative designs were prepared for various levels of protection while considering the construction cost and budget.

The nature of a concept study is that proposed improvements are not known beforehand; therefore, it is rare if pre-programmed available funds and cost to meet the community needs match.

The alternative chosen for construction must meet the long range needs of the community and maximize benefit to the community.

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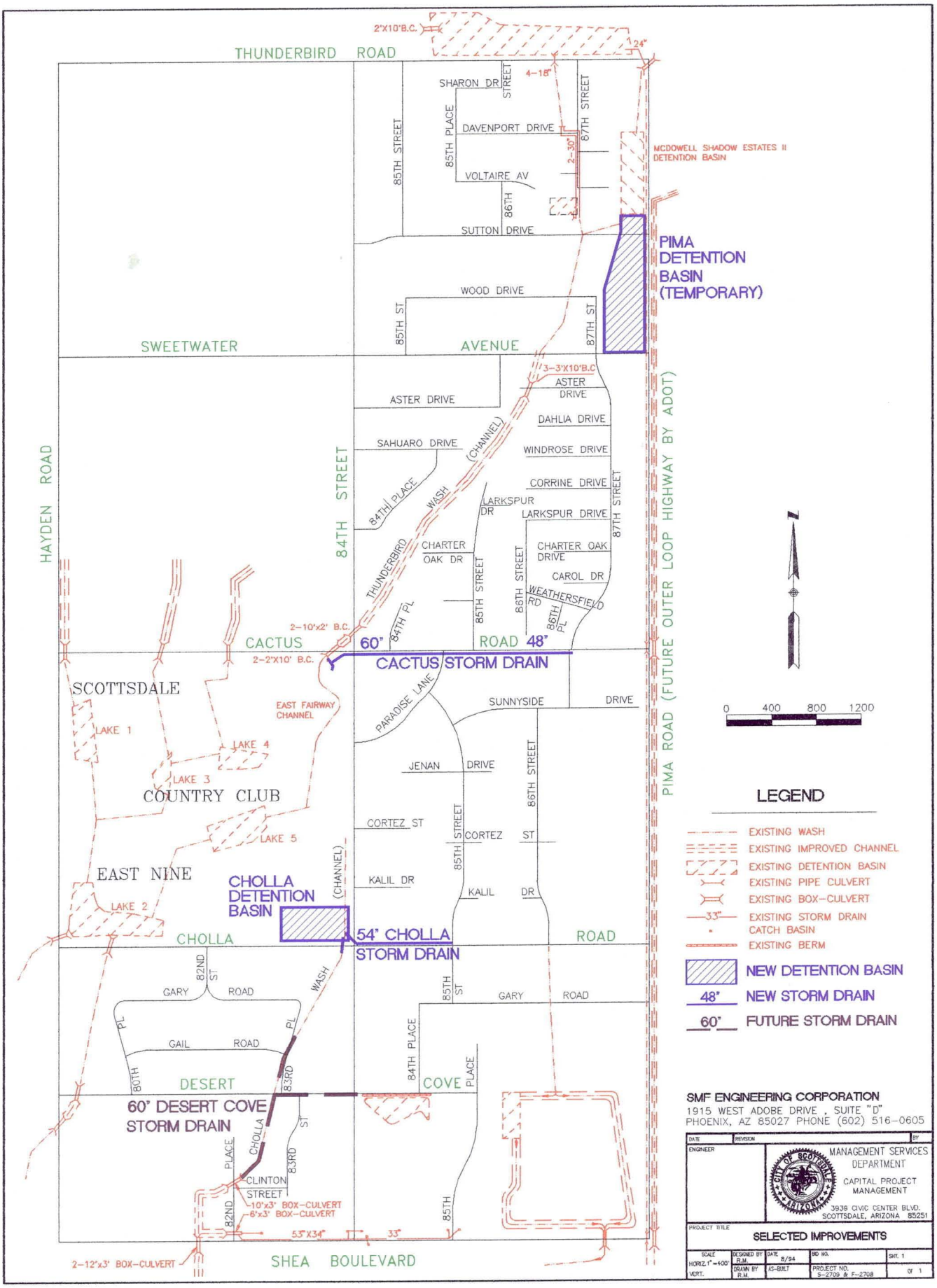
[2] SMF Engineering Corporation. 84th Street and Cholla Road Roadway Improvements, Concept Design Report, August 4, 1993, Sections 3 and 4.


THUNDERBIRD ROAD
SHARON DR
STREET
DAVENPORT DRIVE
85TH PLACE
85TH STREET
87TH STREET
VOLTAIRE AV
86TH
SUTTON DRIVE
MCDOWELL SHADOW ESTATES II DETENTION BASIN
PIMA DETENTION BASIN (TEMPORARY)
WOOD DRIVE
85TH ST
87TH ST
SWEETWATER
AVENUE
ASTER DRIVE
DAHLIA DRIVE
SAHUARO DRIVE
WINDROSE DRIVE
CORRINE DRIVE
LARKSPUR DR
LARKSPUR DRIVE
84TH PLACE
84TH STREET
WASH
(CHANNEL)
THUNDERBIRD
CHARTER OAK DR
CHARTER OAK DRIVE
CAROL DR
WEATHERSFIELD RD
86TH PL
84TH PL
HAYDEN ROAD
PIMA ROAD (FUTURE OUTER LOOP HIGHWAY BY ADOT)
CACTUS
ROAD
60'
48'
CACTUS STORM DRAIN
SCOTTSDALE
EAST FAIRWAY CHANNEL
PARADISE LANE
SUNNYSIDE
DRIVE
LAKE 1
LAKE 4
LAKE 3
COUNTRY CLUB
LAKE 5
JENAN
DRIVE
CORTEZ ST
CORTEZ
ST
EAST NINE
LAKE 2
CHOLLA DETENTION BASIN
KALIL DR
KALIL
DR
54" CHOLLA STORM DRAIN
CHOLLA
ROAD
82ND ST
GARY
ROAD
85TH ST
GAIL
ROAD
PL
80TH
83RD
DESERT
COVE
PLACE
60" DESERT COVE STORM DRAIN
CLINTON STREET
10'x3' BOX-CULVERT
6'x3' BOX-CULVERT
53"X34"
33"
2-12'x3' BOX-CULVERT
SHEA BOULEVARD
2'X10'B.C.
24"
4-18"
2-36"
3-3'X10'B.C
2-10'x2' B.C.
2-2'X10' B.C.
0 400 800 1200
LEGEND
EXISTING WASH
EXISTING IMPROVED CHANNEL
EXISTING DETENTION BASIN
EXISTING PIPE CULVERT
EXISTING BOX-CULVERT
33" EXISTING STORM DRAIN
CATCH BASIN
EXISTING BERM
NEW DETENTION BASIN
48" NEW STORM DRAIN
60" FUTURE STORM DRAIN
SMF ENGINEERING CORPORATION
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CAPITAL PROJECT MANAGEMENT
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SCOTTSDALE, ARIZONA 85251
PROJECT TITLE
SELECTED IMPROVEMENTS
SCALE
HORIZ. 1" =400'
VERT.
DESIGNED BY R.M.
DRAWN BY R.M.
DATE 8/94
AS-BUILT
BID NO.
PROJECT NO. S-2709 & F-2708
SHT. 1
OF 1

Much of this project area south of Cactus Road is an older community and was developed under older drainage standards (Maricopa County). As newer subdivisions developed in the surrounding areas, the drainage problems were exacerbated in this study area. Many of the local citizens who attended the public information meetings perceive their community as a victim of surrounding growth and changing standards.

As the engineer progressed with this study, it became apparent that the drainage issues are more severe than initially described and that alternative solutions are limited by surrounding development and existing downstream drainage system's capacity constraints. Therefore, the long range, overall solution reaches beyond the initial study area of this project and this addendum study and report provides a complete study.

Cholla Wash Channel... Initially, the project study was centered around the Cholla Wash channel. The initial brief description of the project is... "The drainage project will address deficiencies and problems in the existing drainage channel from the 84th Street and Cholla Road intersection south to the existing lined channel at 82nd Place and Clinton Street (400 feet north of Shea Boulevard). Should channel improvements be necessary along the existing channel alignment, the required drainage easements for this portion of the project are assumed to be dedicated to the City at no cost."[3]. However, the future runoff discharges which contribute to Cholla Wash are dependent upon several additional, surrounding, drainage features which require consideration and they are reiterated here:

1) Cactus Road storm sewer
2) Thunderbird Wash and box culvert at 84th Street and Cactus Road
3) Pima Road Detention Basin
4) Box Culvert at Pima / Thunderbird intersection
5) SCC East Nine drainage facilities
6) Outfall drainage culvert and channel at Shea Boulevard

Several of the alternative improvement plans studied require detention and the cost of a detention basin site is a substantial part of the project budget. Suitable sites are scarce, therefore, site selection has been given an inordinate amount of study.

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[3] City of Scottsdale, Engineering Contract Number 920106 - Exhibit "A", Project No. S-2709 & F-2708, 84th Street and Cholla Road Roadway Improvements and 83rd Place and Shea Boulevard Neighborhood Drainage Improvements, Scope of Work, p. 1.

2

II MAJOR DESIGN AND EXISTING COMPONENTS

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B. THUNDERBIRD WASH CHANNEL 4
C. CACTUS ROAD DIVERSION COMPONENT 4
D. EIGHTY-FOURTH STREET 6
E. SCOTTSDALE COUNTRY CLUB EAST NINE 7
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SECTION 2

II MAJOR DESIGN AND EXISTING COMPONENTS

A. PIMA DETENTION BASIN (See Map, Page 2)

Design Period... "ADOT's future depressed Outer Loop Highway will follow the Pima Road alignment. Construction is planned for completion in the year 2006. ADOT's General Plan includes a channel to be constructed on the east side of the Outer Loop Highway."...[4] That facility is also expected to be in service in the year 2006. The Pima Detention Basin planned for the interim period by the City of Scottsdale will be replaced by ADOT's Outer Loop Highway channel. Scottsdale's interim detention basin is planned for a ten (10) year life.

Detention Basin Site... The site is located along the west side of Pima Road between Sweetwater Avenue and Sutton Drive; The site is totally within the future Outer Loop Highway ROW. The total area of the site is about ten (10) acres. See Selected Improvements Map, page 2.

Tributary Drainage Areas... The tributary area (0.68 sq mi) is bound by CAP canal on the north, Thunderbird Road on the south, Pima Road on the west and 92nd Street on the east. The area designation numbers are of the 700, 800, and 900 series. Runoff discharges from this area cross under Pima Road (east to west) in a box culvert located just south of Thunderbird Road; The flows continue south along the west side of Pima Road in an existing channel / wash to Sutton Drive where the proposed Pima Detention Basin is located.

Functional Parameters... The detention basin volumetric capacity and its outfall discharge have primary effects on the existing system function. The primary existing system components which this detention basin will have an impact on are Thunderbird channel, Cactus / 84th Street box culverts, the SCC East Nine east fairway channel, and the SCC East Nine Lake 5. The detention basin storage capacity and discharge rate must be such that the peak flow at the Cactus / 84th Street box culverts do not exceed the box hydraulic capacity; and, that the Lake 5 water surface elevation is not increased beyond the existing conditions water surface elevation.

The hydraulic capacity of the SCC East Nine fairway channel and Thunderbird channel is generally adequate and does not control the detention basin design; these two components will be discussed separately.

Cactus / 84th Street Box Culverts... (See existing "Drainage Facilities Map", Section I, pages 9 and 10). An existing 2-barrel 10' x 2' box culvert is located in

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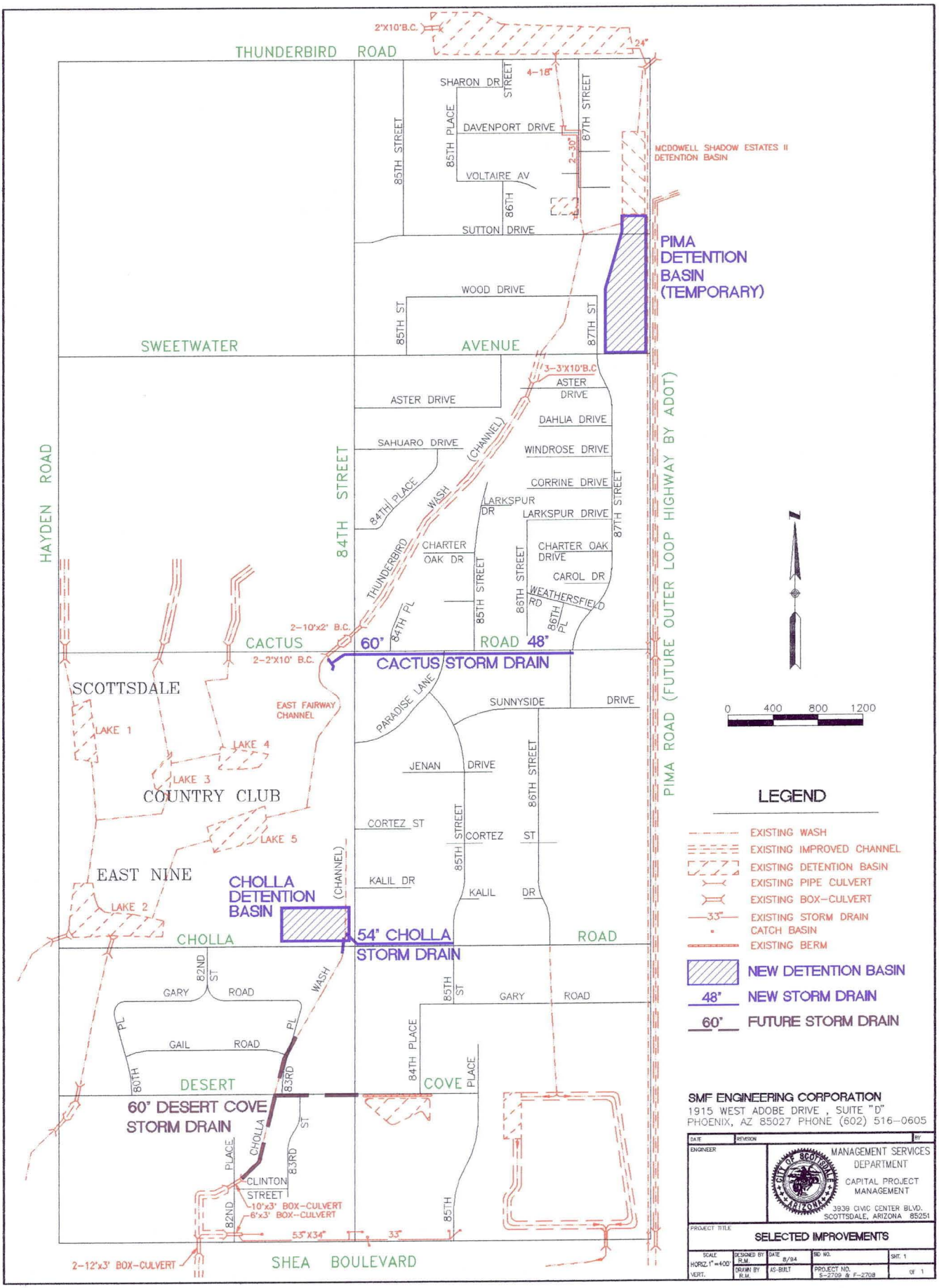
[4] SMF Engineering Corporation, Hydrology Report 84th Street and Cholla Road Roadway Improvements and 83rd Place and Shea Boulevard Neighborhood Drainage Improvements, Volume I - Existing Conditions (June 21, 1993), section 3, p. 2.


THUNDERBIRD ROAD
2"X10"B.C.
24"
4-18"
SHARON DR
STREET
85TH PLACE
DAVENPORT DRIVE
87TH STREET
2-30"
VOLTAIRE AV
86TH
SUTTON DRIVE
85TH STREET
MCDOWELL SHADOW ESTATES II DETENTION BASIN
PIMA DETENTION BASIN (TEMPORARY)
WOOD DRIVE
85TH ST
87TH ST
SWEETWATER
AVENUE
3-3'X10'B.C
ASTER DRIVE
ASTER DRIVE
DAHLIA DRIVE
SAHUARO DRIVE
WINDROSE DRIVE
(CHANNEL)
CORRINE DRIVE
84TH PLACE
WASH
LARKSPUR DR
LARKSPUR DRIVE
87TH STREET
HAYDEN ROAD
84TH STREET
THUNDERBIRD
CHARTER OAK DR
CHARTER OAK DRIVE
85TH STREET
86TH STREET
CAROL DR
WEATHERSFIELD RD
86TH PL
84TH PL
2-10'x2' B.C.
CACTUS
60'
ROAD
48'
2-2'X10' B.C.
CACTUS STORM DRAIN
SCOTTSDALE
EAST FAIRWAY CHANNEL
PARADISE LANE
SUNNYSIDE
DRIVE
LAKE 1
LAKE 4
LAKE 3
COUNTRY CLUB
JENAN
DRIVE
86TH STREET
PIMA ROAD (FUTURE OUTER LOOP HIGHWAY BY ADOT)
CORTEZ ST
85TH STREET
CORTEZ
ST
LAKE 5
EAST NINE
(CHANNEL)
KALIL DR
KALIL
DR
CHOLLA DETENTION BASIN
LAKE 2
CHOLLA
54" CHOLLA STORM DRAIN
ROAD
82ND ST
GARY
ROAD
WASH
85TH ST
GARY
ROAD
PL
PL
GAIL
ROAD
84TH PLACE
80TH
DESERT
83RD
COVE
PLACE
60' DESERT COVE STORM DRAIN
CHOLLA
PLACE
83RD
ST
CLINTON STREET
10'x3' BOX-CULVERT
6'x3' BOX-CULVERT
82ND
53"X34"
33"
85TH
2-12'x3' BOX-CULVERT
SHEA BOULEVARD
N
0 400 800 1200
LEGEND
EXISTING WASH
EXISTING IMPROVED CHANNEL
EXISTING DETENTION BASIN
EXISTING PIPE CULVERT
EXISTING BOX-CULVERT
33" EXISTING STORM DRAIN
CATCH BASIN
EXISTING BERM
NEW DETENTION BASIN
48" NEW STORM DRAIN
60" FUTURE STORM DRAIN
SMF ENGINEERING CORPORATION
1915 WEST ADOBE DRIVE , SUITE "D"
PHOENIX, AZ 85027 PHONE (602) 516-0605
DATE
REVISION
BY
ENGINEER
CITY OF SCOTTSDALE ARIZONA
MANAGEMENT SERVICES DEPARTMENT
CAPITAL PROJECT MANAGEMENT
3939 CIVIC CENTER BLVD.
SCOTTSDALE, ARIZONA 85251
PROJECT TITLE
SELECTED IMPROVEMENTS
SCALE
HORIZ. 1" =400
VERT.
DESIGNED BY R.M.
DRAWN BY R.M.
DATE 8/94
AS-BUILT
BID NO.
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OF 1

Thunderbird channel, under 84th Street, just north of Cactus Road; also, an existing 2-barrel 10' x 2' box culvert is located in Thunderbird channel, under Cactus Road, just west of 84th Street. For existing conditions the capacity of these box culverts is insufficient. However, the box culvert capacity is sufficient for future conditions. Under future conditions, runoff discharges from that part of Thunderbird drainage basin, which lies east of Pima Road, will be intercepted by the Outer Loop Highway channel, thus reducing downstream flows in Thunderbird channel.

Under interim conditions, the runoff discharge flow at these box culverts will be reduced by the Pima Detention Basin when it is put into operation. The Pima Detention Basin will be sized so that these culverts will have sufficient capacity and no improvements are necessary to carry the peak flows in Thunderbird channel.

However, some minor catchment facility improvement is recommended in 84th Street at the box culvert because, for existing conditions, street flows from north of Thunderbird channel overspill into Cactus Road (Cholla Basin).

The following table presents a comparison of box culvert capacity versus expected peak runoff discharges in Thunderbird channel for each of the three periods.

TABLE 2.1	THUNDERBIRD CHANNEL / 84TH STREET BOX CULVERT	
Design Period	**Box Culvert Capacity (CFS)**	**100-Year Event Runoff (CFS)**
Existing Conditions	400	839
Interim Conditions	400	400
Future Conditions	400	307

Scottsdale Country Club East Nine, Lake 5... the Cactus Road / 84th Street box culverts are the critical design components of the Thunderbird Basin drainage system. The Pima Detention Basin storage volume, which is necessary to reduce runoff flows at the box culverts to a level equal to the culvert's capacity, also reduces the water surface elevation of the SCC East Nine, Lake 5 below that for existing conditions. Therefore, an improved condition is realized at Lake 5.

The following table presents a comparison of water surface elevations and volume in Lake 5 for each of the three periods.

TABLE 2.2	LAKE 5 DETENTION BASIN		
Design Period	**Water Surface Elevation**	**Storage Volume Acre-Feet**	**Peak Outflow CFS**
Existing Conditions	1378.88	17.63	470
Interim Conditions	1378.49	15.84	350
Future Conditions	1378.46	15.70	340

Of the homes surrounding Lake 5, the lowest floor elevation is 1379.68.

Basin Dimensions... The proposed Pima Detention Basin site consists of about 10-acres; the entire site is required for development of the basin. The depth of the basin is approximately 4 feet, resulting in a total storage volume of 36 acre-feet.

Basin Outfall... The Thunderbird drainage area HEC-1 model includes the Pima Detention Basin and the functional parameter restraints; the Pima Detention Basin maximum outfall discharge determined by the computer run for interim conditions is 305 cfs. The basin outfall pipes and structures should be designed so that their hydraulic capacity matches or exceeds that HEC-1 model discharge of 305 cfs. The COS suggested that for low flows the outfall pipe should discharge into the Pima Road east channel and larger discharges should outfall into the Thunderbird channel at either Sweetwater Avenue or Wood Drive. These alternates will be considered in the preliminary design.

B. THUNDERBIRD WASH CHANNEL (See Map, Page 2)

Basin to Basin Overspillage... At the inception of this project, Thunderbird Wash was unimproved from Sweetwater Avenue to the Pima / Thunderbird intersection; and overspillage into Cholla Basin occurred. Subsequently, drainage improvements were constructed in conjunction with the "McDowell Shadows Estates II" sub-division. They excavated a channel/swale along the Pima Road frontage within the future Outer Loop Highway ROW, from a point 200 feet north of Sutton Drive to Davenport Drive.

In the Thunderbird Wash segment from Sweetwater Avenue to a point 200 feet north of Sutton Drive, the proposed Pima Detention Basin will replace Thunderbird Wash. The Pima Detention Basin will be located along the west side of Pima Road, between Sweetwater Avenue and Sutton Drive, within the future Outer Loop Highway ROW. See Selected Improvements Map, page 2.

Therefore, during the interim period, the only remaining unimproved segment of Thunderbird Wash will be from Davenport Drive to Thunderbird Road.

The west Pima Road side or V-ditch is positioned about 50 feet east of the Thunderbird Wash in that unimproved segment, and overspillage from Thunderbird Wash into the west Pima Road side-ditch has occurred during past storm events.Therefore, the proposed Pima Detention Basin should intercept flows from both Thunderbird Wash and the west Pima Road side-ditch.

C. CACTUS ROAD DIVERSION COMPONENT (See Map, Page 2)

Purpose... The purpose of the Cactus Road planned diversion component (storm drain) is to: 1) divert runoff discharges from Cactus Road and 84th Street into the SCC East Nine drainage system (Thunderbird Basin). These flows enter Cholla Wash at about Cortez Street for existing conditions; 2) lower the water surface elevation in Cactus Road to eliminate road closures; and 3) lower the 100-year storm water surface elevation to eliminate flooding the house floor at the southeast corner of Cactus Road and 84th Street.

Existing Conditions... The Cactus Road roadway from Pima Road to 84th Street is improved with asphalt pavement, vertical curb, gutter and sidewalk. It carries surface flows from Pima Road to 84th Street. A small culvert is positioned on the west side of the Pima Road intersection to carry flows under Cactus Road; but, a portion of the larger storm flows are diverted west along Cactus Road. Those runoff discharges north of Cactus Road flow generally south/southwest; Cactus Road intercepts the flow and diverts the discharge to 84th Street where it turns south. The HEC-2 computer model for existing conditions demonstrates that for the 100-year return frequency storm, flows are not retained within the ROW and the depth of flow exceeds eight inches. Also, at the southeast corner of Cactus Road and 84th Street, the 100-year storm water surface elevation (1395.44) exceeds the floor elevation (1395.28).

Proposed Improvements... The selected Improvement Plan includes a proposed storm sewer in Cactus Road to intercept the 50-year return frequency discharge and carry it to the SCC East Nine.

However, the 100-year event level of protection is desired; the difference between the 50-year and the 100-year events will surface flow south in 84th Street; and it will be intercepted near Cortez Street with catch basins and a 42-inch pipe which outfalls into the SCC East Fairway channel.

HEC-1 Model... The Thunderbird Basin HEC-1 model was generated to ensure that an equal or better condition exists in Thunderbird channel and at the SCC East Nine subsequent to construction of drainage improvements.

For the selected Improvement Plan which includes the Cactus Road diversion component with an outfall into the SCC East Nine drainage swale, the effects were determined prior to considering the plan valid. See detailed discussion under **"A. PIMA DETENTION BASIN"**.

Catchment Facilities... Usually, catch basins are designed to intercept flows for a 2-year storm in accordance with pavement drainage design criteria. "Catch basin or scupper inlets must be sized and located in series along a gutter grade to ensure that the estimated spread of longitudinal street flow will not exceed twelve feet (measured perpendicular to the curb face) during the peak runoff flow determined for a two-year frequency storm."[5]

Also, for the 100-year return frequency storm, ..."The inlets must also be sized and spaced to ensure that the longitudinal street flow at the peak runoff flow rates from a 100-year frequency storm is retained in the public right-of-way and is flowing at a depth no greater than eight inches above the gutter flow line."[6].

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[5] City of Scottsdale, Design Procedures and Criteria, Section 3 - Design of Facilities to Manage Stormwater Runoff, P. 36.

[6] Ibid.

However, this proposed storm sewer is a flood control facility and the storm sewer design including catch basins will exceed the usual City criteria; 100 percent of the 50-year storm will be intercepted by the proposed system. However, this will require special catch basin designs.

Existing ROW... The existing ROW is 80 feet along Cactus Road from 84th Street to 86th Street; the south half is 40 feet from 86th Street to Pima Road; and, the north half varies from 45 feet to 55 feet between 86th Street and Pima Road. No new ROW is required for this proposed storm sewer in Cactus Road; but, new ROW may be required for the outlet structure at the SCC East Nine drainage swale.

Alignment... It is anticipated that the proposed storm sewer will be positioned in the existing street, thus requiring pavement cut, removal, and replacement of the existing asphalt pavement. Also, a traffic control plan will be necessary for the construction period.

After completion of the base maps, the alignment position, both horizontal and vertical, will be studied as part of the final design and plan preparation phase.

Utilities... Numerous underground utilities exist in Cactus Road, thus base maps must include such prior to determining the alignment position of the storm sewer, and the position of catchment facilities. The anticipated primary conflict will occur with the existing 24-inch water line in Cactus Road.

Outfall Structure... For the selected Improvement Plan the proposed outfall structure will be located near the existing box culvert under Cactus Road just west of 84th Street. The hydraulic profiles of the drainage swale and the proposed storm sewer must be carefully matched to ensure the proper hydraulic capacity of both systems.

Final design must consider the existing golf course, which is to remain in service during the construction period. Therefore, the position of the structure must minimize disruption of the golf facilities.

The post-construction performance of the hydraulic structure and drainage swale must eliminate erosion and silting, and the condition must be safe for public activities in the golf course area.

D. EIGHTY-FOURTH STREET (See Map, Page 2)

Proposed Improvements... For the selected Improvement Plan in which the Cactus Road storm sewer discharges into the SCC East Nine drainage swale, the Cactus Road storm sewer will be designed for the 50-year return frequency storm; thus, for the 100-year storm, some flow will bypass the storm sewer in Cactus Road and turn south on 84th Street. Therefore, special catchment facilities and an outfall pipe will be located just north of Cortez Street. The outfall pipe is planned to flow into the SCC East Nine drainage swale.

Existing Box Culvert... The existing box culvert located under 84th Street just north of Cactus Road in Thunderbird Wash has been observed to overspill and combine with the Cactus Road surface flow. Also, calculations confirm this. That flow combines with the Cactus Road flow and continues south in 84th Street to Cholla Wash near Cortez Street.

The selected Improvement Plan HEC-1 model includes the Pima Detention Basin which eliminates overspillage into Cactus Road and 84th Street.

E. SCOTTSDALE COUNTRY CLUB EAST NINE (See Map, Page 2)

Initial Design... A HEC-1 model was prepared for the SCC East Nine development by Collar, Williams and White Engineering, Inc. (C W & W) in 1984. The improvements included five lakes with a ten-foot depth; the top three feet is for detention requirements. That system is shown on the "Existing Drainage Facilities" map included in Section I, on pages 9 & 10. Thunderbird Wash flows discharge into Lake 5 and Lake 5 discharges into Lake 2 as do Lakes 1, 3, and 4.

The initial hydrology design was based on a 100-year return frequency 2-hour duration storm. Current City of Scottsdale criteria require a 6-hour duration.

The drainage areas shown on the C W & W Drainage Area Map agree very closely to that of this study; except, their drainage area 5 did not account for the detention site along Thunderbird Road which was constructed at a later date. Area 5 is tributary to Thunderbird Wash.

Existing Conditions... "The Scottsdale Country Club drainage facilities consist of a system of drainage swales and five lakes with detention capacity. The system intercepts flows from four major channels which cross Cactus Road between Hayden Road and 84th Street, including the Thunderbird Wash channel which borders this study area on the northwest side between the 84th Street / Cactus Road and the Pima Road / Thunderbird Road intersections."[7]

The Master Drainage Plan says... "Presently, there is a major flooding problem that occurs at the southwestern corner of the Scottsdale Country Club Second Nine. The lake at this location, Lake Number 2, has two culvert outlets, one under Cholla Road and one under Hayden Road. When a 10-year storm occurs on the watershed, water begins to spill out of Lake 2 onto Cholla and Hayden. Most of the water drains south on Hayden and some is captured by catch basins along Hayden. In a 100-year storm, over 2,000 cfs spills over into Hayden and Cholla."[8]

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[7] SMF Engineering Corporation, Hydrology Report 84th Street and Cholla Road Roadway Improvements and 83rd Place and Shea Boulevard Neighborhood Drainage Improvements, Volume I - Existing Conditions (June 21, 1993), section 3, p. 4.

[8] Boyle Engineering Corporation. Hayden / Shea Area Master Drainage Plan, Pima/Doubletree Area Master Drainage Plan, Addendum No. 2, January 25, 1991, p. 2.

HEC-1 Model... As stated in Volume I, the COS has a HEC-1 model for the SCC East Nine's basins and drainage facilities. This model originated with the Boyle Report. The Boyle Report says, "The proposed improvements for the Scottsdale Country Club Second Nine are based on data taken from the 'Grading and Drainage Plan for the Scottsdale Country Club Second Nine'. Further design of the proposed improvements would require more accurate data of the site".[9] Consequently, Lake 5 was mapped and new volumetric calculations were performed for this study and report.

For this amended report, a new Thunderbird Basin HEC-1 model was generated to ensure that an equal or better condition exists in Thunderbird channel and at the SCC East Nine Lake 5 subsequent to construction of drainage improvements. For this new HEC-1 model, the upper limit of Thunderbird Basin is the CAP canal and the lower limit is the outfall at Lake 5. The system of drainage basins tributary to the other SCC East Nine lake network (Lakes 1, 2, 3, & 4) is not included in the new HEC-1 model.

Combined Discharges... For the selected Improvement Plan, the Thunderbird Wash channel and the new Cactus Road storm sewer discharges will combine and flow into the existing East Fairway swale to lake 5. This combined discharge should not exceed that of the capacity for the SCC East Nine drainage system which includes the East Fairway swale, the approach channel to Lake 5, and Lake 2. The Drainage Design Report for the Cactus Road Storm Sewer will address this issue. HEC-2 calculations show that the East Fairway swale has more than sufficient capacity.

F. CHOLLA WASH (See Map, Page 2)

Base Data... Planimetric and topographic mapping with a one foot contour interval covers the existing Cholla Wash area from 84th Street at Cortez Street, extending south and southwest to a point about 500 feet south of Shea Boulevard. The mapping includes the channel overbank areas and the Cholla Detention Site 12-acre parcel at the northwest corner of 84th Street and Cholla Road. Also, photogrammetric cross-sections were collected along this channel at 50-foot maximum spacing.

Runoff Discharges... are presented for the 2, 5, 10, 25, 50 and 100-year return frequency 6-hour duration storms at various locations along Cholla Wash. See Section I, pages 3 through 7 of this amended report.

Right-of-Way... There are few existing drainage easements or rights-of-way for the existing Cholla Wash. Initially, local citizen comments were a catalyst which was cause for the City to place high priority on this project. However, during the public information meeting of June 30, 1993, those property owners adjacent to or near Cholla Wash were polled; eleven of the fifteen affected property owners responded to the written poll. Of those eleven, seven expressed that they were <u>not</u> willing to dedicate a drainage easement for the proposed Cholla Wash improvements.

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[9] Boyle Engineering Corporation. Op. Cit., p. 9.

Existing Floors and Water Surfaces... The HEC-2 water surface profile was calculated along Cholla Wash, with and without improvements, from a point 500 feet south of Shea Boulevard to Cortez Street. The following table shows the water surface elevation for the 100-year storm and the floor elevation for each house adjacent to Cholla Wash. Floor elevations should be a minimum of one foot above the 100-year floodwater surface.

TABLE 2.3 CHOLLA WASH HEC-2 WATER SURFACE ELEVATIONS

Location	Existing Conditions W.S. Elevation	Interim Conditions W.S. Elevation	Floor Elevation
10610 North 82nd Place	1360.2 *★	1358.7 *	1359.1
10620 North 82nd Place	1360.2	1358.7	1362.2
10640 North 82nd Place	1362.5 *★	1359.8	1361.7
10647 North 82nd Place	1363.4 *★	1363.0 *	1363.1
10809 North 82nd Place	1364.5 *★	1363.8 *	1363.9
10823 North 82nd Place	1365.1 *★	1364.6 *	1365.0
10818 North 83rd Street	1364.8	1364.4	1365.9
10826 North 83rd Street	1635.4 * 1365.4	1365.0 *	1365.5
8235 East Desert Cove (Guest House)	1366.3	1365.9	1367.5
8235 East Desert Cove	1366.9 *★	1366.3 *	1366.7
8234 East Desert Cove	1367.8	1367.3	1369.8
8308 East Desert Cove	1368.5	1367.9	1369.7
8239 East Gail (Garage)	1368.9 *	1368.2	1369.5
8239 East Gail	1368.9	1368.2	1370.0
8304 East Gail	1369.7	1369.2	1370.8
11043 North 83rd Place (High Floor)	1372.2 *	1370.5	1372.4
11043 North 83rd Place (Low Floor)	1372.2 *★	1370.5	Unknown (Lower)
11208 North 84th Street	1373.6 *	1372.4	1374.5
11211 North 84th Street	1374.5	1372.6	1376.6
11226 North 84th Street	1374.9 *★	1373.0	1374.8
11231 North 84th Street	1376.1 *	1373.4	1376.9
8339 East Cholla Road	1376.8 *	1374.8	1377.7
8401 East Cholla Road	1376.8	1374.8	1378.5

★ and * See next page

The asterisk (*) indicates that those floors violate the criteria for the 100-year return frequency storm. There are fourteen homes in the Cholla Wash area which have floors less than one foot above the 100-year flood water surface for existing conditions; and there are six homes in the Cholla Wash area which have floors less than one foot above the 100-year flood water surface for interim conditions.

The star (★) indicates eight floors which will be inundated for existing conditions. This number could increase due to sediment and debris load, changes in channel vegetation, and other factors not easily predicted. The Table indicates that no floors are inundated for the interim conditions.

HEC-2 Water Surface Generalizations... The 100-year storm water surface puts the residential structures' floors in jeopardy and eight of the floors will be inundated. The increase in water surface elevation between the 2-year storm and the 100-year storm is about one foot. Also, the vertical difference between the design storm water surface elevation and the floors should be no less than one foot. Therefore, the unimproved capacity of Cholla Wash is equivalent to about a 2-year return frequency storm for existing conditions in the watershed if the design storm water surface were to be held one foot below the residential structure floors.

Clinton Street / 82nd Place Box Culvert... The existing 10' x 3' box culvert in Cholla Wash at this intersection has a capacity somewhat greater than the approach channel. The box hydraulic capacity is about 200 cfs but the approach channel capacity is only about 45 cfs.

For existing conditions, the 100-year runoff discharge approaching the box is 392 cfs and water overflows the channel's banks generating an unplanned diversion. Surface overspillage flows south in 82nd Place and in the adjacent front yards. At Shea Boulevard, flows enter the Shea channel and Cholla channel.

Interim condition selected improvements will eliminate overspillage at the box culvert entrance by reducing the 100-year runoff discharge to 157 cfs. However, the approach channel capacity is less than 157 cfs and some of the water in the overbank areas will continue to by-pass the culvert.

For future conditions, the Desert Cover storm drain will reduce the 100-year runoff discharge approaching the box culvert to 48 cfs. Both box culvert and channel will function properly for future conditions.

