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FINAL DRAINAGE REPORT

Osborn Road Storm Drain – Scottsdale Road to the Indian Bend Wash

Project No. F-2703

Prepared for:
City of Scottsdale
Capital Project Management

Prepared by:
Greiner, Inc.

January 1993
Revised May 1993

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Job No. E019600

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FINAL DRAINAGE REPORT
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I. INTRODUCTION

The City of Scottsdale plans to construct a storm drain along Osborn Road between Scottsdale Road and the Indian Bend Wash. This storm drain will intercept local drainage and provide flood protection for the roadway and adjacent properties. This storm drain will also serve as the outfall for the drainage system associated with the East Couplet roadway from Second Street to Earll Drive. The Osborn Road drain is being designed and constructed in advance of the East Couplet roadway improvements. The drain is expected to be constructed in the summer of 1993 and the East Couplet roadway is expected to be constructed in the summer of 1994.

II. SCOPE

The purpose of this report is to: document the hydrologic conditions of the watershed contributing to the Osborn Road drain, size catch basins in Osborn Road to capture the flow and design the main storm drain trunk line in Osborn Road to carry the flow to Indian Bend Wash. A detailed hydrologic study for the drainage area generally bounded by Scottsdale Road on the west, Indian Bend Wash on the east, Second Street on the north and Earll Drive on the south has been performed. The study area is shown on Exhibit 1.

Catch basins have been sized and located to intercept the drainage in Osborn Road and connecting side streets for the 100-year event. Special consideration has been given to locating catch basins with pedestrian movement and convenience in mind. A summary of catch basin types and locations is included in Table 3.

The proposed main trunk line in Osborn Road has been analyzed for capacity based on the 100-year discharges obtained in the hydrologic investigation. Storm drain laterals have been designed for Brown Road, Civic Center, 75th Street and Miller Road.

The storm drain system associated with the East Couplet roadway between Earll Drive and Osborn Road will be designed at a later date when the design of the roadway occurs.

EXHIBIT 1

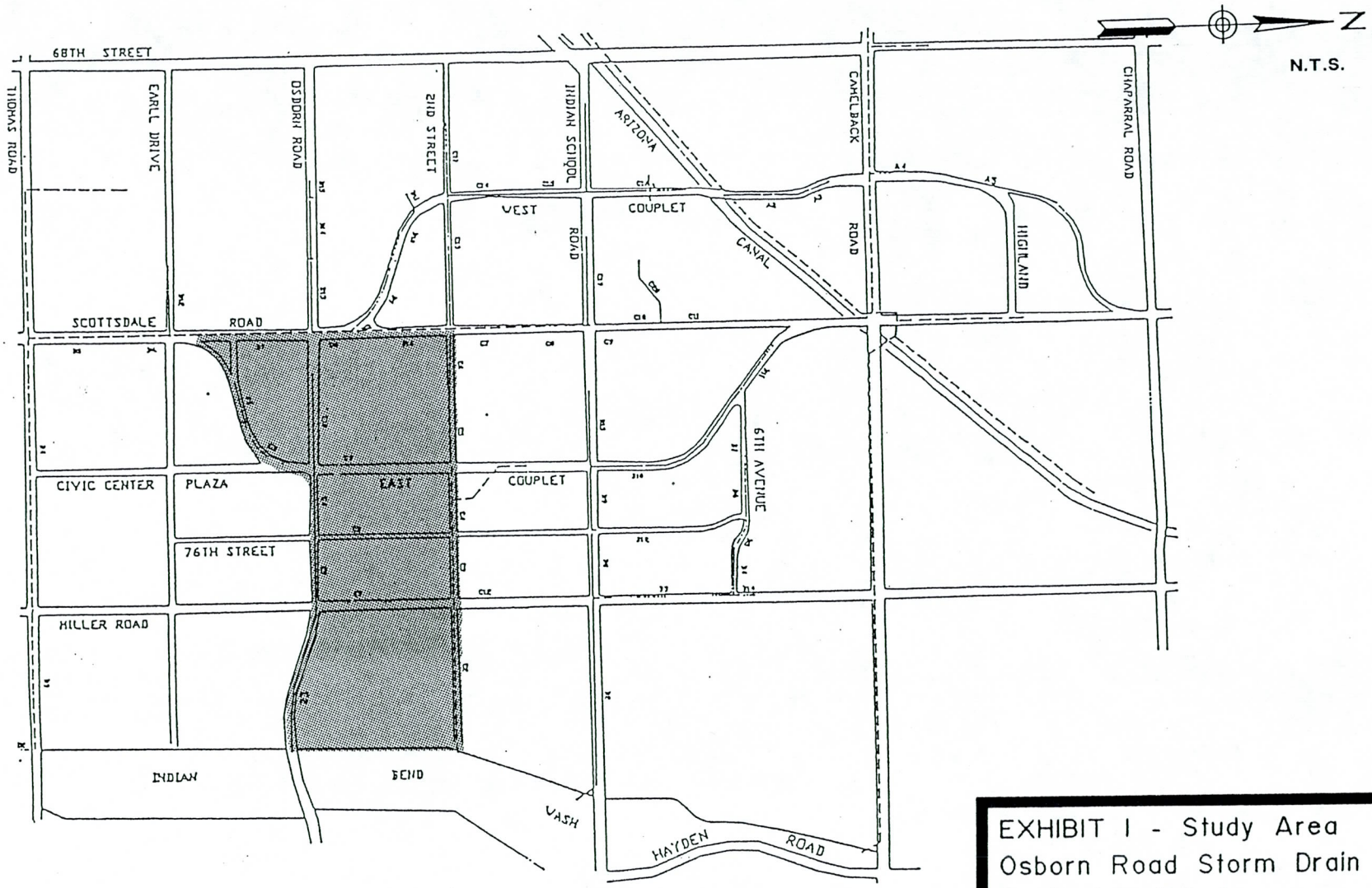


EXHIBIT 1 - Study Area
Osborn Road Storm Drain
Scottsdale Rd. to
Indian Bend Wash

Greiner, Inc.

DRAWN: J.P.W.

CHECKED: R.D.B.

Ref: Boyle Report

III. BASIS OF DESIGN

Previous Drainage Studies

The hydrologic and hydraulic analysis for the Osborn Road drain was previously performed as part of the "Downtown Infrastructure Master Plan Drainage Study" by Boyle Engineers in December, 1986 (Boyle Report). The storm drain was sized for the 100-year rainfall event. The results of the Boyle Report are summarized in Table 1.

TABLE 1 – Boyle Report Summary

Pipe No.	*Location*	*Size (in.)*	*Slope (%)*	*Q (cfs)*	*Depth (ft.)*	*Vel. (f/s)*
Basin E 100-Year						
E2	Osborn Road	84	.25	279	4.3	11.0
E3	Osborn Road	84	.25	276	5.9	8.0
E4	Osborn Road	72	.25	172	5.8	6.1
E5	East Couplet	48	.25	54	4.2 P	4.3
E6	East Couplet	42	.58	60	2.4	8.4
E7	Miller Road	48 E	.30	34	1.7	6.6
E8	Hinton Avenue	60	.33	109	5.2 P	5.6
E9	East Couplet	42	.50	61	3.2	6.6
E10	Osborn Road	42	.50	56	3.2	6.0

E Existing storm drain
P Pressure flow – hydraulic grade below street grade (SWMM)

REF: Boyle Report

The report entitled, "Drainage Design Report for Civic Center Plaza, Indian School Road to Fourth Street," by Johnson - Brittain and Associates, Inc. (J-B Report) was used as a reference for this project. The report documents the hydraulic considerations made in conjunction with the drainage and roadway improvements for Civic Center Plaza between Indian School Road and Fourth Street, as well as the 96-inch outfall storm drain in Second Street.

Greiner's report entitled, "Final Drainage Report for the Second Street Storm Drain - 69th Street to Wells Fargo Avenue" (Greiner Report) was also used as a reference for this report. The Greiner Report documents the hydrologic and hydraulic analysis associated with the Second Street Storm Drain from 69th Street to Wells Fargo Avenue.

Design Criteria

The City of Scottsdale procedures outlined in Section 2.2 of the Hydrology Design Standards and Procedures (Revised September 1992) were used for this report. HEC-1 procedures were used at the City's request although the sub-drainage areas are all less than 40 acres.

The design storm for this project is the 6-hour, 100-year event. The 10-, 25- and 50-year runoff values were also determined.

The NOAA Atlas II was used to establish precipitation values. The rainfall distribution pattern that is built into the HEC-1 model was used.

SCS runoff curve numbers are used to reflect infiltration rates. The soils within the project limits are in Hydrologic Soil Group B. Poor conditions and Antecedent Moisture Condition III were assumed for the large grassy areas in the watershed, such as Choctaw Park.

The SCS dimensionless hydrograph was used to generate the hydrographs. The times of concentration were computed using the TR-55 procedure.

Osborn Road is classified as a minor arterial according to the City's street classification system. The Scottsdale drainage ordinance requires one dry lane in each direction and a maximum depth of flow in the street of eight inches for the 100-year event, provided the flow width does not exceed the width of the right-of-way.

IV. WATERSHED CONDITIONS

The watershed for the Osborn Road storm drain consists predominantly of urbanized area with zoning that ranges from single-family residential to commercial. The slope of the watershed is generally from northwest to southeast at approximately 0.5 percent (average), terminating at the Indian Bend Wash. The drainage pattern generally follows the street grid within the downtown area. All of the drainage basin is developed. Exhibit 2 shows the watershed area taken from the U.S.G.S. map of the area.

The J-B Report and the Greiner Report were reviewed to determine if any off-site flows bypass drainage facilities upstream and impact the hydrology associated with the Osborn Road drain. The J-B Report documents that the catch basins at Wells Fargo Avenue and Second Street are capable of handling the 100-year event. The flowby drains to the sump in Civic Center Boulevard just north of Second Street.

In the Greiner Report, flows bypassing drainage facilities in Second Street will be intercepted in the catch basins at Wells Fargo Avenue and Second Street. Exhibit 3 shows the City's storm drain atlas of existing facilities in the project area.

Bypass flows at the intersection of 75th Street/Second Street and Miller Road/Second Street were also evaluated and are discussed in detail in Section V.

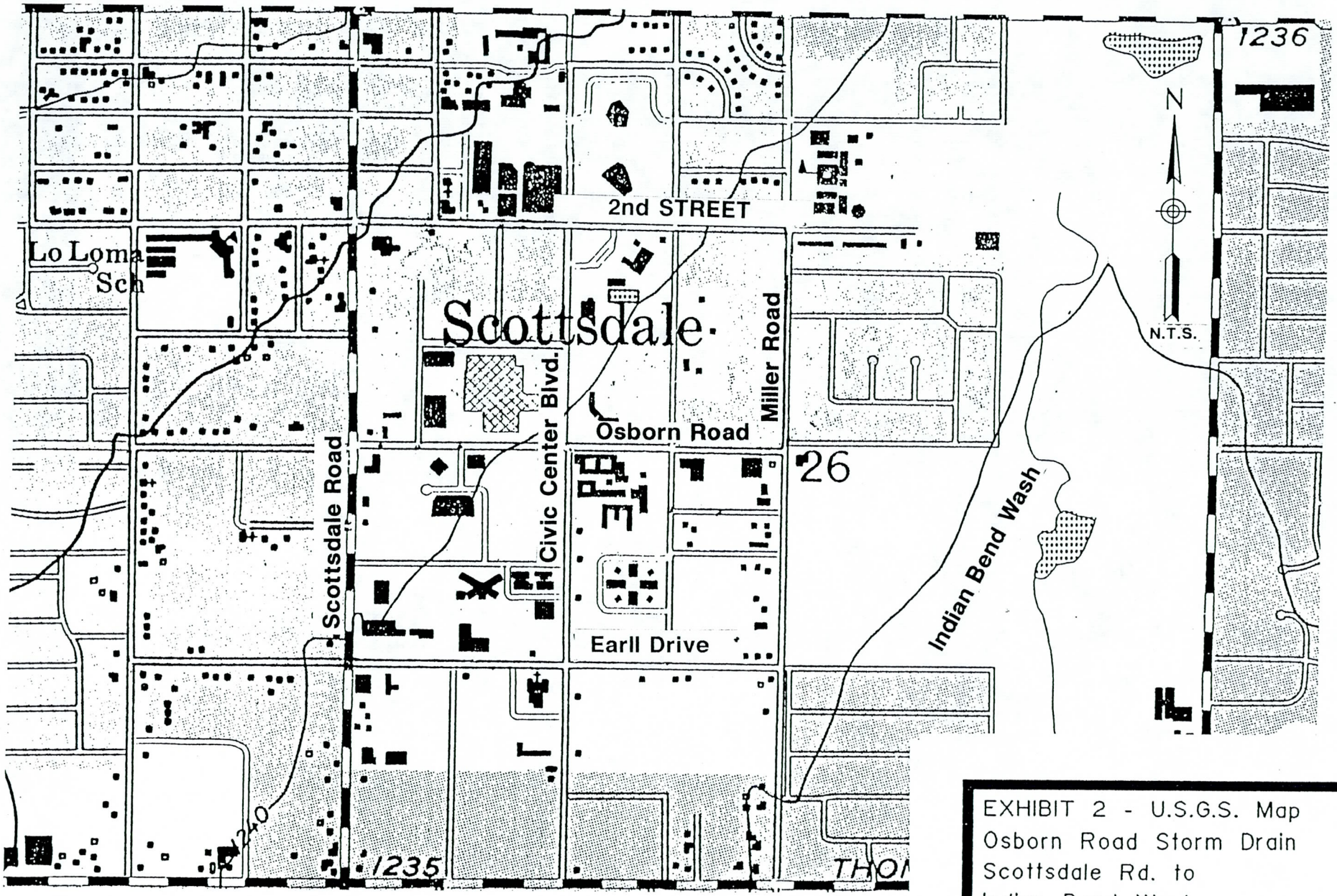
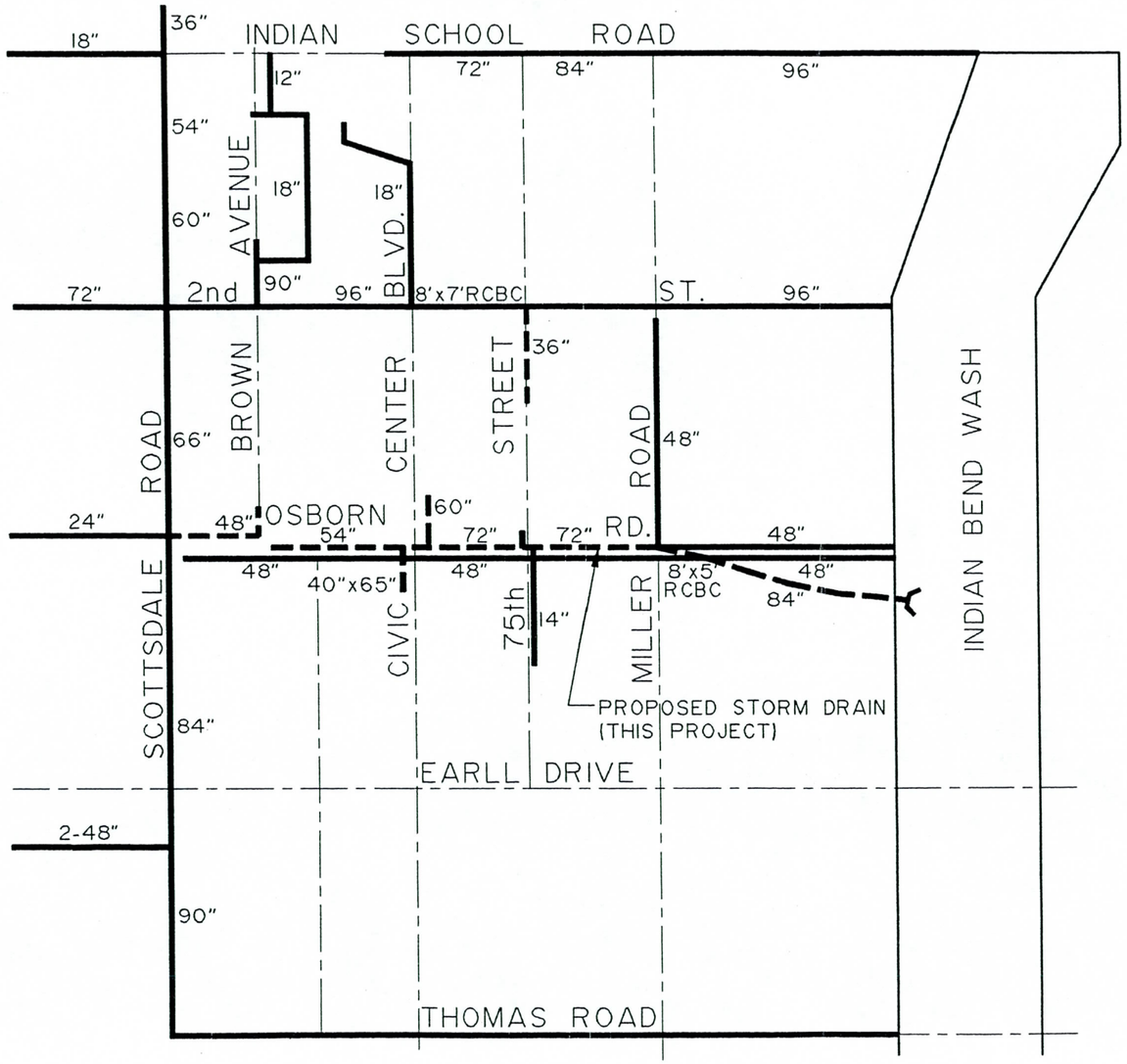
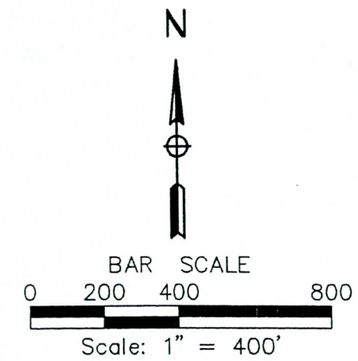


EXHIBIT 2 - U.S.G.S. Map
Osborn Road Storm Drain
Scottsdale Rd. to
Indian Bend Wash

Greiner, Inc.

DRAWN: J.P.W.	CHECKED: R.D.B.





CITY OF SCOTTSDALE

OSBORN ROAD STORM DRAIN
SCOTTSDALE ROAD TO
INDIAN BEND WASH

EXISTING STORM DRAIN FACILITIES

EXHIBIT 3

Greiner

V. EXISTING DRAINAGE FACILITIES

Scottsdale Road Drain

The Scottsdale Road storm drain is located along the western boundary of the watershed area. The drain is 66 inches in diameter north of Osborn Road and 84 inches south of Osborn Road. This drain was connected to the Second Street storm drain at Second Street and plugged to the south. The drainage area north of Second Street has, therefore, been diverted to the east and no longer drains into the Scottsdale Road drain. Cutting off the watershed to the north makes available capacity in the drain that may be used to drain the western end of Osborn Road and drain the western end of the East Couplet between Osborn Road and the intersection with Scottsdale Road.

The consultant working on the West Couplet was contacted to determine the amount of flow draining to the Scottsdale Road drain from the West Couplet. The 100-year flow being discharged is 65 cfs and the hydraulic grade line was assumed to be at the top of the pipe.

We propose to discharge an additional 60 cfs from Osborn Road east of Scottsdale Road to the Scottsdale Road drain. Our assumption was also that the hydraulic grade line of the Scottsdale Road drain is at the top of the pipe.

The Scottsdale Road drain is an 84-inch pipe south of Osborn. The capacity of this pipe flowing full, using Manning's equation is approximately 416 cfs.

The flow being added (60 + 65) will leave an additional 291 cfs capacity available for future use.

SRP Irrigation Facilities

An existing 48-inch irrigation line owned by SRP which runs in Osborn Road from Scottsdale Road to Indian Bend Wash carries irrigation water to the golf course lake in the Wash. This line is also used to drain stormwater from Osborn Road. There are several catch basins along Osborn Road that are tied into the line. SRP has been asked about the acceptability of leaving the catch basins in service as they presently are and SRP responded that it is acceptable provided no new catch basins are added to the line. SRP has indicated that they require 300 miners inches (7.5 cfs) of capacity in this line for irrigation purposes.

Miller Road Drain

There is an existing 48-inch storm drain in Miller Road that turns east in Osborn Road and drains into the Indian Bend Wash. There are catch basins in Miller Road that drain into this line. This storm drain will remain in place. No new catch basins will be added to this drain. The outfall is located on the north side of Osborn Road, and the golf course operators and the City have requested that no additional flows be discharged north of Osborn Road.

Baseball Stadium Pumping Station

The Multi-Use Sports Facility playing field consists of an underdrainage system that retains rainwater falling on the playing field. The drainage system is controlled by an outlet valve that can be opened to release excess water from the underdrainage system. This valve outlets to a 12-inch drain pipe that flows to the existing stormwater pumping station located on the east side of 75th Street just north of Osborn Road. The capacity of the existing 12-inch drain pipe is estimated to be 6 cfs. The pumping station outlet is a 6-inch force main that outlets into an existing catch basin in Osborn Road.

The pump station on 75th Street will be abandoned as part of this project and the 12-inch drain from the stadium will be tied into the lateral planned for 75th Street. The 6 cfs discharge from the 12-inch drain has been included in the peak flow for the 75th Street lateral.

Areas on the periphery of the stadium along 75th Street have been included in the runoff calculation for the adjacent roadway. A portion of the stadium property along Osborn Road is retained in small basins adjacent to the street.

Baseball Stadium Parking Lot and Retention Area

The parking lot and retention area on the east side of 75th Street north of Osborn Road drains an area north of Osborn Road encompassing approximately 6.9 acres. At the request of the City, this drainage area will be tied into the existing Second Street drain. A lateral in 75th Street will be designed to pick up this flow as well as the flow in 75th Street.

Choctaw Park Drainage Facilities

Choctaw Park is located on the north side of Osborn Road just west of the Indian Bend Wash. This park serves as a drainage facility for the approximately forty acres of residential area to the north. The park is graded to serve as a detention area for large storm events with outlet pipes into the Indian Bend Wash.

A hydrologic and hydraulic investigation was conducted to evaluate: the amount of flow draining to the park for the 100-year event, the outflow characteristics of the outlet structures, and the potential for using storage capacity of the park for the new Osborn Road drain.

The drainage area contributing flow to the park was analyzed using the HEC-1 program. The peak 100-year runoff for this area was found to be 97 cfs. The volume of the park was analyzed and found to be 3.14 acre feet at maximum stage (no freeboard).

The outlet pipes of the park were analyzed to determine their capacity during the 100-year event. The outlet pipes consist of a 42-inch pipe and a 30-inch pipe that both drain into the Indian Bend Wash. A stage-outflow curve was developed for the outlet pipes and the results showed that the combined outflow capacity of the two pipes is 160 cfs at maximum stage.

The park was evaluated to assess its operation as a retention basin for the 100-year event. The mass-curve method was used and the following results were obtained:

The peak inflow of 97 cfs is attenuated to a peak outflow of 79 cfs.

The maximum storage used in the 100-year event is approximately 0.97 acre-feet.

The maximum stage in the park for the 100-year event is approximately 3.33 feet or an elevation of 1225.33.

The park facility is adequate as a retention facility for the area that it serves for the 100-year event.

The storage and routing calculations are included in Appendix D.

The City has requested an investigation of the potential for using the park as a storage basin for flows being routed in the new Osborn Road drain as a means of reducing the size of the storm drain. It appears that although there is some available storage in the basin, it would not have any significant impact on reducing the size of the main trunk line in Osborn Road. The reason is that the pipe in Osborn Road has reached its maximum size before it reaches Choctaw Park. In other words, the park is located too close to the outfall (Indian Bend Wash) to be effective.

In addition, the operators of the Continental Golf Course that is located in Indian Bend Wash have told us that increasing the amount of flow entering the Wash on the north side of Osborn Road would be detrimental to their golf course operation. They have requested that the main trunk line outfall be located on the south side of Osborn Road to prevent flooding of the front nine holes of the golf course. Further, the City has told us to avoid discharging additional storm water on the north side of Osborn to prevent more frequent over-the-road flows across Osborn Road.

As a result of the investigation of Choctaw Park, it is our recommendation to leave the park as it is presently and route all flows from the Osborn Road Storm Drain project into Indian Bend Wash south of Osborn Road.

Flowby at the Intersections of 75th Street/Second Street and Second Street/Miller Road

The intersections of 75th Street/Second Street and Second Street/Miller Road were evaluated for potential flowby conditions for the 100-year event. The first step in the evaluation consisted of a review of the Johnson Brittain Drainage Report for the Second Street Storm Drain. Two key points were extracted from this report:

1. No new catch basins were added to Second Street when the storm drain was built. Existing catch basins in Second Street were tied into the new Second Street Drain at 75th Street/Second Street. There are four existing catch basins at this intersection:

   - NW Corner – Single Type M on 75th Street
   - NW Corner – M1-L3 on Second Street

- SW Corner – Single Type M on Second Street
- NE Corner – Single Grated Inlet on Second Street

At Miller Road/Second Street there are:

- NE Corner – Single Type M Inlet on Miller Road
- NW Corner – Single Grated Inlet on Second Street
- SW Corner – Single Type M Inlet on Second Street
- NW Corner – Single Type M Inlet on Miller Road

2. The new Second Street drain was oversized to accommodate additional catch basins being added at a later date.

The drainage area impacting the 75th Street/Second Street intersection consists of the roadway of 75th Street form Indian School Road to Second Street, approximately 1,280 feet. The drainage area impacting the Second Street/Miller Road intersection consists of approximately 20 acres of mixed residential property.

Runoff volumes were computed for these two areas to determine the type and size of catch basins required to prevent this runoff from crossing Second Street. The runoff volume computed for 75th Street/Second Street is 15 cfs. The runoff volume computed for Second Street/Miller Road is 158 cfs.

New catch basins recommended for 75th Street at Second Street include one M2, L17 on the west side of 75th Street and one M2, L10 on the east side. We recommend the existing catch basins remain in service to intercept carryover flow.

The estimated carrying capacity of Miller Road with an 8" depth of flow is 48 cfs. The approach used in designing catch basins for Miller Road and Second Street assumes that any flow above the capacity of Miller Road will break out to the east across the church parking lot on the east side of Miller Road and actually bypass the intersection. This bypass flow will ultimately flow into Second Street east of Miller Road and then flow to Indian Bend Wash.

We recommend two M2, L17 catch basins on each side of Miller Road just north of Second Street. These new catch basins in conjunction with the existing catch basins will intercept all flow in Miller Road up to a depth of eight inches.

The addition of catch basins on Miller Road just north of Second Street will do a great deal to alleviate the potential for flowby at the intersection; however, it would not satisfy the requirements of the City's drainage ordinance for Miller Road (all flow to remain in the R/W at a depth not to exceed 8 inches). Two M2, L17 catch basins on each side of Miller Road just north of Second Street will intercept 45.2 cfs with 2.4 cfs flowby intercepted by the existing catch basins. This amount of interception is considered acceptable since the remaining flow will break out and continue to flow east in Second Street.

VI. RESULTS OF THE HYDROLOGIC INVESTIGATION

The results of the hydrologic investigation is summarized in Table 2. The drainage area map (Exhibit 5) shows the various drainage area delineations used in the hydrologic analysis. The peak discharges for the various reaches along Osborn Road were found to be substantially higher than previous discharges found in the Boyle Report.

TABLE 2 – Runoff Summary

Location	*10-Yr.*	*25-Yr.*	*50-Yr.*	*100-Yr.*
Brown, north of Osborn	34	43	52	60
Osborn, east of Brown	23	29	35	41
Osborn, west of Civic Center	38	48	57	66
E. Couplet, south of Osborn	76	96	115	133
4th St., west of Civic Center	47	60	72	83
Civic Center, south of 4th St.	57	71	85	98
Civic Center, north of Osborn	70	89	106	122
Osborn, east of Civic Center	185	233	279	321
Osborn, west of 75th St.	192	242	289	333
75th St., north of Osborn	29	39	47	56
Osborn, east of 75th St.	241	307	369	427
Osborn, west of Miller	253	322	387	448
Osborn, east of Miller	283	361	434	503
Osborn, west of IBW	293	373	449	520
Choctaw Park	36	56	76	97

The complete HEC-1 input and output files with accompanying routing diagrams are located in Appendix A.

VII. PROPOSED CATCH BASIN LOCATIONS

The catch basins proposed are either MAG or City of Phoenix standard catch basins. Existing catch basins have been considered and will remain in service where practical. A complete summary of proposed catch basin locations and interception rates is located in Table 3. The City's criteria for locating catch basins on Osborn Road (minor arterial) is to provide one dry lane in each direction and to limit the depth of flow in the street to 8 inches for the 100-year event. In addition, this flow must be kept within the right-of-way.