Cholla Wash Outfall... The existing Cholla Wash channel is improved (concrete lined) from Shea Boulevard to 82nd Place and Clinton. At Shea Boulevard the flow must pass under Shea in a 2-barrel 12' x 3' box culvert. For existing conditions, the Shea and Cholla channel combined runoff flow for the 100-year storm which must cross Shea is about 740 cfs. The box capacity is about 340 cfs. The runoff flow in the approach channel (Cholla channel) is 491 cfs, and the channel capacity is about 210 cfs. Runoff discharge flows greater than 340 cfs at the box culvert entrance will cause diversion to the west along Shea Boulevard and the water surface will be less

than one foot below the floor at 10610 North 82nd Place. The selected plan improvements will reduce the combined flow approaching the box culvert from 740 cfs to 399 cfs for interim conditions. Therefore, the existing culvert will carry about a 50-year storm in the barrel and some overspillage will occur for the 100-year storm.

"Regardless of the size of the culvert or bridge, the street crossing should be designed to convey the 100-year storm runoff flow under and/or over the road to the area downstream of the crossing to which the flow would have gone in the absence of the street crossing. The construction of a channel crossing must not cause the diversion of drainage flows except when that diversion of drainage flows is part of an approved plan for modification of drainage patterns."[10]

Diverting flows west in and along Shea Boulevard is not part of an approved diversion plan; therefore, one of several objectives to be achieved by the selected plan is to reduce the flows reaching this outfall location to match the capacity of such. That is, the flow should not exceed 210 cfs in the existing lined segment of lower Cholla Wash. The selected plan improvements will reduce the flow in that segment from 491 cfs to 199 cfs for the 100-year storm interim conditions.

Increasing the capacity of the existing 2-barrel 12' x 3' box culvert under Shea Boulevard is not recommended because citizen complaints from the downstream McCormick Ranch area indicate an existing drainage problem may exist there.

G. DESERT COVE PROPOSED STORM SEWER (See Map, Page 2)

Interim Improvements... This proposed storm sewer is not part of the selected plan interim improvements but rather, it is scheduled for future improvements.

Limits of Storm Sewer... The upstream end of this storm sewer pipe is at the intersection of 84 Street and Desert Cove; it extends west in Desert Cove to where it turns south in Cholla Wash and the outfall connects to the concrete lined segment of Cholla channel (Clinton extended). Also, an alternate alignment which positions the pipe in 83rd Street and Clinton Street or along the west boundary of the Sundown Ranch Acres subdivision should be studied during the preliminary design period.

ROW... No additional ROW is required along Desert Cove Road, 83rd Street, and Clinton Street; however, along the west boundary of Sundown Ranch Acres the existing 8 foot PUE may not be sufficient. This will require additional study during the final design period. Also, the Cholla Wash alignment will require drainage easements.

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[10]City of Scottsdale, Design Procedures and Criteria, Section 3 - Design Facilities to Manage Stormwater Runoff, p. 24.

Purpose... The purpose of the Desert Cove storm sewer is to reduce those surface flows in Cholla Wash between Clinton Street and Desert Cove; and to reduce the surface flows which reach the 84th Street / Shea Boulevard intersection. These flows should be reduced to match the capacity of existing drainage facilities.

Recall that the capacity of the unimproved Cholla Wash is based on holding the 100-year storm water surface one foot below existing floor elevations. To approximate this criteria, the flow in Cholla Wash just north of Clinton Road should not exceed 45 cfs.

Desert Cove and 84th Street... The surface drainage flows which pass through this intersection split; a portion continues west to Cholla Wash and a portion continues south to the 84th Street / Shea Boulevard intersection. For existing conditions the 100-year storm discharge at 84th Street and Shea is 206 cfs. The capacity of the existing drainage facilities at Shea is 90 cfs. The Desert Cove storm sewer will intercept flows at the Desert Cove / 84th Street intersection thus reducing the 100-year discharge which reaches Shea Boulevard at 84th Street to 126 cfs. The 50-year discharge is reduced to 86 cfs.

Cholla Wash... As discussed in Section II, F., the capacity of Cholla Wash is only equivalent to about a 2-year storm discharge. For the selected plan improvements, the runoff flow in Cholla Wash at Cholla Road is only 44 cfs. But, due to a short time of concentration interval, the discharge increases rapidly at locations south of Cholla. Between Clinton and Desert Cove the 5-year return frequency runoff discharge (51 cfs) exceeds the channel capacity, 45 cfs. The Desert Cove storm sewer will intercept flows in Cholla Wash and discharge those flows back into the concrete lined segment of the wash near Clinton Street extended.

A special structure will be required at 83rd Street and Desert Cove. Particular care will be required to design this structure to intercept the 100-year discharge and separate silts so that they do not enter the pipe system.

H. CHOLLA ROAD DIVERSION COMPONENT (See Map, Page 2)

Proposed Facility... This drainage facility consists of a special catchment design at 85th Street and Cholla Road, and a new 54-inch storm sewer pipe from 85th Street to the Cholla Detention Basin at 84th Street.

This improvement was also proposed in the Hayden / Shea Master Drainage Plan.

Planned Diversion Concept... Existing runoff discharges flowing south in 85th Street pass through the Cholla Road intersection and continue south in 85th Street and 84th Place to Desert Cove where it turns west to 84th Street. These flows will be intercepted by the Cholla Road storm drain at the 85th Street / Cholla Road intersection and diverted west along Cholla Road to the Cholla Detention Basin at 84th Street.

For the selected plan which includes this diversion component, it must be demonstrated that the affected community downstream of the proposed diversion is provided a better level of flood protection than existed prior to the diversion. This has been demonstrated as shown in the following Table 2.4.

TABLE 2.4 CHOLLA WASH SOUTH OF CHOLLA ROAD 100-YEAR RUNOFF (CFS)

Design Period	At Cholla Road	At Desert Cove	At Shea Boulevard
Existing Conditions	365	398	674
Interim Conditions	42	129	399
Future Conditions	42	43	389

Rights-of-Way... No new ROW is required for this design component.

Alignment... The new storm sewer pipe will be located under new pavement of the Cholla Road roadway improvements; therefore, pavement cut, removal and replacement is not required.

Outfall... At Cholla Wash, where the storm sewer pipe outfalls into the Cholla Detention Basin, a special structure will be required. It should direct low flows into Cholla Wash with larger flows entering the Detention Basin.

3

III IMPROVEMENT PLAN OBJECTIVES, PHASING, AND CONSTRUCTION COSTS

A. IMPROVEMENT PLAN OBJECTIVES - SUMMARY 1
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MAPS

SELECTED IMPROVEMENTS MAP 3

SECTION 3

III IMPROVEMENT PLAN OBJECTIVES, PHASING, AND CONSTRUCTION COSTS

A. IMPROVEMENT PLAN OBJECTIVES - SUMMARY

Intrusion Damage... The primary objective of this project is to protect residential structure floors along Cholla Wash from floodwater intrusion of the 100-year return frequency storm. This is accomplished by reducing the runoff discharge in Cholla Wash and in the Shea Boulevard 2-barrel 12' x 3' box culvert.

Existing Unplanned Diversions... Flow greater than the capacity of the existing 2-barrel 12' x 3' box culvert in Cholla channel at Shea Boulevard travels westerly in and along Shea Boulevard. In order to eliminate this unplanned diversion, the 100-year discharge (740 cfs) at the box culvert will be reduced to 399 cfs. The capacity of the box culvert is 340 cfs, equivalent to an interim conditions 50-year storm.

The hydrology / hydraulics of the 2-barrel 12' x 3' concrete box culvert under Shea Boulevard is discussed in Section II, F., Cholla Wash. In order to eliminate flooding of the floor at 10610 North 82nd Place and reduce diversion flow to the west along Shea Boulevard, the combined runoff discharge for the 100-year return frequency storm will be reduced to 399 cfs.

For existing conditions, the capacity of the existing box culvert under 84th Street just north of Cactus Road is equivalent to about a 5- or 10-year storm. Overspillage occurs for larger storms generating an unplanned diversion; The flow continues south in 84th Street to Cholla Wash. The proposed interim conditions improvements will reduce the runoff discharge to match the capacity of the box culvert (400 cfs).

The existing box culvert under the 82nd Place/Clinton Street intersection has a capacity of 200 cfs. The 100-year storm runoff discharge is 392 cfs for existing conditions. This overspillage flows south in 82nd Place and in the front yards along 82nd Place. The interim condition runoff discharge of 157 cfs for the 100-year storm is expected to cause some overspillage. The future conditions discharge will be reduced to 48 cfs due to the Desert Cove storm sewer.

The unimproved segment of Thunderbird Wash from Davenport Drive to Thunderbird Road, where overspillage into the Cholla drainage area has occurred in the past, will be eliminated by routing runoff discharges into the Pima Detention Basin.

The existing pipe culvert located on the west side of the Pima / Cactus intersection will not convey the full 100-year flow. Flows in excess of the pipe culvert capacity divert to the west in Cactus Road. The capacity of the proposed Cactus Road storm sewer should be designed to include this flow or the existing pipe culvert capacity should be increased to accommodate the 100-year return frequency discharge.

Road Closures... The proposed improvements will eliminate future road closures in Cholla Road at Cholla Wash, and in Cactus Road at 84th Street. A secondary objective is to eliminate future road closures in the area of 83rd Place from Desert Cove to Gail. Street improvements in this area are necessary to raise the roadway one (1) to two (2) feet; the existing street in this area is in the bottom of Cholla Wash.

Excessive Street Flows... For the larger existing conditions storms, four streets are subject to excessive flows; The depth of flow is in excess of 8-inches and flow is <u>not</u> retained within the ROW. Those project streets are:

Cactus Road - 84th Street to Pima Road
84th Street - Cholla Road to Cactus Road
85th Street - Cholla Road to Paradise Lane
Cholla Road - Cholla Wash to 85th Street

Surface flows will be reduced to an acceptable level in these streets.

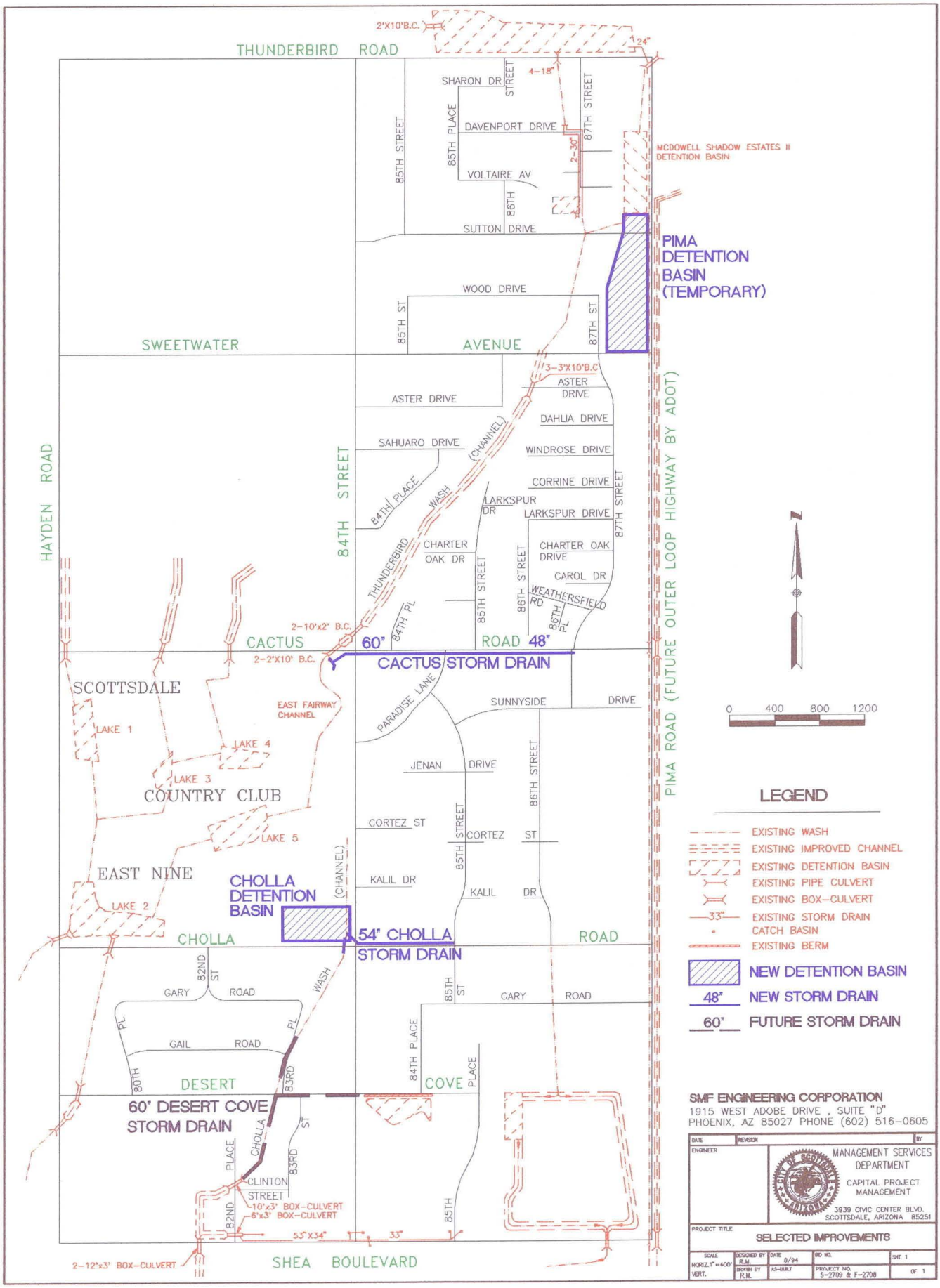
Shea Boulevard Drainage System... At 84th Street, the combined capacity of the Shea storm sewer system and the north half of the street (Shea) is about 90 cfs. In Section I, the Table on page 5 lists 206 cfs for the 100-year storm surface flow in 84th Street at Shea Boulevard. Interim condition selected improvements will reduce this flow to about 165 cfs, and the future Desert Cove Storm sewer will further reduce it to 126 cfs for the 100-year storm.

Erosion Damage... Citizen complaints indicate that damage to yards, landscaping and other improvements has occurred at numerous locations throughout the project area in the past. Many of the improvements are encroachments in City ROW. The combined street and drainage improvements should effect surface flows which are retained in the curb and gutter.

Proposed Diversions... The Selected Improvement Plan which includes planned diversions in Cactus and Cholla Roads must provide flood conditions equal to or better than that which existed in the downstream drainage facilities prior to the diversion.

For the 100-year storm, over 2000 cfs spills over into Hayden and Cholla Roads; this condition must not be exacerbated by the Cactus Road diversion.

It was demonstrated in Section II, A. Pima Detention Basin that the water surface elevation in the SCC East Nine Lake 5 is reduced for the 100-year flood event as is the peak outflow from Lake 5.


THUNDERBIRD ROAD
2'X10'B.C.
24"
SHARON DR
STREET
4-18"
87TH STREET
85TH PLACE
DAVENPORT DRIVE
2-30"
85TH STREET
VOLTAIRE AV
86TH
SUTTON DRIVE
MCDOWELL SHADOW ESTATES II DETENTION BASIN
PIMA DETENTION BASIN (TEMPORARY)
WOOD DRIVE
85TH ST
87TH ST
SWEETWATER
AVENUE
3-3'X10'B.C
ASTER DRIVE
ASTER DRIVE
DAHLIA DRIVE
SAHUARO DRIVE
(CHANNEL)
WINDROSE DRIVE
84TH STREET
84TH PLACE
WASH
CORRINE DRIVE
LARKSPUR DR
LARKSPUR DRIVE
87TH STREET
HAYDEN ROAD
THUNDERBIRD
CHARTER OAK DR
85TH STREET
86TH STREET
CHARTER OAK DRIVE
CAROL DR
WEATHERSFIELD RD
86TH PL
84TH PL
2-10'x2' B.C.
CACTUS
60'
ROAD
48"
2-2'X10' B.C.
CACTUS STORM DRAIN
PIMA ROAD (FUTURE OUTER LOOP HIGHWAY BY ADOT)
SCOTTSDALE
EAST FAIRWAY CHANNEL
PARADISE LANE
SUNNYSIDE
DRIVE
LAKE 1
LAKE 4
LAKE 3
COUNTRY CLUB
JENAN
DRIVE
86TH STREET
CORTEZ ST
85TH STREET
CORTEZ
ST
LAKE 5
EAST NINE
(CHANNEL)
KALIL DR
KALIL
DR
CHOLLA DETENTION BASIN
LAKE 2
CHOLLA
54" CHOLLA STORM DRAIN
ROAD
82ND ST
GARY
ROAD
WASH
85TH ST
GARY
ROAD
PL
PL
GAIL
ROAD
84TH PLACE
80TH
83RD
DESERT
COVE
PLACE
60' DESERT COVE STORM DRAIN
CHOLLA
ST
PLACE
83RD
CLINTON STREET
10'x3' BOX-CULVERT
6'x3' BOX-CULVERT
82ND
53"X34"
33"
85TH
2-12"x3' BOX-CULVERT
SHEA BOULEVARD
N
0 400 800 1200
LEGEND
EXISTING WASH
EXISTING IMPROVED CHANNEL
EXISTING DETENTION BASIN
EXISTING PIPE CULVERT
EXISTING BOX-CULVERT
33" EXISTING STORM DRAIN
CATCH BASIN
EXISTING BERM
NEW DETENTION BASIN
48" NEW STORM DRAIN
60" FUTURE STORM DRAIN
SMF ENGINEERING CORPORATION
1915 WEST ADOBE DRIVE , SUITE "D"
PHOENIX, AZ 85027 PHONE (602) 516-0605
DATE
REVISION
BY
ENGINEER
MANAGEMENT SERVICES DEPARTMENT
CAPITAL PROJECT MANAGEMENT
3939 CIVIC CENTER BLVD.
SCOTTSDALE, ARIZONA 85251
PROJECT TITLE
SELECTED IMPROVEMENTS
SCALE
HORIZ.1"=400'
VERT.
DESIGNED BY R.M.
DRAWN BY R.M.
DATE 8/94
AS-BUILT
BID NO.
PROJECT NO. 9-2709 & F-2706
SHT. 1
OF 1

B. SELECTED IMPROVEMENTS (See Map, Page 3)

Concept/Components... Flows in Cholla Wash south of Cactus Road will be reduced by the Cactus Road diversion component (storm drain) which discharges into the SCC East Nine drainage swale. It will carry the 50-year storm. In 84th Street, near Cortez Street, special catch basins will intercept the 100-year storm bypass from Cactus Road and discharge it into the SCC East Nine swale. The Cholla diversion component will intercept the 100-year storm at 85th Street and discharge into the proposed Cholla Detention Basin. The proposed Cholla Detention Basin will reduce flows discharged in Cholla Wash south of Cholla Road to a minimal level. The proposed Pima Detention Basin will reduce flows in Thunderbird Wash downstream of Sweetwater Avenue; thus, flows reaching the Cactus / 84th Street box culverts are reduced, and flows reaching the SCC East Nine Lake 5 are reduced.

Also, overspillage at the Cactus / 84th Street intersection from Thunderbird Wash is eliminated. Therefore, overspillage (surface flows) no longer contributes to Cholla Wash and those flows are reduced.

Lastly, this plan includes the future Desert Cove storm drain which intercepts flows at 84th Street and Desert Cove, thus reducing flows at the Shea / 84th Street intersection. Overbank flows will be eliminated and the hydraulic capacity will be increased in lower Cholla Wash (south of Desert Cove). Overspillage will be eliminated at the Clinton / 82nd Place box culvert.

C. CONSTRUCTION PHASING

Major Components To Be Constructed... The major drainage components of the Selected Improvement Plan are:

1) Pima Detention Basin
2) Cholla Detention Basin
3) Cactus Road Storm Drain
4) 84th Street / Cortez Street Special Catchment facility
5) Cholla Road Storm Drain

Planned Diversions... The Cactus Road storm drain and the Cholla Road storm drain are both planned diversions; consequently, the Cactus Road storm drain must not be placed into service until after the Pima Road Detention Basin has been constructed, and the Cholla Road storm drain must not be placed into service until after the Cholla Detention Basin has been constructed, unless a method to regulate the flow and assure an acceptable level (pipe sizing, orifice plate, etc.) can be installed prior to the Cholla Detention Basin's construction.

Available Funds... for administration, engineering, construction, right-of-way, and inspection, are:

F-2708	$838,900	Drainage
S-2709	$925,000	Street Improvements
F-4702	$150,000	Pima Detention Basin
T-0703	$100,000	Bottleneck Account
W-0710	$10,000	Waterline Account
MCFCD	$750,000	Drainage

Street Improvement Total: $1,035,000
Drainage Improvement Total: $1,738,900

Grand Total: $2,773,900

Construction Project Phasing... Four separate construction projects (Bid packages) are planned for the Interim Condition Selected Improvements. An additional fifth construction project will consist of the future Desert Cove storm drain.

Interim Condition Selected Improvement Phases are:

Phase 1A Pima Detention Basin
(F-4702 and MCFCD Funds)

Phase 1B Cholla Detention Basin
(F-2708 and MCFCD Funds)

Phase 2 Cactus Road Storm Drain
Includes Cortez catchment facility
(F-2708 and MCFCD Funds)

Phase 3 Cholla Road Storm Drain
(F-2708 Funds)

The Future Improvement Phase is:

Phase 4 Desert Cove Storm Drain
(currently unfunded)

D. CONSTRUCTION PHASE COSTS SUMMARY

ITEM	PHASE				
	1A	1B	2	3	4
Construction	$294,000	$380,000	$586,000	$164,000	$397,000
Right-of-Way	-0-	$520,000	$10,000	-0-	-0-
Contingencies	$46,000	$135,000	$89,000	$26,000	$60,000
Phase Total	$340,000	$1,035,000	$685,000	$190,000	$457,000
Available Funds	$340,000	$1,035,000	$685,000	$190,000	unfunded

Interim Improvements...

Phase 1A	Pima Detention Basin	$ 340,000
Phase 1B	Cholla Detention Basin	1,035,000
Phase 2	Cactus Road Storm Drain	685,000
Phase 3	Cholla Road Storm Drain	190,000
	Interim Improvements Total	$2,250,000

Future Improvements...

Phase 4	Desert Cove Storm Drain	$457,000

E. CONSTRUCTION COSTS

Pima Road Detention Basin (Phase 1A)

Description	Qty	Unit	U.P.	Total
Drainage Excavation (6' Deep)	56,580	C.Y.	$ 3	$ 170,000
Landscape, Berming, Etc.	1	Each	$ 43,000	$ 43,000
Outlet Structures	4	Each	$ 6,000	$ 24,000
Outlet Pipes (30")	500	L.F.	$ 60	$ 30,000
Asphalt Removal and Replacement	140	S.Y.	$ 36	$ 5,000
Waterline	1	L.S.	$ 22,000	$ 22,000
Phase 1A Total				$ 294,000

Cholla Detention Basin (Phase 1B)

Description	Qty	Unit	U.P.	Total
Drainage Excavation (6' Deep)	38,720	C.Y.	$ 3.40	$ 132,000
Topsoil	4	Acres	$ 5,000	$ 20,000
Seeding	4	Acres	$ 2,000	$ 8,000
Trees	25	Each	$ 250	$ 7,000
30" RCP	148	L.F.	$ 60	$ 9,000
Inlet/Outlet Structures	4	Each	$ 6,500	$ 26,000
Fencing	1,780	L.F.	$ 100	$ 178,000
Phase 1B Total				$ 380,000

Cactus Storm Drain & Special Catch Basins (Phase 2)

Description	Qty	Unit	U.P.	Total
18" RCP Connector Pipes	500	L.F.	$ 34	$ 17,000
39" RCP Storm Drain	300	L.F.	$ 76	$ 23,000
51" RCP Storm Drain	1,100	L.F.	$ 103	$ 113,000
60" RCP Storm Drain	1,400	L.F.	$ 122	$ 171,000
Manhole	7	Each	$ 2,500	$ 18,000
Outlet Structure (39")	1	Each	$ 14,000	$ 14,000
Outlet Structure (60")	1	Each	$ 24,000	$ 24,000
Pavement Replacement	3,000	S.Y.	$ 36	$ 108,000
Catch Basin	12	Each	$ 2,500	$ 30,000
Special Catch Basins	2	Each	$ 5,000	$ 10,000
Misc. Removals	1	L.S.	$ 5,000	$ 5,000
Pipe Supports	3	Each	$ 1,000	$ 3,000
Utility Adjustments (20" Water)	1	L.S.	$ 50,000	$ 50,000
Phase 2 Total				$ 586,000

Cholla Road Storm Drain (Phase 3)

Description	Qty	Unit	U.P.	Total
18" RCP Connector Pipes	177	L.F.	$ 34	$ 6,000
30" RCP Connector Pipes	50	L.F.	$ 60	$ 3,000
48" RCP Storm Drain	1,200	L.F.	$ 100	$ 120,000
Manholes	4	Each	$ 2,500	$ 10,000
Catch Basins	6	Each	$ 2,500	$ 15,000
Special Catch Basins	2	Each	$ 5,000	$ 10,000
Phase 3 Total				$ 164,000

Desert Cove Storm Drain (Phase 4-Future)

Description	Qty	Unit	U.P.	Total
18" Connector Pipes	300	L.F.	$ 34	$ 10,000
48" RCP	900	L.F.	$ 96	$ 86,000
60" RCP	1,600	L.F.	$ 122	$ 195,000
Manhole	4	Each	$ 2,500	$ 10,000
Outlet Structure	1	Each	$ 6,000	$ 6,000
Catch Basins	6	Each	$ 2,500	$ 15,000
Sedimentation Structure	1	Each	$ 10,000	$ 10,000
Pavement Replacement	1,800	S.Y.	$ 36	$ 65,000
Phase 4 Total				$ 397,000

150
200

4

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*          SEPTEMBER 1990               *
*           VERSION 4.0                 *
*                                       *
* RUN DATE  11/02/1994  TIME  13:10:43  *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104               *
*                                       *
*****************************************
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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
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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

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

  1           ID        84TH STREET AND CHOLLA ROAD
  2           ID        2-5-10-25-50-100 yr STORM
  3           ID        EXISTING CONDITION --- NO IMPROVEMENTS
  4           ID     ******************************************************
  5           ID        SCOTTSDALE COUNTRY CLUB LAKE 5
  6           ID     ******************************************************
  7           ID        DRAINAGE AREAS EAST OF PIMA INCLUDED
  8           ID        DIVERSIONS INTO SIDE STREETS ON CACTUS SOUTH SIDE
  9           ID        NO STORM DRAIN IN CACTUS ROAD
 10           ID        FILE SCCEX.DAT
 11           ID        DIVERSIONS IN CACTUS/84TH ST INTERSECTION ARE INCORPORATED
 12           ID        FILE SCCEX.DAT
              *DIAGRAM
 13           IT      2                    300
 14           IO      5
 15           JR    PREC     .36     .53     .62     .76     .88     1.0

 16           KK    710        SUBBASIN 710 RUNOFF
 17           PH                    0.88    1.61     2.6    2.84       3     3.3
 18           BA  0.0090
 19           LS      0      77      50
 20           UD   0.07

 21           KK   C720        ROUTE 710 TO C720
 22           RS    100    STOR      -1       0
 23           RC   .060   0.040   0.060     850   .0100
 24           RX      0      .1     100     101     104     105     205   205.1
 25           RY    105     100      99      96      96      99     100     105
 26           RS    100    STOR      -1       0
 27           RC   .060   0.040    .060     460   .0100
 28           RX      0      .1     100     101     106     107     207   207.1
 29           RY    105     100      99      95      95      99     100     105
 30           RS    100    STOR      -1       0
 31           RC   .050   0.030    .050     350   .0034
 32           RX      0      .1     100     109   109.1   118.1     120   120.1
 33           RY    105     100      99      96      96      99      99     105

 34           KK    720        SUBBASIN 720 RUNOFF
 35           BA  0.0655
 36           LS      0      77
 37           UD   0.21