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TABLE 3 – Catch Basin Summary

INLET		DA	INLET	Q	Q_c	Q_T	S_o	GUTTER		PAVEMENT		D	T	a	INLET LENGTH		Q_i/Q	Q_i	Q_c
NO	STATION**	NO	TYPE	cfs	cfs	cfs	%	S_x	z/n	S_x	z/n	FT	FT	IN	ACT.	CORR.		cfs	cfs
1	3+83.50(0)	ON1	M-1,L-10	3.0	0	3.0	0.67	5.63	1366	1.67	3742.5	0.30	13	2	13	10.4	0.85	2.5	0.5
2	1+33.00(B)	N1W	M-2,L-17	28.5	0	28.5	0.45	5.63	1366	1.55	4032.0	0.58	22	2	37	29.6	0.70	20.0	8.5
3	1+33.00(B)	N1E	M-2,L-17	28.5	0	28.5	0.45	.0563	1366	1.55	4032.0	0.58	22	2	37	29.6	0.70	20.0	8.5
4	1+00.00(B)	---	M-2,L-17	--	8.5	8.5	0.45	5.63	1366	1.55	4032.0	0.42	22	2	37	29.6	0.81	7.0	1.5
5	1+00.00(B)	---	M-1,L-10	--	8.5	8.5	0.45	.0563	1366	1.55	4032.0	0.42	22	2	37	29.6	0.81	7.0	1.5
6*	4+72.50(O)	---	GRATED DBL.CB	0	3.5	3.5	0.27	5.63	1366	1.70	3676.5	0.35	15.7	0	4.125	---	0.40	1.0	2.5
7	6+45.00(O)	O2N	M-1,L-13	1.0	2.5	3.5	0.27	5.63	1366	1.70	3676.5	0.35	15.7	2	16	12.0	0.86	3.0	0.5
8	6+45.00(O)	O1S	2-Type N, Triple 1-Type N, Single	6	0	6	0.27	5.63	1366	2.52	2481.2	0.471	15.4	2	20	16.0	0.9750	5.9	0.1
9	6+60.00(O)	N2	MAG TYPE F	14	---	14	0.5	----	----	----	------	0.29	----	--	3.3	2.15	1.00	14.0	---
10	7+00.00(O)	N3	MAG TYPE F	18	---	18	0.5	----	----	----	------	0.33	----	--	3.3	2.42	1.00	18	---
11	12+19.00(O)	O3N,04N	M-1,L-17	5	0.5	5.5	0.29	5.63	1366	1.70	3676.5	0.402	18.7	2	20	16.0	0.93	5.1	0.4
12	12+21.00(O)	O2S	2-Type N, Triple 1-Type N, Single	6	0.1	6.1	0.29	5.63	1366	2.66	2349.6	0.476	14.8	2	20	16.0	0.9739	5.9	0.2
13*	12+39.00(O)	---	M-1	--	0.4	0.4	0.29	5.63	1366	1.70	1376.5	0.189	6.2	2	3	2.4	0.85	0.3	0.1
14*	12+41.00(O)	---	M-1	--	0.2	0.2	0.29	5.63	1366	2.66	2349.6	0.132	1.8	2	3	2.4	1.0	0.2	---
15	7+30.00(F)	4N	M-2,L-17	83	---	83	0.33	5.63	1366	0.73	8562.0	.95	30	2	37	29.6	0.80	33.2	8.3
16	7+30.00(F)	4S	M-2,L-17	83	---	83	0.33	5.63	1366	0.73	8562.0	.95	30	2	37	29.6	0.80	33.2	8.3
17	7+70.00(F)	------	M-1,L-17	--	8.3	8.3	0.33	5.63	1366	0.73	8562.0	0.35	30	2	20	16.0	0.92	7.6	0.7
18	7+70.00(F)	------	M-1,L-17	--	8.3	8.3	0.33	5.63	1366	2.07	3019.0	0.48	19.2	2	20	16.0	0.92	7.6	0.7
19	7+54.00(CC)	CC1W	M-2,L-17	15	---	15	0.44	5.63	1366	0.57	10,964.0	0.337	21.0	2	37	29.4	0.64	9.7	5.3
20	6+64.00(CC)	------	M-2,L-17	--	5.3	5.3	0.44	5.63	1366	0.57	10,964.0	0.21	21.0	2	37	29.4	0.88	4.7	0.6
21	5+00.00(CC)	------	M-1,L-10	--	2.2	2.2	0.39	5.63	1366	1.43	4371.0	0.28	13.8	2	13	10.4	0.96	2.1	0.1
22	2+20.00(CC)	N5W	M-2,L-17	14	0.1	14.1	0.30	5.63	1366	1.43	4371.0	0.45	21.0	2	37	29.4	0.86	12.1	2.0
23	0+59.00(CC)	------	M-1,L-10	--	2.0	2.0	0.30	5.63	1366	0.95	6579.0	0.19	20.0	2	13	10.4	0.78	1.6	0.4
24	2+20.00(CC)	N5E	-------	8.0	---	8.0	0.38	5.63	1366	2.20	2841.0	0.468	17.5	2	20	16.0	0.86	6.9	1.1
25	0+61.00(CC)	------	-------	--	1.1	1.1	0.38	5.63	1366	1.40	4464.0	0.23	10.5	2	6	4.8	0.80	0.9	0.2
26*	13+72.83(O)	------	GRATED DBL. CB	--	0.7	0.7	0.47	5.63	1366	1.70	1376.5	0.206	7.2	2	4.125	----	0.14	0.1	0.6
27	19+20.00(O)	O5N	M-1,L-17	4.0	0.6	4.6	0.47	5.63	1366	1.70	1376.5	0.354	15.9	2	20	16.0	0.94	4.3	0.3

E019600

TABLE 3 – Catch Basin Summary

INLET NO	INLET STATION**	DA NO	INLET TYPE	Q cfs	Q_c cfs	Q_T cfs	S_o %	GUTTER S_x	GUTTER z/n	PAVEMENT S_x	PAVEMENT z/n	D FT	T FT	a IN	INLET LENGTH ACT.	INLET LENGTH CORR.	Q_i/Q	Q_i cfs	Q_c cfs
28	19+20.00(O)	O3S	2-Type N, Triple	8.0	—	8.0	0.47	5.63	1366	2.52	2480.2	0.472	15.4	2	20	16.0	0.8617	6.9	1.1
29	1+20.00(S)	N6W	M-1,L-6	2.5	—	2.5	0.15	5.63	1366	1.05	5952.4	0.34	20	2	9	7.2	0.84	2.1	0.4
30	1+22.00(S)	N6E	M-1,L-6	2.5	—	2.5	0.10	5.63	1366	1.20	5208.3	0.34	20	2	9	7.2	0.84	2.1	0.4
31*	20+18.90(O)	——	GRATED DBL. CB	–	1.1	1.1	0.79	5.63	1366	1.38	4529.0	0.208	9.0	2	4.125	—	0.27	0.3	0.8
32	23+15.00(O)	O4S1	2-Type N, Triple	6	1.4	7.4	0.44	5.63	1366	2.52	2480.2	0.454	14.9	2	20	16.0	0.8740	6.5	0.9
33	23+15.00(O)	O6N1	2-Type N, Triple	15	0.8	15.8	0.44	5.63	1366	1.70	1376.5	0.531	26.5	2	37	29.6	0.90	14.2	1.6
34	25+60.00(O)	O4S2	3-Type N, Triple	10	0.9	10.9	0.44	5.63	1366	2.52	2480.2	0.531	17.8	2	37	27.8	1.00	10.9	0
35	25+63.00(O)	O6N2	2-Type N, Triple	9	1.6	10.6	0.44	5.63	1366	1.70	1376.5	0.462	22.3	2	37	29.6	0.9821	10.4	0.2
36*	25+80.50(O)	——	M-1	–	0	0	0.44	5.63	1366	2.52	2480.2	0	0	2	3	2.4	0	0	0
37*	25+80.50(O)	——	M-1	–	0.2	0.2	0.44	5.63	1366	1.70	1376.5	0.147	3.7	2	3	2.4	1.00	0.2	—
38	1+17.00(M)	N7W	M-2,L-17	29.5	—	29.5	0.36	5.63	1366	2.32	2694.0	0.68	22	2	37	29.4	0.7944	22.2	5.8
39	1+17.00(M)	N7E	M-2,L-17	29.5	—	29.5	0.36	5.63	1366	2.32	2694.0	0.68	22	2	37	29.4	0.7944	22.2	5.8
40	0+60.00(M)	——	M-1,L-17	–	5.8	5.8	0.36	5.63	1366	2.32	2694.0	0.434	15.1	2	20	16.0	0.9514	5.5	0.3
41	0+60.00(M)	——	M-1,L-17	–	5.8	5.8	0.36	5.63	1366	2.32	2694.0	0.434	15.1	2	20	16.0	0.9514	5.5	0.3
42*	0+50.00(M)	——	M-1	–	0.3	0.3	0.36	5.63	1366	3.55	1760.6	0.194	3.1	2	3	2.4	1.00	0.3	0
43	30+61.00(O)	O7N	M-1,L-17	5	—	5.0	0.42	5.63	1366	2.00	3125.0	0.387	15.2	2	20	16.0	0.9543	4.8	0.2
44	30+61.00(O)	O5S	M-1,L-10	3.0	—	3.0	0.42	5.63	1366	2.00	3125.0	0.331	12.4	2	13	10.4	0.9073	2.7	0.3
45	34+21.00(O)	O8N	M-1,L-17	4	0.2	4.2	0.42	5.63	1366	2.00	3125.0	0.367	14.2	2	20	16.0	0.9944	4.1	0.1
46	34+21.00(O)	O6S	M-1,L-17	5.0	0.3	5.3	0.42	5.63	1366	2.00	3125.0	0.394	15.5	2	20	16.0	0.9399	5.0	0.3
47	3+40.00(S)	S1W	M-1,L-17	5.0	—	5.0	0.26	5.63	1366	1.60	3906.2	0.39	19.2	2	20	16.0	0.96	4.8	0.2
48	3+80.00(S)	S1E	M-1,L-17	5.0	—	5.0	0.19	5.63	1366	1.60	3906.2	0.41	20.0	2	20	16.0	0.98	4.9	0.1
49	SMH PKG(O)	N4	MAG TYPE F	14	—	14.0	—	—	—	—	—	—	—	-	6	—	1.00	14.0	—

* EXISTING CATCH BASIN
**STATIONING NOTES:

OSBORN(O): STA. 10+00 @ MONUMENT LINE SCOTTSDALE ROAD
BROWN(B): STA. 10+00 @ MONUMENT LINE OSBORN ROAD
CIVIC CENTER(CC): STA. 10+00 @ MONUMENT LINE OSBORN ROAD
SEVENTY FIFTH(S): STA. 10+00 @ MONUMENT LINE OSBORN ROAD
MILLER(M): STA. 10+00 @ MONUMENT LINE OSBORN ROAD
FOURTH(F): STA. 0+00 @ MONUMENT LINE BROWN ROAD

Maintaining one dry lane in each direction was evaluated but found to be prohibitive because of the relatively flat longitudinal grades along Osborn Road and the inability of the roadway to convey enough water to make this standard practical.

Allowing the flow in the street to accumulate until it reaches the crown of the street was considered and found to be quite reasonable in terms of limiting the depth of flow and providing for practical catch basin spacing along Osborn Road. Therefore, allowing spread to the crown of Osborn Road has been used for our analysis. The criteria of one dry lane in each direction is expected to be used for the East Couplet.

The flowby at all intersections was limited to near zero (less than 1 cfs) where practical. The only exception is at Brown Road where the flowby from double M2-L17 basins is 1.5 cfs.

Off-site runoff concentration points were identified and catch basins located to intercept the flow. These off-site locations include the Post Office property and the Hospital on the north side of Osborn Road, west of Civic Center. In addition, the runoff concentrating at the existing retention basin on 75th Street north of Osborn Road will be intercepted by new catch basins and routed to the new Osborn Road Drain.

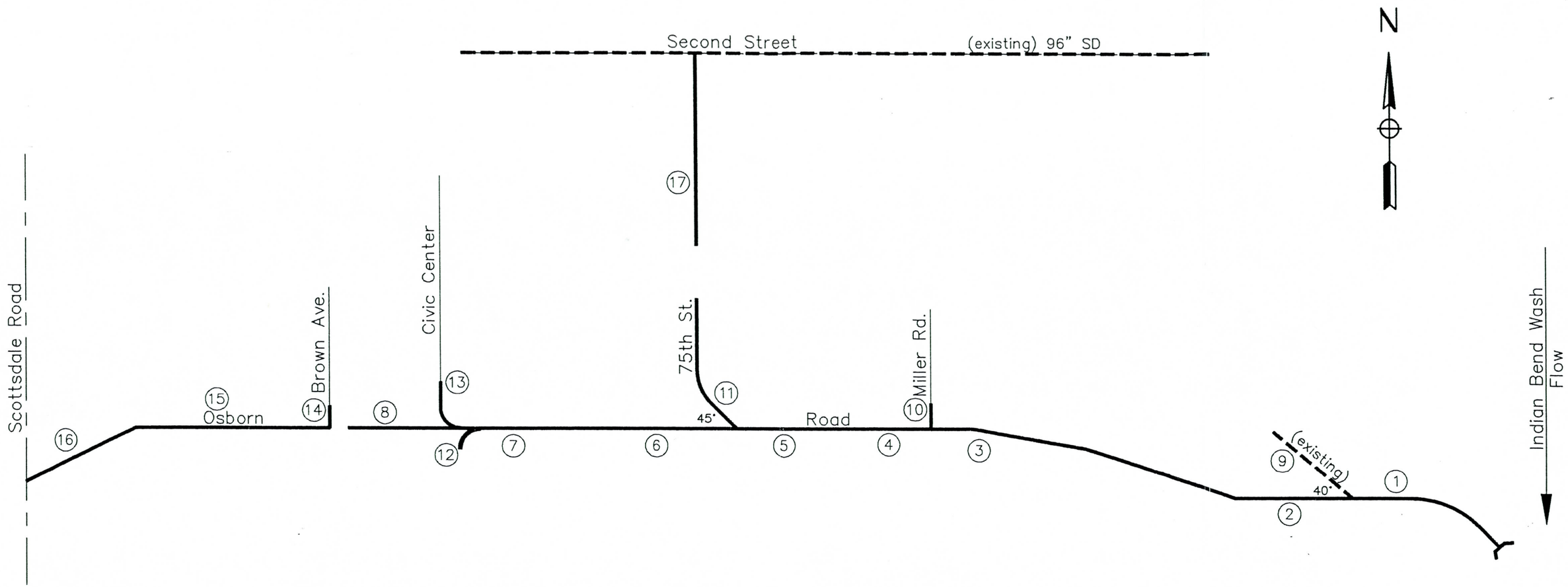
VIII. STORM DRAIN SIZES

Based on the results of the hydrologic and hydraulic analysis, storm drain sizes have been established for the various reaches of the Osborn Road drain. A tailwater elevation of 1,219.00 was assumed for the outlet at Indian Bend Wash. This elevation is 2 feet above the normal water surface of the golf course lake south of Osborn Road and was approved for use after discussion with the City Drainage staff. The storm drain sizes are summarized in Table 4. The summary of hydraulic calculations is included in Appendix B.

TABLE 4 – Storm Drain Summary

Location	*Q*	*Pipe Size*
Brown, north of Osborn	60	48"
Osborn, between Brown and Civic Center	66	54"
4th Street, west of Civic Center	83	54"
Civic Center, north of Osborn	122	60"
East Couplet, south of Osborn	133	54"
Osborn, between Civic Center and 75th St.	333	72"
75th Street, north of Osborn	11	24"
75th Street, south of Osborn	12	18"
Osborn, between 75th St. and Miller Road	392	72"
Miller Road, north of Osborn	59	48"
Osborn, east of Miller	464	84"

DRAINRPT.ECO



NO.	Q (cfs)	DIAMETER
1	514	84"
2	464	84"
3	447	8'x5' RCB
4	392	8'x5' RCB
5	392	72"
6	392	72"
7	333	72"
8	66	54"
9	50	42"
10	59	48"

NO.	Q (cfs)	DIAMETER
11	11	24"
12	133	40"x65" ARCH
13	122	60"
14	57	48"
15	60	48"
16	60	48"
17	56	36"

CITY OF SCOTTSDALE

OSBORN ROAD STORM DRAIN
SCOTTSDALE ROAD TO
INDIAN BEND WASH

PIPE SIZES

EXHIBIT 4

Greiner

APPENDIX A

HEC-1 INPUT AND OUTPUT

HEC-1
10-YEAR

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            FEBRUARY 1981              *
*           REVISED 02 AUG 88           *
*                                       *
*  RUN DATE  04/28/1993  TIME  14:12:41 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
```

```
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   HEC-1 FOR EAST COUPLET, JOB NUMBER E019600
  2           ID   CITY OF SCOTTSDALE PROJECT NUMBERS: S2703 AND F2703
  3           ID   10-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **
  4           ID
  5           ID   DISCHARGE COMPUTATIONS FOR OFFSITE EXISTING DRAINAGE AREAS,
  6           ID   BOTH NORTH AND SOUTH OF OSBORN ROAD, AND ON-SITE
  7           ID   AREAS FROM SCOTTSDALE ROAD IN THE WEST TO THE WEST SIDE MILLER
  8           ID   ROAD IN THE EAST.
  9           ID
 10           ID   INPUT FILE NAME: EAST-10.DAT
 11           ID
 12           IT       2       0       0     300       0       0       0       0
 13           IO       5       0       0       0       0       0       0       0
              *DIAGRAM

 14           KK     O1N
 15           KM
 16           KM   ***********************************************
 17           KM   * DRAINAGE AREA O1N DISCHARGE COMPUTATION.  *
 18           KM   * ON-SITE AREA 1 NORTH SIDE OF OSBORN ROAD. *
 19           KM   ***********************************************
 20           KM
 21           PH       0       0    0.53    0.97    1.57    1.72    1.83    2.02
 22           BA   .0007
 23           LS       0    84.4    60.7
 24           UD   0.060       0       0

 25           KK     N1W
 26           KM
 27           KM   *********************************************
 28           KM   * DRAINAGE AREA N1W DISCHARGE COMPUTATION *
 29           KM   * OFFSITE NORTH SIDE AREA 1 WEST SIDE OF  *
 30           KM   * CONTRIBUTING STREET                     *
 31           KM   *********************************************
 32           KM
 33           BA   .0097       0       0       0       0       0       0       0
 34           LS       0    81.7    72.9       0       0       0       0       0
 35           UD   0.096

 36           KK     N1E
 37           KM
 38           KM   ***********************************************
 39           KM   * DRAINAGE AREA N1E DISCHARGE COMPUTATION.  *
 40           KM   * OFF-SITE AREA NORTH OF OSBORN ROAD FOR    *
 41           KM   * BROWN AVE. ON THE EAST SIDE.               *
 42           KM   ***********************************************
 43           KM
 44           BA   .0040
 45           LS       0    79.0    85.0
 46           UD   0.119       0       0
```

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

  47          KK     CH1
  48          KM
  49          KM   ****************************************************
  50          KM   * COMBINE THE HYDROGRAPHS FROM D.A. N1W WITH D.A. *
  51          KM   * N1E                                             *
  52          KM   ****************************************************
  53          KM
  54          HC       2

  55          KK     CH2
  56          KM
  57          KM   ************************************************
  58          KM   * COMBINE THE COMBINED HYDROGRAPH OF D.A. N1W *
  59          KM   * AND N1E WITH THE HYDROGRAPH FROM D.A. O1N   *
  60          KM   * THIS FLOW WILL BE TAKEN TO THE EXISTING     *
  61          KM   * SCOTTSDALE ROAD DRAIN.                      *
  62          KM   ************************************************
  63          KM
  64          HC       2

  65          KK     O2N
  66          KM
  67          KM   *******************************************
  68          KM   * DRAINAGE AREA O2N DISCHARGE COMPUTATION *
  69          KM   *******************************************
  70          KM
  71          BA   .0002
  72          LS       0    98.0
  73          UD   0.060       0       0

  74          KK     N2
  75          KM
  76          KM   ******************************************
  77          KM   * DRAINAGE AREA N2 DISCHARGE COMPUTATION *
  78          KM   ******************************************
  79          KM
  80          BA   .0029
  81          LS       0    79.0    85.0
  82          UD    .070       0       0

  83          KK     N3
  84          KM
  85          KM   *******************************************
  86          KM   * DRAINAGE AREA N3 DISCHARGE COMPUTATION *
  87          KM   *******************************************
  88          KM
  89          BA   .0041
  90          LS       0    79.0    85.0
  91          UD   0.090       0       0
```

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

  92          KK     CH4
  93          KM
  94          KM   ******************************************
  95          KM   * COMBINE HYDROGRAPH FOR D.A. N2 WITH THE *
  96          KM   * HYDROGRAPH FROM D.A. N3                 *
  97          KM   ******************************************
  98          HC       3

  99          KK     O3N
 100          KM
 101          KM   ******************************************
 102          KM   * DRAINAGE AREA O3N DISCHARGE COMPUTATION *
 103          KM   ******************************************
 104          KM
 105          BA   .0001
 106          LS       0    98.0
 107          UD   0.060       0       0

 108          KK     O1S
 109          KM
 110          KM   *********************************************
 111          KM   * DRAINAGE AREA O1S DISCHARGE COMPUTATION  *
 112          KM   * ON-SITE AREA 1 SOUTH                     *
 113          KM   *********************************************
 114          KM
 115          BA   .0014
 116          LS       0    79.0    65.0
 117          UD   0.062       0       0

 118          KK     CH5
 119          KM
 120          KM   **********************************************
 121          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH4  *
 122          KM   * WITH THE HYDROGRAPHS FROM COMBINED        *
 123          KM   * O3N, AND O1S.  THIS CONCENTRATION POINT   *
 124          KM   * IS ABOUT MID WAY BETWEEN BROWN AVE. AND   *
 125          KM   * CIVIC CENTER AND IS FOR THE COMBINED      *
 126          KM   * FOR BOTH NORTH, SOUTH AND ON-SITE OSBORN  *
 127          KM   **********************************************
 128          HC       3

 129          KK      R2
 130          KM
 131          KM   *********************************************
 132          KM   * ROUTE THE COMBINED HYDROGRAPH CH5 TO THE *
 133          KM   * WEST SIDE OF CIVIC CENTER AVE.           *
 134          KM   *********************************************
 135          RC   0.013   0.016   0.013   525.0  0.0029   10.00
 136          RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
 137          RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00
```

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

 138          KK     N4
 139          KM
 140          KM   ******************************************
 141          KM   * DRAINAGE AREA N4 DISCHARGE COMPUTATION *
 142          KM   ******************************************
 143          KM
 144          BA   .0029
 145          LS       0    79.0    85.0
 146          UD   0.060       0       0

 147          KK     O4N
 148          KM
 149          KM   *******************************************
 150          KM   * DRAINAGE AREA O4N DISCHARGE COMPUTATION *
 151          KM   *******************************************
 152          KM
 153          BA   .0008
 154          LS       0    98.0
 155          UD   0.060       0       0

 156          KK     O2S
 157          KM
 158          KM   *******************************************
 159          KM   * DRAINAGE AREA O2S DISCHARGE COMPUTATION *
 160          KM   *******************************************
 161          KM
 162          BA   .0012
 163          LS       0    98.0
 164          UD   0.060       0       0

 165          KK     CH6
 166          KM
 167          KM   **********************************************
 168          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH5  *
 169          KM   * WITH THE HYDROGRAPHS FROM COMBINED N4,    *
 170          KM   * ON4, AND O2S.  THIS CONCENTRATION POINT   *
 171          KM   * IS WEST OF CIVIC CENTER AVE AND COMBINES  *
 172          KM   * THE FLOWS FROM NORTH, SOUTH AND ON-SITE   *
 173          KM   * FOR OSBORN ROAD.                          *
 174          KM   **********************************************
 175          HC       4

 176          KK     EC1
 177          KM
 178          KM   **********************************************
 179          KM   * DRAINAGE AREA CONSISTING OF MEDICAL       *
 180          KM   * OFFICES DRAINING TO WELLS FARGO AND       *
 181          KM   * MONTEREY.                                 *
 182          KM   **********************************************
 183          BA   .0078
 184          LS       0    82.0    71.0
 185          UD   .0835
```

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

 186          KK     EC2
 187          KM
 188          KM   ***********************************************
 189          KM   * DRAINAGE AREA AT NE CORNER OF SCOTTSDALE  *
 190          KM   * ROAD AND MONTEREY.                         *
 191          KM   ***********************************************
 192          BA   .0037
 193          LS       0    79.0    85.0
 194          UD   .0971

 195          KK    CH01
 196          KM
 197          KM   ***********************************************
 198          KM   * COMBINE HYDROGRAPHS EC1 & EC2.            *
 199          KM   ***********************************************
 200          HC       2

 201          KK     EC3
 202          KM
 203          KM   ***********************************************
 204          KM   * DRAINAGE AREA CONSISTING OF SCOTTSDALE    *
 205          KM   * MEDICAL PAVILION.                          *
 206          KM   ***********************************************
 207          BA   .0038
 208          LS       0    79.0    85.0
 209          UD   .0222

 210          KK     EC4
 211          KM
 212          KM   ***********************************************
 213          KM   * DRAINAGE AREA CONSISTING OF HOSPITAL      *
 214          KM   * PARKING LOT.                               *
 215          KM   ***********************************************
 216          BA   .0062
 217          LS       0    98.0
 218          UD   .0644

 219          KK    CH02
 220          KM
 221          KM   ***********************************************
 222          KM   * COMBINE HYDROGRAPHS CH01, EC3 AND EC4     *
 223          KM   ***********************************************
 224          HC       3

 225          KK     EC5
 226          KM
 227          KM   ***********************************************
 228          KM   * DRAINAGE AREA CONSISTING OF THE COUPLET   *
 229          KM   * ROADWAY.                                   *
 230          KM   ***********************************************
 231          BA   .0061
 232          LS       0    98.0
 233          UD   0.075
```

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

 234          KK     EC6
 235          KM
 236          KM   ***********************************************
 237          KM   * DRAINAGE AREA CONSISTING OF NURSING HOME  *
 238          KM   ***********************************************
 239          BA   .0009
 240          LS       0    69.0    85.0
 241          UD   .0122

 242          KK    CH03
 243          KM
 244          KM   ***********************************************
 245          KM   * COMBINED CH02, EC5 AND EC6                 *
 246          KM   ***********************************************
 247          HC       3

 248          KK     R04
 249          KM
 250          KM   ***********************************************
 251          KM   * ROUTE ALL E. COUPLET HYDROGRAPHS TO        *
 252          KM   * INTERSECTION CIVIC CENTER/OSBORN           *
 253          KM   ***********************************************
 254          RC   0.013   0.016   0.013   850.0  .0045   102
 255          RX     100     110     110   128.5    147   147  157  160
 256          RY     101   100.5   100.0  100.57  100.0 100.5  101  101

 257          KK    CH04
 258          KM
 259          KM   ***********************************************
 260          KM   * COMBINE COUPLET HYDROGRAPH WITH CH6        *
 261          KM   ***********************************************
 262          HC       2

 263          KK      4N
 264          KM
 265          KM   *********************************************
 266          KM   * DRAINAGE AREA 4N DISCHARGE COMPUTATION  *
 267          KM   * OFFSITE NORTH SIDE FOR THE AREA NORTH   *
 268          KM   * OF 4TH STREET FORM BROWN EAST TO CCB    *
 269          KM   *********************************************
 270          KM
 271          BA   .0128       0       0
 272          LS       0    79.0    85.0
 273          UD   0.080       0       0

 274          KK      4S
 275          KM
 276          KM   *********************************************
 277          KM   * DRAINAGE AREA 4S DISCHARGE COMPUTATION  *
 278          KM   * FOR 4TH STREET SOUTH FROM BROWN AVE.    *
 279          KM   * TO CIVIC CENTER BOULEVARD. ON THE WEST. *
 280          KM   *********************************************
 281          KM
 282          BA   .0043
```

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

 283          LS       0    79.0    85.0
 284          UD   0.060       0       0

 285          KK     CH4
 286          KM
 287          KM   *******************************************
 288          KM   * THIS IS THE COMBINED HYDROGRAPH FOR 4TH *
 289          KM   * STREET AT CIVIC CENTER BOULEVARD.       *
 290          KM   *******************************************
 291          HC       2

 292          KK    CC1W
 293          KM
 294          KM   ****************************************************
 295          KM   * DRAINAGE AREA CC1W DISCHARGE COMPUTATION        *
 296          KM   * FOR THE AREA NORTH OF 4TH STREET CONCENTRATING *
 297          KM   * IN CIVIC CENTER BOULEVARD ON THE WEST SIDE     *
 298          KM   ****************************************************
 299          KM
 300          BA   .0032
 301          LS       0    79.0    85.0
 302          UD   0.061       0       0

 303          KK   CHCCN
 304          KM
 305          KM   ***************************************************
 306          KM   * COMBINE THE COMBINED HYDROGRAPH, CH4 WITH     *
 307          KM   * CC1W.  THIS IS THE COMBINED FLOW FOR 4TH ST. *
 308          KM   * AND CIVIC CENTER BOULEVARD AT 4TH STREET.     *
 309          KM   ***************************************************
 310          HC       2

 311          KK     RCC
 312          KM
 313          KM   ************************************************************
 314          KM   * ROUTE THE COMBINED HYDROGRAPH CHCCN TO THE INTERSECTION *
 315          KM   * OSBORN ROAD AND CIVIC CENTER BOULEVARD.                 *
 316          KM   ************************************************************
 317          RC   0.013   0.016   0.013   545.0  0.0030  241.88
 318          RX   100.0   105.0  105.42   105.5   107.0  127.98  127.99   128.0
 319          RY  241.88  241.80  241.80  241.30  241.38  241.68  241.80  241.88

 320          KK     N5W
 321          KM
 322          KM   *********************************************
 323          KM   * DRAINAGE AREA N5W DISCHARGE COMPUTATION *
 324          KM   * FOR CIVIC CENTER BOULEVARD FROM 4TH ST. *
 325          KM   * TO CIVIC CENTER BOULEVARD. ON THE WEST. *
 326          KM   *********************************************
 327          KM
 328          BA   .0029
 329          LS       0    79.0    85.0
 330          UD   0.060       0       0
```

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

  331         KK     N5E
  332         KM
  333         KM   *******************************************
  334         KM   * DRAINAGE AREA N5E DISCHARGE COMPUTATION *
  335         KM   *******************************************
  336         KM
  337         BA   .0019
  338         LS       0    98.0
  339         UD   0.085       0

  340         KK  CHCCNT
  341         KM
  342         KM   ****************************************************
  343         KM   * THIS WILL PRODUCE THE COMBINED HYDROGRAPH FOR *
  344         KM   * CIVIC CENTER AT OSBORN ROAD FROM THE NORTH.   *
  345         KM   * COMBINE THE COMBINED HYDROGRAPH FOR CHCCN     *
  346         KM   * WITH D.A. N5W AND N5E.                       *
  347         KM   ****************************************************
  348         HC       3

  349         KK     CH7
  350         KM
  351         KM   ***********************************************
  352         KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH6   *
  353         KM   * AND CHCCNT WITH THE HYDROGRAPH FROM EC1.   *
  354         KM   * THIS CONCENTRATION POINT IS EAST OF CIVIC  *
  355         KM   * CENTER AVE AND COMBINES THE FLOWS FROM     *
  356         KM   * NORTH, SOUTH AND ON-SITE FOR OSBORN ROAD.  *
  357         KM   ***********************************************
  358         HC       2

  359         KK      R3
  360         KM
  361         KM   *********************************************
  362         KM   * ROUTE THE COMBINED HYDROGRAPH CH7 TO THE *
  363         KM   * WEST SIDE OF 75TH STREET                 *
  364         KM   *********************************************
  365         RC   0.013   0.016   0.013   670.0  0.0047   10.00
  366         RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
  367         RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00

  368         KK     O5N
  369         KM
  370         KM   *******************************************
  371         KM   * DRAINAGE AREA O5N DISCHARGE COMPUTATION *
  372         KM   *******************************************
  373         KM
  374         BA   .0007
  375         LS       0    98.0
  376         UD   0.060       0       0
```

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

 377          KK     O3S
 378          KM
 379          KM   *******************************************
 380          KM   * DRAINAGE AREA O3S DISCHARGE COMPUTATION *
 381          KM   *******************************************
 382          KM
 383          BA   .0019
 384          LS       0    86.0    53.7
 385          UD   0.060       0       0

 386          KK     CH8
 387          KM
 388          KM   ************************************************
 389          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH7  *
 390          KM   * WITH THE HYDROGRAPHS FROM COMBINED O5N,   *
 391          KM   * AND O3S.  THIS CONCENTRATION POINT IS     *
 392          KM   * EAST OF CIVIC CENTER AVE AND COMBINES     *
 393          KM   * THE FLOWS FROM NORTH, SOUTH AND ON-SITE   *
 394          KM   * FOR OSBORN ROAD.                          *
 395          KM   ************************************************
 396          HC       3