 38           KK   C720        COMBINE 710 AND 720
 39           HC      2

 40           KK   C720        ROUTE C720 TO C735
 41           RS    100    STOR      -1       0
 42           RC   .040   0.020    .040     130   .0150
 43           RX      0      .1       1       5      15      19    19.1      20
 44           RY    105     100     100      99      99     100     100     105
 45           RC   .040   0.016    .040     400   .0060
 46           RX      0      .1       9     9.1      37    37.1      46    46.1
 47           RY    105     100     100   99.75   99.75     100     100     105
 48           RC   .040   0.016    .040     650   .0080
 49           RX      0      .1       9     9.1      37    37.1      46    46.1
```

NSTPs of 0 too high ⇒ too low!! KK C720

NSTP of 100 too high unreasonable velocity

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

  50          RY     105     100     100   99.75   99.75     100     100     105
  51          RX       0      .1       1       5      15      19    19.1      20
  52          RC    .040   0.016    .040    1400   .0100
  53          RX       0      .1       9     9.1      37    37.1      46    46.1
  54          RY     105     100     100   99.75   99.75     100     100     105

  55          KK     725         SUBBASIN 725 RUNOFF
  56          BA  0.0680
  57          LS       0      77      42
  58          UD    0.20

  59          KK   ED725         EXISTING DETENTION BASIN 725
  60          RS       1    STOR      -1       0
  61          SA    0.78    1.14    1.17     1.2    1.24    1.24    1.24
  62          SE  1468.5    1472  1472.3  1472.6    1473  1473.5    1474
  63          SQ       0       0   10.45   31.23    72.0     100     200

  64          KK     730         SUBBASIN 730 RUNOFF
  65          BA  0.0053
  66          LS       0      77      42
  67          UD    0.05

  68          KK    C730         COMBINE C725 AND 730
  69          HC       2

  70          KK   ED730         EXISTING DETENTION BASIN 730
  71          RS       1    STOR      -1       0
  72          SA    0.76    1.12    1.15    1.18    1.22    1.22
  73          SE  1464.5    1468  1468.3  1468.6    1469  1469.5
  74          SQ       0       0    5.52   17.29    42.0     150

  75          KK     735         SUBBASIN 735 RUNOFF
  76          BA  .05147
  77          LS       0      77      42
  78          UD    0.29

  79          KK    C735         COMBINE C725 AND C730 AND 735
  80          HC       3

  81          KK   ED735         EXISTING DETENTION BASIN 735
  82          RS       1    STOR      -1       0
  83          SA    1.04    1.40    1.45    1.51    1.56    1.61    1.61    1.61
  84          SE  1461.9  1465.4  1465.9  1466.4  1466.9  1467.4    1468  1468.5
  85          SQ       0       0     3.2    18.0    49.6   101.8     200     500

  86          KK     740         SUBBASIN 740 RUNOFF
  87          BA  .00055
  88          LS       0      98
  89          UD    0.08
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  90          KK     742        SUBBASIN 742 RUNOFF
  91          BA  .00836
  92          LS              77
  93          UD     .11

  94          KK    C742        COMBINE 740 AND 742
  95          HC       2

  96          KK    C744        ROUTE C742 TO C744
  97          RK      95   .0044    .012            CIRC       2

  98          KK     743        SUBBASIN 743 RUNOFF
  99          BA  .00373
 100          LS       0      77      47
 101          UD    0.07

 102          KK    C744        ROUTE 743 TO C744
 103          RS     100    STOR      -1       0
 104          RC    .030   0.016    .030     580   .0085
 105          RX       0      .1      11    11.1      79    79.1      90    90.1
 106          RY     105     100      99   99.82   99.82      99     100     105

 107          KK     744        SUBBASIN 744 RUNOFF
 108          BA  .00661
 109          LS       0      98
 110          UD    0.14

 111          KK    C744        COMBINE C742 AND 743 AND 744
 112          HC       3

 113          KK    C745        ROUTE C744 TO C745
 114          RK     638   .0029    .012            CIRC     3.5

 115          KK     745        SUBBASIN 745 RUNOFF
 116          BA  .01783
 117          LS       0      77
 118          UD    0.17

 119          KK    C745        COMBINE C744 AND 745
 120          HC       2

 121          KK    C735        ROUTE C745 TO C735
 122          RK     510   .0024    .012            CIRC       4

 123          KK    C735        COMBINE C745 AND 735
 124          HC       2

 125          KK    C760        ROUTE C735 TO C760
 126          RK     130   .0030    .012            TRAP      10    .001
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 127          KK     760        SUBBASIN 760 RUNOFF
 128          BA  .01266
 129          LS       0      98
 130          UD    0.19

 131          KK    C760        COMBINE C735 AND 760
 132          HC       2

 133          KK    C790        ROUTE C760 TO C790
 134          RS     100    STOR      -1       0
 135          RC    .050   0.012    .020     900   .0019
 136          RX       0      .1      28      32      37      42     100   100.1
 137          RY     105     100      99      95      95     100     101     105
 138          RC    .050   0.012    .020     250   .0019
 139          RX       0      .1      28    28.1    37.5    37.6      49    49.1
 140          RY     105     100      99      95      95      99     100     105

 141          KK     780        SUBBASIN 780 RUNOFF
 142          BA  .01686
 143          LS       0      77      20
 144          UD    0.13

 145          KK    C782        ROUTE C780 TO C782
 146          RS     100    STOR      -1       0
 147          RC    .020    .025    .050    1210    .010
 148          RX       2       2      30      40      50      60      80     100
 149          RY     105  100.52     100    99.5      98     100   100.5     101

 150          KK     782        SUBBASIN 782 RUNOFF
 151          BA  .01080
 152          LS              77
 153          UD     .18

 154          KK     784        SUBBASIN 784 RUNOFF
 155          BA  .04764
 156          LS              77      42
 157          UD     .19

 158          KK   ED784        EXISTING DETENTION BASIN 784
 159          RS       1    STOR      -1       0
 160          SA       0    1.09    2.02    2.02
 161          SE  1389.0  1389.5  1392.5  1393.0
 162          SQ       0     1.4      58     768

 163          KK    C782        COMBINE 780 AND C782 AND 784
 164          HC       3

 165          KK    C790        ROUTE C782 TO C790
 166          RS     100    STOR      -1       0
 167          RC    .020    .025    .050    2800    .010
 168          RX       2       2      30      40      50      60      80     100
 169          RY     105  100.52     100    99.5      98     100   100.5     101
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 170          KK     790        SUBBASIN 790 RUNOFF
 171          BA  .11345
 172          LS              77
 173          UD     .23

 174          KK    C790        COMBINE 782 AND C760 AND 790
 175          HC       3

 176          KK     750        SUBBASIN 750 RUNOFF
 177          BA  .00313
 178          LS       0      98
 179          UD    0.07

 180          KK    C770        ROUTE C750 TO C770
 181          RS     100    STOR      -1       0
 182          RC    .050   0.016    .016    1100   .0040
 183          RX       0      .1      .2       5     5.1    29.1    29.2    29.3
 184          RY     105   100.5   100.5     100    99.5     100     105     105

 185          KK     770        SUBBASIN 770 RUNOFF
 186          BA  .00505
 187          LS       0      98
 188          UD    0.09

 189          KK    C770        COMBINE C770 AND 770
 190          HC       2

 191          KK    C770        COMBINE C770 AND C790
 192          HC       2

 193          KK    C800        ROUTE C770 TO C800
 194          RS     100    STOR      -1       0
 195          RC    .050   0.020    .050     380   .0037
 196          RX       0      .1      20      36      46      62      82     102
 197          RY     110   106.5     106     100     100     106   106.5     107

 198          KK     800        SUBBASIN 800 RUNOFF
 199          BA  .01719
 200          LS       0      77
 201          UD    0.16

 202          KK    C800        COMBINE 800 AND C770
 203          HC       2

 204          KK    C810        ROUTE C800 TO C810
 205          RS     100    STOR      -1       0
 206          RC    .050   0.020    .050    1170   .0037
 207          RX       0      .1      20      36      60      76      96     116
 208          RY     110     105   104.5     100     100   104.5     105   105.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 209          KK     810        SUBBASIN 810 RUNOFF
 210          BA  .04392
 211          LS       0      77      42
 212          UD    0.23

 213          KK    C810        COMBINE 810 AND C800
 214          HC       2

 215          KK    C820         ROUTE C810 TO C820
 216          RS     100    STOR      -1       0
 217          RC    .050   0.020    .050     790   .0037
 218          RX       0      .1      20      36      60      76      96     116
 219          RY     110     105   104.5     100     100   104.5     105   105.5

 220          KK     820        SUBBASIN 820 RUNOFF
 221          BA  .03645
 222          LS       0      77      38
 223          UD    0.16

 224          KK    C820        COMBINE 820 AND C810
 225          HC       2

 226          KK    C830        ROUTE C820 TO C830
 227          RS     100    STOR      -1       0
 228          RC    .012   0.012    .012      97   .0104
 229          RX       0      .1      .2      .3      .4      .5      20    20.1
 230          RY     106     100     100     100     100     100     100     106

 231          KK     910        SUBBASIN 910 RUNOFF
 232          BA  .04977
 233          LS       0      77      65
 234          UD    0.20

 235          KK    C920        ROUTE 910 TO C920
 236          RK     660    .050    .012            CIRC       2
 237          RK     680   .0060    .025            TRAP       1       1

 238          KK     920        SUBBASIN 920 RUNOFF
 239          BA  .02748
 240          LS       0      69      49
 241          UD    0.26

 242          KK    C920         COMBINE 910 AND 920
 243          HC       2

 244          KK    C930         ROUTE C920 TO C930
 245          RS     100    STOR      -1       0
 246          RC    .050   0.016    .016     680   .0040
 247          RX       0      .1      15    20.5    20.6    44.5    44.6    44.7
 248          RY     105     100    99.5    99.4    98.9    99.4     100     105
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 249          KK     930        SUBBASIN 930 RUNOFF
 250          BA  .05831
 251          LS       0      77      38
 252          UD    0.25

 253          KK    C930        COMBINE C920 AND 930
 254          HC       2

 255          KK    C930        DIVERT FLOW TO C950
 256          DT    D930
 257          DI       0      51     400
 258          DQ       0      51      51

 259          KK    C830         ROUTE C930 TO C830
 260          RS     100    STOR      -1       0
 261          RC    .050   0.016    .016     640   .0028
 262          RX       0      .1     7.5     7.6    34.5    34.6    40.5    50.0
 263          RY     105     100     100    99.5    99.0    99.5    99.7     100

 264          KK     830        SUBBASIN 830 RUNOFF
 265          BA  .00148
 266          LS       0      98
 267          UD    0.07

 268          KK    C830        COMBINE 830 AND C820 AND 930 (Downstream Box-Culvert T-bird)
 269          HC       3

 270          KK    C830        DIVERT FLOW TO C960  (To Existing Pima Channel at Sutton)
 271          DT    D830
 272          DI       0     520     718    1045
 273          DQ       0       0     138     445

 274          KK     A30        SUBBASIN A30 RUNOFF
 275          BA  0.4031
 276          LS       0      77      11
 277          UD    0.47

 278          KK    DA30        DETENTION BASIN AT CPA30
 279          KM                Outflow to A31 and A32 and A36
 280          RS       1    STOR       0
 281          SA       0    0.49    0.94    1.39    1.93
 282          SE   34.99   35.00   37.00   39.00   41.40
 283          SQ       0      40   137.4     268     361

 284          KK     A31        SPLIT FLOW AT DETENTION BASIN DA30
 285          KM                DI is Total Outflow from Detention Basin (A31+A32+A36)
 286          KM                DQ is Split to A32 and A36
 287          DT     A32
 288          DI       0      40   137.4     268     361
 289          DQ       0      40   124.4     242     326
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 290          KK    CA31        COMBINE C830 AND A31
 291          HC       2

 292          KK  ED1010        ROUTE CA31 TO ED1010
 293          RS     100    STOR      -1       0
 294          RC    .060    .040    .060     600   .0086
 295          RX       0     0.1      50      56      59      65     115   115.1
 296          RY     105     100      99      95      95      99     100     105

 297          KK    1010        SUBBASIN 1010 RUNOFF
 298          BA  .01192
 299          LS       0      77
 300          UD    0.08

 301          KK   C1010        COMBINE 1010 and CA31
 302          HC       2

 303          KK  ED1010        EXISTING DETENTION BASIN 1010
 304          RS       1    STOR       0
 305          SA       0    0.41    0.93    1.19    1.45    1.71    2.23
 306          SE    24.7    25.7    26.7    27.2    27.7    28.2    29.2
 307          SQ       0       7      17      21      69     240    1082

 308          KK   C1020        ROUTE DETENTION BASIN OUTFALL TO C1020
 309          RS     100    STOR      -1       0
 310          RC    .050   0.040    .050     220   .0086
 311          RX       0     0.1      50      56      59      65     115   115.1
 312          RY     105     100      99      95      95      99     100     105

 313          KK    1020        SUBBASIN 1020 RUNOFF
 314          BA  .00202
 315          LS       0      77      10
 316          UD    0.06

 317          KK   C1020        COMBINE C1010 AND 1020
 318          HC       2

 319          KK     A32        RETRIEVE SPLIT FLOW AT A32 (A36 and A32)
 320          DR     A32

 321          KK     A32        SPLIT FLOW AT DETENTION BASIN DA30
 322          KM                DI is Split to A32 and A36
 323          KM                DQ is Split to A36 (Box Culvert)
 324          DT     A36
 325          DI       0      40   124.4     242     326
 326          DQ       0      40     110     190     250

 327          KK   C1030        ROUTE A32 TO C1030
 328          RS     100    STOR      -1       0
 329          RC    .060    .040    .060     600   .0080
 330          RX       0     0.1      50      56      59      65     115   115.1
 331          RY     105     100      99      95      95      99     100     105
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 332          KK   C1030        ROUTE A32 TO C1030
 333          RK     230   .0036    .012            CIRC    3.53

 334          KK    1030        SUBBASIN 1030 RUNOFF
 335          BA  .00985
 336          LS       0      77
 337          UD     .13

 338          KK   C1030        COMBINE C1030 AND A32
 339          HC       2

 340          KK   C1040        ROUTE C1030 TO C1040
 341          RK     524  0.0040    .012       0    CIRC    3.53

 342          KK    1040        SUBBASIN 1040 RUNOFF
 343          BA  .01949
 344          LS       0      77      25
 345          UD    0.12

 346          KK  ED1040        EXISTING DETENTION BASIN 1040
 347          RS       1    STOR      -1       0
 348          SA       0    0.52    .597    .713    0.79    0.79
 349          SE    24.0    24.5    25.5    27.0      28      29
 350          SQ       0     1.5       6      13      16      19

 351          KK   C1040        COMBINE C1030 AND 1040
 352          HC       2

 353          KK   C1050        ROUTE C1040 TO C1050
 354          RS     100    STOR      -1       0
 355          RC    .050   0.040    .050     250   .0086
 356          RX       0     0.1      50      56      59      65     115   115.1
 357          RY     105     100      99      95      95      99     100     105

 358          KK    1050        SUBBASIN 1050 RUNOFF
 359          BA  .00387
 360          LS       0      77
 361          UD    0.07

 362          KK   C1050        COMBINE 1050 AND C1040
 363          HC       2

 364          KK   C1050        COMBINE C1050 AND C1020
 365          HC       2

 366          KK   C1070        ROUTE C1050 TO C1070
 367          RS     100    STOR      -1       0
 368          RC    .050   0.040    .050    1150   .0078
 369          RX       0     0.1      50      56      60      66     116   116.1
 370          RY     105     100      99      95      95      99     100     105
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Where is this? Not shown as a D.B. on the map.

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

 371          KK    1060        SUBBASIN 1060 RUNOFF
 372          BA  .01174
 373          LS       0      77
 374          UD    0.20

 375          KK   C1070        ROUTE 1060 TO C1070
 376          RS     100    STOR      -1       0
 377          RC    .040   0.016    .040     380   .0100
 378          RX       0     0.1    21.5    21.6    60.5    60.6      72    72.1
 379          RY     105     100      99   98.86   98.86      99     100     105

 380          KK    1070        SUBBASIN 1070 RUNOFF
 381          BA  .02864
 382          LS       0      77      17
 383          UD    0.14

 384          KK   C1070        COMBINE C1050 AND 1060 AND 1070
 385          HC       3

 386          KK   C1080        ROUTE C1070 TO C1080
 387          RS     100    STOR      -1       0
 388          RC    .050  0.040    .050    3100   .0066
 389          RX       0     0.1      30      41      49      60      90    90.1
 390          RY     108     100      99      95      95      99     100     108

 391          KK    1080        SUBBASIN 1080 RUNOFF
 392          BA  .04840
 393          LS       0      77      24
 394          UD    0.16

 395          KK   C1080        COMBINE 1080 AND C1070
 396          HC       2

 397          KK    1090        SUBBASIN 1090 RUNOFF
 398          BA  .03370
 399          LS       0      77      20
 400          UD   0.138

 401          KK   C1100        ROUTE 1090 TO C1100
 402          RS     100    STOR      -1       0
 403          RC    .040   0.016    .040   .0074    2340
 404          RX       0     0.1      20    20.1      60    60.1      80    80.1
 405          RY     105     100      99   98.75   98.75      99     100     105

 406          KK    1100        SUBBASIN 1100 RUNOFF
 407          BA  .07053
 408          LS       0      77      18
 409          UD    0.37
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

410           KK   C1100        COMBINE 1100 AND 1090
411           HC       2

412           KK   C1080        COMBINE C1100 AND C1080
413           HC       2

414           KK   C1080       DIVERT C1080 TO 84TH STREET SOUTH
415           DT  D1080S
416           DI     400     840
417           DQ       0     190

418           KK   C1080       DIVERT C1080 TO CACTUS ROAD WEST
419           DT  D1080W
420           DI     400     640
421           DQ       0     132

422           KK   C1110        ROUTE C1080 TO C1110
423           RS     100    STOR      -1       0
424           RC    .040   0.030    .040    1500   .0092
425           RX       0     0.1      20      40      80     100     120   120.1
426           RY     105     100      99      93      93      99     100     105
427           RS     100    STOR      -1       0
428           RC    .020   0.020    .020     200   .0080
429           RX       0     0.1     0.2     0.3    24.3    24.4    24.5    24.6
430           RY     110     110     110     100     100     110     110     110

431           KK    1110        SUBBASIN 1110 RUNOFF
432           BA  .02387
433           LS       0      69      18
434           UD    0.09

435           KK   C1110        COMBINE 1110 AND C170
436           HC       2

437           KK    1120        SUBBASIN 1120 RUNOFF
438           BA  .01692
439           LS       0      69      50
440           UD    0.07

441           KK   C1120        COMBINE 1120 AND C1110
442           HC       2

443           KK   LAKE5        DETENTION BASIN AT LAKE 5
444           RS       1    STOR       0
445           SV       0    6.94   10.21      14   18.59   24.07   30.25
446           SE   73.50   76.09   77.09   78.09   79.09   80.09   81.09
447           SQ       0       0      49     225     535     960    1500

448           KK      10       SUBBASIN 10 RUNOFF
449           BA  .00536
450           PH                    0.88    1.61     2.6    2.84     3.0     3.3
451           LS                 89
452           UD     .10
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 453          KK      20      SUBBASIN 20 RUNOFF
 454          BA  .00273
 455          LS              77
 456          UD     .20

 457          KK     C10      COMBINE 10 AND 20
 458          HC       2

 459          KK     C15      ROUTE C10 TO C15
 460          RS     100    STOR      -1       0
 461          RC   0.016   0.025   0.040    2605  0.0070
 462          RX       0      20      40      49      51      60      80     100
 463          RY     100    99.6    99.2      97      97    99.2    99.6     100

 464          KK      15      SUBBASIN 15 RUNOFF
 465          BA  .00559
 466          LS              89
 467          UD     .08

 468          KK     C15      COMBINE C10 AND 15
 469          HC       2

 470          KK     C15      DIVERT C15 TO SOUTH PIMA ROAD
 471          DT     D15
 472          DI       0      19      30      40
 473          DQ       0      19      19      29

 474          KK    C110      ROUTE C15 TO 110
 475          RS     100    STOR      -1       0
 476          RC    .040   0.016    .016     680   .0030
 477          RX      20      40      65      70      70      72     100     100
 478          RY   103.1   102.9  101.75  101.74  101.27  101.35  101.63  103.63

 479          KK     110      SUBBASIN 110 RUNOFF
 480          BA  .00089
 481          LS              98
 482          UD     .07

 483          KK      30      SUBBASIN 30 RUNOFF
 484          BA  .02464
 485          LS              77
 486          UD     .35

 487          KK      40      SUBBASIN 40 RUNOFF
 488          BA  .03122
 489          LS              77      45
 490          UD     .42

 491          KK    C110      COMBINE C15 AND 110 AND 40 AND 30
 492          HC       4
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 493          KK    C110      DIVERT C110 TO 210
 494          DT    D110
 495          DI       0       19       30       50       70
 496          DQ       0        1       12       22       30

 497          KK    C120      ROUTE C110 TO 120
 498          RS     100     STOR       -1        0
 499          RC    .040     .016     .016      130    .0030
 500          RX      55       55     64.7     69.7     69.7     71.7      100      100
 501          RY   102.3    100.3    99.56    99.44    98.96    99.04    99.56   101.56

 502          KK      50      SUBBASIN 50 RUNOFF
 503          BA  .00659
 504          LS              77       35
 505          UD     .14

 506          KK     120      SUBBASIN 120 RUNOFF
 507          BA  .00018
 508          LS              98
 509          UD     .06

 510          KK    C120      COMBINE C110 AND 50 AND 120
 511          HC       3

 512          KK    C130      ROUTE C120 TO 130
 513          RS     100     STOR       -1        0
 514          RC    .040     .016     .016      125    .0030
 515          RX      55       55     64.7     69.7     69.7     71.7      100      100
 516          RY   101.5     99.5    99.06    98.94    98.48    98.56    99.13   101.13

 517          KK      70      SUBBASIN 70 RUNOFF
 518          BA  .01106
 519          LS              77       35
 520          UD     .19

 521          KK     130      SUBBASIN 130 RUNOFF
 522          BA  .00038
 523          LS              98
 524          UD     .06

 525          KK    C130      COMBINE C120 AND 70 AND 130
 526          HC       3

 527          KK    C140      ROUTE C130 TO 140
 528          RS     100     STOR       -1        0
 529          RC    .040     .016     .016      265    .0030
 530          RX      55       55       61       66       66       68      100      100
 531          RY   101.2     99.2    98.48    98.36    97.89    97.97    98.41   100.41
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 532          KK     80      SUBBASIN 80 RUNOFF
 533          BA  .00189
 534          LS             77      30
 535          UD     .10

 536          KK    140      SUBBASIN 140 RUNOFF
 537          BA  .00031
 538          LS             98
 539          UD     .06

 540          KK   C140      COMBINE C130 AND 80 AND 140
 541          HC      3

 542          KK   C150      ROUTE C140 TO 150
 543          RS    100    STOR      -1       0
 544          RC   .040   0.016   0.016     440   .0030
 545          RX     55     55    60.7    65.7    65.7    67.7     100     100
 546          RY  100.5   98.5   97.69   97.57   97.11   97.19   97.81   99.81

 547          KK     90      SUBBASIN 90 RUNOFF
 548          BA  .02922
 549          LS             77      24
 550          UD     .23

 551          KK    150      SUBBASIN 150 RUNOFF
 552          BA  .00064
 553          LS             98
 554          UD     .06

 555          KK   C150      COMBINE C140 AND 90 AND 140
 556          HC      3

 557          KK   C150      DIVERT C150 TO 250
 558          DT   D150
 559          DI      0      20      40      60      80     100     130
 560          DQ      0       0       5      25      35      45      57

 561          KK   C160      ROUTE C150 TO 160
 562          RS    100    STOR      -1       0
 563          RC   .040    .016    .016     550   .0030
 564          RX     20      45      61      66      66      68     100     100
 565          RY   97.3    96.9   96.31   96.19   95.70   95.78   96.29   98.29

 566          KK    100      SUBBASIN 100 RUNOFF
 567          BA  .00666
 568          LS             77      24
 569          UD     .12

 570          KK    160      SUBBASIN 160 RUNOFF
 571          BA  .00079
 572          LS             98
 573          UD     .06
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 574          KK    C160      COMBINE C150 AND 100 AND 160
 575          HC       3

 576          KK    C170      ROUTE C160 TO 170
 577          RS     100    STOR      -1       0
 578          RC    .040    .016    .016     290   .0020
 579          RX      35      35      65      70      70      72      95      95
 580          RY    98.3    96.3   95.38   95.16   94.68   94.76   95.11   97.11

 581          KK     170      SUBBASIN 170 RUNOFF
 582          BA  .00120
 583          LS              77      35
 584          UD     .06

 585          KK    C170      COMBINE C160 AND 170
 586          HC       2

 587          KK    C170      DIVERT C170 TO 270
 588          DT    D170
 589          DI       0      10      15      20      40      60      80     100     130
 590          DQ       0       2       7      12      32      47      63      75      94

 591          KK    D110      RETRIEVE D110
 592          DR    D110

 593          KK     210      SUBBASIN 210 RUNOFF
 594          BA  .00272
 595          LS              98
 596          UD     .11

 597          KK    C210      COMBINE D210 AND 210
 598          HC       2

 599          KK    C210      DIVERT C210 TO 310
 600          DT    D210
 601          DI    5.25      19    26.1      33      39
 602          DQ       0     1.5     3.4       6      16

 603          KK    C220      ROUTE 210 TO 220
 604          RS     100    STOR      -1       0
 605          RC    .016    .016    .040     125   .0030
 606          RX       0       0    31.5    33.5    33.5    38.5      55      80
 607          RY  101.56   99.56   99.15   99.03   99.49   99.61   100.1   100.2

 608          KK     220      SUBBASIN 220 RUNOFF
 609          BA  .00050
 610          LS              98
 611          UD     .06
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 612          KK    C220      COMBINE 210 AND 220
 613          HC       2

 614          KK    C230      ROUTE C220 TO 230
 615          RS     100    STOR      -1       0
 616          RC    .016    .016    .040     265   .0030
 617          RX       0       0    31.5    33.5    33.5    38.5      55      80
 618          RY  101.13   99.13   98.65   98.57   99.04   99.16    99.8  100.10

 619          KK     230      SUBBASIN 230 RUNOFF
 620          BA  .00105
 621          LS              98
 622          UD     .06

 623          KK    C230      COMBINE C220 AND 230
 624          HC       2

 625          KK    C240      ROUTE C230 TO 240
 626          RS     100    STOR      -1       0
 627          RC    .016    .016    .040     440   .0030
 628          RX       0       0    31.8    33.8    33.8    38.8      55      80
 629          RY  100.41   98.41   97.95   97.87   98.37   98.49    99.0    99.9

 630          KK     240      SUBBASIN 240 RUNOFF
 631          BA  .00084
 632          LS              98
 633          UD     .06

 634          KK    C240      COMBINE C230 AND 240
 635          HC       2

 636          KK    C250      ROUTE C240 TO 250
 637          RS     100    STOR      -1       0
 638          RC    .016    .016    .040     550   .0030
 639          RX       0       0    32.3    34.3    34.3    39.3      55      80
 640          RY   99.81   97.81   97.28    97.2   97.68    97.8    98.5    99.0

 641          KK     250      SUBBASIN 250 RUNOFF
 642          BA  .00173
 643          LS              98
 644          UD     .06

 645          KK    D150      RETRIEVE D150
 646          DR    D150

 647          KK    C250      COMBINE C240 AND 250 AND D150
 648          HC       3

 649          KK    C250      DIVERT C250 TO 350
 650          DT    D250
 651          DI       1    44.5    58.2      72      85
 652          DQ       0    12.5    17.1    22.4      32
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 653          KK    C260      ROUTE C250 TO 260
 654          RS     100    STOR      -1       0
 655          RC    .016    .016    .040     290   .0030
 656          RX       0       0    32.4    34.4    34.4    39.4      55      80
 657          RY   98.29   96.29   95.79   95.71   96.18   96.30    96.6    97.1

 658          KK     260      SUBBASIN 260 RUNOFF
 659          BA  .00217
 660          LS              98
 661          UD     .07

 662          KK    C260      COMBINE C250 AND 260
 663          HC       2

 664          KK    C270      ROUTE C260 TO 270
 665          RS     100    STOR      -1       0
 666          RC    .016    .016    .040     290   .0030
 667          RX       0       5    36.8    38.8    38.8    43.8      60      90
 668          RY   95.11   95.04   94.19   94.11   94.59   94.71     95.2    95.3

 669          KK    D170      RETRIEVE D170
 670          DR    D170

 671          KK     270      SUBBASIN 270 RUNOFF
 672          BA  .00114
 673          LS              98
 674          UD     .06

 675          KK    C270      COMBINE C260 AND 270 AND D170
 676          HC       3

 677          KK  D1080S      RETRIEVE D1080S
 678          DR  D1080S

 679          KK    C270      COMBINE D1080S AND C270 AND C170
 680          HC       3

 681          KK    C370      ROUTE C270 TO 370
 682          RS     100    STOR      -1       0
 683          RC    .040    .016    .040     770   .0077
 684          RX       0      24    24.1      40    40.1      56    56.1      80
 685          RY     101   98.93   98.61   98.97   98.97   98.62   98.92     101

 686          KK    D250      RETRIEVE D250
 687          DR    D250

 688          KK    C350      ROUTE D250 TO C350
 689          RS     100    STOR      -1       0
 690          RC    .040    .016    .040     350   .0040
 691          RX       0      24    24.1      40    40.1      56    56.1      80
 692          RY     101   98.93   98.61   98.97   98.97   98.62   98.92     101
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

693           KK     350      SUBBASIN 350 RUNOFF
694           BA  .00225
695           LS              77      20
696           UD     .06

697           KK    C350      COMBINE 350 AND D250
698           HC       2

699           KK    C350      DIVERT C350 TO 330
700           DT    D350
701           DI       0     100
702           DQ       0      50

703           KK    C360      ROUTE C350 TO 360
704           RS     100    STOR      -1       0
705           RC    .040    .016    .040     850   .0040
706           RX       0      24    24.1      40    40.1      56    56.1      80
707           RY     101   98.93   98.61   98.97   98.97   98.62   98.92     101

708           KK     360      SUBBASIN 360 RUNOFF
709           BA  .01320
710           LS              77      20
711           UD     .14

712           KK     370      SUBBASIN 370 RUNOFF
713           BA  .00592
714           LS              77      20
715           UD     .11

716           KK    C370      COMBINE C350 AND 360 AND 370 AND C270
717           HC       4

718           KK    C380      ROUTE C370 TO 380
719           RS     100    STOR      -1       0
720           RC    .040    .016    .040     600   .0054
721           RX       0      20    20.1      40    40.1      60    60.1      80
722           RY     101   98.93   98.61   98.97   98.97   98.62   98.92     101
723           RS     100    STOR      -1       0
724           RC    .040    .016    .040    1200   .0077
725           RX       0      20    20.1      40    40.1      60    60.1      80
726           RY     101   98.93   98.61   98.97   98.97   98.62   98.92     101

727           KK    D210      RETRIEVE D210
728           DR    D210

729           KK    C310      ROUTE D210 TO C310
730           RS     100    STOR      -1       0
731           RC    .040    .016    .040     400   .0080
732           RX       0      24    24.1      40    40.1      56    56.1      80
733           RY     101   98.93   98.61   98.97   98.97   98.62   98.92     101
734           RS     100    STOR      -1       0
735           RC    .040    .016    .040     260   .0030
736           RX       0      24    24.1      40    40.1      56    56.1      80
737           RY  101.21  100.01   99.68     100     100   99.68  100.01  101.21
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 738          KK     310      SUBBASIN 310 RUNOFF
 739          BA  .01647
 740          LS              77      20
 741          UD     .16

 742          KK    C310      COMBINE D210 AND 310
 743          HC       2

 744          KK    C320      DIVERT C310 TO 320
 745          DT    D310
 746          DI       0     100
 747          DQ       0      50

 748          KK    C330      ROUTE C310 TO 330
 749          RS     100    STOR      -1       0
 750          RC    .040    .016    .040     750   .0030
 751          RX       0      24    24.1      40    40.1      56    56.1      80
 752          RY     101   98.93   98.61   98.97   98.97   98.62   98.92     101
 753          RS     100    STOR      -1       0
 754          RC    .040    .016    .040    2000   .0060
 755          RX       0      24    24.1      40    40.1      56    56.1      80
 756          RY  101.21  100.01   99.68     100     100   99.68  100.01  101.21

 757          KK    D350      RETRIEVE D350
 758          DR    D350

 759          KK    C330      ROUTE D350 TO 330
 760          RS     100    STOR      -1       0
 761          RC    .040    .016    .040    2200   .0060
 762          RX       0      24    24.1      40    40.1      56    56.1      80
 763          RY  101.21  100.01   99.68     100     100   99.68  100.01  101.21

 764          KK     340      SUBBASIN 340 RUNOFF
 765          BA  .01031
 766          LS              77      20
 767          UD     .15

 768          KK    C330      ROUTE 340 TO 330
 769          RS     100    STOR      -1       0
 770          RC    .040    .016    .040     440   .0022
 771          RX       0    19.8    19.8      40    40.1      42      50      60
 772          RY    82.9   82.41   81.91   82.31   82.31   82.22    82.1    82.4

 773          KK     330      SUBBASIN 330 RUNOFF
 774          BA  .06322
 775          LS              77      20
 776          UD     .38

 777          KK    C330      COMBINE C340 AND C310 AND 330 AND D350
 778          HC       4
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

779           KK    C330      DIVERT 330 TO 420
780           DT    D330
781           DI       0     100     200
782           DQ       0      80     160

783           KK    C380      ROUTE D330 TO 380
784           RS     100    STOR      -1       0
785           RC    .040    .016    .040     200   .0075
786           RX       0    19.8    19.8      40    40.1      42      50      60
787           RY    82.9   82.41   81.91   82.31   82.31   82.22    82.1    82.4
788           RS     100    STOR      -1       0
789           RC    .040    .016    .040     700   .0036
790           RX       0    19.8    19.8      40    40.1      42      50      60
791           RY    82.9   82.41   81.91   82.31   82.31   82.22    82.1    82.4

792           KK     380      SUBBASIN 380 RUNOFF
793           BA  .04600
794           LS              77      20
795           UD     .18

796           KK     390      SUBBASIN 390 RUNOFF
797           BA  .00938
798           LS              77
799           UD     .17

800           KK    C380      COMBINE C330 AND C370 AND 380 AND 390
801           HC       4

802           KK    C510      ROUTE C390 TO 510
803           RS     100    STOR      -1       0
804           RC    .050    .035    .050     700   .0070
805           RX       0      .1      17      22      28      33      50    50.1
806           RY     102     100      99    96.5    96.5      99     100     102

807           KK     510      SUBBASIN 510 RUNOFF
808           BA  .01044
809           LS              77      20
810           UD     .06

811           KK    C510      COMBINE C390 AND 510
812           HC       2

813           KK    C520      ROUTE C510 TO 520
814           RS     100    STOR      -1       0
815           RC    .050    .035    .050     440   .0030
816           RX       0      .1      17      22      28      33      50    50.1
817           RY     102     100      99    96.5    96.5      99     100     102

818           KK     520      SUBBASIN 520 RUNOFF
819           BA  .01402
820           LS              77      20
821           UD     .10
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

822           KK    C520      COMBINE C510 AND 520
823           HC       2
824           KK     530      SUBBASIN 530 RUNOFF
825           BA  .00806
826           LS              77      20
827           UD     .15
828           KK    C530      COMBINE C520 AND 530
829           HC       2
830           KK    C550      ROUTE C530 TO 550
831           RS     100    STOR      -1       0
832           RC    .050    .035    .050     350   .0050
833           RX       0      .1      17      22      28      33      50    50.1
834           RY     102     100      99    96.5    96.5      99     100     102
835           KK    D330      RETRIEVE D330
836           DR    D330
837           KK    C420      ROUTE D330 TO 420
838           RS     100    STOR      -1       0
839           RC    .040    .016    .040    1300   .0070
840           RX       0      20      23      30    30.1      37      40      60
841           RY     102    99.7   99.93     100     100   99.93    99.7     102
842           RS     100    STOR      -1       0
843           RC    .040    .016    .040     300   .0020
844           RX       0      20      23      30    30.1      37      40      60
845           RY     102    99.7   99.93     100     100   99.93    99.7     102
846           KK     420      SUBBASIN 420 RUNOFF
847           BA  .01719
848           LS              77      20
849           UD     .21
850           KK    C420      COMBINE D330 AND 420
851           HC       2
852           KK    C430      ROUTE C420 TO 430
853           RS     100    STOR      -1       0
854           RC    .040    .016    .040     480   .0020
855           RX       0      20      23      30    30.1      37      40      60
856           RY     102    99.7   99.93     100     100   99.93    99.7     102
857           KK     430      SUBBASIN 430 RUNOFF
858           BA  .02202
859           LS              77      20
860           UD     .20
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

861           KK    C430      COMBINE C420 AND 430
862           HC       2

863           KK     440      SUBBASIN 440 RUNOFF
864           BA  .00731
865           LS              77      20
866           UD     .14

867           KK    C440      COMBINE C430 AND 440
868           HC       2

869           KK    C440      DIVERT C440 TO 470
870           DT    D440
871           DI       0     100     200     300
872           DQ       0      70     140     210

873           KK    C540      ROUTE C440 TO C540
874           RS     100    STOR      -1       0
875           RC    .040    .016    .040     540   .0080
876           RX       0      20      23      30    30.1      37      40      60
877           RY     102    99.7   99.93     100     100   99.93    99.7     102

878           KK     540      SUBBASIN 540 RUNOFF
879           BA  .00517
880           LS              77      20
881           UD     .13

882           KK    C540      COMBINE C440 AND 540
883           HC       2

884           KK    C550      ROUTE 540 TO C550
885           RS     100    STOR      -1       0
886           RC    .040    .016    .040     200   .0080
887           RX       0      20      23      30    30.1      37      40      60
888           RY     101    99.7   99.93     100     100   99.93    99.7     101

889           KK     550      SUBBASIN 550
890           BA  .00703
891           LS              77      20
892           UD     .08

893           KK    C550      COMBINE 550 AND C530 AND 540
894           HC       3

895           KK    C560      ROUTE C550 TO 560
896           RS     100    STOR      -1       0
897           RC    .050    .035    .050     900   .0060
898           RX       0      .1      20      22      28      30      50    50.1
899           RY     102     100      99      97      97      99     100     102
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

900           KK     570      SUBBASIN 570 RUNOFF
901           BA  .00492
902           LS              77      20
903           UD     .16

904           KK     580      SUBBASIN 580 RUNOFF
905           BA  .00575
906           LS              77      20
907           UD     .14

908           KK     560      SUBBASIN 560 RUNOFF
909           BA  .00386
910           LS              77      20
911           UD     .12

912           KK    C560      COMBINE C550 AND 560 AND 570 AND 580
913           HC       4

914           KK    C590      ROUTE C560 TO 590
915           RS     100    STOR      -1       0
916           RC    .050    .035    .050      55   .0030
917           RX       0      .1      20    20.1      32    32.1      50    50.1
918           RY     102     100      99      96      96      99     100     102

919           KK     590      SUBBASIN 590 RUNOFF
920           BA  .01931
921           LS              77      20
922           UD    0.21

923           KK    C590      COMBINE C560 AND 590
924           HC       2

925           KK    C610      ROUTE C590 TO 610
926           RS     100    STOR      -1       0
927           RC    .050    .035    .050     600   .0030
928           RX       0      .1      20      24      32      36      50    50.1
929           RY     102     100      99      96      96      99     100     102

930           KK     610      SUBBASIN 610 RUNOFF
931           BA   .0035
932           LS              77      20
933           UD    0.06

934           KK    C610      COMBINE 610 AND C590
935           HC       2

936           KK    D440      RETRIEVE D440
937           DR    D440
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

938           KK    C470      ROUTE D440 TO 470
939           RS     100    STOR      -1       0
940           RC    .040    .016    .040    1200   .0070
941           RX       0      24    24.1      40    40.1      56    56.1      80
942           RY  101.21  100.01   99.68     100     100   99.68  100.01  101.21

943           KK     410      SUBBASIN 410 RUNOFF
944           BA  .04406
945           LS              77      20
946           UD    0.30

947           KK    C450      ROUTE 410 TO C450
948           RS     100    STOR      -1       0
949           RC    .040   0.016    .016     130   .0020
950           RX      20      40      65      70      70      72     100     100
951           RY   103.1   102.9  101.75  101.74  101.27  101.35  101.63  103.63

952           KK     450      SUBBASIN 450 RUNOFF
953           BA  .00803
954           LS              77      20
955           UD    0.22

956           KK    C450      COMBINE C410 AND 450
957           HC       2

958           KK    C460      ROUTE C450 TO 460
959           RS     100    STOR      -1       0
960           RC    .040   0.016    .016     600   .0020
961           RX      20      40      65      70      70      72     100     100
962           RY   103.1   102.9  101.75  101.74  101.27  101.35  101.63  103.63

963           KK     460      SUBBASIN 460 RUNOFF
964           BA  .01398
965           LS              77
966           UD    0.15

967           KK    C460      COMBINE C450 AND 460
968           HC       2

969           KK     470      SUBBASIN 470 RUNOFF
970           BA  .00717
971           LS              98
972           UD    0.14

973           KK    C470      COMBINE C460 AND C440 AND 470
974           HC       3

975           KK    C600      ROUTE C470 TO 600
976           RS     100    STOR      -1       0
977           RC    .040   0.016    .016     980   .0020
978           RX      20      40      65      70      70      72     100     100
979           RY   103.1   102.9  101.75  101.74  101.27  101.35  101.63  103.63
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 980          KK     600       SUBBASIN 600 RUNOFF
 981          BA  .03036
 982          LS                77       20
 983          UD     .23

 984          KK    C600       COMBINE C470 AND 600
 985          HC       2

 986          KK    C610       ROUTE C600 TO 610
 987          RS     100    STOR       -1        0
 988          RC    .040   0.016    0.016      250    .0020
 989          RX       0      20       40       46       54       60       80      100
 990          RY     101     100       99       96       96       99      100      101

 991          KK    C610       COMBINE 610 AND C600
 992          HC       2

 993          KK    D930         RETRIEVE D930
 994          DR    D930

 995          KK    C950         ROUTE D930 TO C950
 996          RK    1125   .0055     .012             CIRC        3
 997          RK    1282   .0044     .012             CIRC      3.5

 998          KK     940         SUBBASIN 940 RUNOFF
 999          BA  .00836
1000          LS       0      77        5
1001          UD    0.11

1002          KK    C950          ROUTE 940 TO C950
1003          RS     100    STOR       -1        0
1004          RC    .040   0.016     .040      530    .0030
1005          RX       0      .1        9      9.1       41     41.1       50     50.1
1006          RY     105     100     99.5    99.14    98.14     99.5      100      105

1007          KK     950         SUBBASIN 950 RUNOFF
1008          BA  .09858
1009          LS       0      77       41
1010          UD    0.39

1011          KK    C950         COMBINE 950 AND 940 AND D930
1012          HC       3

1013          KK    C970          ROUTE 950 TO C970
1014          RS     100    STOR       -1        0
1015          RC    .050   0.025     .050      200    .0020
1016          RX       0      .1        1       16     16.1       31       32     32.1
1017          RY     105     100       99       94       94       99      100      105
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1018          KK    D830      RETRIEVE D830  (Diverted Flow South from T-bird Box-Culverts)
1019          DR    D830

1020          KK    C960         ROUTE D830 TO C960
1021          RS     100    STOR      -1       0
1022          RC    .016   0.040    .050     610   .0100
1023          RX       0      .1      30      40      50     100   100.1   100.2
1024          RY     105     100   99.33   98.83   99.33     100     100     105

1025          KK     960        SUBBASIN 960 RUNOFF
1026          BA  .00467
1027          LS       0      77
1028          UD    0.13

1029          KK    C960        COMBINE D830 AND 960
1030          HC       2

1031          KK    C970         ROUTE C960 TO C970 (Sutton Channel East)
1032          RS     100    STOR      -1       0
1033          RC    .016   0.040    .050     660   .0080
1034          RX       0      .1      30      40      58      68    68.1    68.2
1035          RY     105     100   99.33   98.23     100     100     100     105

1036          KK     970        SUBBASIN 970 RUNOFF
1037          BA  .00295
1038          LS       0      77
1039          UD    0.09

1040          KK    C970        COMBINE C960 AND 970 (Pima Channel North)
1041          HC       2

1042          KK    C970        COMBINE C950 AND 970 (Pima Channel South)
1043          HC       2

1044          KK    RB10      ROUTE C970 TO RB10
1045          RS     100    STOR      -1       0
1046          RC    .040    .025    .040    1320   .0090
1047          RX       0      20      40      50      60      70      90     110
1048          RY     101     100      99      94      94      99     100     101

1049          KK    RB10         SUBBASIN RB10 RUNOFF
1050          BA  .06314
1051          LS       0      77      22
1052          UD    0.21

1053          KK    RB10      COMBINE C970 AND RB10
1054          HC       2

1055          KK     B20        ROUTE CRB10 TO CPB20
1056          RK    2800   .0071     .03       0    TRAP      15     0.5
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Pima channel
North? South?
Where is RB10, B20
B50?

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

1057          KK     B15        SUBBASIN B15 RUNOFF
1058          BA  0.0400
1059          LS       0      77      20
1060          UD    0.17

1061          KK     B17        ROUTE CPB15 TO CPB17
1062          RK    1200   .0087    .015       0    TRAP      35     0.1

1063          KK     B20        ROUTE CPB17 TO CPB20
1064          RK    2100    .006    .035       0    TRAP      10       5

1065          KK     B20        SUBBASIN B20 RUNOFF
1066          BA  0.1946
1067          LS       0      77      29
1068          UD    0.23

1069          KK   CPB20        COMBINE FLOWS AT CPB20
1070          HC       3

1071          KK     B30        ROUTE CPB20 TO CPB30
1072          RK    2400   .0071     .03       0    TRAP      12     2.5

1073          KK     B30        SUBBASIN B30 RUNOFF
1074          BA  0.1130
1075          LS       0      77      47
1076          UD    0.17

1077          KK   CPB30        COMBINE FLOWS AT CPB30
1078          HC       2

1079          KK     B40        ROUTE CPB30 TO CPB40
1080          RK    2700    .007     .03       0    TRAP      12     2.5

1081          KK     B40        SUBBASIN B40 RUNOFF
1082          BA  0.0901
1083          LS       0      77      12
1084          UD    0.13

1085          KK   CPB40        COMBINE FLOWS AT CPB40
1086          HC       2

1087          KK    PIMA        ROUTE CPB40 TO CPPIMA
1088          RK    3700   .0043    .037       0    TRAP      90       3

1089          KK     B50        SUBBASIN B50 RUNOFF
1090          BA  0.1413
1091          LS       0      77       5
1092          UD    0.30
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1093          KK  CPPIMA        COMBINE AREA B50 AND B AT CPPIMA
1094          HC        2
1095          ZZ
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                .          .          .
                .          .          .
107             .          .          .          744
                .          .          .            .
                .          .          .            .
111             .        C744.........................
                .          V
                .          V
113             .        C745
                .          .
                .          .
115             .          .        745
                .          .          .
                .          .          .
119             .        C745............
                .          V
                .          V
121             .        C735
                .          .
                .          .
123           C735............
                V
                V
125           C760
                .
                .
127             .        760
                .          .
                .          .
131           C760............
                V
                V
133           C790
                .
                .
141             .        780
                .          V
                .          V
145             .        C782
                .          .
                .          .
150             .          .        782
                .          .          .
                .          .          .
154             .          .          .          784
                .          .          .            V
                .          .          .            V
158             .          .          .         ED784
                .          .          .            .
                .          .          .            .
163             .        C782.........................
                .          V
                .          V
165             .        C790
                .          .
                .          .
170             .          .        790
                .          .          .
                .          .          .
174           C790.........................
                .
                .
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```
176          .          750
             .           V
             .           V
180          .         C770
             .            .
             .            .
185          .            .          770
             .            .           .
             .            .           .
189          .         C770............
             .            .
             .            .
191       C770............
             V
             V
193       C800
             .
             .
198          .          800
             .            .
             .            .
202       C800............
             V
             V
204       C810
             .
             .
209          .          810
             .            .
             .            .
213       C810............
             V
             V
215       C820
             .
             .
220          .          820
             .            .
             .            .
224       C820............
             V
             V
226       C830
             .
             .
231          .          910
             .           V
             .           V
235          .         C920
             .            .
             .            .
238          .            .          920
             .            .           .
             .            .           .
242          .         C920............
             .           V
             .           V
244          .         C930
             .            .
             .            .
249          .            .          930
             .            .           .
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          .          .          .
253       .        C930............
          .          .
          .          .
256       .          .-------->    D930
255       .        C930
          .          V
          .          V
259       .        C830
          .          .
          .          .
264       .          .         830
          .          .           .
          .          .           .
268     C830........................
          .
          .
271       .-------->    D830
270     C830
          .
          .
274       .         A30
          .          V
          .          V
278       .        DA30
          .          .
          .          .
287       .          .-------->    A32
284       .         A31
          .          .
          .          .
290     CA31............
          V
          V
292    ED1010
          .
          .
297       .        1010
          .          .
          .          .
301     C1010............
          V
          V
303    ED1010
          V
          V
308     C1020
          .
          .
313       .        1020
          .          .
          .          .
317     C1020............
          .
          .
320       .          .<--------    A32
319       .         A32
          .          .
          .          .
324       .          .-------->    A36
321       .         A32
          .          V
```

```
          .          V
327       .       C1030
          .          V
          .          V
332       .       C1030
          .          .
          .          .
334       .          .        1030
          .          .          .
          .          .          .
338       .       C1030............
          .          V
          .          V
340       .       C1040
          .          .
          .          .
342       .          .        1040
          .          .          V
          .          .          V
346       .          .      ED1040
          .          .          .
          .          .          .
351       .       C1040............
          .          V
          .          V
353       .       C1050
          .          .
          .          .
358       .          .        1050
          .          .          .
          .          .          .
362       .       C1050............
          .          .
          .          .
364    C1050............
          V
          V
366    C1070
          .
          .
371       .        1060
          .          V
          .          V
375       .       C1070
          .          .
          .          .
380       .          .        1070
          .          .          .
          .          .          .
384    C1070........................
          V
          V
386    C1080
          .
          .
391       .        1080
          .          .
          .          .
395    C1080............
          .
          .
397       .        1090
```

```
            .          V
            .          V
401         .       C1100
            .          .
            .          .
406         .          .        1100
            .          .          .
            .          .          .
410         .       C1100............
            .          .
            .          .
412      C1080............
            .
            .
415         .-------> D1080S
414      C1080
            .
            .
419         .-------> D1080W
418      C1080
            V
            V
422      C1110
            .
            .
431         .        1110
            .          .
            .          .
435      C1110............
            .
            .
437         .        1120
            .          .
            .          .
441      C1120............
            V
            V
443      LAKE5
            .
            .
448         .          10
            .          .
            .          .
453         .          .          20
            .          .          .
            .          .          .
457         .        C10............
            .          V
            .          V
459         .        C15
            .          .
            .          .
464         .          .          15
            .          .          .
            .          .          .
468         .        C15............
            .          .
            .          .
471         .          .------->     D15
470         .        C15
            .          V
            .          V
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474   .   C110
      .     .
      .     .
479   .     .       110
      .     .         .
      .     .         .
483   .     .         .       30
      .     .         .        .
      .     .         .        .
487   .     .         .        .       40
      .     .         .        .        .
      .     .         .        .        .
491   .   C110.......................................
      .     .
      .     .
494   .     .-------->   D110
493   .   C110
      .     V
      .     V
497   .   C120
      .     .
      .     .
502   .     .       50
      .     .         .
      .     .         .
506   .     .         .       120
      .     .         .        .
      .     .         .        .
510   .   C120........................
      .     V
      .     V
512   .   C130
      .     .
      .     .
517   .     .       70
      .     .         .
      .     .         .
521   .     .         .       130
      .     .         .        .
      .     .         .        .
525   .   C130........................
      .     V
      .     V
527   .   C140
      .     .
      .     .
532   .     .       80
      .     .         .
      .     .         .
536   .     .         .       140
      .     .         .        .
      .     .         .        .
540   .   C140........................
      .     V
      .     V
542   .   C150
      .     .
      .     .
547   .     .       90
      .     .         .
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551   .     .         .       150
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                .          .          .
                .          .          .
555             .       C150.......................
                .          .
                .          .
558             .          .------->     D150
557             .       C150
                .          V
                .          V
561             .       C160
                .          .
                .          .
566             .          .          100
                .          .            .
                .          .            .
570             .          .            .          160
                .          .            .            .
                .          .            .            .
574             .       C160.......................
                .          V
                .          V
576             .       C170
                .          .
                .          .
581             .          .          170
                .          .            .
                .          .            .
585             .       C170............
                .          .
                .          .
588             .          .------->     D170
587             .       C170
                .          .
                .          .
592             .          .            .<-------     D110
591             .          .         D110
                .          .            .
                .          .            .
593             .          .            .          210
                .          .            .            .
                .          .            .            .
597             .          .         C210............
                .          .            .
                .          .            .
600             .          .            .------->     D210
599             .          .         C210
                .          .            V
                .          .            V
603             .          .         C220
                .          .            .
                .          .            .
608             .          .            .          220
                .          .            .            .
                .          .            .            .
612             .          .         C220............
                .          .            V
                .          .            V
614             .          .         C230
                .          .            .
                .          .            .
619             .          .            .          230
                .          .            .            .
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                .          .
623             .          .      C230............
                .          .         V
                .          .         V
625             .          .      C240
                .          .         .
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630             .          .         .        240
                .          .         .          .
                .          .         .          .
634             .          .      C240............
                .          .         V
                .          .         V
636             .          .      C250
                .          .         .
                .          .         .
641             .          .         .        250
                .          .         .          .
                .          .         .          .
646             .          .         .          .          .<-------    D150
645             .          .         .          .       D150
                .          .         .          .          .
                .          .         .          .          .
647             .          .      C250........................
                .          .         .
                .          .         .
650             .          .         .-------->    D250
649             .          .      C250
                .          .         V
                .          .         V
653             .          .      C260
                .          .         .
                .          .         .
658             .          .         .        260
                .          .         .          .
                .          .         .          .
662             .          .      C260............
                .          .         V
                .          .         V
664             .          .      C270
                .          .         .
                .          .         .
670             .          .         .          .<-------    D170
669             .          .         .       D170
                .          .         .          .
                .          .         .          .
671             .          .         .          .       270
                .          .         .          .          .
                .          .         .          .          .
675             .          .      C270........................
                .          .         .
                .          .         .
678             .          .         .          .<-------  D1080S
677             .          .         .     D1080S
                .          .         .          .
                .          .         .          .
679             .       C270........................
                .          V
                .          V
681             .       C370
                .          .
                .          .
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687   .     .     .<-------   D250
686   .     .   D250
      .     .     V
      .     .     V
688   .     .   C350
      .     .     .
      .     .     .
693   .     .     .       350
      .     .     .         .
      .     .     .         .
697   .     .   C350............
      .     .     .
      .     .     .
700   .     .     .-------->  D350
699   .     .   C350
      .     .     V
      .     .     V
703   .     .   C360
      .     .     .
      .     .     .
708   .     .     .       360
      .     .     .         .
      .     .     .         .
712   .     .     .         .       370
      .     .     .         .         .
      .     .     .         .         .
716   .   C370.....................................
      .     V
      .     V
718   .   C380
      .     .
      .     .
728   .     .     .<-------   D210
727   .     .   D210
      .     .     V
      .     .     V
729   .     .   C310
      .     .     .
      .     .     .
738   .     .     .       310
      .     .     .         .
      .     .     .         .
742   .     .   C310............
      .     .     .
      .     .     .
745   .     .     .-------->  D310
744   .     .   C320
      .     .     V
      .     .     V
748   .     .   C330
      .     .     .
      .     .     .
758   .     .     .         .<-------   D350
757   .     .     .       D350
      .     .     .         V
      .     .     .         V
759   .     .     .       C330
      .     .     .         .
      .     .     .         .
764   .     .     .         .       340
      .     .     .         .         V
      .     .     .         .         V
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768                                          C330
                                               .
                                               .
773                                            .        330
                                               .         .
                                               .         .
777                                  C330.................................
                                               .
                                               .
780                                            .-------> D330
779                                  C330
                                       V
                                       V
783                                  C380
                                               .
                                               .
792                                            .      380
                                               .       .
                                               .       .
796                                            .       .      390
                                               .       .       .
                                               .       .       .
800                          C380.................................
                               V
                               V
802                          C510
                               .
                               .
807                                  510
                                       .
                                       .
811                          C510............
                               V
                               V
813                          C520
                               .
                               .
818                                  520
                                       .
                                       .
822                          C520............
                               .
                               .
824                                  530
                                       .
                                       .
828                          C530............
                               V
                               V
830                          C550
                               .
                               .
836                                    .<-------  D330
835                                  D330
                                       V
                                       V
837                                  C420
                                       .
                                       .
846                                    .      420
                                       .       .
                                       .       .
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850   .     .     C420............
      .     .       V
      .     .       V
852   .     .     C430
      .     .       .
      .     .       .
857   .     .       .        430
      .     .       .          .
      .     .       .          .
861   .     .     C430............
      .     .       .
      .     .       .
863   .     .       .        440
      .     .       .          .
      .     .       .          .
867   .     .     C440............
      .     .       .
      .     .       .
870   .     .       .-------->   D440
869   .     .     C440
      .     .       V
      .     .       V
873   .     .     C540
      .     .       .
      .     .       .
878   .     .       .        540
      .     .       .          .
      .     .       .          .
882   .     .     C540............
      .     .       V
      .     .       V
884   .     .     C550
      .     .       .
      .     .       .
889   .     .       .        550
      .     .       .          .
      .     .       .          .
893   .   C550......................
      .     V
      .     V
895   .   C560
      .     .
      .     .
900   .     .     570
      .     .       .
      .     .       .
904   .     .       .        580
      .     .       .          .
      .     .       .          .
908   .     .       .          .        560
      .     .       .          .          .
      .     .       .          .          .
912   .   C560...................................
      .     V
      .     V
914   .   C590
      .     .
      .     .
919   .     .     590
      .     .       .
      .     .       .
923   .   C590............
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                .          V
                .          V
925             .        C610
                .          .
                .          .
930             .          .        610
                .          .          .
                .          .          .
934             .        C610............
                .          .
                .          .
937             .          .          .<-------     D440
936             .          .        D440
                .          .          V
                .          .          V
938             .          .        C470
                .          .          .
                .          .          .
943             .          .          .        410
                .          .          .          V
                .          .          .          V
947             .          .          .        C450
                .          .          .          .
                .          .          .          .
952             .          .          .          .          450
                .          .          .          .            .
                .          .          .          .            .
956             .          .          .        C450............
                .          .          .          V
                .          .          .          V
958             .          .          .        C460
                .          .          .          .
                .          .          .          .
963             .          .          .          .          460
                .          .          .          .            .
                .          .          .          .            .
967             .          .          .        C460............
                .          .          .          .
                .          .          .          .
969             .          .          .          .          470
                .          .          .          .            .
                .          .          .          .            .
973             .          .        C470........................
                .          .          V
                .          .          V
975             .          .        C600
                .          .          .
                .          .          .
980             .          .          .        600
                .          .          .          .
                .          .          .          .
984             .          .        C600............
                .          .          V
                .          .          V
986             .          .        C610
                .          .          .
                .          .          .
991             .        C610............
                .          .
                .          .
994             .          .          .<-------     D930
993             .          .        D930
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                 .         .         V
                 .         .         V
995              .         .       C950
                 .         .         .
                 .         .         .
998              .         .         .        940
                 .         .         .          V
                 .         .         .          V
1002             .         .         .       C950
                 .         .         .          .
                 .         .         .          .
1007             .         .         .          .        950
                 .         .         .          .          .
                 .         .         .          .          .
1011             .         .       C950.......................
                 .         .         V
                 .         .         V
1013             .         .       C970
                 .         .         .
                 .         .         .
1019             .         .         .          .<-------     D830
1018             .         .         .       D830
                 .         .         .          V
                 .         .         .          V
1020             .         .         .       C960
                 .         .         .          .
                 .         .         .          .
1025             .         .         .          .        960
                 .         .         .          .          .
                 .         .         .          .          .
1029             .         .         .       C960............
                 .         .         .          V
                 .         .         .          V
1031             .         .         .       C970
                 .         .         .          .
                 .         .         .          .
1036             .         .         .          .        970
                 .         .         .          .          .
                 .         .         .          .          .
1040             .         .         .       C970............
                 .         .         .          .
                 .         .         .          .
1042             .         .       C970............
                 .         .         V
                 .         .         V
1044             .         .       RB10
                 .         .         .
                 .         .         .
1049             .         .         .       RB10
                 .         .         .          .
                 .         .         .          .
1053             .         .       RB10............
                 .         .         V
                 .         .         V
1055             .         .       B20
                 .         .         .
                 .         .         .
1057             .         .         .        B15
                 .         .         .          V
                 .         .         .          V
1061             .         .         .        B17
                 .         .         .          V
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                 .         .         .         V
1063             .         .         .       B20
                 .         .         .         .
                 .         .         .         .
1065             .         .         .         .        B20
                 .         .         .         .         .
                 .         .         .         .         .
1069             .         .      CPB20.......................
                 .         .         V
                 .         .         V
1071             .         .       B30
                 .         .         .
                 .         .         .
1073             .         .         .       B30
                 .         .         .         .
                 .         .         .         .
1077             .         .      CPB30............
                 .         .         V
                 .         .         V
1079             .         .       B40
                 .         .         .
                 .         .         .
1081             .         .         .       B40
                 .         .         .         .
                 .         .         .         .
1085             .         .      CPB40............
                 .         .         V
                 .         .         V
1087             .         .      PIMA
                 .         .         .
                 .         .         .
1089             .         .         .       B50
                 .         .         .         .
                 .         .         .         .
1093             .         .      CPPIMA............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            SEPTEMBER 1990             *
*             VERSION 4.0               *
*                                       *
*  RUN DATE  11/02/1994  TIME  13:10:43 *
*                                       *
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```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
                    84TH STREET AND CHOLLA ROAD
                    2-5-10-25-50-100 yr STORM
                    EXISTING CONDITION --- NO IMPROVEMENTS
                 ******************************************************
                    SCOTTSDALE COUNTRY CLUB LAKE 5
                 ******************************************************
                    DRAINAGE AREAS EAST OF PIMA INCLUDED
                    DIVERSIONS INTO SIDE STREETS ON CACTUS SOUTH SIDE
                    NO STORM DRAIN IN CACTUS ROAD
                    FILE SCCEX.DAT
                    DIVERSIONS IN CACTUS/84TH ST INTERSECTION ARE INCORPORATED
                    FILE SCCEX.DAT

14 IO        OUTPUT CONTROL VARIABLES
                  IPRNT          5  PRINT CONTROL
                  IPLOT          0  PLOT CONTROL
                  QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT        HYDROGRAPH TIME DATA
                   NMIN          2  MINUTES IN COMPUTATION INTERVAL
                  IDATE      1   0  STARTING DATE
                  ITIME       0000  STARTING TIME
                     NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                 NDDATE      1   0  ENDING DATE
                 NDTIME       0958  ENDING TIME
                  ICENT         19  CENTURY MARK

             COMPUTATION INTERVAL     .03 HOURS
                  TOTAL TIME BASE    9.97 HOURS

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

   JP        MULTI-PLAN OPTION
                 NPLAN          1  NUMBER OF PLANS

   JR        MULTI-RATIO OPTION
               RATIOS OF PRECIPITATION
               .36      .53      .62      .76      .88     1.00

      *** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION=  1
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PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

					RATIOS APPLIED TO PRECIPITATION					
OPERATION	STATION	AREA	PLAN		RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6
					.36	.53	.62	.76	.88	1.00
HYDROGRAPH AT	710	.01	1	FLOW	9.	15.	18.	24.	29.	34.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
ROUTED TO	C720	.01	1	FLOW	9.	15.	19.	24.	29.	34.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
			** PEAK STAGES IN FEET **							
			1	STAGE	97.16	97.45	97.56	97.72	97.87	97.99
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
HYDROGRAPH AT	720	.07	1	FLOW	5.	21.	32.	53.	73.	95.
				TIME	3.37	3.30	3.30	3.30	3.27	3.27
2 COMBINED AT	C720	.07	1	FLOW	10.	27.	40.	64.	86.	111.
				TIME	3.13	3.23	3.23	3.27	3.23	3.23
ROUTED TO	C720	.07	1	FLOW	10.	27.	42.	65.	88.	113.
				TIME	3.27	3.33	3.27	3.33	3.30	3.27
			** PEAK STAGES IN FEET **							
			1	STAGE	99.84	99.99	100.07	100.15	100.24	100.32
				TIME	3.27	3.33	3.27	3.33	3.30	3.27
HYDROGRAPH AT	725	.07	1	FLOW	38.	64.	80.	107.	132.	157.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
ROUTED TO	ED725	.07	1	FLOW	25.	47.	61.	79.	92.	119.
				TIME	3.40	3.37	3.37	3.37	3.37	3.37
			** PEAK STAGES IN FEET **							
			1	STAGE	1472.52	1472.76	1472.89	1473.12	1473.37	1473.59
				TIME	3.40	3.37	3.37	3.37	3.37	3.37
HYDROGRAPH AT	730	.01	1	FLOW	5.	8.	10.	14.	17.	21.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
2 COMBINED AT	C730	.07	1	FLOW	26.	49.	62.	81.	95.	122.
				TIME	3.40	3.37	3.37	3.37	3.37	3.37
ROUTED TO	ED730	.07	1	FLOW	17.	35.	49.	75.	90.	112.
				TIME	3.67	3.60	3.53	3.50	3.47	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	1468.60	1468.88	1469.03	1469.15	1469.22	1469.32
				TIME	3.67	3.60	3.53	3.50	3.47	3.43
HYDROGRAPH AT	735	.05	1	FLOW	23.	40.	49.	66.	81.	96.
				TIME	3.33	3.33	3.33	3.33	3.33	3.33
3 COMBINED AT	C735	.20	1	FLOW	42.	91.	122.	188.	242.	303.
				TIME	3.40	3.40	3.37	3.40	3.37	3.37

ROUTED TO	ED735	.20	1	FLOW	26.	66.	94.	153.	204.	288.
				TIME	3.83	3.67	3.63	3.57	3.50	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	1466.52	1467.05	1467.32	1467.71	1468.01	1468.15
				TIME	3.83	3.67	3.63	3.57	3.50	3.43
HYDROGRAPH AT	740	.00	1	FLOW	1.	1.	2.	2.	2.	3.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
HYDROGRAPH AT	742	.01	1	FLOW	1.	4.	6.	9.	13.	17.
				TIME	3.23	3.17	3.17	3.17	3.17	3.17
2 COMBINED AT	C742	.01	1	FLOW	1.	5.	7.	11.	15.	19.
				TIME	3.17	3.17	3.17	3.17	3.13	3.13
ROUTED TO	C744	.01	1	FLOW	1.	5.	7.	11.	15.	19.
				TIME	3.17	3.17	3.17	3.17	3.17	3.13
HYDROGRAPH AT	743	.00	1	FLOW	3.	6.	7.	10.	12.	14.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
ROUTED TO	C744	.00	1	FLOW	3.	6.	7.	10.	12.	14.
				TIME	3.13	3.17	3.17	3.17	3.17	3.17
			** PEAK STAGES IN FEET **							
			1	STAGE	99.39	99.49	99.55	99.64	99.66	99.67
				TIME	3.13	3.17	3.17	3.17	3.17	3.17
HYDROGRAPH AT	744	.01	1	FLOW	9.	14.	16.	20.	24.	27.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
3 COMBINED AT	C744	.02	1	FLOW	14.	24.	31.	41.	50.	60.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
ROUTED TO	C745	.02	1	FLOW	14.	24.	30.	40.	49.	59.
				TIME	3.17	3.20	3.17	3.17	3.17	3.17
HYDROGRAPH AT	745	.02	1	FLOW	2.	6.	10.	16.	22.	29.
				TIME	3.33	3.27	3.23	3.23	3.23	3.23
2 COMBINED AT	C745	.04	1	FLOW	14.	29.	39.	55.	70.	85.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
ROUTED TO	C735	.04	1	FLOW	14.	29.	38.	55.	70.	85.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C735	.24	1	FLOW	27.	72.	103.	169.	227.	324.
				TIME	3.77	3.63	3.60	3.53	3.50	3.43
ROUTED TO	C760	.24	1	FLOW	27.	72.	103.	169.	227.	323.
				TIME	3.80	3.63	3.60	3.53	3.50	3.43
HYDROGRAPH AT	760	.01	1	FLOW	15.	23.	27.	33.	39.	44.
				TIME	3.23	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C760	.25	1	FLOW	32.	77.	110.	180.	241.	345.
				TIME	3.23	3.63	3.60	3.53	3.50	3.43
ROUTED TO	C790	.25	1	FLOW	32.	77.	110.	180.	240.	350.
				TIME	3.23	3.63	3.60	3.53	3.50	3.43

			** PEAK STAGES IN FEET **							
			1	STAGE	95.78	96.41	96.80	97.52	98.08	99.00
				TIME	3.23	3.63	3.60	3.53	3.50	3.43
HYDROGRAPH AT	780	.02	1	FLOW	6.	13.	17.	25.	32.	39.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
ROUTED TO	C782	.02	1	FLOW	6.	13.	17.	24.	33.	40.
				TIME	3.27	3.23	3.23	3.27	3.23	3.23
			** PEAK STAGES IN FEET **							
			1	STAGE	98.58	98.81	98.89	99.03	99.15	99.23
				TIME	3.27	3.23	3.23	3.27	3.23	3.23
HYDROGRAPH AT	782	.01	1	FLOW	1.	4.	6.	10.	13.	17.
				TIME	3.33	3.27	3.27	3.23	3.23	3.23
HYDROGRAPH AT	784	.05	1	FLOW	27.	46.	58.	77.	95.	113.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
ROUTED TO	ED784	.05	1	FLOW	9.	15.	18.	24.	29.	35.
				TIME	3.57	3.60	3.60	3.60	3.60	3.60
			** PEAK STAGES IN FEET **							
			1	STAGE	1389.88	1390.20	1390.38	1390.70	1390.98	1391.27
				TIME	3.57	3.60	3.60	3.60	3.60	3.60
3 COMBINED AT	C782	.08	1	FLOW	13.	26.	35.	50.	63.	77.
				TIME	3.33	3.27	3.30	3.27	3.27	3.23
ROUTED TO	C790	.08	1	FLOW	14.	27.	37.	50.	63.	77.
				TIME	3.47	3.47	3.40	3.37	3.37	3.40
			** PEAK STAGES IN FEET **							
			1	STAGE	98.83	99.07	99.20	99.35	99.49	99.61
				TIME	3.47	3.47	3.40	3.37	3.37	3.40
HYDROGRAPH AT	790	.11	1	FLOW	9.	34.	53.	87.	121.	156.
				TIME	3.40	3.33	3.33	3.30	3.30	3.30
3 COMBINED AT	C790	.44	1	FLOW	49.	123.	177.	287.	390.	547.
				TIME	3.47	3.57	3.43	3.47	3.40	3.43
HYDROGRAPH AT	750	.00	1	FLOW	5.	8.	10.	12.	14.	16.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
ROUTED TO	C770	.00	1	FLOW	6.	9.	10.	12.	15.	16.
				TIME	3.20	3.17	3.17	3.20	3.20	3.20
			** PEAK STAGES IN FEET **							
			1	STAGE	99.84	99.88	99.89	99.93	99.97	100.00
				TIME	3.20	3.17	3.17	3.20	3.20	3.20
HYDROGRAPH AT	770	.01	1	FLOW	8.	12.	15.	18.	21.	24.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C770	.01	1	FLOW	12.	19.	22.	27.	31.	36.
				TIME	3.20	3.17	3.17	3.13	3.13	3.17
2 COMBINED AT	C770	.45	1	FLOW	53.	127.	183.	293.	398.	555.
				TIME	3.47	3.47	3.43	3.47	3.40	3.43

ROUTED TO	C800	.45	1	FLOW	53.	127.	183.	293.	399.	557.
				TIME	3.47	3.47	3.43	3.47	3.43	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	101.03	101.66	102.03	102.60	103.03	103.59
				TIME	3.47	3.47	3.43	3.47	3.43	3.43
HYDROGRAPH AT	800	.02	1	FLOW	2.	6.	10.	16.	22.	29.
				TIME	3.30	3.23	3.23	3.23	3.23	3.20
2 COMBINED AT	C800	.46	1	FLOW	54.	130.	189.	301.	410.	571.
				TIME	3.47	3.47	3.43	3.47	3.43	3.43
ROUTED TO	C810	.46	1	FLOW	55.	132.	189.	300.	412.	564.
				TIME	3.30	3.50	3.47	3.50	3.47	3.47
			** PEAK STAGES IN FEET **							
			1	STAGE	100.63	101.08	101.32	101.72	102.07	102.45
				TIME	3.30	3.50	3.47	3.50	3.47	3.47
HYDROGRAPH AT	810	.04	1	FLOW	23.	38.	48.	64.	79.	94.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
2 COMBINED AT	C810	.51	1	FLOW	77.	155.	220.	342.	464.	622.
				TIME	3.30	3.47	3.47	3.43	3.43	3.47
ROUTED TO	C820	.51	1	FLOW	77.	156.	222.	347.	468.	622.
				TIME	3.37	3.47	3.43	3.47	3.43	3.50
			** PEAK STAGES IN FEET **							
			1	STAGE	100.76	101.18	101.45	101.87	102.22	102.60
				TIME	3.37	3.47	3.43	3.47	3.43	3.50
HYDROGRAPH AT	820	.04	1	FLOW	21.	36.	45.	61.	76.	91.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C820	.54	1	FLOW	88.	176.	242.	370.	501.	652.
				TIME	3.37	3.37	3.43	3.47	3.43	3.50
ROUTED TO	C830	.54	1	FLOW	88.	176.	242.	370.	500.	653.
				TIME	3.37	3.30	3.43	3.47	3.43	3.50
			** PEAK STAGES IN FEET **							
			1	STAGE	100.52	100.81	100.99	101.29	101.56	101.84
				TIME	3.37	3.30	3.43	3.47	3.43	3.50
HYDROGRAPH AT	910	.05	1	FLOW	41.	65.	78.	99.	118.	138.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
ROUTED TO	C920	.05	1	FLOW	41.	64.	77.	98.	117.	137.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
HYDROGRAPH AT	920	.03	1	FLOW	15.	22.	27.	35.	43.	51.
				TIME	3.27	3.30	3.30	3.30	3.30	3.30
2 COMBINED AT	C920	.08	1	FLOW	55.	86.	104.	133.	159.	186.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
ROUTED TO	C930	.08	1	FLOW	56.	86.	103.	133.	159.	187.
				TIME	3.27	3.30	3.27	3.30	3.30	3.27

			** PEAK STAGES IN FEET **							
			1	STAGE	99.69	99.86	99.93	100.04	100.13	100.22
				TIME	3.27	3.30	3.27	3.30	3.30	3.27
HYDROGRAPH AT	930	.06	1	FLOW	26.	46.	57.	77.	96.	115.
				TIME	3.30	3.30	3.30	3.30	3.30	3.30
2 COMBINED AT	C930	.14	1	FLOW	82.	132.	161.	211.	254.	300.
				TIME	3.27	3.30	3.30	3.30	3.30	3.27
DIVERSION TO	D930	.14	1	FLOW	51.	51.	51.	51.	51.	51.
				TIME	3.17	3.10	3.07	3.03	3.03	3.00
HYDROGRAPH AT	C930	.14	1	FLOW	31.	81.	110.	160.	203.	249.
				TIME	3.27	3.30	3.30	3.30	3.30	3.27
ROUTED TO	C830	.14	1	FLOW	31.	83.	114.	161.	203.	252.
				TIME	3.30	3.33	3.30	3.33	3.30	3.30
			** PEAK STAGES IN FEET **							
			1	STAGE	99.66	99.97	100.09	100.27	100.39	100.53
				TIME	3.30	3.33	3.30	3.33	3.30	3.30
HYDROGRAPH AT	830	.00	1	FLOW	3.	4.	5.	6.	7.	8.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
3 COMBINED AT	C830	.68	1	FLOW	118.	256.	347.	509.	676.	861.
				TIME	3.37	3.30	3.33	3.37	3.37	3.40
DIVERSION TO	D830	.68	1	FLOW	0.	0.	0.	0.	109.	272.
				TIME	.03	.03	.03	.03	3.37	3.40
HYDROGRAPH AT	C830	.68	1	FLOW	118.	256.	347.	509.	567.	589.
				TIME	3.37	3.30	3.33	3.37	3.37	3.40
HYDROGRAPH AT	A30	.40	1	FLOW	50.	117.	163.	244.	321.	403.
				TIME	3.57	3.60	3.57	3.57	3.57	3.57
ROUTED TO	DA30	.40	1	FLOW	47.	105.	144.	210.	271.	311.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
			** PEAK STAGES IN FEET **							
			1	STAGE	35.14	36.34	37.10	38.11	39.07	40.12
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
DIVERSION TO	A32	.40	1	FLOW	46.	97.	130.	190.	244.	281.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
HYDROGRAPH AT	A31	.40	1	FLOW	1.	9.	14.	20.	26.	30.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
2 COMBINED AT	CA31	1.08	1	FLOW	118.	256.	350.	519.	580.	610.
				TIME	3.37	3.30	3.33	3.40	3.37	3.50
ROUTED TO	ED1010	1.08	1	FLOW	119.	257.	355.	519.	583.	611.
				TIME	3.37	3.40	3.37	3.40	3.40	3.53
			** PEAK STAGES IN FEET **							
			1	STAGE	98.14	99.32	99.76	100.17	100.31	100.36
				TIME	3.37	3.40	3.37	3.40	3.40	3.53
HYDROGRAPH AT	1010	.01	1	FLOW	1.	6.	9.	15.	21.	27.

				TIME	3.20	3.13	3.13	3.13	3.13	3.13
2 COMBINED AT	C1010	1.10	1	FLOW	120.	259.	359.	524.	588.	616.
				TIME	3.37	3.40	3.37	3.40	3.40	3.53
ROUTED TO	ED1010	1.10	1	FLOW	74.	240.	345.	520.	585.	614.
				TIME	3.63	3.47	3.43	3.43	3.43	3.53
			** PEAK STAGES IN FEET **							
			1	STAGE	27.71	28.20	28.33	28.53	28.61	28.64
				TIME	3.63	3.47	3.43	3.43	3.43	3.53
ROUTED TO	C1020	1.10	1	FLOW	74.	241.	355.	521.	585.	615.
				TIME	3.60	3.47	3.43	3.43	3.47	3.53
			** PEAK STAGES IN FEET **							