 397          KK     N6W
 398          KM
 399          KM   *******************************************
 400          KM   * DRAINAGE AREA N6W DISCHARGE COMPUTATION *
 401          KM   *******************************************
 402          KM
 403          BA   .0008
 404          LS       0    83.8    48.8
 405          UD   0.064       0       0

 406          KK     N6E
 407          KM
 408          KM   *******************************************
 409          KM   * DRAINAGE AREA N6E DISCHARGE COMPUTATION *
 410          KM   *******************************************
 411          KM
 412          BA   .0004
 413          LS       0    98.0
 414          UD   0.060       0

 415          KK    CH8A
 416          KM
 417          KM   ************************************************
 418          KM   * COMBINE HYDROGRAPHS FOR D.A. N6W AND N6E *
 419          KM   * THIS IS THE FLOW COMING FROM THE NORTH   *
 420          KM   * ALONG 75TH STREET TO OSBORN.              *
 421          KM   ************************************************
 422          KM
 423          HC       2
```

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

 424          KK    BOYS
 425          KM
 426          KM   ********************************************
 427          KM   * DRAINAGE AREA BOYS DISCHARGE COMPUTATION *
 428          KM   ********************************************
 429          KM
 430          BA   .0013
 431          LS       0    79.0    85.0
 432          UD   0.060       0       0

 433          KK     S1W
 434          KM
 435          KM   *********************************************
 436          KM   * DRAINAGE AREA S1W DISCHARGE COMPUTATION *
 437          KM   * AREA SOUTH 1 WEST SIDE OF CONTRIBUTING  *
 438          KM   * SIDE STREET.                            *
 439          KM   *********************************************
 440          KM
 441          BA   .0012
 442          LS       0    83.8    63.8
 443          UD   0.060       0       0

 444          KK     S1E
 445          KM
 446          KM   *********************************************
 447          KM   * DRAINAGE AREA S1E DISCHARGE COMPUTATION *
 448          KM   *********************************************
 449          KM
 450          BA   .0012
 451          LS       0    82.2    70.8
 452          UD   0.060       0       0

 453          KK     CH9
 454          KM
 455          KM   ****************************************************
 456          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH8        *
 457          KM   * WITH THE COMBINED HYDROGRAPH CH8A WITH THE      *
 458          KM   * HYDROGRAPHS FROM S1W, S1E, BOYS                 *
 459          KM   * THIS CONCENTRATION POINT IS EAST OF 75TH ROAD   *
 460          KM   * AND COMBINES THE FLOWS FROM NORTH, SOUTH AND    *
 461          KM   * ON-SITE FOR OSBORN ROAD.                        *
 462          KM   ****************************************************
 463          HC       5

 464          KK      R4
 465          KM
 466          KM   *********************************************
 467          KM   * ROUTE THE COMBINED HYDROGRAPH CH9 TO STA  *
 468          KM   * 22+85.00 APPROXIMATELY HALF WAY TO MILLER *
 469          KM   *********************************************
 470          KM
 471          RC   0.013   0.016   0.013  365.00  0.0044   10.00
 472          RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
 473          RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00
```

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

 474          KK   O6N1
 475          KM
 476          KM  *********************************************
 477          KM  * DRAINAGE AREA O6N1 DISCHARGE COMPUTATION *
 478          KM  *********************************************
 479          KM
 480          BA  .0048
 481          LS      0    88.4    19.0
 482          UD  0.126       0       0

 483          KK   O4S1
 484          KM
 485          KM  *********************************************
 486          KM  * DRAINAGE AREA O4S1 DISCHARGE COMPUTATION *
 487          KM  *********************************************
 488          KM
 489          BA  .0012
 490          LS      0    79.0    85.0
 491          UD  0.060       0       0

 492          KK   CH10
 493          KM
 494          KM  ***************************************************
 495          KM  * COMBINE HYDROGRAPH FROM THE COMBINED CH9      *
 496          KM  * WITH THE HYDROGRAPHS FROM O6N1 AND O4S1       *
 497          KM  * THIS CONCENTRATION POINT IS AT STA. 22+85.00 *
 498          KM  ***************************************************
 499          KM
 500          HC      3

 501          KK     R5
 502          KM
 503          KM  *********************************************
 504          KM  * ROUTE THE COMBINED HYDROGRAPH CH10 TO THE *
 505          KM  * WEST SIDE OF MILLER ROAD                 *
 506          KM  *********************************************
 507          KM
 508          RC  0.013   0.016   0.013  290.00  0.0044   10.00
 509          RX    100     105   105.5  105.51  169.35  169.36  169.86  174.86
 510          RY  10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00

 511          KK   O6N2
 512          KM
 513          KM  *********************************************
 514          KM  * DRAINAGE AREA O6N2 DISCHARGE COMPUTATION *
 515          KM  *********************************************
 516          KM
 517          BA  .0024
 518          LS      0    79.0    65.0
 519          UD  0.071       0       0
```

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

 520          KK    O4S2
 521          KM
 522          KM   ********************************************
 523          KM   * DRAINAGE AREA O4S2 DISCHARGE COMPUTATION *
 524          KM   ********************************************
 525          KM
 526          BA   .0021
 527          LS       0    79.0    85.0
 528          UD   0.060       0       0

 529          KK    CH10
 530          KM
 531          KM   ***********************************************
 532          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH10 *
 533          KM   * WITH THE HYDROGRAPHS FROM O6N2 AND O4S2   *
 534          KM   * THIS CONCENTRATION POINT IS WEST OF        *
 535          KM   * MILLER ROAD AND COMBINES THE FLOWS FROM    *
 536          KM   * NORTH, SOUTH AND ON-SITE FOR OSBORN ROAD. *
 537          KM   ***********************************************
 538          HC       3

 539          KK     N7W
 540          KM
 541          KM   ***********************************************
 542          KM   * COMPUTED HYDROGRAPH FOR D.A. N7W THE WEST *
 543          KM   * SIDE OF MILLER ROAD AT OSBORN ROAD.       *
 544          KM   ***********************************************
 545          BA   .0134
 546          LS       0    79.0    71.1
 547          UD   0.106

 548          KK     N7E
 549          KM
 550          KM   ********************************************
 551          KM   * COMPUTE HYDROGRAPH FOR D.A. N7E THE EAST *
 552          KM   * SIDE OF MILLER ROAD AT OSBORN ROAD.      *
 553          KM   ********************************************
 554          KM
 555          BA   .0047
 556          LS       0    79.0    54.0
 557          UD   0.275

 558          KK    CH11
 559          KM
 560          KM   ********************************************
 561          KM   * COMBINE THE HYDROGRAPH FOR D.A. N7W WITH *
 562          KM   * N7E TO COMPUTE THE TOTAL FLOW FROM THE   *
 563          KM   * NORTH FOR MILLER ROAD.                    *
 564          KM   ********************************************
 565          HC       2
```

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

 566          KK    CH12
 567          KM
 568          KM   ********************************************
 569          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH10 *
 570          KM   * WITH CH11 TO COMPUTE THE TOTAL FLOW FOR  *
 571          KM   * OSBORN ROAD JUST EAST OF MILLER RD.      *
 572          KM   ********************************************
 573          HC       2

 574          KK      R6
 575          KM
 576          KM   ********************************************
 577          KM   * ROUTE THE COMBINED HYDROGRAPH CH12 TO THE *
 578          KM   * WEST SIDE OF THE 1ST ENTRANCE TO THE      *
 579          KM   * APARTMENT COMPLEX.                        *
 580          KM   ********************************************
 581          KM
 582          RC   0.013   0.016   0.013   470.0  0.0042   100.0       0       0
 583          RX  1000.0 1000.25 1000.50 1000.58 1055.58 1056.00 1056.25 1056.50
 584          RY  100.00  100.00  100.00   99.82   99.82  100.00  100.00  100.00

 585          KK     O7N
 586          KM
 587          KM   ***************************************************
 588          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O7N JUST       *
 589          KM   * WEST OF THE WESTERN MOST ENTRANCE TO THE       *
 590          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE       *
 591          KM   * INDIAN BEND WASH ON THE NORTH SIDE OF OSBORN. *
 592          KM   ***************************************************
 593          KM
 594          BA   .0009
 595          LS       0    98.0       0
 596          UD   0.060       0       0

 597          KK     O5S
 598          KM
 599          KM   ***************************************************
 600          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O5S JUST       *
 601          KM   * WEST OF THE WESTERN MOST ENTRANCE TO THE       *
 602          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE       *
 603          KM   * INDIAN BEND WASH ON THE SOUTH SIDE OF OSBORN. *
 604          KM   ***************************************************
 605          KM
 606          BA   .0006
 607          LS       0    96.6
 608          UD   0.060       0       0

 609          KK    CH13
 610          KM
 611          KM   ******************************************************
 612          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH12          *
 613          KM   * WITH D.A. O7N AND O5S LOCATED JUST WEST OF        *
 614          KM   * THE WESTERN MOST ENTRANCE TO THE APARTMENT        *
 615          KM   * COMPLEX BETWEEN MILLER AND THE INDIAN BEND WASH. *
```

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

 616          KM   ****************************************************
 617          HC      3

 618          KK     R6
 619          KM
 620          KM   ***********************************************
 621          KM   * ROUTE THE COMBINED HYDROGRAPH CH12 TO THE *
 622          KM   * WEST SIDE OF THE WESTER ENTRANCE TO THE   *
 623          KM   * APARTMENT COMPLEX.                         *
 624          KM   ***********************************************
 625          RC   0.013   0.016  0.013   470.0  0.0042   100.0       0        0
 626          RX  1000.0 1000.25 1000.50 1000.58 1055.58 1056.00 1056.25 1056.50
 627          RY  100.00  100.00  100.00   99.82   99.82  100.00  100.00  100.00

 628          KK     O8N
 629          KM
 630          KM   ***************************************************
 631          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O8N JUST      *
 632          KM   * WEST OF THE EASTERN MOST ENTRANCE TO THE      *
 633          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE      *
 634          KM   * INDIAN BEND WASH ON THE NORTH SIDE OF OSBORN. *
 635          KM   ***************************************************
 636          KM
 637          BA   .0008
 638          LS       0    98.0       0
 639          UD   0.060       0       0

 640          KK     O6S
 641          KM
 642          KM   ***************************************************
 643          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O6S JUST      *
 644          KM   * WEST OF THE EASTERN MOST ENTRANCE TO THE      *
 645          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE      *
 646          KM   * INDIAN BEND WASH ON THE SOUTH SIDE OF OSBORN. *
 647          KM   ***************************************************
 648          KM
 649          BA   .0010
 650          LS       0    95.9
 651          UD   0.060       0       0

 652          KK    CH14
 653          KM
 654          KM   ****************************************************
 655          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH13         *
 656          KM   * WITH D.A. O8N AND O6S LOCATED JUST WEST OF       *
 657          KM   * THE EASTERN MOST ENTRANCE TO THE APARTMENT       *
 658          KM   * COMPLEX BETWEEN MILLER AND THE INDIAN BEND WASH. *
 659          KM   ****************************************************
 660          HC      3
```

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

 661          KK     O9N
 662          KM
 663          KM   ******************************************************
 664          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O9N LOCATED AT THE *
 665          KM   * END OF THE PROJECT AT THE INDIAN BEND WASH.        *
 666          KM   ******************************************************
 667          BA   .0017
 668          LS       0    93.9
 669          UD   0.060       0

 670          KK     O7S
 671          KM
 672          KM   ******************************************************
 673          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O7S LOCATED AT THE *
 674          KM   * END OF THE PROJECT AT THE INDIAN BEND WASH.        *
 675          KM   ******************************************************
 676          BA   .0019
 677          LS       0    95.1
 678          UD   0.060       0

 679          KK     N8E
 680          KM
 681          BA   .0017
 682          LS       0      79
 683          UD    .319       0

 684          KK     N10
 685          KM
 686          BA   .0017
 687          LS       0      79
 688          UD    .310       0

 689          KK     N11
 690          KM
 691          BA   .0011
 692          LS       0    91.1
 693          UD    .280       0

 694          KK      N9
 695          KM
 696          BA   .0182
 697          LS       0      79
 698          UD    .122       0

 699          KK    CH15
 700          KM
 701          HC       4

 702          KK     N12
 703          KM
 704          BA   .0006
 705          LS       0      79
 706          UD    .261       0
```

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

 707          KK     N13
 708          KM
 709          BA   .0043
 710          LS       0       91
 711          UD    .248        0

 712          KK     N8W
 713          KM
 714          BA   .0312
 715          LS       0       79
 716          UD    .248        0

 717          KK      CP
 718          KM
 719          BA   .0043
 720          LS       0       91
 721          UD    .027        0

 722          KK    CH16
 723          KM   ****************************************************
 724          KM    COMBINE N8E, N10, N11, N9, N12, N13, N8W, CP.
 725          KM   ****************************************************
 726          HC       5
 727          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

(V) ROUTING (---->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<---) RETURN OF DIVERTED OR PUMPED FLOW

```
INPUT
 LINE
 NO.
 14     O1N
        .
        .
 25     .        N1W
        .         .
        .         .
 36     .         .        N1E
        .         .         .
        .         .         .
 47     .        CH1........
        .         .
        .         .
 55    CH2........
        .
        .
 65     .        O2N
        .         .
        .         .
 74     .         .        N2
        .         .         .
        .         .         .
 83     .         .         .        N3
        .         .         .         .
        .         .         .         .
 92     .        CH4........................
        .         .
        .         .
 99     .         .        O3N
        .         .         .
        .         .         .
108     .         .         .        O1S
        .         .         .         .
        .         .         .         .
118     .        CH5........................
        .         V
        .         V
129     .        R2
        .         .
        .         .
138     .         .        N4
        .         .         .
        .         .         .
147     .         .         .        O4N
        .         .         .         .
        .         .         .         .
156     .         .         .         .        O2S
        .         .         .         .         .
        .         .         .         .         .
165     .        CH6.......................................
        .         .
        .         .
176     .         .        EC1
        .         .         .
        .         .         .
186     .         .         .        EC2
        .         .         .         .
        .         .         .         .
195     .         .        CH01........
        .         .         .
        .         .         .
201     .         .         .        EC3
        .         .         .         .
        .         .         .         .
210     .         .         .         .        EC4
        .         .         .         .         .
        .         .         .         .         .
219     .         .        CH02.......................
        .         .         .
        .         .         .
225     .         .         .        EC5
        .         .         .         .
        .         .         .         .
234     .         .         .         .        EC6
```

```
242                CH03.......................
                     V
                     V
248                R04
                     .
                     .
257          CH04............
                     .
                     .
263                4N
                     .
                     .
274                .          4S
                     .          .
                     .          .
285                CH4............
                     .
                     .
292                .        CC1W
                     .          .
                     .          .
303                CHCCN..........
                     V
                     V
311                RCC
                     .
                     .
320                .        N5W
                     .          .
                     .          .
331                .          .        N5E
                     .          .         .
                     .          .         .
340                CHCCNT......................
                     .
                     .
349          CH7............
               V
               V
359          R3
                     .
                     .
368                O5N
                     .
                     .
377                .        O3S
                     .          .
                     .          .
386          CH8.......................
                     .
                     .
397                N6W
                     .
                     .
406                .        N6E
                     .          .
                     .          .
415                CH8A............
                     .
                     .
424                .        BOYS
                     .          .
                     .          .
433                .          .        S1W
                     .          .         .
                     .          .         .
444                .          .         .        S1E
                     .          .         .         .
                     .          .         .         .
453          CH9.............................................
               V
               V
464          R4
                     .
                     .
474                O6N1
                     .
                     .
```

```
483                                 O4S1
                                      .
492                CH10.......................
                     V
                     V
501                  R5
                     .
511                                O6N2
                                      .
520                                      O4S2
                                            .
529                CH10.......................
                     .
539                                N7W
                                      .
548                                      N7E
                                            .
558                                CH11............
                                      .
566                CH12............
                     V
                     V
574                  R6
                     .
585                                O7N
                                      .
597                                      O5S
                                            .
609                CH13.......................
                     V
                     V
618                  R6
                     .
628                                O8N
                                      .
640                                      O6S
                                            .
652                CH14.......................
                     .
661                                O9N
                                      .
670                                      O7S
                                            .
679                                                N8E
                                                     .
684                                                     N10
                                                         .
689                                                         N11
                                                             .
694                                                             N9
                                                                 .
699                                                CH15..............................
                                                     .
702                                                     N12
                                                         .
707                                                         N13
                                                             .
```

```
712          :          :          :          :          :          :          :          N8W
             :          :          :          :          :          :          :          :
             :          :          :          :          :          :          :          :
717          :          :          :          :          :          :          :          :          CP
             :          :          :          :          :          :          :          :          :
             :          :          :          :          :          :          :          :          :
722          :          :          :          :          CH16.......................................................
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
*  RUN DATE  04/28/1993  TIME  14:12:41 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
```

HEC-1 FOR EAST COUPLET, JOB NUMBER E019600
CITY OF SCOTTSDALE PROJECT NUMBERS: S2703 AND F2703
10-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **

DISCHARGE COMPUTATIONS FOR OFFSITE EXISTING DRAINAGE AREAS, BOTH NORTH AND SOUTH OF OSBORN ROAD, AND ON-SITE AREAS FROM SCOTTSDALE ROAD IN THE WEST TO THE WEST SIDE MILLER ROAD IN THE EAST.

INPUT FILE NAME: EAST-10.DAT

```
13 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
```

1

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	O1N	2.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT	N1W	23.	3.13	2.	1.	1.	.01		
HYDROGRAPH AT	N1E	9.	3.13	1.	0.	0.	.00		
2 COMBINED AT	CH1	32.	3.13	2.	2.	2.	.01		
2 COMBINED AT	CH2	34.	3.13	3.	2.	2.	.01		
HYDROGRAPH AT	O2N	1.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT	N2	8.	3.10	1.	0.	0.	.00		
HYDROGRAPH AT	N3	11.	3.10	1.	0.	0.	.00		
3 COMBINED AT	CH4	20.	3.10	1.	1.	1.	.01		
HYDROGRAPH AT	O3N	0.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT	O1S	3.	3.10	0.	0.	0.	.00		
3 COMBINED AT	CH5	23.	3.10	2.	1.	1.	.01		
ROUTED TO	R2	23.	3.10	2.	1.	1.	.01		
HYDROGRAPH AT	N4	8.	3.07	1.	0.	0.	.00		
HYDROGRAPH AT	O4N	3.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT	O2S	4.	3.07	0.	0.	0.	.00		
4 COMBINED AT	CH6	38.	3.10	3.	2.	2.	.01		
HYDROGRAPH AT	EC1	19.	3.10	1.	1.	1.	.01		
HYDROGRAPH AT	EC2	9.	3.13	1.	0.	0.	.00		
2 COMBINED AT	CH01	29.	3.10	2.	1.	1.	.01		
HYDROGRAPH AT	EC3	13.	3.03	1.	0.	0.	.00		
HYDROGRAPH AT	EC4	19.	3.10	1.	1.	1.	.01		
3 COMBINED AT	CH02	56.	3.10	4.	2.	2.	.02		
HYDROGRAPH AT	EC5	19.	3.10	1.	1.	1.	.01		

+	HYDROGRAPH AT	EC6	3.	3.03	0.	0.	0.	.00
+	3 COMBINED AT	CH03	76.	3.10	5.	3.	3.	.03
+	ROUTED TO	R04	76.	3.10	5.	3.	3.	.03
+	2 COMBINED AT	CH04	114.	3.10	8.	5.	5.	.04
+	HYDROGRAPH AT	4N	35.	3.10	2.	1.	1.	.01
+	HYDROGRAPH AT	4S	13.	3.07	1.	1.	1.	.00
+	2 COMBINED AT	CH4	47.	3.10	3.	2.	2.	.02
+	HYDROGRAPH AT	CC1W	9.	3.07	1.	0.	0.	.00
+	2 COMBINED AT	CHCCN	57.	3.10	4.	2.	2.	.02
+	ROUTED TO	RCC	57.	3.10	4.	2.	2.	.02
+	HYDROGRAPH AT	N5W	8.	3.07	1.	0.	0.	.00
+	HYDROGRAPH AT	N5E	6.	3.10	0.	0.	0.	.00
+	3 COMBINED AT	CHCCNT	70.	3.10	5.	3.	3.	.03
+	2 COMBINED AT	CH7	185.	3.10	13.	8.	8.	.07
+	ROUTED TO	R3	185.	3.10	13.	8.	8.	.07
+	HYDROGRAPH AT	O5N	2.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O3S	5.	3.10	0.	0.	0.	.00
+	3 COMBINED AT	CH8	192.	3.10	13.	8.	8.	.07
+	HYDROGRAPH AT	N6W	2.	3.10	0.	0.	0.	.00
+	HYDROGRAPH AT	N6E	1.	3.07	0.	0.	0.	.00
+	2 COMBINED AT	CH8A	3.	3.10	0.	0.	0.	.00
+	HYDROGRAPH AT	BOYS	4.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	S1W	3.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	S1E	3.	3.07	0.	0.	0.	.00
+	5 COMBINED AT	CH9	205.	3.10	14.	8.	8.	.07
+	ROUTED TO	R4	205.	3.10	14.	8.	8.	.07
+	HYDROGRAPH AT	O6N1	8.	3.17	1.	0.	0.	.00

+	HYDROGRAPH AT	O4S1	4.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH10	215.	3.10	15.	9.	9.	.08
+	ROUTED TO	R5	215.	3.10	15.	9.	9.	.08
+	HYDROGRAPH AT	O6N2	6.	3.10	0.	0.	0.	.00
+	HYDROGRAPH AT	O4S2	6.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH10	226.	3.10	16.	9.	9.	.09
+	HYDROGRAPH AT	N7W	30.	3.13	2.	1.	1.	.01
+	HYDROGRAPH AT	N7E	5.	3.30	1.	0.	0.	.00
+	2 COMBINED AT	CH11	33.	3.13	3.	2.	2.	.02
+	2 COMBINED AT	CH12	257.	3.10	19.	11.	11.	.10
+	ROUTED TO	R6	257.	3.10	19.	11.	11.	.10
+	HYDROGRAPH AT	O7N	3.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O5S	2.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH13	262.	3.10	19.	11.	11.	.10
+	ROUTED TO	R6	262.	3.10	19.	11.	11.	.10
+	HYDROGRAPH AT	O8N	3.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O6S	3.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH14	267.	3.10	19.	12.	12.	.11
+	HYDROGRAPH AT	O9N	4.	3.10	0.	0.	0.	.00
+	HYDROGRAPH AT	O7S	5.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	N8E	1.	3.43	0.	0.	0.	.00
+	HYDROGRAPH AT	N10	1.	3.40	0.	0.	0.	.00
+	HYDROGRAPH AT	N11	1.	3.33	0.	0.	0.	.00
+	HYDROGRAPH AT	N9	13.	3.17	1.	1.	1.	.02
+	4 COMBINED AT	CH15	15.	3.20	1.	1.	1.	.02
+	HYDROGRAPH AT	N12	0.	3.37	0.	0.	0.	.00
+	HYDROGRAPH AT	N13	5.	3.30	1.	0.	0.	.00

	HYDROGRAPH AT							
+		N8W	16.	3.33	2.	1.	1.	.03
	HYDROGRAPH AT							
+		CP	11.	3.07	1.	0.	0.	.00
	5 COMBINED AT							
+		CH16	36.	3.27	4.	3.	3.	.06

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

HEC-1
25-YEAR

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            FEBRUARY 1981             *
*          REVISED 02 AUG 88           *
*                                      *
*  RUN DATE  04/28/1993  TIME  14:32:54 *
*                                      *
****************************************
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****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
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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
```

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   HEC-1 FOR EAST COUPLET, JOB NUMBER E019600
  2           ID   CITY OF SCOTTSDALE PROJECT NUMBERS: S2703 AND F2703
  3           ID   25-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **
  4           ID
  5           ID   DISCHARGE COMPUTATIONS FOR OFFSITE EXISTING DRAINAGE AREAS,
  6           ID   BOTH NORTH AND SOUTH OF OSBORN ROAD, AND ON-SITE
  7           ID   AREAS FROM SCOTTSDALE ROAD IN THE WEST TO THE WEST SIDE MILLER
  8           ID   ROAD IN THE EAST.
  9           ID
 10           ID   INPUT FILE NAME: EAST-25.DAT
 11           ID
 12           IT       2       0       0     300       0       0       0       0
 13           IO       5       0       0       0       0       0       0       0
              *DIAGRAM

 14           KK     O1N
 15           KM
 16           KM   ***********************************************
 17           KM   * DRAINAGE AREA O1N DISCHARGE COMPUTATION.  *
 18           KM   * ON-SITE AREA 1 NORTH SIDE OF OSBORN ROAD. *
 19           KM   ***********************************************
 20           KM
 21           PH       0       0    0.66    1.20    1.94    2.13    2.26    2.50
 22           BA   .0007
 23           LS       0    84.4    60.7
 24           UD   0.060       0       0

 25           KK     N1W
 26           KM
 27           KM   *******************************************
 28           KM   * DRAINAGE AREA N1W DISCHARGE COMPUTATION *
 29           KM   * OFFSITE NORTH SIDE AREA 1 WEST SIDE OF  *
 30           KM   * CONTRIBUTING STREET                     *
 31           KM   *******************************************
 32           KM
 33           BA   .0097       0       0       0       0       0       0       0
 34           LS       0    81.7    72.9       0       0       0       0       0
 35           UD   0.096

 36           KK     N1E
 37           KM
 38           KM   ***********************************************
 39           KM   * DRAINAGE AREA N1E DISCHARGE COMPUTATION.  *
 40           KM   * OFF-SITE AREA NORTH OF OSBORN ROAD FOR    *
 41           KM   * BROWN AVE. ON THE EAST SIDE.               *
 42           KM   ***********************************************
 43           KM
 44           BA   .0040
 45           LS       0    79.0    85.0
 46           UD   0.119       0       0
```

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

  47          KK     CH1
  48          KM
  49          KM   ****************************************************
  50          KM   * COMBINE THE HYDROGRAPHS FROM D.A. N1W WITH D.A. *
  51          KM   * N1E                                             *
  52          KM   ****************************************************
  53          KM
  54          HC       2

  55          KK     CH2
  56          KM
  57          KM   ************************************************
  58          KM   * COMBINE THE COMBINED HYDROGRAPH OF D.A. N1W *
  59          KM   * AND N1E WITH THE HYDROGRAPH FROM D.A. O1N   *
  60          KM   * THIS FLOW WILL BE TAKEN TO THE EXISTING     *
  61          KM   * SCOTTSDALE ROAD DRAIN.                      *
  62          KM   ************************************************
  63          KM
  64          HC       2

  65          KK     O2N
  66          KM
  67          KM   *******************************************
  68          KM   * DRAINAGE AREA O2N DISCHARGE COMPUTATION *
  69          KM   *******************************************
  70          KM
  71          BA   .0002
  72          LS       0    98.0
  73          UD   0.060       0       0

  74          KK      N2
  75          KM
  76          KM   ******************************************
  77          KM   * DRAINAGE AREA N2 DISCHARGE COMPUTATION *
  78          KM   ******************************************
  79          KM
  80          BA   .0029
  81          LS       0    79.0    85.0
  82          UD    .070       0       0

  83          KK      N3
  84          KM
  85          KM   ******************************************
  86          KM   * DRAINAGE AREA N3 DISCHARGE COMPUTATION *
  87          KM   ******************************************
  88          KM
  89          BA   .0041
  90          LS       0    79.0    85.0
  91          UD   0.090       0       0
```

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

  92          KK     CH4
  93          KM
  94          KM   *******************************************
  95          KM   * COMBINE HYDROGRAPH FOR D.A. N2 WITH THE *
  96          KM   * HYDROGRAPH FROM D.A. N3                 *
  97          KM   *******************************************
  98          HC       3

  99          KK     O3N
 100          KM
 101          KM   *******************************************
 102          KM   * DRAINAGE AREA O3N DISCHARGE COMPUTATION *
 103          KM   *******************************************
 104          KM
 105          BA   .0001
 106          LS       0    98.0
 107          UD   0.060       0       0

 108          KK     O1S
 109          KM
 110          KM   ********************************************
 111          KM   * DRAINAGE AREA O1S DISCHARGE COMPUTATION  *
 112          KM   * ON-SITE AREA 1 SOUTH                     *
 113          KM   ********************************************
 114          KM
 115          BA   .0014
 116          LS       0    79.0    65.0
 117          UD   0.062       0       0

 118          KK     CH5
 119          KM
 120          KM   *********************************************
 121          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH4  *
 122          KM   * WITH THE HYDROGRAPHS FROM COMBINED        *
 123          KM   * O3N, AND O1S.  THIS CONCENTRATION POINT   *
 124          KM   * IS ABOUT MID WAY BETWEEN BROWN AVE. AND   *
 125          KM   * CIVIC CENTER AND IS FOR THE COMBINED      *
 126          KM   * FOR BOTH NORTH, SOUTH AND ON-SITE OSBORN  *
 127          KM   *********************************************
 128          HC       3

 129          KK      R2
 130          KM
 131          KM   *******************************************
 132          KM   * ROUTE THE COMBINED HYDROGRAPH CH5 TO THE *
 133          KM   * WEST SIDE OF CIVIC CENTER AVE.           *
 134          KM   *******************************************
 135          RC   0.013   0.016   0.013   525.0  0.0029   10.00
 136          RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
 137          RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00
```

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

 138          KK      N4
 139          KM
 140          KM   ******************************************
 141          KM   * DRAINAGE AREA N4 DISCHARGE COMPUTATION *
 142          KM   ******************************************
 143          KM
 144          BA   .0029
 145          LS       0    79.0    85.0
 146          UD   0.060       0       0

 147          KK     O4N
 148          KM
 149          KM   *******************************************
 150          KM   * DRAINAGE AREA O4N DISCHARGE COMPUTATION *
 151          KM   *******************************************
 152          KM
 153          BA   .0008
 154          LS       0    98.0
 155          UD   0.060       0       0

 156          KK     O2S
 157          KM
 158          KM   *******************************************
 159          KM   * DRAINAGE AREA O2S DISCHARGE COMPUTATION *
 160          KM   *******************************************
 161          KM
 162          BA   .0012
 163          LS       0    98.0
 164          UD   0.060       0       0

 165          KK     CH6
 166          KM
 167          KM   *********************************************
 168          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH5  *
 169          KM   * WITH THE HYDROGRAPHS FROM COMBINED N4,    *
 170          KM   * ON4, AND O2S.  THIS CONCENTRATION POINT   *
 171          KM   * IS WEST OF CIVIC CENTER AVE AND COMBINES  *
 172          KM   * THE FLOWS FROM NORTH, SOUTH AND ON-SITE   *
 173          KM   * FOR OSBORN ROAD.                          *
 174          KM   *********************************************
 175          HC       4

 176          KK     EC1
 177          KM
 178          KM   *********************************************
 179          KM   * DRAINAGE AREA CONSISTING OF MEDICAL       *
 180          KM   * OFFICES DRAINING TO WELLS FARGO AND       *
 181          KM   * MONTEREY.                                 *
 182          KM   *********************************************
 183          BA   .0078
 184          LS       0    82.0    71.0
 185          UD   .0835
```