			1	STAGE	97.51	99.24	99.74	100.12	100.26	100.31
				TIME	3.60	3.47	3.43	3.43	3.47	3.53
HYDROGRAPH AT	1020	.00	1	FLOW	1.	2.	2.	3.	4.	6.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C1020	1.10	1	FLOW	75.	241.	356.	522.	585.	616.
				TIME	3.60	3.47	3.43	3.43	3.47	3.53
HYDROGRAPH AT	A32	.00	1	FLOW	46.	97.	130.	190.	244.	281.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
DIVERSION TO	A36	.00	1	FLOW	45.	87.	114.	154.	192.	218.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
HYDROGRAPH AT	A32	.00	1	FLOW	1.	10.	16.	35.	53.	63.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
ROUTED TO	C1030	.00	1	FLOW	1.	10.	16.	35.	53.	63.
				TIME	3.80	3.80	3.80	3.80	3.77	3.80
			** PEAK STAGES IN FEET **							
			1	STAGE	95.14	95.88	96.18	96.76	97.16	97.35
				TIME	3.80	3.80	3.80	3.80	3.77	3.80
ROUTED TO	C1030	.00	1	FLOW	1.	10.	16.	35.	53.	63.
				TIME	3.80	3.80	3.80	3.80	3.77	3.83
HYDROGRAPH AT	1030	.01	1	FLOW	1.	4.	6.	10.	14.	18.
				TIME	3.27	3.20	3.20	3.20	3.17	3.17
2 COMBINED AT	C1030	.01	1	FLOW	1.	10.	17.	36.	54.	65.
				TIME	3.80	3.80	3.80	3.80	3.77	3.80
ROUTED TO	C1040	.01	1	FLOW	1.	10.	17.	36.	54.	64.
				TIME	3.80	3.80	3.80	3.80	3.77	3.83
HYDROGRAPH AT	1040	.02	1	FLOW	9.	17.	22.	32.	40.	49.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
ROUTED TO	ED1040	.02	1	FLOW	2.	4.	5.	6.	8.	9.
				TIME	3.50	3.57	3.57	3.57	3.57	3.57
			** PEAK STAGES IN FEET **							
			1	STAGE	24.68	25.02	25.23	25.58	25.87	26.18
				TIME	3.50	3.57	3.57	3.57	3.57	3.57

2 COMBINED AT	C1040	.03	1	FLOW	3.	14.	21.	42.	61.	73.
				TIME	3.77	3.80	3.80	3.80	3.77	3.80
ROUTED TO	C1050	.03	1	FLOW	3.	14.	21.	42.	61.	73.
				TIME	3.80	3.80	3.80	3.80	3.80	3.83
			** PEAK STAGES IN FEET **							
			1	STAGE	95.46	96.07	96.33	96.89	97.28	97.49
				TIME	3.80	3.80	3.80	3.80	3.80	3.83
HYDROGRAPH AT	1050	.00	1	FLOW	0.	2.	3.	5.	7.	9.
				TIME	3.17	3.13	3.13	3.10	3.10	3.10
2 COMBINED AT	C1050	.03	1	FLOW	3.	14.	22.	43.	62.	74.
				TIME	3.80	3.77	3.80	3.80	3.77	3.83
2 COMBINED AT	C1050	1.13	1	FLOW	78.	249.	367.	543.	623.	681.
				TIME	3.60	3.47	3.43	3.43	3.57	3.60
ROUTED TO	C1070	1.13	1	FLOW	78.	250.	373.	544.	631.	685.
				TIME	3.67	3.53	3.53	3.50	3.53	3.60
			** PEAK STAGES IN FEET **							
			1	STAGE	97.41	99.19	99.72	100.13	100.31	100.39
				TIME	3.67	3.53	3.53	3.50	3.53	3.60
HYDROGRAPH AT	1060	.01	1	FLOW	1.	4.	6.	10.	14.	18.
				TIME	3.37	3.30	3.30	3.27	3.27	3.27
ROUTED TO	C1070	.01	1	FLOW	1.	4.	6.	10.	14.	17.
				TIME	3.40	3.33	3.30	3.30	3.30	3.30
			** PEAK STAGES IN FEET **							
			1	STAGE	98.87	98.88	98.89	98.92	98.94	98.96
				TIME	3.40	3.33	3.30	3.30	3.30	3.30
HYDROGRAPH AT	1070	.03	1	FLOW	9.	19.	26.	38.	50.	62.
				TIME	3.20	3.20	3.20	3.20	3.17	3.17
3 COMBINED AT	C1070	1.17	1	FLOW	80.	259.	385.	563.	652.	706.
				TIME	3.67	3.53	3.53	3.50	3.53	3.40
ROUTED TO	C1080	1.17	1	FLOW	81.	274.	388.	580.	668.	723.
				TIME	3.77	3.63	3.67	3.67	3.63	3.60
			** PEAK STAGES IN FEET **							
			1	STAGE	96.76	98.27	98.84	99.51	99.77	99.88
				TIME	3.77	3.63	3.67	3.67	3.63	3.60
HYDROGRAPH AT	1080	.05	1	FLOW	18.	36.	48.	68.	87.	106.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C1080	1.22	1	FLOW	84.	282.	397.	593.	687.	749.
				TIME	3.77	3.63	3.67	3.67	3.63	3.60
HYDROGRAPH AT	1090	.03	1	FLOW	12.	24.	33.	48.	62.	76.
				TIME	3.17	3.20	3.20	3.17	3.17	3.17
ROUTED TO	C1100	.03	1	FLOW	12.	24.	33.	48.	62.	76.
				TIME	3.17	3.20	3.20	3.17	3.17	3.17

			** PEAK STAGES IN FEET **							
			1	STAGE	98.75	98.75	98.75	98.75	98.75	98.75
				TIME	3.17	3.20	3.17	3.17	3.17	3.17
HYDROGRAPH AT	1100	.07	1	FLOW	14.	29.	39.	56.	72.	90.
				TIME	3.43	3.47	3.47	3.43	3.43	3.43
2 COMBINED AT	C1100	.10	1	FLOW	20.	41.	55.	79.	102.	126.
				TIME	3.27	3.30	3.30	3.30	3.27	3.27
2 COMBINED AT	C1080	1.32	1	FLOW	93.	311.	432.	642.	755.	839.
				TIME	3.77	3.60	3.67	3.67	3.63	3.60
DIVERSION TO	D1080S	1.32	1	FLOW	0.	0.	14.	104.	153.	190.
				TIME	.03	.03	3.67	3.67	3.63	3.60
HYDROGRAPH AT	C1080	1.32	1	FLOW	93.	311.	418.	537.	602.	650.
				TIME	3.77	3.60	3.67	3.67	3.63	3.60
DIVERSION TO	D1080W	1.32	1	FLOW	0.	0.	10.	75.	111.	137.
				TIME	.03	.03	3.67	3.67	3.63	3.60
HYDROGRAPH AT	C1080	1.32	1	FLOW	93.	311.	408.	462.	491.	512.
				TIME	3.77	3.60	3.67	3.67	3.63	3.60
ROUTED TO	C1110	1.32	1	FLOW	94.	318.	409.	462.	491.	514.
				TIME	3.80	3.63	3.67	3.67	3.63	3.60
			** PEAK STAGES IN FEET **							
			1	STAGE	100.72	101.59	101.85	102.00	102.09	102.15
				TIME	3.80	3.63	3.67	3.67	3.63	3.60
HYDROGRAPH AT	1110	.02	1	FLOW	8.	13.	18.	27.	36.	46.
				TIME	3.10	3.13	3.13	3.13	3.13	3.13
2 COMBINED AT	C1110	1.35	1	FLOW	95.	319.	411.	465.	495.	520.
				TIME	3.80	3.63	3.67	3.67	3.63	3.60
HYDROGRAPH AT	1120	.02	1	FLOW	16.	24.	30.	39.	48.	57.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C1120	1.36	1	FLOW	95.	321.	413.	467.	498.	524.
				TIME	3.80	3.63	3.67	3.67	3.63	3.60
ROUTED TO	LAKE5	1.36	1	FLOW	30.	157.	273.	397.	444.	470.
				TIME	5.27	4.13	3.97	4.00	4.00	3.97
			** PEAK STAGES IN FEET **							
			1	STAGE	76.71	77.70	78.25	78.65	78.79	78.88
				TIME	5.27	4.13	3.97	4.00	4.00	3.97
HYDROGRAPH AT	10	.01	1	FLOW	3.	7.	10.	13.	16.	19.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
HYDROGRAPH AT	20	.00	1	FLOW	0.	1.	1.	2.	3.	4.
				TIME	3.37	3.30	3.30	3.27	3.27	3.27
2 COMBINED AT	C10	.01	1	FLOW	4.	8.	10.	14.	18.	22.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
ROUTED TO	C15	.01	1	FLOW	5.	9.	11.	15.	19.	23.
				TIME	3.43	3.37	3.33	3.33	3.30	3.30

** PEAK STAGES IN FEET **

			1	STAGE	97.49	97.67	97.75	97.85	97.95	98.03
				TIME	3.43	3.37	3.33	3.33	3.30	3.30
HYDROGRAPH AT	15	.01	1	FLOW	4.	8.	11.	15.	18.	22.
				TIME	3.13	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C15	.01	1	FLOW	6.	11.	15.	20.	25.	30.
				TIME	3.43	3.37	3.33	3.30	3.30	3.30
DIVERSION TO	D15	.01	1	FLOW	6.	11.	15.	19.	19.	19.
				TIME	3.43	3.37	3.33	3.30	3.27	3.30
HYDROGRAPH AT	C15	.01	1	FLOW	0.	0.	0.	1.	6.	11.
				TIME	.03	.03	.03	3.30	3.30	3.30
ROUTED TO	C110	.01	1	FLOW	0.	0.	0.	0.	6.	13.
				TIME	.03	.03	.03	3.57	3.43	3.40

** PEAK STAGES IN FEET **

			1	STAGE	101.27	101.27	101.27	101.40	101.60	101.70
				TIME	.00	.00	.00	3.57	3.43	3.40
HYDROGRAPH AT	110	.00	1	FLOW	2.	2.	3.	3.	4.	5.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
HYDROGRAPH AT	30	.02	1	FLOW	2.	6.	9.	15.	20.	26.
				TIME	3.57	3.50	3.47	3.47	3.43	3.43
HYDROGRAPH AT	40	.03	1	FLOW	12.	20.	25.	33.	40.	47.
				TIME	3.47	3.47	3.47	3.47	3.47	3.47
4 COMBINED AT	C110	.07	1	FLOW	14.	26.	34.	48.	66.	85.
				TIME	3.47	3.47	3.47	3.47	3.43	3.40
DIVERSION TO	D110	.07	1	FLOW	1.	8.	14.	21.	29.	36.
				TIME	3.47	3.47	3.47	3.47	3.43	3.40
HYDROGRAPH AT	C110	.07	1	FLOW	13.	18.	20.	27.	38.	49.
				TIME	3.47	3.30	3.47	3.47	3.43	3.40
ROUTED TO	C120	.07	1	FLOW	13.	18.	20.	27.	38.	49.
				TIME	3.50	3.30	3.50	3.47	3.47	3.40

** PEAK STAGES IN FEET **

			1	STAGE	99.50	99.54	99.56	99.62	99.70	99.77
				TIME	3.50	3.30	3.50	3.47	3.47	3.40
HYDROGRAPH AT	50	.01	1	FLOW	4.	7.	8.	11.	14.	17.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
HYDROGRAPH AT	120	.00	1	FLOW	0.	0.	1.	1.	1.	1.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
3 COMBINED AT	C120	.08	1	FLOW	14.	23.	26.	31.	42.	56.
				TIME	3.43	3.30	3.23	3.40	3.47	3.40
ROUTED TO	C130	.08	1	FLOW	14.	22.	25.	31.	43.	55.
				TIME	3.47	3.30	3.23	3.43	3.47	3.40

** PEAK STAGES IN FEET **

			1	STAGE	99.04	99.13	99.15	99.19	99.27	99.34
				TIME	3.47	3.30	3.23	3.43	3.47	3.40
HYDROGRAPH AT	70	.01	1	FLOW	5.	9.	12.	16.	20.	25.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
HYDROGRAPH AT	130	.00	1	FLOW	1.	1.	1.	2.	2.	2.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
3 COMBINED AT	C130	.09	1	FLOW	17.	31.	38.	47.	55.	71.
				TIME	3.37	3.27	3.23	3.20	3.27	3.40
ROUTED TO	C140	.09	1	FLOW	17.	32.	38.	46.	55.	71.
				TIME	3.40	3.30	3.27	3.23	3.30	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	98.43	98.53	98.57	98.62	98.67	98.74
				TIME	3.40	3.30	3.27	3.23	3.30	3.43
HYDROGRAPH AT	80	.00	1	FLOW	1.	2.	3.	4.	4.	5.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
HYDROGRAPH AT	140	.00	1	FLOW	1.	1.	1.	1.	1.	2.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
3 COMBINED AT	C140	.09	1	FLOW	18.	33.	40.	50.	58.	72.
				TIME	3.30	3.30	3.27	3.20	3.23	3.43
ROUTED TO	C150	.09	1	FLOW	18.	33.	40.	50.	58.	72.
				TIME	3.40	3.33	3.30	3.23	3.23	3.37
			** PEAK STAGES IN FEET **							
			1	STAGE	97.70	97.83	97.87	97.93	97.97	98.04
				TIME	3.40	3.33	3.30	3.23	3.23	3.37
HYDROGRAPH AT	90	.03	1	FLOW	9.	18.	24.	34.	43.	53.
				TIME	3.27	3.30	3.30	3.27	3.27	3.27
HYDROGRAPH AT	150	.00	1	FLOW	1.	2.	2.	3.	3.	3.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
3 COMBINED AT	C150	.12	1	FLOW	27.	51.	64.	84.	102.	124.
				TIME	3.30	3.30	3.30	3.27	3.30	3.30
DIVERSION TO	D150	.12	1	FLOW	2.	16.	27.	37.	46.	55.
				TIME	3.30	3.30	3.30	3.27	3.30	3.30
HYDROGRAPH AT	C150	.12	1	FLOW	25.	35.	37.	47.	56.	69.
				TIME	3.30	3.20	3.30	3.27	3.30	3.30
ROUTED TO	C160	.12	1	FLOW	26.	36.	37.	48.	56.	69.
				TIME	3.33	3.27	3.33	3.27	3.33	3.33
			** PEAK STAGES IN FEET **							
			1	STAGE	96.33	96.40	96.41	96.47	96.52	96.58
				TIME	3.33	3.27	3.33	3.27	3.33	3.33
HYDROGRAPH AT	100	.01	1	FLOW	3.	6.	8.	11.	14.	17.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
HYDROGRAPH AT	160	.00	1	FLOW	1.	2.	3.	3.	4.	4.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07

3 COMBINED AT	C160	.13	1	FLOW	27.	41.	44.	56.	66.	80.
				TIME	3.33	3.23	3.20	3.27	3.27	3.30
ROUTED TO	C170	.13	1	FLOW	27.	41.	44.	56.	66.	81.
				TIME	3.37	3.27	3.23	3.30	3.27	3.27
			** PEAK STAGES IN FEET **							
			1	STAGE	95.37	95.49	95.51	95.59	95.66	95.74
				TIME	3.37	3.27	3.23	3.30	3.27	3.27
HYDROGRAPH AT	170	.00	1	FLOW	1.	2.	2.	3.	3.	4.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C170	.13	1	FLOW	28.	42.	45.	56.	67.	82.
				TIME	3.37	3.27	3.23	3.30	3.27	3.27
DIVERSION TO	D170	.13	1	FLOW	20.	33.	35.	44.	53.	64.
				TIME	3.37	3.27	3.23	3.30	3.27	3.27
HYDROGRAPH AT	C170	.13	1	FLOW	8.	8.	9.	12.	14.	18.
				TIME	3.10	3.27	3.23	3.30	3.27	3.27
HYDROGRAPH AT	D110	.00	1	FLOW	1.	8.	14.	21.	29.	36.
				TIME	3.47	3.47	3.47	3.47	3.43	3.40
HYDROGRAPH AT	210	.00	1	FLOW	4.	6.	7.	9.	11.	12.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
2 COMBINED AT	C210	.00	1	FLOW	4.	10.	16.	23.	31.	39.
				TIME	3.13	3.47	3.43	3.43	3.43	3.40
DIVERSION TO	D210	.00	1	FLOW	0.	0.	1.	3.	5.	16.
				TIME	.03	3.47	3.43	3.43	3.43	3.40
HYDROGRAPH AT	C210	.00	1	FLOW	4.	9.	14.	20.	26.	27.
				TIME	3.13	3.47	3.43	3.43	3.43	3.30
ROUTED TO	C220	.00	1	FLOW	4.	9.	15.	20.	26.	27.
				TIME	3.17	3.47	3.47	3.47	3.47	3.30
			** PEAK STAGES IN FEET **							
			1	STAGE	99.39	99.49	99.57	99.62	99.66	99.67
				TIME	3.17	3.47	3.47	3.47	3.47	3.30
HYDROGRAPH AT	220	.00	1	FLOW	1.	1.	2.	2.	2.	3.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
2 COMBINED AT	C220	.00	1	FLOW	5.	9.	15.	21.	26.	28.
				TIME	3.13	3.47	3.47	3.47	3.47	3.30
ROUTED TO	C230	.00	1	FLOW	5.	9.	15.	21.	26.	27.
				TIME	3.20	3.53	3.47	3.47	3.47	3.33
			** PEAK STAGES IN FEET **							
			1	STAGE	98.92	99.01	99.10	99.15	99.19	99.20
				TIME	3.20	3.53	3.47	3.47	3.47	3.33
HYDROGRAPH AT	230	.00	1	FLOW	2.	3.	3.	4.	5.	6.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
2 COMBINED AT	C230	.00	1	FLOW	6.	10.	15.	21.	26.	28.

				TIME	3.17	3.53	3.47	3.47	3.47	3.33
ROUTED TO	C240	.00	1	FLOW	6.	10.	15.	21.	26.	29.
				TIME	3.23	3.60	3.53	3.47	3.50	3.37
			** PEAK STAGES IN FEET **							
			1	STAGE	98.25	98.31	98.40	98.45	98.49	98.51
				TIME	3.23	3.60	3.53	3.47	3.50	3.37
HYDROGRAPH AT	240	.00	1	FLOW	2.	2.	3.	3.	4.	5.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
2 COMBINED AT	C240	.01	1	FLOW	7.	10.	15.	22.	27.	29.
				TIME	3.20	3.20	3.53	3.47	3.50	3.37
ROUTED TO	C250	.01	1	FLOW	7.	11.	16.	22.	27.	29.
				TIME	3.30	3.27	3.57	3.53	3.57	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	97.61	97.67	97.75	97.81	97.85	97.87
				TIME	3.30	3.27	3.57	3.53	3.57	3.43
HYDROGRAPH AT	250	.00	1	FLOW	3.	5.	6.	7.	8.	9.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
HYDROGRAPH AT	D150	.00	1	FLOW	2.	16.	27.	37.	46.	55.
				TIME	3.30	3.30	3.30	3.27	3.30	3.30
3 COMBINED AT	C250	.01	1	FLOW	9.	27.	41.	55.	70.	85.
				TIME	3.27	3.30	3.27	3.27	3.30	3.30
DIVERSION TO	D250	.01	1	FLOW	2.	8.	11.	16.	22.	32.
				TIME	3.27	3.30	3.27	3.27	3.30	3.30
HYDROGRAPH AT	C250	.01	1	FLOW	7.	20.	29.	39.	48.	53.
				TIME	3.27	3.30	3.27	3.27	3.30	3.30
ROUTED TO	C260	.01	1	FLOW	7.	19.	29.	39.	49.	53.
				TIME	3.33	3.30	3.30	3.30	3.37	3.33
			** PEAK STAGES IN FEET **							
			1	STAGE	96.12	96.28	96.36	96.42	96.47	96.50
				TIME	3.33	3.30	3.30	3.30	3.37	3.33
HYDROGRAPH AT	260	.00	1	FLOW	4.	6.	7.	9.	10.	11.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C260	.01	1	FLOW	8.	21.	31.	41.	51.	56.
				TIME	3.30	3.30	3.27	3.30	3.27	3.23
ROUTED TO	C270	.01	1	FLOW	8.	21.	32.	42.	50.	56.
				TIME	3.37	3.33	3.30	3.27	3.33	3.30
			** PEAK STAGES IN FEET **							
			1	STAGE	94.61	94.80	94.91	94.97	95.03	95.07
				TIME	3.37	3.33	3.30	3.27	3.33	3.30
HYDROGRAPH AT	D170	.00	1	FLOW	20.	33.	35.	44.	53.	64.
				TIME	3.37	3.27	3.23	3.30	3.27	3.27
HYDROGRAPH AT	270	.00	1	FLOW	2.	3.	4.	5.	5.	6.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07

3 COMBINED AT	C270	.01	1	FLOW	28.	53.	66.	86.	104.	122.
				TIME	3.37	3.30	3.30	3.30	3.30	3.27
HYDROGRAPH AT	D1080S	.00	1	FLOW	0.	0.	14.	104.	153.	190.
				TIME	.03	.03	3.67	3.67	3.63	3.60
3 COMBINED AT	C270	.14	1	FLOW	36.	61.	75.	168.	237.	292.
				TIME	3.37	3.30	3.27	3.63	3.60	3.57
ROUTED TO	C370	.14	1	FLOW	36.	61.	75.	172.	243.	294.
				TIME	3.40	3.33	3.33	3.67	3.63	3.60
			** PEAK STAGES IN FEET **							
			1	STAGE	99.09	99.20	99.26	99.55	99.72	99.83
				TIME	3.40	3.33	3.33	3.67	3.63	3.60
HYDROGRAPH AT	D250	.00	1	FLOW	2.	8.	11.	16.	22.	32.
				TIME	3.27	3.30	3.27	3.27	3.30	3.30
ROUTED TO	C350	.00	1	FLOW	2.	7.	12.	16.	22.	32.
				TIME	3.33	3.33	3.30	3.23	3.37	3.33
			** PEAK STAGES IN FEET **							
			1	STAGE	98.80	98.91	98.98	99.02	99.06	99.14
				TIME	3.33	3.33	3.30	3.23	3.37	3.33
HYDROGRAPH AT	350	.00	1	FLOW	1.	2.	3.	4.	6.	7.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C350	.00	1	FLOW	3.	8.	13.	18.	23.	34.
				TIME	3.33	3.33	3.30	3.23	3.37	3.33
DIVERSION TO	D350	.00	1	FLOW	1.	4.	6.	9.	12.	17.
				TIME	3.33	3.33	3.30	3.23	3.37	3.33
HYDROGRAPH AT	C350	.00	1	FLOW	1.	4.	6.	9.	12.	17.
				TIME	3.33	3.33	3.30	3.23	3.37	3.33
ROUTED TO	C360	.00	1	FLOW	1.	4.	7.	9.	12.	17.
				TIME	3.47	3.47	3.40	3.37	3.37	3.40
			** PEAK STAGES IN FEET **							
			1	STAGE	98.76	98.86	98.90	98.94	98.98	99.03
				TIME	3.47	3.47	3.40	3.37	3.37	3.40
HYDROGRAPH AT	360	.01	1	FLOW	5.	10.	13.	19.	24.	30.
				TIME	3.17	3.20	3.20	3.20	3.17	3.17
HYDROGRAPH AT	370	.01	1	FLOW	2.	5.	6.	9.	12.	15.
				TIME	3.13	3.17	3.17	3.13	3.13	3.13
4 COMBINED AT	C370	.16	1	FLOW	40.	71.	90.	183.	258.	315.
				TIME	3.37	3.33	3.30	3.67	3.63	3.60
ROUTED TO	C380	.16	1	FLOW	40.	71.	91.	182.	254.	315.
				TIME	3.43	3.40	3.37	3.73	3.70	3.63
			** PEAK STAGES IN FEET **							
			1	STAGE	99.07	99.19	99.25	99.49	99.64	99.75
				TIME	3.43	3.40	3.37	3.73	3.70	3.63

HYDROGRAPH AT	D210	.00	1	FLOW	0.	0.	1.	3.	5.	16.
				TIME	.03	3.47	3.43	3.43	3.43	3.40
ROUTED TO	C310	.00	1	FLOW	0.	1.	1.	3.	5.	16.
				TIME	.03	3.50	3.50	3.50	3.50	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	99.68	99.79	99.83	99.89	99.95	100.09
				TIME	.00	3.50	3.50	3.50	3.50	3.43
HYDROGRAPH AT	310	.02	1	FLOW	5.	11.	15.	22.	28.	35.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C310	.02	1	FLOW	5.	11.	15.	23.	29.	37.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
DIVERSION TO	D310	.02	1	FLOW	3.	6.	8.	11.	15.	19.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
HYDROGRAPH AT	C320	.02	1	FLOW	3.	6.	8.	11.	15.	19.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
ROUTED TO	C330	.02	1	FLOW	3.	6.	8.	11.	17.	21.
				TIME	3.47	3.47	3.43	3.40	3.37	3.33
			** PEAK STAGES IN FEET **							
			1	STAGE	99.87	99.93	99.96	100.00	100.05	100.08
				TIME	3.47	3.47	3.43	3.40	3.37	3.33
HYDROGRAPH AT	D350	.00	1	FLOW	1.	4.	6.	9.	12.	17.
				TIME	3.33	3.33	3.30	3.23	3.37	3.33
ROUTED TO	C330	.00	1	FLOW	1.	4.	7.	9.	12.	17.
				TIME	3.77	3.63	3.57	3.53	3.50	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	99.82	99.90	99.94	99.97	100.01	100.05
				TIME	3.77	3.63	3.57	3.53	3.50	3.43
HYDROGRAPH AT	340	.01	1	FLOW	3.	7.	10.	14.	18.	22.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
ROUTED TO	C330	.01	1	FLOW	3.	7.	10.	14.	18.	23.
				TIME	3.30	3.27	3.23	3.23	3.27	3.23
			** PEAK STAGES IN FEET **							
			1	STAGE	82.23	82.32	82.36	82.41	82.46	82.50
				TIME	3.30	3.27	3.23	3.23	3.27	3.23
HYDROGRAPH AT	330	.06	1	FLOW	13.	27.	36.	51.	65.	81.
				TIME	3.43	3.47	3.47	3.47	3.47	3.43
4 COMBINED AT	C330	.09	1	FLOW	18.	39.	52.	77.	98.	127.
				TIME	3.47	3.50	3.47	3.47	3.43	3.43
DIVERSION TO	D330	.09	1	FLOW	15.	31.	42.	62.	79.	102.
				TIME	3.47	3.50	3.47	3.47	3.43	3.43
HYDROGRAPH AT	C330	.09	1	FLOW	4.	8.	10.	15.	20.	25.
				TIME	3.47	3.50	3.47	3.47	3.43	3.43
ROUTED TO	C380	.09	1	FLOW	4.	8.	11.	16.	20.	25.

				TIME	3.63	3.57	3.53	3.53	3.50	3.50
			** PEAK STAGES IN FEET **							
			1	STAGE	82.21	82.29	82.34	82.39	82.42	82.47
				TIME	3.63	3.57	3.53	3.53	3.50	3.50
HYDROGRAPH AT	380	.05	1	FLOW	14.	30.	40.	57.	74.	91.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
HYDROGRAPH AT	390	.01	1	FLOW	1.	3.	5.	9.	12.	15.
				TIME	3.33	3.27	3.23	3.23	3.23	3.23
4 COMBINED AT	C380	.31	1	FLOW	53.	99.	131.	205.	287.	365.
				TIME	3.40	3.37	3.37	3.73	3.70	3.63
ROUTED TO	C510	.31	1	FLOW	54.	99.	130.	200.	287.	359.
				TIME	3.43	3.37	3.40	3.77	3.73	3.67
			** PEAK STAGES IN FEET **							
			1	STAGE	98.05	98.64	98.95	99.44	99.88	100.15
				TIME	3.43	3.37	3.40	3.77	3.73	3.67
HYDROGRAPH AT	510	.01	1	FLOW	5.	10.	14.	20.	26.	32.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C510	.32	1	FLOW	55.	102.	133.	201.	288.	360.
				TIME	3.43	3.37	3.40	3.77	3.73	3.67
ROUTED TO	C520	.32	1	FLOW	54.	103.	133.	198.	284.	358.
				TIME	3.50	3.40	3.40	3.80	3.77	3.70
			** PEAK STAGES IN FEET **							
			1	STAGE	98.46	99.16	99.46	99.95	100.41	100.74
				TIME	3.50	3.40	3.40	3.80	3.77	3.70
HYDROGRAPH AT	520	.01	1	FLOW	6.	12.	16.	23.	30.	37.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
2 COMBINED AT	C520	.33	1	FLOW	56.	107.	138.	199.	286.	361.
				TIME	3.50	3.40	3.40	3.80	3.77	3.70
HYDROGRAPH AT	530	.01	1	FLOW	3.	6.	8.	11.	14.	18.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C530	.34	1	FLOW	57.	110.	142.	204.	288.	364.
				TIME	3.50	3.40	3.40	3.37	3.77	3.70
ROUTED TO	C550	.34	1	FLOW	57.	109.	142.	203.	284.	365.
				TIME	3.50	3.40	3.37	3.40	3.80	3.73
			** PEAK STAGES IN FEET **							
			1	STAGE	98.26	98.94	99.24	99.67	100.07	100.40
				TIME	3.50	3.40	3.37	3.40	3.80	3.73
HYDROGRAPH AT	D330	.00	1	FLOW	15.	31.	42.	62.	79.	102.
				TIME	3.47	3.50	3.47	3.47	3.43	3.43
ROUTED TO	C420	.00	1	FLOW	15.	31.	42.	61.	79.	102.
				TIME	3.50	3.53	3.50	3.47	3.50	3.47
			** PEAK STAGES IN FEET **							
			1	STAGE	100.30	100.50	100.61	100.78	100.91	101.06

				TIME	3.50	3.53	3.50	3.47	3.50	3.47
HYDROGRAPH AT	420	.02	1	FLOW	5.	10.	14.	20.	25.	31.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
2 COMBINED AT	C420	.02	1	FLOW	17.	37.	50.	73.	96.	121.
				TIME	3.50	3.47	3.47	3.47	3.40	3.40
ROUTED TO	C430	.02	1	FLOW	17.	37.	50.	74.	96.	122.
				TIME	3.57	3.50	3.50	3.50	3.47	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	100.34	100.56	100.69	100.87	101.03	101.18
				TIME	3.57	3.50	3.50	3.50	3.47	3.43
HYDROGRAPH AT	430	.02	1	FLOW	6.	13.	18.	26.	33.	41.
				TIME	3.23	3.27	3.27	3.27	3.23	3.23
2 COMBINED AT	C430	.04	1	FLOW	21.	44.	60.	88.	117.	148.
				TIME	3.40	3.47	3.47	3.43	3.43	3.40
HYDROGRAPH AT	440	.01	1	FLOW	3.	5.	7.	10.	13.	16.
				TIME	3.17	3.20	3.20	3.20	3.17	3.17
2 COMBINED AT	C440	.05	1	FLOW	23.	47.	63.	92.	122.	155.
				TIME	3.40	3.37	3.47	3.43	3.43	3.40
DIVERSION TO	D440	.05	1	FLOW	16.	33.	44.	64.	85.	109.
				TIME	3.40	3.37	3.47	3.43	3.43	3.40
HYDROGRAPH AT	C440	.05	1	FLOW	7.	14.	19.	28.	37.	47.
				TIME	3.40	3.37	3.47	3.43	3.43	3.40
ROUTED TO	C540	.05	1	FLOW	7.	14.	19.	28.	37.	47.
				TIME	3.47	3.43	3.40	3.50	3.47	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	100.08	100.17	100.21	100.29	100.35	100.42
				TIME	3.47	3.43	3.40	3.50	3.47	3.43
HYDROGRAPH AT	540	.01	1	FLOW	2.	4.	5.	8.	10.	12.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
2 COMBINED AT	C540	.05	1	FLOW	8.	16.	21.	31.	40.	51.
				TIME	3.47	3.43	3.37	3.37	3.33	3.43
ROUTED TO	C550	.05	1	FLOW	8.	16.	21.	31.	40.	50.
				TIME	3.50	3.47	3.40	3.37	3.33	3.47
			** PEAK STAGES IN FEET **							
			1	STAGE	100.08	100.17	100.21	100.29	100.35	100.41
				TIME	3.50	3.47	3.40	3.37	3.33	3.47
HYDROGRAPH AT	550	.01	1	FLOW	3.	6.	8.	12.	16.	20.
				TIME	3.10	3.13	3.13	3.10	3.10	3.10
3 COMBINED AT	C550	.40	1	FLOW	65.	126.	166.	237.	308.	398.
				TIME	3.50	3.40	3.37	3.40	3.77	3.73
ROUTED TO	C560	.40	1	FLOW	65.	125.	166.	237.	307.	388.
				TIME	3.57	3.43	3.47	3.43	3.80	3.80

			** PEAK STAGES IN FEET **							
			1	STAGE	98.98	99.66	99.94	100.29	100.57	100.87
				TIME	3.57	3.43	3.47	3.43	3.80	3.80
HYDROGRAPH AT	570	.00	1	FLOW	2.	3.	5.	7.	8.	10.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
HYDROGRAPH AT	580	.01	1	FLOW	2.	4.	6.	8.	10.	13.
				TIME	3.17	3.20	3.20	3.20	3.17	3.17
HYDROGRAPH AT	560	.00	1	FLOW	1.	3.	4.	6.	8.	9.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
4 COMBINED AT	C560	.41	1	FLOW	66.	130.	171.	246.	316.	392.
				TIME	3.57	3.43	3.47	3.40	3.40	3.40
ROUTED TO	C590	.41	1	FLOW	66.	130.	171.	246.	317.	392.
				TIME	3.57	3.43	3.47	3.40	3.40	3.40
			** PEAK STAGES IN FEET **							
			1	STAGE	97.87	98.93	99.44	100.05	100.46	100.82
				TIME	3.57	3.43	3.47	3.40	3.40	3.40
HYDROGRAPH AT	590	.02	1	FLOW	6.	11.	15.	22.	29.	35.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
2 COMBINED AT	C590	.43	1	FLOW	69.	138.	182.	262.	338.	419.
				TIME	3.57	3.43	3.40	3.40	3.40	3.37
ROUTED TO	C610	.43	1	FLOW	68.	138.	183.	262.	338.	423.
				TIME	3.47	3.47	3.47	3.47	3.43	3.40
			** PEAK STAGES IN FEET **							
			1	STAGE	98.07	99.04	99.45	99.98	100.37	100.74
				TIME	3.47	3.47	3.47	3.47	3.43	3.40
HYDROGRAPH AT	610	.00	1	FLOW	2.	3.	5.	7.	9.	11.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C610	.43	1	FLOW	69.	139.	184.	263.	340.	425.
				TIME	3.47	3.47	3.47	3.47	3.43	3.40
HYDROGRAPH AT	D440	.00	1	FLOW	16.	33.	44.	64.	85.	109.
				TIME	3.40	3.37	3.47	3.43	3.43	3.40
ROUTED TO	C470	.00	1	FLOW	16.	33.	44.	64.	85.	109.
				TIME	3.50	3.47	3.43	3.50	3.50	3.47
			** PEAK STAGES IN FEET **							
			1	STAGE	100.03	100.13	100.19	100.28	100.36	100.43
				TIME	3.50	3.47	3.43	3.50	3.50	3.47
HYDROGRAPH AT	410	.04	1	FLOW	11.	22.	29.	41.	53.	65.
				TIME	3.37	3.37	3.37	3.37	3.37	3.37
ROUTED TO	C450	.04	1	FLOW	11.	21.	29.	41.	53.	65.
				TIME	3.37	3.37	3.37	3.37	3.37	3.37
			** PEAK STAGES IN FEET **							
			1	STAGE	101.71	101.83	101.89	101.98	102.06	102.13
				TIME	3.37	3.37	3.37	3.37	3.37	3.37

HYDROGRAPH AT	450	.01	1	FLOW	2.	5.	6.	9.	12.	14.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
2 COMBINED AT	C450	.05	1	FLOW	13.	26.	34.	49.	63.	78.
				TIME	3.37	3.37	3.37	3.37	3.37	3.33
ROUTED TO	C460	.05	1	FLOW	13.	26.	34.	49.	63.	78.
				TIME	3.40	3.40	3.43	3.40	3.40	3.40
			** PEAK STAGES IN FEET **							
			1	STAGE	101.73	101.87	101.93	102.04	102.12	102.20
				TIME	3.40	3.40	3.43	3.40	3.40	3.40
HYDROGRAPH AT	460	.01	1	FLOW	1.	5.	8.	14.	19.	24.
				TIME	3.30	3.23	3.23	3.20	3.20	3.20
2 COMBINED AT	C460	.07	1	FLOW	14.	29.	39.	57.	74.	92.
				TIME	3.40	3.40	3.37	3.37	3.37	3.37
HYDROGRAPH AT	470	.01	1	FLOW	10.	15.	18.	22.	26.	29.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
3 COMBINED AT	C470	.07	1	FLOW	32.	66.	89.	130.	167.	206.
				TIME	3.40	3.40	3.40	3.37	3.37	3.37
ROUTED TO	C600	.07	1	FLOW	33.	67.	90.	129.	166.	207.
				TIME	3.50	3.47	3.47	3.43	3.43	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	101.92	102.14	102.26	102.44	102.58	102.73
				TIME	3.50	3.47	3.47	3.43	3.43	3.43
HYDROGRAPH AT	600	.03	1	FLOW	8.	17.	23.	33.	43.	53.
				TIME	3.27	3.30	3.30	3.30	3.27	3.27
2 COMBINED AT	C600	.10	1	FLOW	38.	79.	106.	155.	201.	248.
				TIME	3.50	3.47	3.43	3.40	3.40	3.40
ROUTED TO	C610	.10	1	FLOW	38.	79.	106.	155.	201.	249.
				TIME	3.50	3.47	3.47	3.43	3.40	3.40
			** PEAK STAGES IN FEET **							
			1	STAGE	97.03	97.55	97.82	98.23	98.56	98.86
				TIME	3.50	3.47	3.47	3.43	3.40	3.40
2 COMBINED AT	C610	.54	1	FLOW	106.	217.	290.	416.	539.	674.
				TIME	3.50	3.47	3.47	3.43	3.43	3.40
HYDROGRAPH AT	D930	.00	1	FLOW	51.	51.	51.	51.	51.	51.
				TIME	3.17	3.10	3.07	3.03	3.03	3.00
ROUTED TO	C950	.00	1	FLOW	51.	51.	51.	51.	51.	51.
				TIME	3.20	3.13	3.13	3.10	3.07	3.03
HYDROGRAPH AT	940	.01	1	FLOW	1.	4.	7.	10.	14.	18.
				TIME	3.20	3.17	3.17	3.17	3.17	3.17
ROUTED TO	C950	.01	1	FLOW	1.	5.	7.	10.	14.	18.
				TIME	3.30	3.23	3.20	3.23	3.23	3.20
			** PEAK STAGES IN FEET **							
			1	STAGE	98.28	98.53	98.58	98.64	98.72	98.80

				TIME	3.30	3.23	3.20	3.23	3.23	3.20
HYDROGRAPH AT	950	.10	1	FLOW	37.	62.	78.	104.	127.	152.
				TIME	3.43	3.43	3.43	3.43	3.43	3.43
3 COMBINED AT	C950	.11	1	FLOW	89.	116.	132.	159.	184.	209.
				TIME	3.43	3.43	3.43	3.43	3.43	3.43
ROUTED TO	C970	.11	1	FLOW	89.	116.	132.	159.	184.	209.
				TIME	3.43	3.43	3.47	3.43	3.43	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	96.95	97.25	97.43	97.67	97.88	98.08
				TIME	3.43	3.43	3.47	3.43	3.43	3.43
HYDROGRAPH AT	D830	.00	1	FLOW	0.	0.	0.	0.	109.	272.
				TIME	.03	.03	.03	.03	3.37	3.40
ROUTED TO	C960	.00	1	FLOW	0.	0.	0.	0.	126.	288.
				TIME	.03	.03	.03	.03	3.37	3.40
			** PEAK STAGES IN FEET **							
			1	STAGE	98.83	98.83	98.83	98.83	99.95	100.26
				TIME	.00	.00	.00	.00	3.37	3.40
HYDROGRAPH AT	960	.00	1	FLOW	0.	2.	3.	5.	7.	9.
				TIME	3.27	3.20	3.20	3.20	3.17	3.17
2 COMBINED AT	C960	.00	1	FLOW	0.	2.	3.	5.	129.	292.
				TIME	3.27	3.20	3.20	3.20	3.37	3.40
ROUTED TO	C970	.00	1	FLOW	0.	2.	3.	5.	138.	331.
				TIME	3.43	3.33	3.27	3.23	3.43	3.37
			** PEAK STAGES IN FEET **							
			1	STAGE	98.35	98.63	98.70	98.77	100.05	100.44
				TIME	3.43	3.33	3.27	3.23	3.43	3.37
HYDROGRAPH AT	970	.00	1	FLOW	0.	1.	2.	4.	5.	6.
				TIME	3.20	3.17	3.13	3.13	3.13	3.13
2 COMBINED AT	C970	.01	1	FLOW	1.	3.	5.	7.	139.	333.
				TIME	3.43	3.30	3.27	3.23	3.43	3.37
2 COMBINED AT	C970	.11	1	FLOW	89.	118.	134.	163.	323.	536.
				TIME	3.43	3.43	3.47	3.43	3.43	3.37
ROUTED TO	RB10	.11	1	FLOW	90.	118.	135.	163.	319.	517.
				TIME	3.47	3.50	3.47	3.47	3.47	3.40
			** PEAK STAGES IN FEET **							
			1	STAGE	95.25	95.47	95.58	95.75	96.53	97.27
				TIME	3.47	3.50	3.47	3.47	3.47	3.40
HYDROGRAPH AT	RB10	.06	1	FLOW	20.	39.	52.	75.	96.	118.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
2 COMBINED AT	RB10	.18	1	FLOW	103.	145.	172.	217.	375.	603.
				TIME	3.40	3.40	3.37	3.37	3.47	3.40
ROUTED TO	B20	.18	1	FLOW	102.	144.	171.	216.	364.	586.
				TIME	3.47	3.47	3.43	3.40	3.53	3.47

HYDROGRAPH AT	B15	.04	1	FLOW	13.	26.	35.	51.	66.	82.
				TIME	3.20	3.23	3.23	3.23	3.20	3.20
ROUTED TO	B17	.04	1	FLOW	13.	26.	35.	51.	66.	81.
				TIME	3.27	3.27	3.27	3.23	3.23	3.23
ROUTED TO	B20	.04	1	FLOW	12.	26.	35.	51.	65.	80.
				TIME	3.47	3.40	3.40	3.37	3.37	3.33
HYDROGRAPH AT	B20	.19	1	FLOW	73.	134.	173.	241.	303.	369.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
3 COMBINED AT	CPB20	.41	1	FLOW	169.	282.	356.	483.	602.	897.
				TIME	3.37	3.37	3.33	3.33	3.33	3.43
ROUTED TO	B30	.41	1	FLOW	168.	280.	355.	479.	599.	883.
				TIME	3.43	3.43	3.40	3.40	3.37	3.50
HYDROGRAPH AT	B30	.11	1	FLOW	75.	125.	155.	205.	250.	296.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	CPB30	.53	1	FLOW	203.	348.	443.	601.	761.	990.
				TIME	3.40	3.37	3.37	3.37	3.33	3.47
ROUTED TO	B40	.53	1	FLOW	202.	347.	440.	600.	755.	980.
				TIME	3.47	3.43	3.43	3.40	3.37	3.53
HYDROGRAPH AT	B40	.09	1	FLOW	22.	54.	76.	116.	154.	193.
				TIME	3.20	3.20	3.17	3.17	3.17	3.17
2 COMBINED AT	CPB40	.62	1	FLOW	212.	372.	475.	651.	830.	1029.
				TIME	3.47	3.40	3.40	3.37	3.37	3.53
ROUTED TO	PIMA	.62	1	FLOW	210.	369.	473.	648.	821.	1017.
				TIME	3.70	3.60	3.57	3.53	3.50	3.63
HYDROGRAPH AT	B50	.14	1	FLOW	15.	45.	65.	102.	138.	176.
				TIME	3.43	3.40	3.40	3.40	3.37	3.37
2 COMBINED AT	CPPIMA	.76	1	FLOW	221.	403.	526.	736.	941.	1160.
				TIME	3.70	3.57	3.53	3.50	3.50	3.47

5

INTERIM CONDITIONS

HEC-1 RUN

THUNDERBIRD BASIN

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*          SEPTEMBER 1990               *
*           VERSION 4.0                 *
*                                       *
* RUN DATE  11/01/1994  TIME  14:12:55  *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104               *
*                                       *
*****************************************
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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
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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

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

  1           ID        84TH STREET AND CHOLLA ROAD
  2           ID        2-5-10-25-50-100 yr STORM
  3           ID        INTERIM CONDITION:
  4           ID        ALTERNATE 2A final design (MODIFIED)
  5           ID        --ASSUME NO SPLIT IN CACTUS/84TH INTERSECTION
  6           ID        --NEW STORM SEWER IN CACTUS (INclude ADOT R/W FOR INTERIM)
  7           ID        --CACTUS SD TO OUTFALL AT BOX-CULVERT
  8           ID        --INTERCEPTOR AT CORTEZ IN 84TH STREET
  9           ID        --No NEW PIMA CHANNEL
 10           ID        --NEW INTERIM DETENTION BASINS WEST OF PIMA & NORTH OF SWEETWATER
 11           ID
 12           ID        --FILE SCCSW4.DAT
 13           ID     ******************************************************
              *DIAGRAM
 14           IT       2                    300
 15           IO       5
 16           JR    PREC     .36     .53     .62     .76     .88     1.0

 17           KK     710        SUBBASIN 710 RUNOFF
 18           PH                    0.88    1.61     2.6    2.84       3     3.3
 19           BA  0.0090
 20           LS       0      77      50
 21           UD    0.07

 22           KK    C720        ROUTE 710 TO C720
 23           RS     100    STOR      -1       0
 24           RC    .060   0.040   0.060     850   .0100
 25           RX       0      .1     100     101     104     105     205   205.1
 26           RY     105     100      99      96      96      99     100     105
 27           RS     100    STOR      -1       0
 28           RC    .060   0.040    .060     460   .0100
 29           RX       0      .1     100     101     106     107     207   207.1
 30           RY     105     100      99      95      95      99     100     105
 31           RS     100    STOR      -1       0
 32           RC    .050   0.030    .050     350   .0034
 33           RX       0      .1     100     109   109.1   118.1     120   120.1
 34           RY     105     100      99      96      96      99      99     105

 35           KK     720        SUBBASIN 720 RUNOFF
 36           BA  0.0655
 37           LS       0      77
 38           UD    0.21

 39           KK    C720        COMBINE 710 AND 720
 40           HC       2

 41           KK    C720        ROUTE C720 TO C735
 42           RS     100    STOR      -1       0
 43           RC    .040   0.020    .040     130   .0150
 44           RX       0      .1       1       5      15      19    19.1      20
 45           RY     105     100     100      99      99     100     100     105
 46           RC    .040   0.016    .040     400   .0060
 47           RX       0      .1       9     9.1      37    37.1      46    46.1
 48           RY     105     100     100   99.75   99.75     100     100     105
 49           RC    .040   0.016    .040     650   .0080
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  50          RX       0      .1       9     9.1      37    37.1      46    46.1
  51          RY     105     100     100   99.75   99.75     100     100     105
  52          RX       0      .1       1       5      15      19    19.1      20
  53          RC    .040   0.016    .040    1400   .0100
  54          RX       0      .1       9     9.1      37    37.1      46    46.1
  55          RY     105     100     100   99.75   99.75     100     100     105

  56          KK     725          SUBBASIN 725 RUNOFF
  57          BA  0.0680
  58          LS       0      77      42
  59          UD    0.20

  60          KK   ED725          EXISTING DETENTION BASIN 725
  61          RS       1    STOR      -1       0
  62          SA    0.78    1.14    1.17     1.2    1.24    1.24    1.24
  63          SE  1468.5    1472  1472.3  1472.6    1473  1473.5    1474
  64          SQ       0       0   10.45   31.23    72.0     100     200

  65          KK     730          SUBBASIN 730 RUNOFF
  66          BA  0.0053
  67          LS       0      77      42
  68          UD    0.05

  69          KK    C730          COMBINE C725 AND 730
  70          HC       2

  71          KK   ED730          EXISTING DETENTION BASIN 730
  72          RS       1    STOR      -1       0
  73          SA    0.76    1.12    1.15    1.18    1.22    1.22
  74          SE  1464.5    1468  1468.3  1468.6    1469  1469.5
  75          SQ       0       0    5.52   17.29    42.0     150

  76          KK     735          SUBBASIN 735 RUNOFF
  77          BA  .05147
  78          LS       0      77      42
  79          UD    0.29

  80          KK    C735          COMBINE C725 AND C730 AND 735
  81          HC       3

  82          KK   ED735          EXISTING DETENTION BASIN 735
  83          RS       1    STOR      -1       0
  84          SA    1.04    1.40    1.45    1.51    1.56    1.61    1.61    1.61
  85          SE  1461.9  1465.4  1465.9  1466.4  1466.9  1467.4    1468  1468.5
  86          SQ       0       0     3.2    18.0    49.6   101.8     200     500

  87          KK     740          SUBBASIN 740 RUNOFF
  88          BA  .00055
  89          LS       0      98
  90          UD    0.08
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  91          KK     742        SUBBASIN 742 RUNOFF
  92          BA  .00836
  93          LS              77
  94          UD     .11

  95          KK    C742        COMBINE 740 AND 742
  96          HC       2

  97          KK    C744        ROUTE C742 TO C744
  98          RK      95   .0044    .012            CIRC       2

  99          KK     743        SUBBASIN 743 RUNOFF
 100          BA  .00373
 101          LS       0      77      47
 102          UD    0.07

 103          KK    C744        ROUTE 743 TO C744
 104          RS     100    STOR      -1       0
 105          RC    .030   0.016    .030     580   .0085
 106          RX       0      .1      11    11.1      79    79.1      90    90.1
 107          RY     105     100      99   99.82   99.82      99     100     105

 108          KK     744        SUBBASIN 744 RUNOFF
 109          BA  .00661
 110          LS       0      98
 111          UD    0.14

 112          KK    C744        COMBINE C742 AND 743 AND 744
 113          HC       3

 114          KK    C745        ROUTE C744 TO C745
 115          RK     638   .0029    .012            CIRC     3.5

 116          KK     745        SUBBASIN 745 RUNOFF
 117          BA  .01783
 118          LS       0      77
 119          UD    0.17

 120          KK    C745        COMBINE C744 AND 745
 121          HC       2

 122          KK    C735        ROUTE C745 TO C735
 123          RK     510   .0024    .012            CIRC       4

 124          KK    C735        COMBINE C745 AND 735
 125          HC       2

 126          KK    C760        ROUTE C735 TO C760
 127          RK     130   .0030    .012            TRAP      10    .001
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 128          KK     760        SUBBASIN 760 RUNOFF
 129          BA  .01266
 130          LS       0      98
 131          UD    0.19

 132          KK    C760        COMBINE C735 AND 760
 133          HC       2

 134          KK    C790        ROUTE C760 TO C790
 135          RS     100    STOR      -1       0
 136          RC    .050   0.012    .020     900   .0019
 137          RX       0      .1      28      32      37      42     100   100.1
 138          RY     105     100      99      95      95     100     101     105
 139          RC    .050   0.012    .020     250   .0019
 140          RX       0      .1      28    28.1    37.5    37.6      49    49.1
 141          RY     105     100      99      95      95      99     100     105

 142          KK     780        SUBBASIN 780 RUNOFF
 143          BA  .01686
 144          LS       0      77      20
 145          UD    0.13

 146          KK    C782        ROUTE C780 TO C782
 147          RS     100    STOR      -1       0
 148          RC    .020    .025    .050    1210    .010
 149          RX       2       2      30      40      50      60      80     100
 150          RY     105  100.52     100    99.5      98     100   100.5     101

 151          KK     782        SUBBASIN 782 RUNOFF
 152          BA  .01080
 153          LS              77
 154          UD     .18

 155          KK     784        SUBBASIN 784 RUNOFF
 156          BA  .04764
 157          LS              77      42
 158          UD     .19

 159          KK   ED784        EXISTING DETENTION BASIN 784
 160          RS       1    STOR      -1       0
 161          SA       0    1.09    2.02    2.02
 162          SE  1389.0  1389.5  1392.5  1393.0
 163          SQ       0     1.4      58     768

 164          KK    C782        COMBINE 780 AND C782 AND 784
 165          HC       3

 166          KK    C790        ROUTE C782 TO C790
 167          RS     100    STOR      -1       0
 168          RC    .020    .025    .050    2800    .010
 169          RX       2       2      30      40      50      60      80     100
 170          RY     105  100.52     100    99.5      98     100   100.5     101
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 171          KK     790        SUBBASIN 790 RUNOFF
 172          BA  .11345
 173          LS              77
 174          UD     .23

 175          KK    C790        COMBINE 782 AND C760 AND 790
 176          HC       3

 177          KK     750        SUBBASIN 750 RUNOFF
 178          BA  .00313
 179          LS       0      98
 180          UD    0.07

 181          KK    C770        ROUTE C750 TO C770
 182          RS     100    STOR      -1       0
 183          RC    .050   0.016    .016    1100   .0040
 184          RX       0      .1      .2       5     5.1    29.1    29.2    29.3
 185          RY     105   100.5   100.5     100    99.5     100     105     105

 186          KK     770        SUBBASIN 770 RUNOFF
 187          BA  .00505
 188          LS       0      98
 189          UD    0.09

 190          KK    C770        COMBINE C770 AND 770
 191          HC       2

 192          KK    C770        COMBINE C770 AND C790
 193          HC       2

 194          KK    C800        ROUTE C770 TO C800
 195          RS     100    STOR      -1       0
 196          RC    .050   0.020    .050     380   .0037
 197          RX       0      .1      20      36      46      62      82     102
 198          RY     110   106.5     106     100     100     106   106.5     107

 199          KK     800        SUBBASIN 800 RUNOFF
 200          BA  .01719
 201          LS       0      77
 202          UD    0.16

 203          KK    C800        COMBINE 800 AND C770
 204          HC       2

 205          KK    C810        ROUTE C800 TO C810
 206          RS     100    STOR      -1       0
 207          RC    .050   0.020    .050    1170   .0037
 208          RX       0      .1      20      36      60      76      96     116
 209          RY     110     105   104.5     100     100   104.5     105   105.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 210          KK     810        SUBBASIN 810 RUNOFF
 211          BA  .04392
 212          LS       0      77      42
 213          UD    0.23

 214          KK    C810        COMBINE 810 AND C800
 215          HC       2

 216          KK    C820         ROUTE C810 TO C820
 217          RS     100    STOR      -1       0
 218          RC    .050   0.020    .050     790   .0037
 219          RX       0      .1      20      36      60      76      96     116
 220          RY     110     105   104.5     100     100   104.5     105   105.5

 221          KK     820        SUBBASIN 820 RUNOFF
 222          BA  .03645
 223          LS       0      77      38
 224          UD    0.16

 225          KK    C820        COMBINE 820 AND C810
 226          HC       2

 227          KK    C830        ROUTE C820 TO C830
 228          RS     100    STOR      -1       0
 229          RC    .012   0.012    .012      97   .0104
 230          RX       0      .1      .2      .3      .4      .5      20    20.1
 231          RY     106     100     100     100     100     100     100     106

 232          KK     910        SUBBASIN 910 RUNOFF
 233          BA  .04977
 234          LS       0      77      65
 235          UD    0.20

 236          KK    C920        ROUTE 910 TO C920
 237          RK     660    .050    .012            CIRC       2
 238          RK     680   .0060    .025            TRAP       1       1

 239          KK     920        SUBBASIN 920 RUNOFF
 240          BA  .02748
 241          LS       0      69      49
 242          UD    0.26

 243          KK    C920         COMBINE 910 AND 920
 244          HC       2

 245          KK    C930         ROUTE C920 TO C930
 246          RS     100    STOR      -1       0
 247          RC    .050   0.016    .016     680   .0040
 248          RX       0      .1      15    20.5    20.6    44.5    44.6    44.7
 249          RY     105     100    99.5    99.4    98.9    99.4     100     105
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 250          KK     930        SUBBASIN 930 RUNOFF
 251          BA  .05831
 252          LS       0      77      38
 253          UD    0.25

 254          KK    C930        COMBINE C920 AND 930
 255          HC       2

 256          KK    C930        DIVERT FLOW TO C950
 257          DT    D930
 258          DI       0      51     400
 259          DQ       0      51      51

 260          KK    C830         ROUTE C930 TO C830
 261          RS     100    STOR      -1       0
 262          RC    .050   0.016    .016     640   .0028
 263          RX       0      .1     7.5     7.6    34.5    34.6    40.5    50.0
 264          RY     105     100     100    99.5    99.0    99.5    99.7     100

 265          KK     830        SUBBASIN 830 RUNOFF
 266          BA  .00148
 267          LS       0      98
 268          UD    0.07

 269          KK    C830        COMBINE 830 AND C820 AND 930 (Downstream Box-Culvert T-bird)
 270          HC       3

 271          KK    C830        DIVERT FLOW TO C960  (EXISTING DIVERSION)
 272          DT    D830
 273          DI       0     520     718    1045
 274          DQ       0       0     138     445

 275          KK     A30        SUBBASIN A30 RUNOFF
 276          BA  0.4031
 277          LS       0      77      11
 278          UD    0.47

 279          KK    DA30        DETENTION BASIN AT CPA30
 280          KM                Outflow to A31 and A32 and A36
 281          RS       1    STOR       0
 282          SA       0    0.49    0.94    1.39    1.93
 283          SE   34.99   35.00   37.00   39.00   41.40
 284          SQ       0      40   137.4     268     361

 285          KK     A31        SPLIT FLOW AT DETENTION BASIN DA30
 286          KM                DI is Total Outflow from Detention Basin (A31+A32+A36)
 287          KM                DQ is Split to A32 and A36
 288          DT     A32
 289          DI       0      40   137.4     268     361
 290          DQ       0      40   124.4     242     326
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 291          KK    CA31        COMBINE C830 AND A31
 292          HC       2

 293          KK  ED1010        ROUTE CA31 TO ED1010
 294          RS     100    STOR      -1       0
 295          RC    .060    .040    .060     600   .0086
 296          RX       0     0.1      50      56      59      65     115   115.1
 297          RY     105     100      99      95      95      99     100     105

 298          KK    1010        SUBBASIN 1010 RUNOFF
 299          BA  .01192
 300          LS       0      77
 301          UD    0.08

 302          KK   C1010        COMBINE 1010 and CA31
 303          HC       2

 304          KK  ED1010        EXISTING DETENTION BASIN 1010 (McDowell Shadow Estates II)
 305          RS       1    STOR       0
 306          SA       0    0.41    0.93    1.19    1.45    1.71    2.23
 307          SE    24.7    25.7    26.7    27.2    27.7    28.2    29.2
 308          SQ       0       7      17      21      69     240    1082

 309          KK   1060A        SUBBASIN 1060A RUNOFF
 310          BA  .00198
 311          LS       0      77
 312          UD    0.06

 313          KK  C1060A        COMBINE 1010 AND 1060A
 314          HC       2

 315          KK  N1060A        ROUTE NEW DETENTION BASIN 1060A
 316          RS       1    STOR       0
 317          SA   0.735  1.0606  1.0606
 318          SE      23      27    27.5
 319          SQ       0     200    1000

 320          KK     10N        SUBBASIN 10N RUNOFF
 321          BA  .00236
 322          LS       0      89
 323          UD    0.06

 324          KK   1060B        SUBBASIN 1060B RUNOFF
 325          BA  .00440
 326          LS       0      77
 327          UD    0.06

 328          KK  C1060B        COMBINE 1060A AND 1060B AND 10N
 329          HC       3
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Change from kt model

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

 330          KK  N1060B        ROUTE NEW DETENTION BASIN 1060B
 331          RS       1    STOR       0
 332          SA  1.9605  2.5344  2.5344
 333          SE      21      25    25.5
 334          SQ       0     200    1000

 335          KK   1060C        SUBBASIN 1060C RUNOFF
 336          BA  .00487
 337          LS       0      77
 338          UD    0.06

 339          KK  C1060C        COMBINE 1060B AND 1060C
 340          HC       2

 341          KK  N1060C        ROUTE NEW DETENTION BASIN 1060C
 342          RS       1    STOR       0
 343          SA  2.5482  3.2002  3.2002
 344          SE      19      23    23.5
 345          SQ       0     200    1000

 346          KK   1060D        SUBBASIN 1060D RUNOFF
 347          BA  .00488
 348          LS       0      77
 349          UD    0.06

 350          KK  C1060D        COMBINE 1060C AND 1060D
 351          HC       2

 352          KK  N1060D        ROUTE NEW DETENTION BASIN 1060D
 353          RS       1    STOR       0
 354          SA  2.4380  3.0762  3.0762
 355          SE      18      21    21.5
 356          SQ       0     200    1000

 357          KK   C1070        ROUTE DETENTION BASIN OUTFALL TO C1070
 358          RK     400   .0030    .012            CIRC       4

 359          KK     A32        RETRIEVE SPLIT FLOW AT A32 (A36 and A32)
 360          DR     A32

 361          KK     A32        SPLIT FLOW AT DETENTION BASIN DA30
 362          KM                DI is Split to A32 and A36
 363          KM                DQ is Split to A36 (Box Culvert)
 364          DT     A36
 365          DI       0      40   124.4     242     326
 366          DQ       0      40     110     190     250

 367          KK   C1030        ROUTE A32 TO C1030
 368          RS     100    STOR      -1       0
 369          RC    .060    .040    .060     600   .0080
 370          RX       0     0.1      50      56      59      65     115   115.1
 371          RY     105     100      99      95      95      99     100     105
```