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

 186          KK     EC2
 187          KM
 188          KM   ********************************************
 189          KM   * DRAINAGE AREA AT NE CORNER OF SCOTTSDALE  *
 190          KM   * ROAD AND MONTEREY.                        *
 191          KM   ********************************************
 192          BA   .0037
 193          LS       0    79.0    85.0
 194          UD   .0971

 195          KK    CH01
 196          KM
 197          KM   ********************************************
 198          KM   * COMBINE HYDROGRAPHS EC1 & EC2.            *
 199          KM   ********************************************
 200          HC       2

 201          KK     EC3
 202          KM
 203          KM   ********************************************
 204          KM   * DRAINAGE AREA CONSISTING OF SCOTTSDALE    *
 205          KM   * MEDICAL PAVILION.                         *
 206          KM   ********************************************
 207          BA   .0038
 208          LS       0    79.0    85.0
 209          UD   .0222

 210          KK     EC4
 211          KM
 212          KM   ********************************************
 213          KM   * DRAINAGE AREA CONSISTING OF HOSPITAL      *
 214          KM   * PARKING LOT.                              *
 215          KM   ********************************************
 216          BA   .0062
 217          LS       0    98.0
 218          UD   .0644

 219          KK    CH02
 220          KM
 221          KM   ********************************************
 222          KM   * COMBINE HYDROGRAPHS CH01, EC3 AND EC4     *
 223          KM   ********************************************
 224          HC       3

 225          KK     EC5
 226          KM
 227          KM   ********************************************
 228          KM   * DRAINAGE AREA CONSISTING OF THE COUPLET   *
 229          KM   * ROADWAY.                                  *
 230          KM   ********************************************
 231          BA   .0061
 232          LS       0    98.0
 233          UD   0.075
```

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

 234          KK     EC6
 235          KM
 236          KM   ***********************************************
 237          KM   * DRAINAGE AREA CONSISTING OF NURSING HOME  *
 238          KM   ***********************************************
 239          BA   .0009
 240          LS       0    69.0    85.0
 241          UD   .0122

 242          KK    CH03
 243          KM
 244          KM   ***********************************************
 245          KM   * COMBINED CH02, EC5 AND EC6                 *
 246          KM   ***********************************************
 247          HC       3

 248          KK     R04
 249          KM
 250          KM   ***********************************************
 251          KM   * ROUTE ALL E. COUPLET HYDROGRAPHS TO        *
 252          KM   * INTERSECTION CIVIC CENTER/OSBORN           *
 253          KM   ***********************************************
 254          RC   0.013   0.016   0.013   850.0  .0045   102
 255          RX     100     110     110   128.5    147   147  157  160
 256          RY     101   100.5   100.0  100.57  100.0 100.5  101  101

 257          KK    CH04
 258          KM
 259          KM   ***********************************************
 260          KM   * COMBINE COUPLET HYDROGRAPH WITH CH6        *
 261          KM   ***********************************************
 262          HC       2

 263          KK      4N
 264          KM
 265          KM   *********************************************
 266          KM   * DRAINAGE AREA 4N DISCHARGE COMPUTATION  *
 267          KM   * OFFSITE NORTH SIDE FOR THE AREA NORTH   *
 268          KM   * OF 4TH STREET FORM BROWN EAST TO CCB    *
 269          KM   *********************************************
 270          KM
 271          BA   .0128       0       0
 272          LS       0    79.0    85.0
 273          UD   0.080       0       0

 274          KK      4S
 275          KM
 276          KM   *********************************************
 277          KM   * DRAINAGE AREA 4S DISCHARGE COMPUTATION  *
 278          KM   * FOR 4TH STREET SOUTH FROM BROWN AVE.    *
 279          KM   * TO CIVIC CENTER BOULEVARD. ON THE WEST. *
 280          KM   *********************************************
 281          KM
 282          BA   .0043
```

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

 283          LS       0    79.0    85.0
 284          UD   0.060       0       0

 285          KK     CH4
 286          KM
 287          KM   *******************************************
 288          KM   * THIS IS THE COMBINED HYDROGRAPH FOR 4TH *
 289          KM   * STREET AT CIVIC CENTER BOULEVARD.       *
 290          KM   *******************************************
 291          HC       2

 292          KK    CC1W
 293          KM
 294          KM   ****************************************************
 295          KM   * DRAINAGE AREA CC1W DISCHARGE COMPUTATION       *
 296          KM   * FOR THE AREA NORTH OF 4TH STREET CONCENTRATING *
 297          KM   * IN CIVIC CENTER BOULEVARD ON THE WEST SIDE     *
 298          KM   ****************************************************
 299          KM
 300          BA   .0032
 301          LS       0    79.0    85.0
 302          UD   0.061       0       0

 303          KK   CHCCN
 304          KM
 305          KM   ***************************************************
 306          KM   * COMBINE THE COMBINED HYDROGRAPH, CH4 WITH    *
 307          KM   * CC1W.  THIS IS THE COMBINED FLOW FOR 4TH ST. *
 308          KM   * AND CIVIC CENTER BOULEVARD AT 4TH STREET.    *
 309          KM   ***************************************************
 310          HC       2

 311          KK     RCC
 312          KM
 313          KM   ************************************************************
 314          KM   * ROUTE THE COMBINED HYDROGRAPH CHCCN TO THE INTERSECTION *
 315          KM   * OSBORN ROAD AND CIVIC CENTER BOULEVARD.                 *
 316          KM   ************************************************************
 317          RC   0.013   0.016   0.013   545.0  0.0030  241.88
 318          RX   100.0   105.0  105.42   105.5   107.0  127.98  127.99   128.0
 319          RY  241.88  241.80  241.80  241.30  241.38  241.68  241.80  241.88

 320          KK     N5W
 321          KM
 322          KM   *******************************************
 323          KM   * DRAINAGE AREA N5W DISCHARGE COMPUTATION *
 324          KM   * FOR CIVIC CENTER BOULEVARD FROM 4TH ST. *
 325          KM   * TO CIVIC CENTER BOULEVARD. ON THE WEST. *
 326          KM   *******************************************
 327          KM
 328          BA   .0029
 329          LS       0    79.0    85.0
 330          UD   0.060       0       0
```

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

 331          KK     N5E
 332          KM
 333          KM   *******************************************
 334          KM   * DRAINAGE AREA N5E DISCHARGE COMPUTATION *
 335          KM   *******************************************
 336          KM
 337          BA   .0019
 338          LS       0    98.0
 339          UD   0.085       0

 340          KK  CHCCNT
 341          KM
 342          KM   ***************************************************
 343          KM   * THIS WILL PRODUCE THE COMBINED HYDROGRAPH FOR *
 344          KM   * CIVIC CENTER AT OSBORN ROAD FROM THE NORTH.   *
 345          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CHCCN     *
 346          KM   * WITH D.A. N5W AND N5E.                       *
 347          KM   ***************************************************
 348          HC       3

 349          KK     CH7
 350          KM
 351          KM   **********************************************
 352          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH6   *
 353          KM   * AND CHCCNT WITH THE HYDROGRAPH FROM EC1.   *
 354          KM   * THIS CONCENTRATION POINT IS EAST OF CIVIC  *
 355          KM   * CENTER AVE AND COMBINES THE FLOWS FROM     *
 356          KM   * NORTH, SOUTH AND ON-SITE FOR OSBORN ROAD.  *
 357          KM   **********************************************
 358          HC       2

 359          KK      R3
 360          KM
 361          KM   *********************************************
 362          KM   * ROUTE THE COMBINED HYDROGRAPH CH7 TO THE *
 363          KM   * WEST SIDE OF 75TH STREET                 *
 364          KM   *********************************************
 365          RC   0.013   0.016   0.013   670.0  0.0047   10.00
 366          RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
 367          RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00

 368          KK     O5N
 369          KM
 370          KM   *******************************************
 371          KM   * DRAINAGE AREA O5N DISCHARGE COMPUTATION *
 372          KM   *******************************************
 373          KM
 374          BA   .0007
 375          LS       0    98.0
 376          UD   0.060       0       0
```

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

 377          KK     O3S
 378          KM
 379          KM   *******************************************
 380          KM   * DRAINAGE AREA O3S DISCHARGE COMPUTATION *
 381          KM   *******************************************
 382          KM
 383          BA   .0019
 384          LS       0    86.0    53.7
 385          UD   0.060       0       0

 386          KK     CH8
 387          KM
 388          KM   ********************************************
 389          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH7  *
 390          KM   * WITH THE HYDROGRAPHS FROM COMBINED O5N,   *
 391          KM   * AND O3S.  THIS CONCENTRATION POINT IS     *
 392          KM   * EAST OF CIVIC CENTER AVE AND COMBINES     *
 393          KM   * THE FLOWS FROM NORTH, SOUTH AND ON-SITE   *
 394          KM   * FOR OSBORN ROAD.                          *
 395          KM   ********************************************
 396          HC       3

 397          KK     N6W
 398          KM
 399          KM   *******************************************
 400          KM   * DRAINAGE AREA N6W DISCHARGE COMPUTATION *
 401          KM   *******************************************
 402          KM
 403          BA   .0008
 404          LS       0    83.8    48.8
 405          UD   0.064       0       0

 406          KK     N6E
 407          KM
 408          KM   *******************************************
 409          KM   * DRAINAGE AREA N6E DISCHARGE COMPUTATION *
 410          KM   *******************************************
 411          KM
 412          BA   .0004
 413          LS       0    98.0
 414          UD   0.060       0

 415          KK    CH8A
 416          KM
 417          KM   ********************************************
 418          KM   * COMBINE HYDROGRAPHS FOR D.A. N6W AND N6E *
 419          KM   * THIS IS THE FLOW COMING FROM THE NORTH   *
 420          KM   * ALONG 75TH STREET TO OSBORN.              *
 421          KM   ********************************************
 422          KM
 423          HC       2
```

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

 424          KK    BOYS
 425          KM
 426          KM   *********************************************
 427          KM   * DRAINAGE AREA BOYS DISCHARGE COMPUTATION *
 428          KM   *********************************************
 429          KM
 430          BA   .0013
 431          LS       0    79.0    85.0
 432          UD   0.060       0       0

 433          KK     S1W
 434          KM
 435          KM   *********************************************
 436          KM   * DRAINAGE AREA S1W DISCHARGE COMPUTATION *
 437          KM   * AREA SOUTH 1 WEST SIDE OF CONTRIBUTING  *
 438          KM   * SIDE STREET.                            *
 439          KM   *********************************************
 440          KM
 441          BA   .0012
 442          LS       0    83.8    63.8
 443          UD   0.060       0       0

 444          KK     S1E
 445          KM
 446          KM   *********************************************
 447          KM   * DRAINAGE AREA S1E DISCHARGE COMPUTATION *
 448          KM   *********************************************
 449          KM
 450          BA   .0012
 451          LS       0    82.2    70.8
 452          UD   0.060       0       0

 453          KK     CH9
 454          KM
 455          KM   ****************************************************
 456          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH8        *
 457          KM   * WITH THE COMBINED HYDROGRAPH CH8A WITH THE      *
 458          KM   * HYDROGRAPHS FROM S1W, S1E, BOYS                 *
 459          KM   * THIS CONCENTRATION POINT IS EAST OF 75TH ROAD   *
 460          KM   * AND COMBINES THE FLOWS FROM NORTH, SOUTH AND    *
 461          KM   * ON-SITE FOR OSBORN ROAD.                        *
 462          KM   ****************************************************
 463          HC       5

 464          KK      R4
 465          KM
 466          KM   *********************************************
 467          KM   * ROUTE THE COMBINED HYDROGRAPH CH9 TO STA  *
 468          KM   * 22+85.00 APPROXIMATELY HALF WAY TO MILLER *
 469          KM   *********************************************
 470          KM
 471          RC   0.013   0.016   0.013  365.00  0.0044   10.00
 472          RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
 473          RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00
```

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

 520          KK    O4S2
 521          KM
 522          KM   *********************************************
 523          KM   * DRAINAGE AREA O4S2 DISCHARGE COMPUTATION *
 524          KM   *********************************************
 525          KM
 526          BA   .0021
 527          LS       0    79.0    85.0
 528          UD   0.060       0       0

 529          KK    CH10
 530          KM
 531          KM   **********************************************
 532          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH10 *
 533          KM   * WITH THE HYDROGRAPHS FROM O6N2 AND O4S2   *
 534          KM   * THIS CONCENTRATION POINT IS WEST OF        *
 535          KM   * MILLER ROAD AND COMBINES THE FLOWS FROM    *
 536          KM   * NORTH, SOUTH AND ON-SITE FOR OSBORN ROAD. *
 537          KM   **********************************************
 538          HC       3

 539          KK     N7W
 540          KM
 541          KM   **********************************************
 542          KM   * COMPUTED HYDROGRAPH FOR D.A. N7W THE WEST *
 543          KM   * SIDE OF MILLER ROAD AT OSBORN ROAD.       *
 544          KM   **********************************************
 545          BA   .0134
 546          LS       0    79.0    71.1
 547          UD   0.106

 548          KK     N7E
 549          KM
 550          KM   *********************************************
 551          KM   * COMPUTE HYDROGRAPH FOR D.A. N7E THE EAST *
 552          KM   * SIDE OF MILLER ROAD AT OSBORN ROAD.      *
 553          KM   *********************************************
 554          KM
 555          BA   .0047
 556          LS       0    79.0    54.0
 557          UD   0.275

 558          KK    CH11
 559          KM
 560          KM   *********************************************
 561          KM   * COMBINE THE HYDROGRAPH FOR D.A. N7W WITH *
 562          KM   * N7E TO COMPUTE THE TOTAL FLOW FROM THE   *
 563          KM   * NORTH FOR MILLER ROAD.                   *
 564          KM   *********************************************
 565          HC       2
```

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

 566          KK    CH12
 567          KM
 568          KM   ********************************************
 569          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH10 *
 570          KM   * WITH CH11 TO COMPUTE THE TOTAL FLOW FOR  *
 571          KM   * OSBORN ROAD JUST EAST OF MILLER RD.      *
 572          KM   ********************************************
 573          HC       2

 574          KK      R6
 575          KM
 576          KM   ********************************************
 577          KM   * ROUTE THE COMBINED HYDROGRAPH CH12 TO THE *
 578          KM   * WEST SIDE OF THE 1ST ENTRANCE TO THE      *
 579          KM   * APARTMENT COMPLEX.                        *
 580          KM   ********************************************
 581          KM
 582          RC   0.013   0.016   0.013   470.0  0.0042   100.0       0       0
 583          RX  1000.0 1000.25 1000.50 1000.58 1055.58 1056.00 1056.25 1056.50
 584          RY  100.00  100.00  100.00   99.82   99.82  100.00  100.00  100.00

 585          KK     O7N
 586          KM
 587          KM   ***************************************************
 588          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O7N JUST       *
 589          KM   * WEST OF THE WESTERN MOST ENTRANCE TO THE       *
 590          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE       *
 591          KM   * INDIAN BEND WASH ON THE NORTH SIDE OF OSBORN. *
 592          KM   ***************************************************
 593          KM
 594          BA   .0009
 595          LS       0    98.0       0
 596          UD   0.060       0       0

 597          KK     O5S
 598          KM
 599          KM   ***************************************************
 600          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O5S JUST       *
 601          KM   * WEST OF THE WESTERN MOST ENTRANCE TO THE       *
 602          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE       *
 603          KM   * INDIAN BEND WASH ON THE SOUTH SIDE OF OSBORN. *
 604          KM   ***************************************************
 605          KM
 606          BA   .0006
 607          LS       0    96.6
 608          UD   0.060       0       0

 609          KK    CH13
 610          KM
 611          KM   ****************************************************
 612          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH12         *
 613          KM   * WITH D.A. O7N AND O5S LOCATED JUST WEST OF       *
 614          KM   * THE WESTERN MOST ENTRANCE TO THE APARTMENT       *
 615          KM   * COMPLEX BETWEEN MILLER AND THE INDIAN BEND WASH. *
```