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

 372          KK   C1030        ROUTE A32 TO C1030
 373          RK     230   .0036    .012            CIRC    3.53

 374          KK    1030        SUBBASIN 1030 RUNOFF
 375          BA  .00985
 376          LS       0      77
 377          UD     .13

 378          KK   C1030        COMBINE C1030 AND A32
 379          HC       2

 380          KK   C1040        ROUTE C1030 TO C1040
 381          RK     524  0.0040    .012       0    CIRC    3.53

 382          KK    1040        SUBBASIN 1040 RUNOFF
 383          BA  .01949
 384          LS       0      77      25
 385          UD    0.12

 386          KK  ED1040        EXISTING DETENTION BASIN 1040
 387          RS       1    STOR      -1       0
 388          SA       0    0.52    .597    .713    0.79    0.79
 389          SE    24.0    24.5    25.5    27.0      28      29
 390          SQ       0     1.5       6      13      16      19

 391          KK   C1040        COMBINE C1030 AND 1040
 392          HC       2

 393          KK   C1050        ROUTE C1040 TO C1050
 394          RS     100    STOR      -1       0
 395          RC    .050   0.040    .050     250   .0086
 396          RX       0     0.1      50      56      59      65     115   115.1
 397          RY     105     100      99      95      95      99     100     105

 398          KK    1050        SUBBASIN 1050 RUNOFF
 399          BA  .00387
 400          LS       0      77
 401          UD    0.07

 402          KK   C1050        COMBINE 1050 AND C1040
 403          HC       2

 404          KK    1020        SUBBASIN 1020 RUNOFF
 405          BA  .00198
 406          LS       0      77      10
 407          UD    0.06

 408          KK   C1050        COMBINE C1050 AND C1020
 409          HC       2
```

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

 410          KK   C1070        ROUTE C1050 TO C1070
 411          RS     100    STOR      -1       0
 412          RC    .050   0.040    .050    1150   .0078
 413          RX       0     0.1      50      56      60      66     116   116.1
 414          RY     105     100      99      95      95      99     100     105

 415          KK    1070        SUBBASIN 1070 RUNOFF
 416          BA  .02864
 417          LS       0      77      17
 418          UD    0.14

 419          KK   C1070        COMBINE C1050 AND 1070
 420          HC       2

 421          KK   C1070        COMBINE C1060D AND 1070
 422          HC       2

 423          KK   C1080        ROUTE C1070 TO C1080
 424          RS     100    STOR      -1       0
 425          RC    .050   0.040    .050    3100   .0066
 426          RX       0     0.1      30      41      49      60      90    90.1
 427          RY     108     100      99      95      95      99     100     108

 428          KK    1080        SUBBASIN 1080 RUNOFF
 429          BA  .04840
 430          LS       0      77      24
 431          UD    0.16

 432          KK   C1080        COMBINE 1080 AND C1070
 433          HC       2

 434          KK    1090        SUBBASIN 1090 RUNOFF
 435          BA  .03370
 436          LS       0      77      20
 437          UD   0.138

 438          KK   C1100        ROUTE 1090 TO C1100
 439          RS     100    STOR      -1       0
 440          RC    .040   0.016    .040   .0074    2340
 441          RX       0     0.1      20    20.1      60    60.1      80    80.1
 442          RY     105     100      99   98.75   98.75      99     100     105

 443          KK    1100        SUBBASIN 1100 RUNOFF
 444          BA  .07053
 445          LS       0      77      18
 446          UD    0.37

 447          KK   C1100        COMBINE 1100 AND 1090
 448          HC       2
```

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

449           KK   C1080        COMBINE C1100 AND C1080
450           HC       2

451           KK      40      SUBBASIN 40 RUNOFF
452           BA  .03122
453           LS              77      45
454           UD     .42

455           KK   SD110      ROUTE C40 TO SD110
456           RK     190  0.0010   0.012            CIRC       3

457           KK      10      SUBBASIN 10 RUNOFF
458           BA  .00536
459           PH                    0.88    1.61     2.6    2.84     3.0     3.3
460           LS              89
461           UD     .10

462           KK      20      SUBBASIN 20 RUNOFF
463           BA  .00273
464           LS              77
465           UD     .20

466           KK     C10      COMBINE 10 AND 20
467           HC       2

468           KK     C15      ROUTE C10 TO C15
469           RS     100    STOR      -1       0
470           RC   0.016   0.025   0.040    2605  0.0070
471           RX       0      20      40      49      51      60      80     100
472           RY     100    99.6    99.2      97      97    99.2    99.6     100

473           KK      15      SUBBASIN 15 RUNOFF
474           BA  .00559
475           LS              89
476           UD     .08

477           KK     C15      COMBINE C10 AND 15
478           HC       2

479           KK     C15      DIVERT C15 TO SOUTH PIMA ROAD
480           DT     D15
481           DI       0      19      30      40
482           DQ       0      19      19      29

483           KK    C110      ROUTE C15 TO 110
484           RS     100    STOR      -1       0
485           RC    .040   0.016    .016     680   .0030
486           RX      20      40      65      70      70      72     100     100
487           RY   103.1   102.9  101.75  101.74  101.27  101.35  101.63  103.63
```

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

488           KK      50      SUBBASIN 50 RUNOFF
489           BA  .00659
490           LS              77      35
491           UD     .14

492           KK     110      SUBBASIN 110 RUNOFF (up to Pima for Interim)
493           BA  .00107
494           LS              98
495           UD     .07

496           KK    C110      COMBINE 110 AND 50
497           HC       2

498           KK     210      SUBBASIN 210 RUNOFF (up tp Pima for Interim)
499           BA  .00232
500           LS              98
501           UD     .08

502           KK   SD210      COMBINE SD110 AND C110 AND 210 AND 40
503           HC       4

504           KK   SD220      ROUTE SD210 TO SD220
505           RK     255  0.0010   0.012           CIRC       4

506           KK      70      SUBBASIN 70 RUNOFF
507           BA  .01106
508           LS              77      35
509           UD     .19

510           KK     120      SUBBASIN 120 RUNOFF
511           BA  .00042
512           LS              98
513           UD     .06

514           KK    C120      COMBINE C120 AND 70
515           HC       2

516           KK   SD220      COMBINE SD210 AND SD220
517           HC       2

518           KK   SD230      ROUTE SD220 TO SD230
519           RK     255  0.0010   0.012           CIRC       4

520           KK      80      SUBBASIN 80 RUNOFF
521           BA  .00189
522           LS              77      30
523           UD     .10

524           KK     130      SUBBASIN 130 RUNOFF
525           BA  .00034
526           LS              98
527           UD     .06
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

528           KK    C130      COMBINE 80 AND 130
529           HC       2

530           KK     220      SUBBASIN 220 RUNOFF
531           BA  .00103
532           LS              98
533           UD     .06

534           KK    C230      ROUTE C220 TO 230
535           RS     100    STOR      -1       0
536           RC    .016    .016    .040     380   .0030     120
537           RX       0       0    31.8    33.8    33.8    38.8      55      80
538           RY  100.41   98.41   97.95   97.87   98.37   98.49    99.0    99.9

539           KK     230      SUBBASIN 230 RUNOFF
540           BA  .00083
541           LS              98
542           UD     .06

543           KK    C230      COMBINE C220 AND 230
544           HC       2

545           KK   SD230      COMBINE SD220 AND C130 AND C230
546           HC       3

547           KK    SD90      ROUTE SD230 TO SD90
548           RK     205  0.0010   0.012            CIRC       4

549           KK      90      SUBBASIN 90 RUNOFF
550           BA  .02922
551           LS              77      24
552           UD     .23

553           KK    SD90      COMBINE SD230 AND 90
554           HC       2

555           KK   SD240      ROUTE SD90 TO SD240
556           RK     125  0.0010   0.012            CIRC       4

557           KK     140      SUBBASIN 140 RUNOFF
558           BA  .00081
559           LS              98
560           UD     .06

561           KK     240      SUBBASIN 240 RUNOFF
562           BA  .00150
563           LS              98
564           UD     .06
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

565           KK   SD240      COMBINE SD90 AND 140 AND 240
566           HC       3

567           KK   SD250      ROUTE SD240 TO SD250
568           RK     350  0.0010   0.012            CIRC       4

569           KK     150      SUBBASIN 150 RUNOFF
570           BA  .00192
571           LS              98
572           UD     .07

573           KK     250      SUBBASIN 250 RUNOFF
574           BA  .00134
575           LS              98
576           UD     .06

577           KK   SD250      COMBINE SD240 AND 150 AND 250
578           HC       3

579           KK   SD260      ROUTE SD250 TO SD260
580           RK     336  0.0010   0.012            CIRC       5

581           KK     100      SUBBASIN 100 RUNOFF
582           BA  .00666
583           LS              77       24
584           UD     .12

585           KK     160      SUBBASIN 160 RUNOFF
586           BA  .00058
587           LS              98
588           UD     .06

589           KK    C160      COMBINE 100 AND 160
590           HC       2

591           KK     260      SUBBASIN 260 RUNOFF
592           BA  .00114
593           LS              98
594           UD     .06

595           KK   SD260      COMBINE SD250 AND C160 AND 260
596           HC       3

597           KK   SD270      ROUTE SD260 TO SD270
598           RK     194  0.0010   0.012            CIRC       5

599           KK     170      SUBBASIN 170 RUNOFF
600           BA  .00047
601           LS              77       35
602           UD     .06
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

603           KK     270      SUBBASIN 270 RUNOFF
604           BA  .00095
605           LS              98
606           UD     .06

607           KK   SD270      COMBINE SD260 AND 170 AND 270
608           HC       3

609           KK   SD270      DIVERT EXCESS OF 50YR STORMDRAIN TO 84TH ST SOUTH
610           DT   ST270
611           DI       0     131     200
612           DQ       0       0      69

613           KK   SDBOX      ROUTE SD270 TO SDBOX
614           RK     270  0.0010   0.012            CIRC       5

615           KK   C1080      COMBINE C1080 AND SDBOX
616           HC       2

617           KK  C1110N        ROUTE C1080 TO C1110N
618           RS     100    STOR      -1       0
619           RC    .040   0.030    .040     900   .0092
620           RX       0     0.1      20      40      80     100     120   120.1
621           RY     105     100      99      93      93      99     100     105

622           KK   1110N        SUBBASIN 1110N RUNOFF
623           BA  .00396
624           LS       0      69      18
625           UD    0.06

626           KK  C1110N        COMBINE C1110N AND C1080
627           HC       2

628           KK  C1110S      ROUTE C1110N TO C1110S
629           RS     100    STOR      -1       0
630           RC    .040   0.030    .040    1050   .0092
631           RX       0     0.1      20      40      80     100     120   120.1
632           RY     105     100      99      93      93      99     100     105

633           KK   ST270      RETRIEVE ST270 (street flow in 84th street)
634           DR   ST270

635           KK    C370      ROUTE ST270 TO 370
636           RS     100    STOR      -1       0
637           RC    .040    .016    .040     800   .0077
638           RX       0      24    24.1      40    40.1      56    56.1      80
639           RY     101   98.93   98.61   98.97   98.97   98.62   98.92     101

640           KK     350      SUBBASIN 350 RUNOFF
641           BA  .00225
642           LS              77      20
643           UD     .06
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 644          KK    C350      DIVERT C350 TO 330
 645          DT    D330
 646          DI       0     100
 647          DQ       0      50

 648          KK    C360      ROUTE C350 TO 360
 649          RS     100    STOR      -1       0
 650          RC    .040    .016    .040     850   .0040
 651          RX       0      24    24.1      40    40.1      56    56.1      80
 652          RY     101   98.93   98.61   98.97   98.97   98.62   98.92     101

 653          KK     360      SUBBASIN 360 RUNOFF
 654          BA  .01320
 655          LS              77      20
 656          UD     .14

 657          KK     370      SUBBASIN 370 RUNOFF
 658          BA  .00592
 659          LS              77      20
 660          UD     .11

 661          KK    C370      COMBINE D280 AND C350 AND 360 AND 370
 662          HC       4

 663          KK   C380N      ROUTE C370 TO 380N
 664          RS     100    STOR      -1       0
 665          RC    .040    .016    .040     620   .0054
 666          RX       0      20    20.1      40    40.1      60    60.1      80
 667          RY     101   98.93   98.61   98.97   98.97   98.62   98.92     101

 668          KK    380N      SUBBASIN 380N RUNOFF
 669          BA  .00588
 670          LS              77      20
 671          UD     .15

 672          KK   C380N      COMBINE C370 AND 380N (street flow in 84th street at Kalil)
 673          HC       2

 674          KK  C1110S      ROUTE C380N TO C1110S
 675          RD     280  0.0030   0.012            CIRC       3

 676          KK   1110S        SUBBASIN 1110S RUNOFF
 677          BA  .01991
 678          LS       0      69      18
 679          UD    0.09

 680          KK  C1110S      COMBINE C1110S AND C380N AND 1110S (flow upstream of box-culvert)
 681          HC       3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

682           KK   C1120      ROUTE C1110S TO C1120
683           RS     100    STOR      -1       0
684           RC    .020   0.020    .020     200   .0080
685           RX       0     0.1     0.2     0.3    24.3    24.4    24.5    24.6
686           RY     110     110     110     100     100     110     110     110

687           KK    1120        SUBBASIN 1120 RUNOFF
688           BA  .01692
689           LS       0      69      50
690           UD    0.07

691           KK   C1120        COMBINE 1120 AND C1110S
692           HC       2

693           KK   LAKE5        DETENTION BASIN AT LAKE 5
694           RS       1    STOR       0
695           SV       0    6.94   10.21      14   18.59   24.07   30.25
696           SE   73.50   76.09   77.09   78.09   79.09   80.09   81.09
697           SQ       0       0      49     225     535     960    1500
698           ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.     (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   17        710
              V
              V
   22       C720
              .
              .
   35         .          720
              .            .
              .            .
   39       C720............
              V
              V
   41       C720
              .
              .
   56         .          725
              .            V
              .            V
   60         .        ED725
              .            .
              .            .
   65         .            .          730
              .            .            .
              .            .            .
   69         .        C730............
              .            V
              .            V
   71         .        ED730
              .            .
              .            .
   76         .            .          735
              .            .            .
              .            .            .
   80       C735........................
              V
              V
   82      ED735
              .
              .
   87         .          740
              .            .
              .            .
   91         .            .          742
              .            .            .
              .            .            .
   95         .        C742............
              .            V
              .            V
   97         .        C744
              .            .
              .            .
   99         .            .          743
              .            .            V
              .            .            V
  103         .            .        C744
```

```
                .          .          .
                .          .          .
108             .          .          .          744
                .          .          .           .
                .          .          .           .
112             .        C744.........................
                .          V
                .          V
114             .        C745
                .          .
                .          .
116             .          .        745
                .          .          .
                .          .          .
120             .        C745............
                .          V
                .          V
122             .        C735
                .          .
                .          .
124           C735............
                V
                V
126           C760
                .
                .
128             .        760
                .          .
                .          .
132           C760............
                V
                V
134           C790
                .
                .
142             .        780
                .          V
                .          V
146             .        C782
                .          .
                .          .
151             .          .        782
                .          .          .
                .          .          .
155             .          .          .          784
                .          .          .           V
                .          .          .           V
159             .          .          .         ED784
                .          .          .           .
                .          .          .           .
164             .        C782.........................
                .          V
                .          V
166             .        C790
                .          .
                .          .
171             .          .        790
                .          .          .
                .          .          .
175           C790.........................
                .
                .
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```
177          .          750
             .            V
             .            V
181          .         C770
             .            .
             .            .
186          .            .          770
             .            .            .
             .            .            .
190          .         C770............
             .            .
             .            .
192       C770............
             V
             V
194       C800
             .
             .
199          .          800
             .            .
             .            .
203       C800............
             V
             V
205       C810
             .
             .
210          .          810
             .            .
             .            .
214       C810............
             V
             V
216       C820
             .
             .
221          .          820
             .            .
             .            .
225       C820............
             V
             V
227       C830
             .
             .
232          .          910
             .            V
             .            V
236          .         C920
             .            .
             .            .
239          .            .          920
             .            .            .
             .            .            .
243          .         C920............
             .            V
             .            V
245          .         C930
             .            .
             .            .
250          .            .          930
             .            .            .
```

```
                .          .          .
254             .        C930............
                .          .
                .          .
257             .          .-------->     D930
256             .        C930
                .          V
                .          V
260             .        C830
                .          .
                .          .
265             .          .          830
                .          .            .
                .          .            .
269           C830........................
                .
                .
272             .-------->     D830
271           C830
                .
                .
275             .        A30
                .          V
                .          V
279             .       DA30
                .          .
                .          .
288             .          .-------->     A32
285             .        A31
                .          .
                .          .
291           CA31............
                V
                V
293           ED1010
                .
                .
298             .       1010
                .          .
                .          .
302           C1010...........
                V
                V
304           ED1010
                .
                .
309             .      1060A
                .          .
                .          .
313           C1060A..........
                V
                V
315           N1060A
                .
                .
320             .        10N
                .          .
                .          .
324             .          .        1060B
                .          .            .
                .          .            .
328           C1060B......................
```

```
          V
          V
330     N1060B
          .
          .
335       .        1060C
          .           .
          .           .
339     C1060C............
          V
          V
341     N1060C
          .
          .
346       .        1060D
          .           .
          .           .
350     C1060D............
          V
          V
352     N1060D
          V
          V
357      C1070
          .
          .
360       .           .<-------     A32
359       .        A32
          .           .
          .           .
364       .           .------->     A36
361       .        A32
          .           V
          .           V
367       .       C1030
          .           V
          .           V
372       .       C1030
          .           .
          .           .
374       .           .        1030
          .           .           .
          .           .           .
378       .       C1030............
          .           V
          .           V
380       .       C1040
          .           .
          .           .
382       .           .        1040
          .           .           V
          .           .           V
386       .           .      ED1040
          .           .           .
          .           .           .
391       .       C1040............
          .           V
          .           V
393       .       C1050
          .           .
          .           .
398       .           .        1050
```

```
                .          .          .
                .          .          .
402             .       C1050..........
                .          .
                .          .
404             .          .       1020
                .          .          .
                .          .          .
408             .       C1050..........
                .          V
                .          V
410             .       C1070
                .          .
                .          .
415             .          .       1070
                .          .          .
                .          .          .
419             .       C1070..........
                .          .
                .          .
421     C1070..........
           V
           V
423     C1080
           .
           .
428             .       1080
                .          .
                .          .
432     C1080..........
           .
           .
434             .       1090
                .          V
                .          V
438             .       C1100
                .          .
                .          .
443             .          .       1100
                .          .          .
                .          .          .
447             .       C1100..........
                .          .
                .          .
449     C1080..........
           .
           .
451             .         40
                .          V
                .          V
455             .       SD110
                .          .
                .          .
457             .          .         10
                .          .          .
                .          .          .
462             .          .          .        20
                .          .          .         .
                .          .          .         .
466             .          .       C10..........
                .          .          V
                .          .          V
```

```
468          .          .          C15
             .          .           .
             .          .           .
473          .          .           .          15
             .          .           .           .
             .          .           .           .
477          .          .          C15...........
             .          .           .
             .          .           .
480          .          .           .-------->     D15
479          .          .          C15
             .          .           V
             .          .           V
483          .          .         C110
             .          .           .
             .          .           .
488          .          .           .          50
             .          .           .           .
             .          .           .           .
492          .          .           .           .          110
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496          .          .           .         C110...........
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498          .          .           .           .          210
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502          .       SD210.......................................
             .          V
             .          V
504          .       SD220
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             .          .
506          .          .          70
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510          .          .           .          120
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514          .          .          C120..........
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516          .       SD220...........
             .          V
             .          V
518          .       SD230
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             .          .
520          .          .          80
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524          .          .           .          130
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528          .          .          C130..........
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             .          .           .
530          .          .           .          220
             .          .           .           V
             .          .           .           V
534          .          .           .         C230
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539                                                  230
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543                                          C230.........
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545                 SD230.......................
                      V
                      V
547                 SD90
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549                                  90
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553                 SD90............
                      V
                      V
555                 SD240
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557                                  140
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561                                                  240
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565                 SD240.......................
                      V
                      V
567                 SD250
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                      .
569                                  150
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573                                                  250
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577                 SD250.......................
                      V
                      V
579                 SD260
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581                                  100
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585                                                  160
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589                                  C160............
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591                                                  260
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595                 SD260.......................
                      V
                      V
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597          .        SD270
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599          .          .          170
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603          .          .           .          270
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607          .        SD270.......................
             .          .
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610          .          .-------->   ST270
609          .        SD270
             .          V
             .          V
613          .        SDBOX
             .          .
             .          .
615       C1080............
             V
             V
617       C1110N
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622          .        1110N
             .          .
             .          .
626       C1110N............
             V
             V
628       C1110S
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634          .          .<-------   ST270
633          .        ST270
             .          V
             .          V
635          .        C370
             .          .
             .          .
640          .          .          350
             .          .           .
             .          .           .
645          .          .           .-------->    D330
644          .          .        C350
             .          .           V
             .          .           V
648          .          .        C360
             .          .           .
             .          .           .
653          .          .           .          360
             .          .           .           .
             .          .           .           .
657          .          .           .           .          370
             .          .           .           .           .
             .          .           .           .           .
661          .        C370.....................................
             .          V
             .          V
663          .        C380N
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668             .          .        380N
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                .          .          .
672             .      C380N.............
                .          V
                .          V
674             .     C1110S
                .          .
                .          .
676             .          .       1110S
                .          .          .
                .          .          .
680        C1110S.........................
                V
                V
682        C1120
                .
                .
687             .       1120
                .          .
                .          .
691        C1120............
                V
                V
693        LAKE5
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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*          SEPTEMBER 1990               *
*           VERSION 4.0                 *
*                                       *
*  RUN DATE  11/01/1994  TIME  14:12:55 *
*                                       *
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104               *
*                                       *
*****************************************
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                    84TH STREET AND CHOLLA ROAD
                    2-5-10-25-50-100 yr STORM
                    INTERIM CONDITION:
                    ALTERNATE 2A final design (MODIFIED)
                    --ASSUME NO SPLIT IN CACTUS/84TH INTERSECTION
                    --NEW STORM SEWER IN CACTUS (INclude ADOT R/W FOR INTERIM)
                    --CACTUS SD TO OUTFALL AT BOX-CULVERT
                    --INTERCEPTOR AT CORTEZ IN 84TH STREET
                    --No NEW PIMA CHANNEL
                    --NEW INTERIM DETENTION BASINS WEST OF PIMA & NORTH OF SWEETWATER

                    --FILE SCCSW4.DAT
                  ***************************************************************

15 IO        OUTPUT CONTROL VARIABLES
                  IPRNT          5  PRINT CONTROL
                  IPLOT          0  PLOT CONTROL
                  QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT        HYDROGRAPH TIME DATA
                   NMIN          2  MINUTES IN COMPUTATION INTERVAL
                  IDATE     1    0  STARTING DATE
                  ITIME       0000  STARTING TIME
                     NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                 NDDATE     1    0  ENDING DATE
                 NDTIME       0958  ENDING TIME
                 ICENT ,        19  CENTURY MARK

             COMPUTATION INTERVAL     .03 HOURS
                  TOTAL TIME BASE    9.97 HOURS

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

   JP        MULTI-PLAN OPTION
                 NPLAN          1  NUMBER OF PLANS

   JR        MULTI-RATIO OPTION
                RATIOS OF PRECIPITATION
                .36      .53      .62      .76      .88      1.00
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6
					.36	.53	.62	.76	.88	1.00
HYDROGRAPH AT	710	.01	1	FLOW	9.	15.	18.	24.	29.	34.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
ROUTED TO	C720	.01	1	FLOW	9.	15.	19.	24.	29.	34.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
			** PEAK STAGES IN FEET **							
			1	STAGE	97.16	97.45	97.56	97.72	97.87	97.99
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
HYDROGRAPH AT	720	.07	1	FLOW	5.	21.	32.	53.	73.	95.
				TIME	3.37	3.30	3.30	3.30	3.27	3.27
2 COMBINED AT	C720	.07	1	FLOW	10.	27.	40.	64.	86.	111.
				TIME	3.13	3.23	3.23	3.27	3.23	3.23
ROUTED TO	C720	.07	1	FLOW	10.	27.	42.	65.	88.	113.
				TIME	3.27	3.33	3.27	3.33	3.30	3.27
			** PEAK STAGES IN FEET **							
			1	STAGE	99.84	99.99	100.07	100.15	100.24	100.32
				TIME	3.27	3.33	3.27	3.33	3.30	3.27
HYDROGRAPH AT	725	.07	1	FLOW	38.	64.	80.	107.	132.	157.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
ROUTED TO	ED725	.07	1	FLOW	25.	47.	61.	79.	92.	119.
				TIME	3.40	3.37	3.37	3.37	3.37	3.37
			** PEAK STAGES IN FEET **							
			1	STAGE	1472.52	1472.76	1472.89	1473.12	1473.37	1473.59
				TIME	3.40	3.37	3.37	3.37	3.37	3.37
HYDROGRAPH AT	730	.01	1	FLOW	5.	8.	10.	14.	17.	21.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
2 COMBINED AT	C730	.07	1	FLOW	26.	49.	62.	81.	95.	122.
				TIME	3.40	3.37	3.37	3.37	3.37	3.37
ROUTED TO	ED730	.07	1	FLOW	17.	35.	49.	75.	90.	112.
				TIME	3.67	3.60	3.53	3.50	3.47	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	1468.60	1468.88	1469.03	1469.15	1469.22	1469.32
				TIME	3.67	3.60	3.53	3.50	3.47	3.43
HYDROGRAPH AT	735	.05	1	FLOW	23.	40.	49.	66.	81.	96.
				TIME	3.33	3.33	3.33	3.33	3.33	3.33
3 COMBINED AT	C735	.20	1	FLOW	42.	91.	122.	188.	242.	303.
				TIME	3.40	3.40	3.37	3.40	3.37	3.37

ROUTED TO	ED735	.20	1	FLOW	26.	66.	94.	153.	204.	288.
				TIME	3.83	3.67	3.63	3.57	3.50	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	1466.52	1467.05	1467.32	1467.71	1468.01	1468.15
				TIME	3.83	3.67	3.63	3.57	3.50	3.43
HYDROGRAPH AT	740	.00	1	FLOW	1.	1.	2.	2.	2.	3.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
HYDROGRAPH AT	742	.01	1	FLOW	1.	4.	6.	9.	13.	17.
				TIME	3.23	3.17	3.17	3.17	3.17	3.17
2 COMBINED AT	C742	.01	1	FLOW	1.	5.	7.	11.	15.	19.
				TIME	3.17	3.17	3.17	3.17	3.13	3.13
ROUTED TO	C744	.01	1	FLOW	1.	5.	7.	11.	15.	19.
				TIME	3.17	3.17	3.17	3.17	3.17	3.13
HYDROGRAPH AT	743	.00	1	FLOW	3.	6.	7.	10.	12.	14.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
ROUTED TO	C744	.00	1	FLOW	3.	6.	7.	10.	12.	14.
				TIME	3.13	3.17	3.17	3.17	3.17	3.17
			** PEAK STAGES IN FEET **							
			1	STAGE	99.39	99.49	99.55	99.64	99.66	99.67
				TIME	3.13	3.17	3.17	3.17	3.17	3.17
HYDROGRAPH AT	744	.01	1	FLOW	9.	14.	16.	20.	24.	27.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
3 COMBINED AT	C744	.02	1	FLOW	14.	24.	31.	41.	50.	60.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
ROUTED TO	C745	.02	1	FLOW	14.	24.	30.	40.	49.	59.
				TIME	3.17	3.20	3.17	3.17	3.17	3.17
HYDROGRAPH AT	745	.02	1	FLOW	2.	6.	10.	16.	22.	29.
				TIME	3.33	3.27	3.23	3.23	3.23	3.23
2 COMBINED AT	C745	.04	1	FLOW	14.	29.	39.	55.	70.	85.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
ROUTED TO	C735	.04	1	FLOW	14.	29.	38.	55.	70.	85.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C735	.24	1	FLOW	27.	72.	103.	169.	227.	324.
				TIME	3.77	3.63	3.60	3.53	3.50	3.43
ROUTED TO	C760	.24	1	FLOW	27.	72.	103.	169.	227.	323.
				TIME	3.80	3.63	3.60	3.53	3.50	3.43
HYDROGRAPH AT	760	.01	1	FLOW	15.	23.	27.	33.	39.	44.
				TIME	3.23	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C760	.25	1	FLOW	32.	77.	110.	180.	241.	345.
				TIME	3.23	3.63	3.60	3.53	3.50	3.43
ROUTED TO	C790	.25	1	FLOW	32.	77.	110.	180.	240.	350.
				TIME	3.23	3.63	3.60	3.53	3.50	3.43

			** PEAK STAGES IN FEET **							
			1	STAGE	95.78	96.41	96.80	97.52	98.08	99.00
				TIME	3.23	3.63	3.60	3.53	3.50	3.43
HYDROGRAPH AT	780	.02	1	FLOW	6.	13.	17.	25.	32.	39.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
ROUTED TO	C782	.02	1	FLOW	6.	13.	17.	24.	33.	40.
				TIME	3.27	3.23	3.23	3.27	3.23	3.23
			** PEAK STAGES IN FEET **							
			1	STAGE	98.58	98.81	98.89	99.03	99.15	99.23
				TIME	3.27	3.23	3.23	3.27	3.23	3.23
HYDROGRAPH AT	782	.01	1	FLOW	1.	4.	6.	10.	13.	17.
				TIME	3.33	3.27	3.27	3.23	3.23	3.23
HYDROGRAPH AT	784	.05	1	FLOW	27.	46.	58.	77.	95.	113.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
ROUTED TO	ED784	.05	1	FLOW	9.	15.	18.	24.	29.	35.
				TIME	3.57	3.60	3.60	3.60	3.60	3.60
			** PEAK STAGES IN FEET **							
			1	STAGE	1389.88	1390.20	1390.38	1390.70	1390.98	1391.27
				TIME	3.57	3.60	3.60	3.60	3.60	3.60
3 COMBINED AT	C782	.08	1	FLOW	13.	26.	35.	50.	63.	77.
				TIME	3.33	3.27	3.30	3.27	3.27	3.23
ROUTED TO	C790	.08	1	FLOW	14.	27.	37.	50.	63.	77.
				TIME	3.47	3.47	3.40	3.37	3.37	3.40
			** PEAK STAGES IN FEET **							
			1	STAGE	98.83	99.07	99.20	99.35	99.49	99.61
				TIME	3.47	3.47	3.40	3.37	3.37	3.40
HYDROGRAPH AT	790	.11	1	FLOW	9.	34.	53.	87.	121.	156.
				TIME	3.40	3.33	3.33	3.30	3.30	3.30
3 COMBINED AT	C790	.44	1	FLOW	49.	123.	177.	287.	390.	547.
				TIME	3.47	3.57	3.43	3.47	3.40	3.43
HYDROGRAPH AT	750	.00	1	FLOW	5.	8.	10.	12.	14.	16.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
ROUTED TO	C770	.00	1	FLOW	6.	9.	10.	12.	15.	16.
				TIME	3.20	3.17	3.17	3.20	3.20	3.20
			** PEAK STAGES IN FEET **							
			1	STAGE	99.84	99.88	99.89	99.93	99.97	100.00
				TIME	3.20	3.17	3.17	3.20	3.20	3.20
HYDROGRAPH AT	770	.01	1	FLOW	8.	12.	15.	18.	21.	24.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C770	.01	1	FLOW	12.	19.	22.	27.	31.	36.
				TIME	3.20	3.17	3.17	3.13	3.13	3.17
2 COMBINED AT	C770	.45	1	FLOW	53.	127.	183.	293.	398.	555.
				TIME	3.47	3.47	3.43	3.47	3.40	3.43

ROUTED TO	C800	.45	1	FLOW	53.	127.	183.	293.	399.	557.
				TIME	3.47	3.47	3.43	3.47	3.43	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	101.03	101.66	102.03	102.60	103.03	103.59
				TIME	3.47	3.47	3.43	3.47	3.43	3.43
HYDROGRAPH AT	800	.02	1	FLOW	2.	6.	10.	16.	22.	29.
				TIME	3.30	3.23	3.23	3.23	3.23	3.20
2 COMBINED AT	C800	.46	1	FLOW	54.	130.	189.	301.	410.	571.
				TIME	3.47	3.47	3.43	3.47	3.43	3.43
ROUTED TO	C810	.46	1	FLOW	55.	132.	189.	300.	412.	564.
				TIME	3.30	3.50	3.47	3.50	3.47	3.47
			** PEAK STAGES IN FEET **							
			1	STAGE	100.63	101.08	101.32	101.72	102.07	102.45
				TIME	3.30	3.50	3.47	3.50	3.47	3.47
HYDROGRAPH AT	810	.04	1	FLOW	23.	38.	48.	64.	79.	94.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
2 COMBINED AT	C810	.51	1	FLOW	77.	155.	220.	342.	464.	622.
				TIME	3.30	3.47	3.47	3.43	3.43	3.47
ROUTED TO	C820	.51	1	FLOW	77.	156.	222.	347.	468.	622.
				TIME	3.37	3.47	3.43	3.47	3.43	3.50
			** PEAK STAGES IN FEET **							
			1	STAGE	100.76	101.18	101.45	101.87	102.22	102.60
				TIME	3.37	3.47	3.43	3.47	3.43	3.50
HYDROGRAPH AT	820	.04	1	FLOW	21.	36.	45.	61.	76.	91.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C820	.54	1	FLOW	88.	176.	242.	370.	501.	652.
				TIME	3.37	3.37	3.43	3.47	3.43	3.50
ROUTED TO	C830	.54	1	FLOW	88.	176.	242.	370.	500.	653.
				TIME	3.37	3.30	3.43	3.47	3.43	3.50
			** PEAK STAGES IN FEET **							
			1	STAGE	100.52	100.81	100.99	101.29	101.56	101.84
				TIME	3.37	3.30	3.43	3.47	3.43	3.50
HYDROGRAPH AT	910	.05	1	FLOW	41.	65.	78.	99.	118.	138.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
ROUTED TO	C920	.05	1	FLOW	41.	64.	77.	98.	117.	137.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
HYDROGRAPH AT	920	.03	1	FLOW	15.	22.	27.	35.	43.	51.
				TIME	3.27	3.30	3.30	3.30	3.30	3.30
2 COMBINED AT	C920	.08	1	FLOW	55.	86.	104.	133.	159.	186.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
ROUTED TO	C930	.08	1	FLOW	56.	86.	103.	133.	159.	187.
				TIME	3.27	3.30	3.27	3.30	3.30	3.27

			** PEAK STAGES IN FEET **							
			1	STAGE	99.69	99.86	99.93	100.04	100.13	100.22
				TIME	3.27	3.30	3.27	3.30	3.30	3.27
HYDROGRAPH AT	930	.06	1	FLOW	26.	46.	57.	77.	96.	115.
				TIME	3.30	3.30	3.30	3.30	3.30	3.30
2 COMBINED AT	C930	.14	1	FLOW	82.	132.	161.	211.	254.	300.
				TIME	3.27	3.30	3.30	3.30	3.30	3.27
DIVERSION TO	D930	.14	1	FLOW	51.	51.	51.	51.	51.	51.
				TIME	3.17	3.10	3.07	3.03	3.03	3.00
HYDROGRAPH AT	C930	.14	1	FLOW	31.	81.	110.	160.	203.	249.
				TIME	3.27	3.30	3.30	3.30	3.30	3.27
ROUTED TO	C830	.14	1	FLOW	31.	83.	114.	161.	203.	252.
				TIME	3.30	3.33	3.30	3.33	3.30	3.30
			** PEAK STAGES IN FEET **							
			1	STAGE	99.66	99.97	100.09	100.27	100.39	100.53
				TIME	3.30	3.33	3.30	3.33	3.30	3.30
HYDROGRAPH AT	830	.00	1	FLOW	3.	4.	5.	6.	7.	8.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
3 COMBINED AT	C830	.68	1	FLOW	118.	256.	347.	509.	676.	861.
				TIME	3.37	3.30	3.33	3.37	3.37	3.40
DIVERSION TO	D830	.68	1	FLOW	0.	0.	0.	0.	109.	272.
				TIME	.03	.03	.03	.03	3.37	3.40
HYDROGRAPH AT	C830	.68	1	FLOW	118.	256.	347.	509.	567.	589.
				TIME	3.37	3.30	3.33	3.37	3.37	3.40
HYDROGRAPH AT	A30	.40	1	FLOW	50.	117.	163.	244.	321.	403.
				TIME	3.57	3.60	3.57	3.57	3.57	3.57
ROUTED TO	DA30	.40	1	FLOW	47.	105.	144.	210.	271.	311.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
			** PEAK STAGES IN FEET **							
			1	STAGE	35.14	36.34	37.10	38.11	39.07	40.12
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
DIVERSION TO	A32	.40	1	FLOW	46.	97.	130.	190.	244.	281.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
HYDROGRAPH AT	A31	.40	1	FLOW	1.	9.	14.	20.	26.	30.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
2 COMBINED AT	CA31	1.08	1	FLOW	118.	256.	350.	519.	580.	610.
				TIME	3.37	3.30	3.33	3.40	3.37	3.50
ROUTED TO	ED1010	1.08	1	FLOW	119.	257.	355.	519.	583.	611.
				TIME	3.37	3.40	3.37	3.40	3.40	3.53
			** PEAK STAGES IN FEET **							
			1	STAGE	98.14	99.32	99.76	100.17	100.31	100.36
				TIME	3.37	3.40	3.37	3.40	3.40	3.53
HYDROGRAPH AT	1010	.01	1	FLOW	1.	6.	9.	15.	21.	27.

				TIME	3.20	3.13	3.13	3.13	3.13	3.13
2 COMBINED AT	C1010	1.10	1	FLOW	120.	259.	359.	524.	588.	616.
				TIME	3.37	3.40	3.37	3.40	3.40	3.53
ROUTED TO	ED1010	1.10	1	FLOW	74.	240.	345.	520.	585.	614.
				TIME	3.63	3.47	3.43	3.43	3.43	3.53
			** PEAK STAGES IN FEET **							
			1	STAGE	27.71	28.20	28.33	28.53	28.61	28.64
				TIME	3.63	3.47	3.43	3.43	3.43	3.53
HYDROGRAPH AT	1060A	.00	1	FLOW	0.	1.	2.	3.	4.	5.
				TIME	3.17	3.13	3.10	3.10	3.10	3.10
2 COMBINED AT	C1060A	1.10	1	FLOW	74.	240.	346.	521.	585.	615.
				TIME	3.63	3.47	3.40	3.43	3.43	3.53
ROUTED TO	N1060A	1.10	1	FLOW	60.	176.	350.	541.	649.	670.
				TIME	3.90	3.70	3.53	3.43	3.37	3.33
			** PEAK STAGES IN FEET **							
			1	STAGE	24.21	26.52	27.09	27.21	27.28	27.29
				TIME	3.90	3.70	3.53	3.43	3.37	3.33
HYDROGRAPH AT	10N	.00	1	FLOW	2.	4.	5.	7.	8.	10.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
HYDROGRAPH AT	1060B	.00	1	FLOW	1.	2.	4.	6.	8.	11.
				TIME	3.17	3.13	3.10	3.10	3.10	3.10
3 COMBINED AT	C1060B	1.10	1	FLOW	61.	176.	351.	544.	653.	676.
				TIME	3.90	3.70	3.53	3.43	3.37	3.33
ROUTED TO	N1060B	1.10	1	FLOW	45.	117.	163.	417.	563.	616.
				TIME	4.47	4.20	4.13	3.67	3.60	3.57
			** PEAK STAGES IN FEET **							
			1	STAGE	21.91	23.35	24.26	25.14	25.23	25.26
				TIME	4.47	4.20	4.13	3.67	3.60	3.57
HYDROGRAPH AT	1060C	.00	1	FLOW	1.	3.	4.	7.	9.	12.
				TIME	3.17	3.13	3.10	3.10	3.10	3.10
2 COMBINED AT	C1060C	1.11	1	FLOW	45.	117.	163.	418.	564.	617.
				TIME	4.47	4.20	4.13	3.67	3.60	3.57
ROUTED TO	N1060C	1.11	1	FLOW	37.	88.	121.	174.	342.	503.
				TIME	5.17	4.87	4.77	4.53	3.90	3.80
			** PEAK STAGES IN FEET **							
			1	STAGE	19.73	20.75	21.42	22.48	23.09	23.19
				TIME	5.17	4.87	4.77	4.53	3.90	3.80
HYDROGRAPH AT	1060D	.00	1	FLOW	1.	3.	4.	7.	9.	12.
				TIME	3.17	3.13	3.10	3.10	3.10	3.10
2 COMBINED AT	C1060D	1.11	1	FLOW	37.	88.	121.	174.	342.	503.
				TIME	5.17	4.87	4.77	4.53	3.90	3.80
ROUTED TO	N1060D	1.11	1	FLOW	34.	79.	108.	156.	187.	305.
				TIME	5.73	5.40	5.30	5.10	4.87	4.03

			** PEAK STAGES IN FEET **							
			1	STAGE	18.51	19.18	19.62	20.34	20.80	21.07
				TIME	5.73	5.40	5.30	5.10	4.87	4.03
ROUTED TO	C1070	1.11	1	FLOW	34.	79.	108.	156.	187.	298.
				TIME	5.73	5.40	5.30	5.10	4.87	4.07
HYDROGRAPH AT	A32	.00	1	FLOW	46.	97.	130.	190.	244.	281.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
DIVERSION TO	A36	.00	1	FLOW	45.	87.	114.	154.	192.	218.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
HYDROGRAPH AT	A32	.00	1	FLOW	1.	10.	16.	35.	53.	63.
				TIME	3.70	3.73	3.73	3.77	3.77	3.80
ROUTED TO	C1030	.00	1	FLOW	1.	10.	16.	35.	53.	63.
				TIME	3.80	3.80	3.80	3.80	3.77	3.80
			** PEAK STAGES IN FEET **							
			1	STAGE	95.14	95.88	96.18	96.76	97.16	97.35
				TIME	3.80	3.80	3.80	3.80	3.77	3.80
ROUTED TO	C1030	.00	1	FLOW	1.	10.	16.	35.	53.	63.
				TIME	3.80	3.80	3.80	3.80	3.77	3.83
HYDROGRAPH AT	1030	.01	1	FLOW	1.	4.	6.	10.	14.	18.
				TIME	3.27	3.20	3.20	3.20	3.17	3.17
2 COMBINED AT	C1030	.01	1	FLOW	1.	10.	17.	36.	54.	65.
				TIME	3.80	3.80	3.80	3.80	3.77	3.80
ROUTED TO	C1040	.01	1	FLOW	1.	10.	17.	36.	54.	64.
				TIME	3.80	3.80	3.80	3.80	3.77	3.83
HYDROGRAPH AT	1040	.02	1	FLOW	9.	17.	22.	32.	40.	49.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
ROUTED TO	ED1040	.02	1	FLOW	2.	4.	5.	6.	8.	9.
				TIME	3.50	3.57	3.57	3.57	3.57	3.57
			** PEAK STAGES IN FEET **							
			1	STAGE	24.68	25.02	25.23	25.58	25.87	26.18
				TIME	3.50	3.57	3.57	3.57	3.57	3.57
2 COMBINED AT	C1040	.03	1	FLOW	3.	14.	21.	42.	61.	73.
				TIME	3.77	3.80	3.80	3.80	3.77	3.80
ROUTED TO	C1050	.03	1	FLOW	3.	14.	21.	42.	61.	73.
				TIME	3.80	3.80	3.80	3.80	3.80	3.83
			** PEAK STAGES IN FEET **							
			1	STAGE	95.46	96.07	96.33	96.89	97.28	97.49
				TIME	3.80	3.80	3.80	3.80	3.80	3.83
HYDROGRAPH AT	1050	.00	1	FLOW	0.	2.	3.	5.	7.	9.
				TIME	3.17	3.13	3.13	3.10	3.10	3.10
2 COMBINED AT	C1050	.03	1	FLOW	3.	14.	22.	43.	62.	74.
				TIME	3.80	3.77	3.80	3.80	3.77	3.83

HYDROGRAPH AT	1020	.00	1	FLOW	1.	1.	2.	3.	4.	5.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C1050	.04	1	FLOW	4.	14.	22.	43.	62.	74.
				TIME	3.33	3.77	3.80	3.80	3.77	3.83
ROUTED TO	C1070	.04	1	FLOW	4.	14.	22.	43.	62.	74.
				TIME	3.50	3.90	3.87	3.87	3.83	3.90
			** PEAK STAGES IN FEET **							
			1	STAGE	95.40	95.96	96.22	96.76	97.15	97.34
				TIME	3.50	3.90	3.87	3.87	3.83	3.90
HYDROGRAPH AT	1070	.03	1	FLOW	9.	19.	26.	38.	50.	62.
				TIME	3.20	3.20	3.20	3.20	3.17	3.17
2 COMBINED AT	C1070	.06	1	FLOW	10.	26.	37.	55.	74.	92.
				TIME	3.20	3.27	3.23	3.20	3.20	3.20
2 COMBINED AT	C1070	1.18	1	FLOW	35.	81.	111.	161.	208.	370.
				TIME	5.70	5.40	5.30	5.07	4.17	4.07
ROUTED TO	C1080	1.18	1	FLOW	35.	81.	111.	161.	208.	377.
				TIME	5.93	5.57	5.43	5.23	4.30	4.20
			** PEAK STAGES IN FEET **							
			1	STAGE	96.09	96.75	97.10	97.51	97.86	98.79
				TIME	5.93	5.57	5.43	5.23	4.30	4.20
HYDROGRAPH AT	1080	.05	1	FLOW	18.	36.	48.	68.	87.	106.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C1080	1.23	1	FLOW	35.	82.	113.	163.	212.	382.
				TIME	5.93	5.57	5.43	5.20	4.30	4.20
HYDROGRAPH AT	1090	.03	1	FLOW	12.	24.	33.	48.	62.	76.
				TIME	3.17	3.20	3.20	3.17	3.17	3.17
ROUTED TO	C1100	.03	1	FLOW	12.	24.	33.	48.	62.	76.
				TIME	3.17	3.20	3.20	3.17	3.17	3.17
			** PEAK STAGES IN FEET **							
			1	STAGE	98.75	98.75	98.75	98.75	98.75	98.75
				TIME	3.17	3.20	3.17	3.17	3.17	3.17
HYDROGRAPH AT	1100	.07	1	FLOW	14.	29.	39.	56.	72.	90.
				TIME	3.43	3.47	3.47	3.43	3.43	3.43
2 COMBINED AT	C1100	.10	1	FLOW	20.	41.	55.	79.	102.	126.
				TIME	3.27	3.30	3.30	3.30	3.27	3.27
2 COMBINED AT	C1080	1.33	1	FLOW	40.	86.	118.	177.	236.	400.
				TIME	3.23	3.47	3.43	3.40	3.37	4.20
HYDROGRAPH AT	40	.03	1	FLOW	12.	20.	25.	33.	40.	47.
				TIME	3.47	3.47	3.47	3.47	3.47	3.47
ROUTED TO	SD110	.03	1	FLOW	12.	20.	25.	33.	40.	47.
				TIME	3.47	3.47	3.47	3.47	3.47	3.47
HYDROGRAPH AT	10	.01	1	FLOW	3.	7.	10.	13.	16.	19.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13

HYDROGRAPH AT	20	.00	1	FLOW	0.	1.	1.	2.	3.	4.
				TIME	3.37	3.30	3.30	3.27	3.27	3.27
2 COMBINED AT	C10	.01	1	FLOW	4.	8.	10.	14.	18.	22.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
ROUTED TO	C15	.01	1	FLOW	5.	9.	11.	15.	19.	23.
				TIME	3.43	3.37	3.33	3.33	3.30	3.30
			** PEAK STAGES IN FEET **							
			1	STAGE	97.49	97.67	97.75	97.85	97.95	98.03
				TIME	3.43	3.37	3.33	3.33	3.30	3.30
HYDROGRAPH AT	15	.01	1	FLOW	4.	8.	11.	15.	18.	22.
				TIME	3.13	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C15	.01	1	FLOW	6.	11.	15.	20.	25.	30.
				TIME	3.43	3.37	3.33	3.30	3.30	3.30
DIVERSION TO	D15	.01	1	FLOW	6.	11.	15.	19.	19.	19.
				TIME	3.43	3.37	3.33	3.30	3.27	3.30
HYDROGRAPH AT	C15	.01	1	FLOW	0.	0.	0.	1.	6.	11.
				TIME	.03	.03	.03	3.30	3.30	3.30
ROUTED TO	C110	.01	1	FLOW	0.	0.	0.	0.	6.	13.
				TIME	.03	.03	.03	3.57	3.43	3.40
			** PEAK STAGES IN FEET **							
			1	STAGE	101.27	101.27	101.27	101.40	101.60	101.70
				TIME	.00	.00	.00	3.57	3.43	3.40
HYDROGRAPH AT	50	.01	1	FLOW	4.	7.	8.	11.	14.	17.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
HYDROGRAPH AT	110	.00	1	FLOW	2.	3.	3.	4.	5.	6.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C110	.01	1	FLOW	5.	9.	11.	14.	18.	21.
				TIME	3.13	3.13	3.13	3.17	3.17	3.17
HYDROGRAPH AT	210	.00	1	FLOW	4.	6.	7.	9.	10.	12.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
4 COMBINED AT	SD210	.05	1	FLOW	14.	24.	29.	38.	53.	68.
				TIME	3.40	3.43	3.43	3.43	3.43	3.40
ROUTED TO	SD220	.05	1	FLOW	14.	24.	29.	38.	52.	67.
				TIME	3.40	3.43	3.43	3.43	3.43	3.40
HYDROGRAPH AT	70	.01	1	FLOW	5.	9.	12.	16.	20.	25.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
HYDROGRAPH AT	120	.00	1	FLOW	1.	1.	1.	2.	2.	2.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
2 COMBINED AT	C120	.01	1	FLOW	6.	10.	13.	17.	21.	25.
				TIME	3.20	3.23	3.23	3.23	3.23	3.23
2 COMBINED AT	SD220	.07	1	FLOW	19.	32.	39.	52.	64.	83.
				TIME	3.20	3.23	3.23	3.23	3.23	3.40

ROUTED TO	SD230	.07	1	FLOW	19.	32.	39.	52.	64.	83.
				TIME	3.23	3.23	3.27	3.27	3.27	3.40
HYDROGRAPH AT	80	.00	1	FLOW	1.	2.	3.	4.	4.	5.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
HYDROGRAPH AT	130	.00	1	FLOW	1.	1.	1.	1.	2.	2.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
2 COMBINED AT	C130	.00	1	FLOW	2.	3.	3.	5.	6.	7.
				TIME	3.10	3.10	3.13	3.13	3.13	3.13
HYDROGRAPH AT	220	.00	1	FLOW	2.	3.	3.	4.	5.	6.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
ROUTED TO	C230	.00	1	FLOW	2.	3.	3.	4.	5.	6.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
			** PEAK STAGES IN FEET **							
			1	STAGE	97.88	97.89	97.90	97.90	97.91	97.91
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
HYDROGRAPH AT	230	.00	1	FLOW	1.	2.	3.	3.	4.	4.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
2 COMBINED AT	C230	.00	1	FLOW	3.	5.	6.	8.	9.	10.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
3 COMBINED AT	SD230	.07	1	FLOW	23.	37.	45.	59.	72.	86.
				TIME	3.17	3.17	3.17	3.20	3.20	3.40
ROUTED TO	SD90	.07	1	FLOW	22.	36.	45.	59.	72.	85.
				TIME	3.17	3.17	3.20	3.20	3.20	3.40
HYDROGRAPH AT	90	.03	1	FLOW	9.	18.	24.	34.	43.	53.
				TIME	3.27	3.30	3.30	3.27	3.27	3.27
2 COMBINED AT	SD90	.10	1	FLOW	31.	53.	67.	91.	113.	138.
				TIME	3.23	3.27	3.27	3.27	3.27	3.27
ROUTED TO	SD240	.10	1	FLOW	31.	53.	67.	91.	113.	137.
				TIME	3.23	3.27	3.27	3.27	3.27	3.27
HYDROGRAPH AT	140	.00	1	FLOW	1.	2.	3.	3.	4.	4.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
HYDROGRAPH AT	240	.00	1	FLOW	3.	4.	5.	6.	7.	8.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
3 COMBINED AT	SD240	.10	1	FLOW	33.	55.	69.	93.	116.	141.
				TIME	3.20	3.23	3.23	3.23	3.23	3.27
ROUTED TO	SD250	.10	1	FLOW	32.	55.	69.	93.	116.	140.
				TIME	3.20	3.23	3.27	3.27	3.27	3.27
HYDROGRAPH AT	150	.00	1	FLOW	3.	5.	6.	8.	9.	10.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
HYDROGRAPH AT	250	.00	1	FLOW	2.	4.	4.	5.	6.	7.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07

3 COMBINED AT	SD250	.11	1	FLOW	36.	59.	73.	98.	121.	146.
				TIME	3.17	3.20	3.23	3.23	3.23	3.27
ROUTED TO	SD260	.11	1	FLOW	36.	59.	73.	98.	121.	146.
				TIME	3.17	3.20	3.23	3.23	3.23	3.27
HYDROGRAPH AT	100	.01	1	FLOW	3.	6.	8.	11.	14.	17.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
HYDROGRAPH AT	160	.00	1	FLOW	1.	2.	2.	2.	3.	3.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
2 COMBINED AT	C160	.01	1	FLOW	4.	7.	9.	12.	15.	19.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
HYDROGRAPH AT	260	.00	1	FLOW	2.	3.	4.	5.	5.	6.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
3 COMBINED AT	SD260	.11	1	FLOW	40.	66.	82.	110.	135.	162.
				TIME	3.17	3.17	3.20	3.20	3.20	3.20
ROUTED TO	SD270	.11	1	FLOW	40.	66.	82.	110.	135.	161.
				TIME	3.17	3.20	3.20	3.20	3.20	3.20
HYDROGRAPH AT	170	.00	1	FLOW	0.	1.	1.	1.	1.	2.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
HYDROGRAPH AT	270	.00	1	FLOW	2.	3.	3.	4.	4.	5.
				TIME	3.07	3.07	3.07	3.07	3.07	3.07
3 COMBINED AT	SD270	.12	1	FLOW	41.	68.	84.	112.	138.	165.
				TIME	3.17	3.17	3.20	3.20	3.20	3.20
DIVERSION TO	ST270	.12	1	FLOW	0.	0.	0.	0.	7.	34.
				TIME	.03	.03	.03	.03	3.20	3.20
HYDROGRAPH AT	SD270	.12	1	FLOW	41.	68.	84.	112.	131.	131.
				TIME	3.17	3.17	3.20	3.20	3.17	3.10
ROUTED TO	SDBOX	.12	1	FLOW	41.	68.	84.	112.	131.	131.
				TIME	3.17	3.20	3.20	3.20	3.20	3.13
2 COMBINED AT	C1080	1.45	1	FLOW	81.	146.	188.	270.	357.	421.
				TIME	3.20	3.20	3.23	3.40	3.37	4.20
ROUTED TO	C1110N	1.45	1	FLOW	81.	151.	193.	269.	355.	420.
				TIME	3.27	3.27	3.23	3.43	3.40	4.23
			** PEAK STAGES IN FEET **							
			1	STAGE	93.57	93.82	93.95	94.19	94.40	94.54
				TIME	3.27	3.27	3.23	3.43	3.40	4.23
HYDROGRAPH AT	1110N	.00	1	FLOW	1.	2.	3.	5.	7.	9.
				TIME	3.07	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C1110N	1.45	1	FLOW	81.	152.	194.	270.	356.	422.
				TIME	3.27	3.27	3.23	3.43	3.40	3.40
ROUTED TO	C1110S	1.45	1	FLOW	82.	157.	198.	272.	361.	425.
				TIME	3.37	3.23	3.23	3.30	3.43	3.43
			** PEAK STAGES IN FEET **							

			1	STAGE	93.57	93.84	93.97	94.20	94.41	94.55
				TIME	3.37	3.23	3.23	3.30	3.43	3.43
HYDROGRAPH AT	ST270	.00	1	FLOW	0.	0.	0.	0.	7.	34.
				TIME	.03	.03	.03	.03	3.20	3.20
ROUTED TO	C370	.00	1	FLOW	0.	0.	0.	0.	7.	42.
				TIME	.03	.03	.03	.03	3.30	3.23
			** PEAK STAGES IN FEET **							
			1	STAGE	98.61	98.61	98.61	98.61	98.88	99.13
				TIME	.00	.00	.00	.00	3.30	3.23
HYDROGRAPH AT	350	.00	1	FLOW	1.	2.	3.	4.	6.	7.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
DIVERSION TO	D330	.00	1	FLOW	1.	1.	1.	2.	3.	3.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
HYDROGRAPH AT	C350	.00	1	FLOW	1.	1.	1.	2.	3.	3.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
ROUTED TO	C360	.00	1	FLOW	0.	1.	2.	2.	3.	3.
				TIME	3.37	3.27	3.27	3.23	3.23	3.27
			** PEAK STAGES IN FEET **							
			1	STAGE	98.71	98.76	98.78	98.80	98.82	98.84
				TIME	3.37	3.27	3.27	3.23	3.23	3.27
HYDROGRAPH AT	360	.01	1	FLOW	5.	10.	13.	19.	24.	30.
				TIME	3.17	3.20	3.20	3.20	3.17	3.17
HYDROGRAPH AT	370	.01	1	FLOW	2.	5.	6.	9.	12.	15.
				TIME	3.13	3.17	3.17	3.13	3.13	3.13
4 COMBINED AT	C370	.02	1	FLOW	7.	14.	19.	28.	37.	84.
				TIME	3.17	3.17	3.17	3.20	3.17	3.23
ROUTED TO	C380N	.02	1	FLOW	7.	14.	20.	28.	37.	80.
				TIME	3.23	3.27	3.23	3.20	3.23	3.27
			** PEAK STAGES IN FEET **							
			1	STAGE	98.88	98.95	99.00	99.04	99.09	99.27
				TIME	3.23	3.27	3.23	3.20	3.23	3.27
HYDROGRAPH AT	380N	.01	1	FLOW	2.	4.	6.	8.	10.	13.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C380N	.03	1	FLOW	9.	18.	25.	36.	47.	91.
				TIME	3.23	3.23	3.23	3.20	3.23	3.27
ROUTED TO	C1110S	.03	1	FLOW	9.	18.	25.	36.	47.	87.
				TIME	3.23	3.27	3.23	3.20	3.23	3.27
HYDROGRAPH AT	1110S	.02	1	FLOW	6.	11.	15.	22.	30.	39.
				TIME	3.10	3.13	3.13	3.13	3.13	3.13
3 COMBINED AT	C1110S	1.50	1	FLOW	90.	182.	233.	314.	403.	492.
				TIME	3.37	3.23	3.23	3.30	3.27	3.40
ROUTED TO	C1120	1.50	1	FLOW	90.	192.	240.	319.	407.	487.
				TIME	3.37	3.27	3.23	3.30	3.27	3.40

			** PEAK STAGES IN FEET **							
			1	STAGE	100.70	101.15	101.31	101.59	101.84	102.08
				TIME	3.37	3.27	3.23	3.30	3.27	3.40
HYDROGRAPH AT	1120	.02	1	FLOW	16.	24.	30.	39.	48.	57.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C1120	1.51	1	FLOW	93.	201.	253.	331.	424.	501.
				TIME	3.33	3.27	3.23	3.30	3.27	3.23
ROUTED TO	LAKE5	1.51	1	FLOW	32.	86.	117.	172.	245.	350.
				TIME	6.77	5.97	5.77	5.43	3.67	4.33
			** PEAK STAGES IN FEET **							
			1	STAGE	76.75	77.30	77.48	77.79	78.16	78.49
				TIME	6.77	5.97	5.77	5.43	3.67	4.33

INTERIM CONDITIONS

HEC-1 RUN

CHOLLA BASIN

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*          SEPTEMBER 1990               *
*           VERSION 4.0                 *
*                                       *
*  RUN DATE  11/02/1994  TIME  10:40:45 *
*                                       *
*****************************************
```

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

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

  1           ID        84TH STREET AND CHOLLA ROAD ROADWAY IMPROVEMENTS
  2           ID        2-5-10-25-50-100 yr STORM
  3           ID        INTERIM CONDITION:
  4           ID        ALTERNATE 2A final design (MODIFIED)
  5           ID        --STORM DRAIN IN CHOLLA ROAD
  6           ID        --DETENTION BASIN AT SITE 1 (3 acres)
  7           ID        --NO STORM DRAIN IN DESERT COVE
  8           ID        --CONNECTOR AT CORTEZ TO INTERCEPT 100-YR FLOWS
  9           ID
 10           ID        FILE CHFIN4HY.DAT
              *DIAGRAM
 11           IT      2                    300
 12           IO      5
 13           JR    PREC     .36     .53     .62     .76     .88     1.0

 14           KK     310      subbasin 310 runoff
 15           BA  .01647
 16           PH                     0.88    1.61     2.6    2.84     3.0     3.3
 17           LS              77      20
 18           UD     .16

 19           KK    C320      DIVERT C310 TO 320
 20           DT    D310
 21           DI       0     100
 22           DQ       0      50

 23           KK    C330      ROUTE C310 TO 330
 24           RS     100    STOR      -1       0
 25           RC    .040    .016    .040     750   .0030
 26           RX       0      24    24.1      40    40.1      56    56.1      80
 27           RY     101   98.93   98.61   98.97   98.97   98.62   98.92     101
 28           RS     100    STOR      -1       0
 29           RC    .040    .016    .040    2000   .0060
 30           RX       0      24    24.1      40    40.1      56    56.1      80
 31           RY  101.21  100.01   99.68     100     100   99.68  100.01  101.21

 32           KK     350      subbasin 350 runoff
 33           BA  .00225
 34           LS              77      20
 35           UD     .06

 36           KK    C350      DIVERT C350 TO 360
 37           DT    D350
 38           DI       0     100
 39           DQ       0      50

 40           KK    C330      ROUTE 350 TO 330
 41           RS     100    STOR      -1       0
 42           RC    .040    .016    .040    2200   .0060
 43           RX       0      24    24.1      40    40.1      56    56.1      80
 44           RY  101.21  100.01   99.68     100     100   99.68  100.01  101.21
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  45          KK     330      subbasin 330 runoff
  46          BA  .06322
  47          LS              77      20
  48          UD     .38

  49          KK    C330      COMBINE C310 AND 330 AND C350
  50          HC       3

  51          KK     340      subbasin 340 runoff
  52          BA  .01031
  53          LS              77      20
  54          UD     .15

  55          KK    C330      ROUTE 340 TO 330
  56          RS     100    STOR      -1       0
  57          RC    .040    .016    .040     440   .0022
  58          RX       0    19.8    19.8      40    40.1      42      50      60
  59          RY    82.9   82.41   81.91   82.31   82.31   82.22    82.1    82.4

  60          KK    C330      COMBINE C310 AND 340
  61          HC       2

  62          KK   C380F      ROUTE C330 TO 380F
  63          RD     300  0.0030   0.012            CIRC       4

  64          KK    380F      subbasin 380F runoff
  65          BA  .00688
  66          LS              77      20
  67          UD     .13

  68          KK   C380F      COMBINE 380F AND C330
  69          HC       2

  70          KK   C380E      ROUTE C380F TO 380E
  71          RD     300  0.0030   0.012            CIRC       4

  72          KK    380E      subbasin 380E runoff
  73          BA  .00505
  74          LS              77      20
  75          UD     .10

  76          KK   C380E      COMBINE 380E AND C380F
  77          HC       2

  78          KK   C380D      ROUTE C380E TO 380D
  79          RD     240  0.0030   0.012            CIRC       4

  80          KK    380D      subbasin 380D runoff
  81          BA  .00198
  82          LS              77      20
  83          UD     .10
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  84          KK   C380D      COMBINE C380D AND 380E
  85          HC       2

  86          KK   SD700      ROUTE C380D TO SD700
  87          RD     100  0.0030   0.012            CIRC       4

  88          KK    380B      subbasin 380B runoff
  89          BA  .02333
  90          LS              77      20
  91          UD     .20

  92          KK   SD700      ROUTE C380B TO SD700
  93          RD     150  0.0030   0.012            CIRC       2

  94          KK    380C      subbasin 380C runoff
  95          BA  .00288
  96          LS              77      20
  97          UD     .10

  98          KK   SD700      ROUTE C380C TO SD700
  99          RD      80  0.0030   0.012            CIRC       2

 100          KK     390      subbasin 390 runoff
 101          BA  .00938
 102          LS              77
 103          UD     .17

 104          KK    C390      COMBINE C380D AND 380B AND 380C AND 390
 105          HC       4

 106          KK   SD700      NEW DETENTION BASIN
 107          RS       1    STOR       0
 108          SV       0    2.22    4.58    7.08    9.44
 109          SE      74      75      76      77      78
 110          SQ       0      11      26      41      56

 111          KK    C510      ROUTE SD700 TO 510
 112          RS     100    STOR      -1       0
 113          RC    .050    .035    .050     700   .0070
 114          RX       0      .1      17      22      28      33      50    50.1
 115          RY     102     100      99    96.5    96.5      99     100     102

 116          KK     510      SUBBASIN 510 RUNOFF
 117          BA  .01044
 118          LS              77      20
 119          UD     .06

 120          KK    C510      COMBINE SD700 AND 510
 121          HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 122          KK    C520      ROUTE C510 TO 520
 123          RS     100    STOR      -1       0
 124          RC    .050    .035    .050     440   .0030
 125          RX       0      .1      17      22      28      33      50    50.1
 126          RY     102     100      99    96.5    96.5      99     100     102

 127          KK     520      SUBBASIN 520 RUNOFF
 128          BA  .01402
 129          LS              77      20
 130          UD     .10

 131          KK    C520      COMBINE C510 AND 520
 132          HC       2

 133          KK     530      SUBBASIN 530 RUNOFF
 134          BA  .00806
 135          LS              77      20
 136          UD     .15

 137          KK    C530      COMBINE C520 AND 530
 138          HC       2

 139          KK    C550      ROUTE C530 TO 550
 140          RS     100    STOR      -1       0
 141          RC    .050    .035    .050     350   .0050
 142          RX       0      .1      17      22      28      33      50    50.1
 143          RY     102     100      99    96.5    96.5      99     100     102

 144          KK     420      SUBBASIN 420 RUNOFF
 145          BA  .01719
 146          LS              77      20
 147          UD     .21

 148          KK    C430      ROUTE C420 TO 430
 149          RS     100    STOR      -1       0
 150          RC    .040    .016    .040     480   .0020
 151          RX       0      20      23      30    30.1      37      40      60
 152          RY     102    99.7   99.93     100     100   99.93    99.7     102

 153          KK     430      SUBBASIN 430 RUNOFF
 154          BA  .02202
 155          LS              77      20
 156          UD     .20

 157          KK    C430      COMBINE C420 AND 430
 158          HC       2

 159          KK     440      SUBBASIN 440 RUNOFF
 160          BA  .00731
 161          LS              77      20
 162          UD     .14
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 163          KK    C440      COMBINE C430 AND 440
 164          HC       2

 165          KK    C440      DIVERT C440 TO 470
 166          DT    D440
 167          DI       0     100     200     300
 168          DQ       0      70     140     210

 169          KK    C540      ROUTE C440 TO C540
 170          RS     100    STOR      -1       0
 171          RC    .040    .016    .040     540   .0080
 172          RX       0      20      23      30    30.1      37      40      60
 173          RY     102    99.7   99.93     100     100   99.93    99.7     102

 174          KK     540      SUBBASIN 540 RUNOFF
 175          BA  .00517
 176          LS              77      20
 177          UD     .13

 178          KK    C540      COMBINE C440 AND 540
 179          HC       2

 180          KK    C550      ROUTE 540 TO C550
 181          RS     100    STOR      -1       0
 182          RC    .040    .016    .040     200   .0080
 183          RX       0      20      23      30    30.1      37      40      60
 184          RY     101    99.7   99.93     100     100   99.93    99.7     101

 185          KK     550      SUBBASIN 550
 186          BA  .00703
 187          LS              77      20
 188          UD     .08

 189          KK    C550      COMBINE 550 AND C530 AND 540
 190          HC       3

 191          KK    C560      ROUTE C550 TO 560
 192          RS     100    STOR      -1       0
 193          RC    .050    .035    .050     900   .0060
 194          RX       0      .1      20      22      28      30      50    50.1
 195          RY     102     100      99      97      97      99     100     102

 196          KK     570      SUBBASIN 570 RUNOFF
 197          BA  .00492
 198          LS              77      20
 199          UD     .16

 200          KK     580      SUBBASIN 580 RUNOFF
 201          BA  .00575
 202          LS              77      20
 203          UD     .14
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 204          KK     560      SUBBASIN 560 RUNOFF
 205          BA  .00386
 206          LS              77      20
 207          UD     .12

 208          KK    C560      COMBINE C550 AND 560 AND 570 AND 580
 209          HC       4

 210          KK    C590      ROUTE C560 TO 590
 211          RS     100    STOR      -1       0
 212          RC    .050    .035    .050      55   .0030
 213          RX       0      .1      20    20.1      32    32.1      50    50.1
 214          RY     102     100      99      96      96      99     100     102

 215          KK     590      SUBBASIN 590 RUNOFF
 216          BA  .01931
 217          LS              77      20
 218          UD    0.21

 219          KK    C590      COMBINE C560 AND 590
 220          HC       2

 221          KK    C610      ROUTE C590 TO 610
 222          RS     100    STOR      -1       0
 223          RC    .050    .035    .050     600   .0030
 224          RX       0      .1      20      24      32      36      50    50.1
 225          RY     102     100      99      96      96      99     100     102

 226          KK     610      SUBBASIN 610 RUNOFF
 227          BA   .0035
 228          LS              77      20
 229          UD    0.06

 230          KK    C610      COMBINE 610 AND C590
 231          HC       2

 232          KK    D440      RETRIEVE D440
 233          DR    D440

 234          KK    C470      ROUTE D440 TO 470
 235          RS     100    STOR      -1       0
 236          RC    .040    .016    .040    1200   .0070
 237          RX       0      24    24.1      40    40.1      56    56.1      80
 238          RY  101.21  100.01   99.68     100     100   99.68  100.01  101.21

 239          KK     410      SUBBASIN 410 RUNOFF
 240          BA  .04406
 241          LS              77      20
 242          UD    0.30
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 243          KK    C450      ROUTE 410 TO C450
 244          RS     100    STOR      -1       0
 245          RC    .040   0.016    .016     130   .0020
 246          RX      20      40      65      70      70      72     100     100
 247          RY   103.1   102.9  101.75  101.74  101.27  101.35  101.63  103.63

 248          KK     450      SUBBASIN 450 RUNOFF
 249          BA  .00803
 250          LS              77      20
 251          UD    0.22

 252          KK    C450      COMBINE C410 AND 450
 253          HC       2

 254          KK    C460      ROUTE C450 TO 460
 255          RS     100    STOR      -1       0
 256          RC    .040   0.016    .016     600   .0020
 257          RX      20      40      65      70      70      72     100     100
 258          RY   103.1   102.9  101.75  101.74  101.27  101.35  101.63  103.63

 259          KK     460      SUBBASIN 460 RUNOFF
 260          BA  .01398
 261          LS              77
 262          UD    0.15

 263          KK    C460      COMBINE C450 AND 460
 264          HC       2

 265          KK     470      SUBBASIN 470 RUNOFF
 266          BA  .00717
 267          LS              98
 268          UD    0.14

 269          KK    C470      COMBINE C460 AND C440 AND 470
 270          HC       3

 271          KK    C600      ROUTE C470 TO 600
 272          RS     100    STOR      -1       0
 273          RC    .040   0.016    .016     980   .0020
 274          RX      20      40      65      70      70      72     100     100
 275          RY   103.1   102.9  101.75  101.74  101.27  101.35  101.63  103.63

 276          KK     600      SUBBASIN 600 RUNOFF
 277          BA  .03036
 278          LS              77      20
 279          UD     .23

 280          KK    C600      COMBINE C470 AND 600
 281          HC       2
```

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


 282          KK    C610      ROUTE C600 TO 610
 283          RS     100    STOR      -1       0
 284          RC    .040   0.016   0.016     250   .0020
 285          RX       0      20      40      46      54      60      80     100
 286          RY     101     100      99      96      96      99     100     101

 287          KK    C610      COMBINE 610 AND C600
 288          HC       2
 289          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.     (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  14        310
              .
              .
  20          .------->    D310
  19      C320
            V
            V
  23      C330
              .
              .
  32          .         350
              .           .
              .           .
  37          .           .------->    D350
  36          .       C350
              .         V
              .         V
  40          .       C330
              .           .
              .           .
  45          .           .         330
              .           .           .
              .           .           .
  49      C330........................
              .
              .
  51          .         340
              .           V
              .           V
  55          .       C330
              .           .
              .           .
  60      C330............
            V
            V
  62      C380F
              .
              .
  64          .       380F
              .           .
              .           .
  68      C380F............
            V
            V
  70      C380E
              .
              .
  72          .       380E
              .           .
              .           .
  76      C380E............
            V
            V
  78      C380D
              .
```

```
          .
80        .        380D
          .          .
          .          .
84     C380D............
          V
          V
86     SD700
          .
          .
88        .        380B
          .          V
          .          V
92        .       SD700
          .          .
          .          .
94        .          .       380C
          .          .         V
          .          .         V
98        .          .      SD700
          .          .         .
          .          .         .
100       .          .         .        390
          .          .         .         .
          .          .         .         .
104    C390.....................................
          V
          V
106    SD700
          V
          V
111    C510
          .
          .
116       .        510
          .          .
          .          .
120    C510............
          V
          V
122    C520
          .
          .
127       .        520
          .          .
          .          .
131    C520............
          .
          .
133       .        530
          .          .
          .          .
137    C530............
          V
          V
139    C550
          .
          .
144       .        420
          .          V
          .          V
148       .       C430
```

```
                .          .
                .          .
153             .          .          430
                .          .            .
                .          .            .
157             .       C430............
                .          .
                .          .
159             .          .          440
                .          .            .
                .          .            .
163             .       C440............
                .          .
                .          .
166             .          .-------->     D440
165             .       C440
                .          V
                .          V
169             .       C540
                .          .
                .          .
174             .          .          540
                .          .            .
                .          .            .
178             .       C540............
                .          V
                .          V
180             .       C550
                .          .
                .          .
185             .          .          550
                .          .            .
                .          .            .
189          C550........................
                V
                V
191          C560
                .
                .
196             .       570
                .          .
                .          .
200             .          .          580
                .          .            .
                .          .            .
204             .          .            .          560
                .          .            .            .
                .          .            .            .
208          C560.......................................
                V
                V
210          C590
                .
                .
215             .       590
                .          .
                .          .
219          C590............
                V
                V
221          C610
                .
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226       .        610
          .          .
          .          .
230     C610............
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          .
233       .          .<-------    D440
232       .      D440
          .        V
          .        V
234       .      C470
          .          .
          .          .
239       .          .        410
          .          .          V
          .          .          V
243       .          .      C450
          .          .          .
          .          .          .
248       .          .          .        450
          .          .          .          .
          .          .          .          .
252       .          .      C450............
          .          .          V
          .          .          V
254       .          .      C460
          .          .          .
          .          .          .
259       .          .          .        460
          .          .          .          .
          .          .          .          .
263       .          .      C460............
          .          .          .
          .          .          .
265       .          .          .        470
          .          .          .          .
          .          .          .          .
269       .      C470........................
          .        V
          .        V
271       .      C600
          .          .
          .          .
276       .          .        600
          .          .          .
          .          .          .
280       .      C600............
          .        V
          .        V
282       .      C610
          .          .
          .          .
287     C610............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*          SEPTEMBER 1990               *
*           VERSION 4.0                 *
*                                       *
*  RUN DATE  11/02/1994  TIME  10:40:45 *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104               *
*                                       *
*****************************************
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```
                    84TH STREET AND CHOLLA ROAD ROADWAY IMPROVEMENTS
                    2-5-10-25-50-100 yr STORM
                    INTERIM CONDITION:
                    ALTERNATE 2A final design (MODIFIED)
                    --STORM DRAIN IN CHOLLA ROAD
                    --DETENTION BASIN AT SITE 1 (3 acres)
                    --NO STORM DRAIN IN DESERT COVE
                    --CONNECTOR AT CORTEZ TO INTERCEPT 100-YR FLOWS

                    FILE CHFIN4HY.DAT

12 IO        OUTPUT CONTROL VARIABLES
                 IPRNT          5  PRINT CONTROL
                 IPLOT          0  PLOT CONTROL
                 QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT        HYDROGRAPH TIME DATA
                  NMIN          2  MINUTES IN COMPUTATION INTERVAL
                 IDATE      1   0  STARTING DATE
                 ITIME       0000  STARTING TIME
                    NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                NDDATE      1   0  ENDING DATE
                NDTIME       0958  ENDING TIME
                 ICENT         19  CENTURY MARK

            COMPUTATION INTERVAL     .03 HOURS
                 TOTAL TIME BASE    9.97 HOURS

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

   JP        MULTI-PLAN OPTION
                 NPLAN          1  NUMBER OF PLANS

   JR        MULTI-RATIO OPTION
               RATIOS OF PRECIPITATION
               .36      .53      .62      .76      .88     1.00
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

					RATIOS APPLIED TO PRECIPITATION					
OPERATION	STATION	AREA	PLAN		RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6
					.36	.53	.62	.76	.88	1.00
HYDROGRAPH AT	310	.02	1	FLOW	5.	11.	15.	22.	28.	35.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
DIVERSION TO	D310	.02	1	FLOW	3.	6.	8.	11.	14.	17.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
HYDROGRAPH AT	C320	.02	1	FLOW	3.	6.	8.	11.	14.	17.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
ROUTED TO	C330	.02	1	FLOW	3.	6.	8.	11.	16.	20.
				TIME	3.47	3.43	3.43	3.40	3.37	3.33
			** PEAK STAGES IN FEET **							
			1	STAGE	99.87	99.93	99.96	100.00	100.04	100.07
				TIME	3.47	3.43	3.43	3.40	3.37	3.33
HYDROGRAPH AT	350	.00	1	FLOW	1.	2.	3.	4.	6.	7.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
DIVERSION TO	D350	.00	1	FLOW	1.	1.	1.	2.	3.	3.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
HYDROGRAPH AT	C350	.00	1	FLOW	1.	1.	1.	2.	3.	3.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
ROUTED TO	C330	.00	1	FLOW	0.	1.	1.	2.	3.	4.
				TIME	3.63	3.53	3.53	3.47	3.43	3.43
			** PEAK STAGES IN FEET **							
			1	STAGE	99.77	99.81	99.82	99.85	99.87	99.89
				TIME	3.63	3.53	3.53	3.47	3.43	3.43
HYDROGRAPH AT	330	.06	1	FLOW	13.	27.	36.	51.	65.	81.
				TIME	3.43	3.47	3.47	3.47	3.47	3.43
3 COMBINED AT	C330	.08	1	FLOW	16.	33.	44.	63.	80.	99.
				TIME	3.47	3.47	3.43	3.47	3.43	3.43
HYDROGRAPH AT	340	.01	1	FLOW	3.	7.	10.	14.	18.	22.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
ROUTED TO	C330	.01	1	FLOW	3.	7.	10.	14.	18.	23.
				TIME	3.30	3.27	3.23	3.23	3.27	3.23
			** PEAK STAGES IN FEET **							
			1	STAGE	82.23	82.32	82.36	82.41	82.46	82.50
				TIME	3.30	3.27	3.23	3.23	3.27	3.23
2 COMBINED AT	C330	.09	1	FLOW	18.	37.	50.	71.	91.	111.
				TIME	3.47	3.43	3.43	3.43	3.37	3.43

ROUTED TO	C380F	.09	1	FLOW	18.	37.	50.	71.	90.	111.
				TIME	3.47	3.47	3.43	3.47	3.37	3.43
HYDROGRAPH AT	380F	.01	1	FLOW	2.	5.	7.	10.	13.	16.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
2 COMBINED AT	C380F	.10	1	FLOW	19.	39.	52.	74.	96.	117.
				TIME	3.47	3.47	3.43	3.43	3.37	3.37
ROUTED TO	C380E	.10	1	FLOW	19.	39.	52.	74.	95.	117.
				TIME	3.47	3.47	3.43	3.43	3.40	3.40
HYDROGRAPH AT	380E	.01	1	FLOW	2.	4.	6.	8.	11.	13.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
2 COMBINED AT	C380E	.10	1	FLOW	20.	40.	54.	76.	98.	121.
				TIME	3.47	3.47	3.43	3.43	3.37	3.37
ROUTED TO	C380D	.10	1	FLOW	19.	40.	53.	76.	98.	121.
				TIME	3.50	3.47	3.43	3.43	3.40	3.40
HYDROGRAPH AT	380D	.00	1	FLOW	1.	2.	2.	3.	4.	5.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
2 COMBINED AT	C380D	.11	1	FLOW	20.	40.	54.	77.	99.	122.
				TIME	3.47	3.47	3.43	3.43	3.40	3.37
ROUTED TO	SD700	.11	1	FLOW	20.	40.	54.	77.	99.	122.
				TIME	3.50	3.47	3.43	3.43	3.40	3.40
HYDROGRAPH AT	380B	.02	1	FLOW	7.	14.	19.	27.	35.	44.
				TIME	3.23	3.27	3.27	3.27	3.23	3.23
ROUTED TO	SD700	.02	1	FLOW	7.	14.	19.	27.	35.	43.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
HYDROGRAPH AT	380C	.00	1	FLOW	1.	2.	3.	5.	6.	8.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
ROUTED TO	SD700	.00	1	FLOW	1.	2.	3.	5.	6.	7.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
HYDROGRAPH AT	390	.01	1	FLOW	1.	3.	5.	9.	12.	15.
				TIME	3.33	3.27	3.23	3.23	3.23	3.23
4 COMBINED AT	C390	.14	1	FLOW	25.	53.	71.	104.	137.	172.
				TIME	3.37	3.40	3.40	3.37	3.37	3.33
ROUTED TO	SD700	.14	1	FLOW	6.	13.	18.	26.	34.	42.
				TIME	4.07	4.03	4.03	4.00	3.97	3.97
			** PEAK STAGES IN FEET **							
			1	STAGE	74.58	75.14	75.46	76.02	76.52	77.05
				TIME	4.07	4.07	4.03	4.00	3.97	3.97
ROUTED TO	C510	.14	1	FLOW	6.	13.	18.	26.	34.	42.
				TIME	4.13	4.10	4.07	4.03	4.00	4.03
			** PEAK STAGES IN FEET **							
			1	STAGE	96.96	97.20	97.35	97.55	97.71	97.85
				TIME	4.13	4.10	4.07	4.03	4.00	4.03

HYDROGRAPH AT	510	.01	1	FLOW	5.	10.	14.	20.	26.	32.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C510	.15	1	FLOW	7.	13.	18.	27.	35.	43.
				TIME	4.13	4.07	4.07	4.03	4.00	3.97
ROUTED TO	C520	.15	1	FLOW	7.	13.	18.	27.	35.	43.
				TIME	4.20	4.13	4.07	4.10	4.03	4.03
			** PEAK STAGES IN FEET **							
			1	STAGE	97.11	97.41	97.59	97.84	98.04	98.22
				TIME	4.20	4.13	4.07	4.10	4.03	4.03
HYDROGRAPH AT	520	.01	1	FLOW	6.	12.	16.	23.	30.	37.
				TIME	3.13	3.13	3.13	3.13	3.13	3.13
2 COMBINED AT	C520	.17	1	FLOW	11.	23.	31.	45.	58.	72.
				TIME	3.17	3.13	3.13	3.13	3.13	3.13
HYDROGRAPH AT	530	.01	1	FLOW	3.	6.	8.	11.	14.	18.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
2 COMBINED AT	C530	.17	1	FLOW	14.	28.	38.	55.	71.	87.
				TIME	3.17	3.17	3.13	3.13	3.13	3.13
ROUTED TO	C550	.17	1	FLOW	13.	29.	39.	55.	71.	87.
				TIME	3.20	3.17	3.17	3.17	3.17	3.17
			** PEAK STAGES IN FEET **							
			1	STAGE	97.28	97.71	97.93	98.23	98.47	98.69
				TIME	3.20	3.17	3.17	3.17	3.17	3.17
HYDROGRAPH AT	420	.02	1	FLOW	5.	10.	14.	20.	25.	31.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
ROUTED TO	C430	.02	1	FLOW	5.	10.	14.	20.	26.	31.
				TIME	3.37	3.30	3.37	3.33	3.30	3.30
			** PEAK STAGES IN FEET **							
			1	STAGE	100.12	100.23	100.28	100.37	100.44	100.51
				TIME	3.37	3.30	3.37	3.33	3.30	3.30
HYDROGRAPH AT	430	.02	1	FLOW	6.	13.	18.	26.	33.	41.
				TIME	3.23	3.27	3.27	3.27	3.23	3.23
2 COMBINED AT	C430	.04	1	FLOW	11.	23.	31.	45.	57.	72.
				TIME	3.27	3.30	3.27	3.27	3.30	3.27
HYDROGRAPH AT	440	.01	1	FLOW	3.	5.	7.	10.	13.	16.
				TIME	3.17	3.20	3.20	3.20	3.17	3.17
2 COMBINED AT	C440	.05	1	FLOW	13.	27.	37.	53.	68.	85.
				TIME	3.27	3.30	3.27	3.27	3.27	3.27
DIVERSION TO	D440	.05	1	FLOW	9.	19.	26.	37.	48.	59.
				TIME	3.27	3.30	3.27	3.27	3.27	3.27
HYDROGRAPH AT	C440	.05	1	FLOW	4.	8.	11.	16.	20.	25.
				TIME	3.27	3.30	3.27	3.27	3.27	3.27
ROUTED TO	C540	.05	1	FLOW	4.	8.	11.	16.	21.	25.
				TIME	3.40	3.30	3.33	3.30	3.27	3.30

			** PEAK STAGES IN FEET **							
			1	STAGE	100.02	100.09	100.13	100.19	100.23	100.27
				TIME	3.40	3.30	3.33	3.30	3.27	3.30
HYDROGRAPH AT	540	.01	1	FLOW	2.	4.	5.	8.	10.	12.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
2 COMBINED AT	C540	.05	1	FLOW	5.	11.	14.	21.	28.	34.
				TIME	3.37	3.30	3.33	3.30	3.27	3.23
ROUTED TO	C550	.05	1	FLOW	5.	11.	14.	21.	28.	34.
				TIME	3.37	3.30	3.27	3.33	3.30	3.27
			** PEAK STAGES IN FEET **							
			1	STAGE	100.03	100.12	100.15	100.21	100.26	100.31
				TIME	3.37	3.30	3.27	3.33	3.30	3.27
HYDROGRAPH AT	550	.01	1	FLOW	3.	6.	8.	12.	16.	20.
				TIME	3.10	3.13	3.13	3.10	3.10	3.10
3 COMBINED AT	C550	.23	1	FLOW	19.	40.	54.	78.	103.	129.
				TIME	3.20	3.17	3.17	3.17	3.17	3.17
ROUTED TO	C560	.23	1	FLOW	19.	41.	55.	78.	102.	128.
				TIME	3.27	3.23	3.23	3.23	3.27	3.27
			** PEAK STAGES IN FEET **							
			1	STAGE	97.97	98.53	98.81	99.17	99.44	99.68
				TIME	3.27	3.23	3.23	3.23	3.27	3.27
HYDROGRAPH AT	570	.00	1	FLOW	2.	3.	5.	7.	8.	10.
				TIME	3.20	3.20	3.20	3.20	3.20	3.20
HYDROGRAPH AT	580	.01	1	FLOW	2.	4.	6.	8.	10.	13.
				TIME	3.17	3.20	3.20	3.20	3.17	3.17
YDROGRAPH AT	560	.00	1	FLOW	1.	3.	4.	6.	8.	9.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
4 COMBINED AT	C560	.25	1	FLOW	23.	51.	68.	97.	125.	157.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
OUTED TO	C590	.25	1	FLOW	23.	51.	68.	97.	125.	156.
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
			** PEAK STAGES IN FEET **							
			1	STAGE	96.95	97.57	97.90	98.40	98.87	99.27
				TIME	3.23	3.23	3.23	3.23	3.23	3.23
YDROGRAPH AT	590	.02	1	FLOW	6.	11.	15.	22.	29.	35.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
2 COMBINED AT	C590	.27	1	FLOW	29.	62.	83.	118.	154.	191.
				TIME	3.23	3.23	3.23	3.23	3.23	3.27
OUTED TO	C610	.27	1	FLOW	29.	62.	84.	119.	152.	192.
				TIME	3.30	3.27	3.27	3.27	3.30	3.30
			** PEAK STAGES IN FEET **							
			1	STAGE	97.28	97.97	98.33	98.82	99.18	99.52
				TIME	3.30	3.27	3.27	3.27	3.30	3.30

HYDROGRAPH AT	610	.00	1	FLOW	2.	3.	5.	7.	9.	11.
				TIME	3.10	3.10	3.10	3.10	3.10	3.10
2 COMBINED AT	C610	.27	1	FLOW	30.	63.	86.	122.	155.	195.
				TIME	3.30	3.27	3.27	3.27	3.30	3.30
HYDROGRAPH AT	D440	.00	1	FLOW	9.	19.	26.	37.	48.	59.
				TIME	3.27	3.30	3.27	3.27	3.27	3.27
OUTED TO	C470	.00	1	FLOW	9.	19.	26.	37.	48.	59.
				TIME	3.43	3.33	3.33	3.33	3.30	3.30
			** PEAK STAGES IN FEET **							
			1	STAGE	99.97	100.05	100.10	100.16	100.21	100.26
				TIME	3.43	3.33	3.33	3.33	3.30	3.30
HYDROGRAPH AT	410	.04	1	FLOW	11.	22.	29.	41.	53.	65.
				TIME	3.37	3.37	3.37	3.37	3.37	3.37
OUTED TO	C450	.04	1	FLOW	11.	21.	29.	41.	53.	65.
				TIME	3.37	3.37	3.37	3.37	3.37	3.37
			** PEAK STAGES IN FEET **							
			1	STAGE	101.71	101.83	101.89	101.98	102.06	102.13
				TIME	3.37	3.37	3.37	3.37	3.37	3.37
YDROGRAPH AT	450	.01	1	FLOW	2.	5.	6.	9.	12.	14.
				TIME	3.27	3.27	3.27	3.27	3.27	3.27
2 COMBINED AT	C450	.05	1	FLOW	13.	26.	34.	49.	63.	78.
				TIME	3.37	3.37	3.37	3.37	3.37	3.33
OUTED TO	C460	.05	1	FLOW	13.	26.	34.	49.	63.	78.
				TIME	3.40	3.40	3.43	3.40	3.40	3.40
			** PEAK STAGES IN FEET **							
			1	STAGE	101.73	101.87	101.93	102.04	102.12	102.20
				TIME	3.40	3.40	3.43	3.40	3.40	3.40
YDROGRAPH AT	460	.01	1	FLOW	1.	5.	8.	14.	19.	24.
				TIME	3.30	3.23	3.23	3.20	3.20	3.20
2 COMBINED AT	C460	.07	1	FLOW	14.	29.	39.	57.	74.	92.
				TIME	3.40	3.40	3.37	3.37	3.37	3.37
YDROGRAPH AT	470	.01	1	FLOW	10.	15.	18.	22.	26.	29.
				TIME	3.17	3.17	3.17	3.17	3.17	3.17
3 COMBINED AT	C470	.07	1	FLOW	26.	54.	73.	104.	134.	165.
				TIME	3.40	3.33	3.33	3.33	3.30	3.33
ROUTED TO	C600	.07	1	FLOW	26.	55.	72.	104.	135.	167.
				TIME	3.43	3.40	3.40	3.40	3.40	3.37
			** PEAK STAGES IN FEET **							
			1	STAGE	101.87	102.07	102.17	102.33	102.46	102.59
				TIME	3.43	3.40	3.40	3.40	3.40	3.37
HYDROGRAPH AT	600	.03	1	FLOW	8.	17.	23.	33.	43.	53.
				TIME	3.27	3.30	3.30	3.30	3.27	3.27

2 COMBINED AT	C600	.10	1	FLOW	32.	70.	93.	133.	172.	214.
				TIME	3.43	3.40	3.37	3.37	3.37	3.37
ROUTED TO	C610	.10	1	FLOW	33.	70.	92.	134.	172.	214.
				TIME	3.43	3.40	3.40	3.37	3.37	3.37
			** PEAK STAGES IN FEET **							
			1	STAGE	96.94	97.44	97.69	98.06	98.35	98.64
				TIME	3.43	3.40	3.40	3.37	3.37	3.37
2 COMBINED AT	C610	.37	1	FLOW	57.	120.	163.	240.	317.	399.
				TIME	3.33	3.37	3.33	3.33	3.30	3.30