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

 616          KM   ****************************************************
 617          HC       3

 618          KK      R6
 619          KM
 620          KM   **********************************************
 621          KM   * ROUTE THE COMBINED HYDROGRAPH CH12 TO THE *
 622          KM   * WEST SIDE OF THE WESTER ENTRANCE TO THE   *
 623          KM   * APARTMENT COMPLEX.                         *
 624          KM   **********************************************
 625          RC  0.013   0.016   0.013   470.0  0.0042   100.0       0       0
 626          RX  1000.0 1000.25 1000.50 1000.58 1055.58 1056.00 1056.25 1056.50
 627          RY  100.00  100.00  100.00   99.82   99.82  100.00  100.00  100.00

 628          KK     08N
 629          KM
 630          KM   ****************************************************
 631          KM   * COMPUTE THE HYDROGRAPH FOR D.A. 08N JUST      *
 632          KM   * WEST OF THE EASTERN MOST ENTRANCE TO THE      *
 633          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE      *
 634          KM   * INDIAN BEND WASH ON THE NORTH SIDE OF OSBORN. *
 635          KM   ****************************************************
 636          KM
 637          BA   .0008
 638          LS       0    98.0       0
 639          UD   0.060       0       0

 640          KK     06S
 641          KM
 642          KM   ****************************************************
 643          KM   * COMPUTE THE HYDROGRAPH FOR D.A. 06S JUST      *
 644          KM   * WEST OF THE EASTERN MOST ENTRANCE TO THE      *
 645          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE      *
 646          KM   * INDIAN BEND WASH ON THE SOUTH SIDE OF OSBORN. *
 647          KM   ****************************************************
 648          KM
 649          BA   .0010
 650          LS       0    95.9
 651          UD   0.060       0       0

 652          KK    CH14
 653          KM
 654          KM   *****************************************************
 655          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH13         *
 656          KM   * WITH D.A. 08N AND 06S LOCATED JUST WEST OF       *
 657          KM   * THE EASTERN MOST ENTRANCE TO THE APARTMENT       *
 658          KM   * COMPLEX BETWEEN MILLER AND THE INDIAN BEND WASH. *
 659          KM   *****************************************************
 660          HC       3
```

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

 661          KK     O9N
 662          KM
 663          KM   ******************************************************
 664          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O9N LOCATED AT THE *
 665          KM   * END OF THE PROJECT AT THE INDIAN BEND WASH.        *
 666          KM   ******************************************************
 667          BA   .0017
 668          LS       0    93.9
 669          UD   0.060       0

 670          KK     O7S
 671          KM
 672          KM   ******************************************************
 673          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O7S LOCATED AT THE *
 674          KM   * END OF THE PROJECT AT THE INDIAN BEND WASH.        *
 675          KM   ******************************************************
 676          BA   .0019
 677          LS       0    95.1
 678          UD   0.060       0

 679          KK     N8E
 680          KM
 681          BA   .0017
 682          LS       0      79
 683          UD    .319       0

 684          KK     N10
 685          KM
 686          BA   .0017
 687          LS       0      79
 688          UD    .310       0

 689          KK     N11
 690          KM
 691          BA   .0011
 692          LS       0    91.1
 693          UD    .280       0

 694          KK      N9
 695          KM
 696          BA   .0182
 697          LS       0      79
 698          UD    .122       0

 699          KK    CH15
 700          KM
 701          HC       4

 702          KK     N12
 703          KM
 704          BA   .0006
 705          LS       0      79
 706          UD    .261       0
```

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

 707          KK     N13
 708          KM
 709          BA   .0043
 710          LS       0       91
 711          UD    .248        0

 712          KK     N8W
 713          KM
 714          BA   .0312
 715          LS       0       79
 716          UD    .248        0

 717          KK      CP
 718          KM
 719          BA   .0043
 720          LS       0       91
 721          UD    .027        0

 722          KK    CH16
 723          KM   ****************************************************
 724          KM    COMBINE N8E, N10, N11, N9, N12, N13, N8W, CP.
 725          KM   ****************************************************
 726          HC       5
 727          ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

(V) ROUTING (--->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<---) RETURN OF DIVERTED OR PUMPED FLOW

```
INPUT
 LINE
 NO.
  14    O1N
  25      .      N1W
  36      .       .        N1E
  47      .      CH1.......
  55    CH2.......
  65      .      O2N
  74      .       .        N2
  83      .       .        .        N3
  92      .      CH4.......................
  99      .       .        O3N
 108      .       .        .        O1S
 118      .      CH5.......................
          .       V
          .       V
 129      .      R2
 138      .       .        N4
 147      .       .        .        O4N
 156      .       .        .        .        O2S
 165      .      CH6.......................................
 176      .       .        EC1
 186      .       .        .        EC2
 195      .       .       CH01......
 201      .       .        .        EC3
 210      .       .        .        .        EC4
 219      .       .       CH02......................
 225      .       .        .        EC5
 234      .       .        .        .        EC6
```

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	O1N	2.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT	N1W	29.	3.13	2.	1.	1.	.01		
HYDROGRAPH AT	N1E	12.	3.13	1.	1.	1.	.00		
2 COMBINED AT	CH1	41.	3.13	3.	2.	2.	.01		
2 COMBINED AT	CH2	43.	3.13	3.	2.	2.	.01		
HYDROGRAPH AT	O2N	1.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT	N2	10.	3.10	1.	0.	0.	.00		
HYDROGRAPH AT	N3	14.	3.10	1.	1.	1.	.00		
3 COMBINED AT	CH4	25.	3.10	2.	1.	1.	.01		
HYDROGRAPH AT	O3N	0.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT	O1S	4.	3.10	0.	0.	0.	.00		
3 COMBINED AT	CH5	29.	3.10	2.	1.	1.	.01		
ROUTED TO	R2	29.	3.10	2.	1.	1.	.01		
HYDROGRAPH AT	N4	11.	3.07	1.	0.	0.	.00		
HYDROGRAPH AT	O4N	3.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT	O2S	5.	3.07	0.	0.	0.	.00		
4 COMBINED AT	CH6	48.	3.10	3.	2.	2.	.01		
HYDROGRAPH AT	EC1	25.	3.10	2.	1.	1.	.01		
HYDROGRAPH AT	EC2	12.	3.13	1.	1.	1.	.00		
2 COMBINED AT	CH01	36.	3.10	3.	2.	2.	.01		
HYDROGRAPH AT	EC3	17.	3.03	1.	1.	1.	.00		
HYDROGRAPH AT	EC4	24.	3.10	2.	1.	1.	.01		
3 COMBINED AT	CH02	71.	3.10	5.	3.	3.	.02		
HYDROGRAPH AT	EC5	23.	3.10	1.	1.	1.	.01		

+	HYDROGRAPH AT	O4S1	4.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH10	272.	3.10	19.	11.	11.	.08
+	ROUTED TO	R5	272.	3.10	19.	11.	11.	.08
+	HYDROGRAPH AT	O6N2	7.	3.10	0.	0.	0.	.00
+	HYDROGRAPH AT	O4S2	8.	3.07	1.	0.	0.	.00
+	3 COMBINED AT	CH10	287.	3.10	20.	12.	12.	.09
+	HYDROGRAPH AT	N7W	38.	3.13	3.	2.	2.	.01
+	HYDROGRAPH AT	N7E	7.	3.30	1.	1.	1.	.00
+	2 COMBINED AT	CH11	42.	3.13	4.	2.	2.	.02
+	2 COMBINED AT	CH12	326.	3.10	24.	14.	14.	.10
+	ROUTED TO	R6	326.	3.10	24.	14.	14.	.10
+	HYDROGRAPH AT	O7N	4.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O5S	2.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH13	332.	3.10	24.	14.	14.	.10
+	ROUTED TO	R6	332.	3.10	24.	14.	14.	.10
+	HYDROGRAPH AT	O8N	3.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O6S	4.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH14	339.	3.10	24.	15.	15.	.11
+	HYDROGRAPH AT	O9N	6.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O7S	7.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	N8E	1.	3.40	0.	0.	0.	.00
+	HYDROGRAPH AT	N10	1.	3.40	0.	0.	0.	.00
+	HYDROGRAPH AT	N11	2.	3.33	0.	0.	0.	.00
+	HYDROGRAPH AT	N9	22.	3.17	2.	1.	1.	.02
+	4 COMBINED AT	CH15	24.	3.17	2.	1.	1.	.02
+	HYDROGRAPH AT	N12	0.	3.33	0.	0.	0.	.00
+	HYDROGRAPH AT	N13	7.	3.30	1.	0.	0.	.00

+	HYDROGRAPH AT	N8W	26.	3.33	3.	2.	2.	.03
+	HYDROGRAPH AT	CP	15.	3.03	1.	0.	0.	.00
+	5 COMBINED AT	CH16	56.	3.27	6.	4.	4.	.06

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

HEC-1
50-YEAR

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            FEBRUARY 1981              *
*          REVISED 02 AUG 88            *
*                                       *
*  RUN DATE  04/28/1993  TIME  14:49:56 *
*                                       *
*****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*          (916) 551-1748              *
*                                      *
****************************************
```

```
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   HEC-1 FOR EAST COUPLET, JOB NUMBER E019600
  2           ID   CITY OF SCOTTSDALE PROJECT NUMBERS: S2703 AND F2703
  3           ID   50-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **
  4           ID
  5           ID   DISCHARGE COMPUTATIONS FOR OFFSITE EXISTING DRAINAGE AREAS,
  6           ID   BOTH NORTH AND SOUTH OF OSBORN ROAD, AND ON-SITE
  7           ID   AREAS FROM SCOTTSDALE ROAD IN THE WEST TO THE WEST SIDE MILLER
  8           ID   ROAD IN THE EAST.
  9           ID
 10           ID   INPUT FILE NAME: EAST-50.DAT
 11           ID
 12           IT       2       0       0     300       0       0       0       0
 13           IO       5       0       0       0       0       0       0       0
              *DIAGRAM

 14           KK     O1N
 15           KM
 16           KM   ***********************************************
 17           KM   * DRAINAGE AREA O1N DISCHARGE COMPUTATION.  *
 18           KM   * ON-SITE AREA 1 NORTH SIDE OF OSBORN ROAD. *
 19           KM   ***********************************************
 20           KM
 21           PH       0       0    0.78    1.42    2.29    2.50    2.65    2.92
 22           BA   .0007
 23           LS       0    84.4    60.7
 24           UD   0.060       0       0

 25           KK     N1W
 26           KM
 27           KM   *********************************************
 28           KM   * DRAINAGE AREA N1W DISCHARGE COMPUTATION *
 29           KM   * OFFSITE NORTH SIDE AREA 1 WEST SIDE OF  *
 30           KM   * CONTRIBUTING STREET                     *
 31           KM   *********************************************
 32           KM
 33           BA   .0097       0       0       0       0       0       0       0
 34           LS       0    81.7    72.9       0       0       0       0       0
 35           UD   0.096

 36           KK     N1E
 37           KM
 38           KM   ***********************************************
 39           KM   * DRAINAGE AREA N1E DISCHARGE COMPUTATION.  *
 40           KM   * OFF-SITE AREA NORTH OF OSBORN ROAD FOR    *
 41           KM   * BROWN AVE. ON THE EAST SIDE.               *
 42           KM   ***********************************************
 43           KM
 44           BA   .0040
 45           LS       0    79.0    85.0
 46           UD   0.119       0       0
```

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

  47          KK     CH1
  48          KM
  49          KM   ****************************************************
  50          KM   * COMBINE THE HYDROGRAPHS FROM D.A. N1W WITH D.A. *
  51          KM   * N1E                                             *
  52          KM   ****************************************************
  53          KM
  54          HC       2

  55          KK     CH2
  56          KM
  57          KM   ************************************************
  58          KM   * COMBINE THE COMBINED HYDROGRAPH OF D.A. N1W *
  59          KM   * AND N1E WITH THE HYDROGRAPH FROM D.A. O1N   *
  60          KM   * THIS FLOW WILL BE TAKEN TO THE EXISTING     *
  61          KM   * SCOTTSDALE ROAD DRAIN.                      *
  62          KM   ************************************************
  63          KM
  64          HC       2

  65          KK     O2N
  66          KM
  67          KM   *******************************************
  68          KM   * DRAINAGE AREA O2N DISCHARGE COMPUTATION *
  69          KM   *******************************************
  70          KM
  71          BA   .0002
  72          LS       0    98.0
  73          UD   0.060       0       0

  74          KK      N2
  75          KM
  76          KM   ******************************************
  77          KM   * DRAINAGE AREA N2 DISCHARGE COMPUTATION *
  78          KM   ******************************************
  79          KM
  80          BA   .0029
  81          LS       0    79.0    85.0
  82          UD    .070       0       0

  83          KK      N3
  84          KM
  85          KM   ******************************************
  86          KM   * DRAINAGE AREA N3 DISCHARGE COMPUTATION *
  87          KM   ******************************************
  88          KM
  89          BA   .0041
  90          LS       0    79.0    85.0
  91          UD   0.090       0       0
```

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

  92          KK     CH4
  93          KM
  94          KM   ********************************************
  95          KM   * COMBINE HYDROGRAPH FOR D.A. N2 WITH THE *
  96          KM   * HYDROGRAPH FROM D.A. N3                 *
  97          KM   ********************************************
  98          HC       3

  99          KK     O3N
 100          KM
 101          KM   ********************************************
 102          KM   * DRAINAGE AREA O3N DISCHARGE COMPUTATION *
 103          KM   ********************************************
 104          KM
 105          BA   .0001
 106          LS       0    98.0
 107          UD   0.060       0       0

 108          KK     O1S
 109          KM
 110          KM   *********************************************
 111          KM   * DRAINAGE AREA O1S DISCHARGE COMPUTATION  *
 112          KM   * ON-SITE AREA 1 SOUTH                     *
 113          KM   *********************************************
 114          KM
 115          BA   .0014
 116          LS       0    79.0    65.0
 117          UD   0.062       0       0

 118          KK     CH5
 119          KM
 120          KM   **********************************************
 121          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH4  *
 122          KM   * WITH THE HYDROGRAPHS FROM COMBINED        *
 123          KM   * O3N, AND O1S.  THIS CONCENTRATION POINT   *
 124          KM   * IS ABOUT MID WAY BETWEEN BROWN AVE. AND   *
 125          KM   * CIVIC CENTER AND IS FOR THE COMBINED      *
 126          KM   * FOR BOTH NORTH, SOUTH AND ON-SITE OSBORN  *
 127          KM   **********************************************
 128          HC       3

 129          KK      R2
 130          KM
 131          KM   ********************************************
 132          KM   * ROUTE THE COMBINED HYDROGRAPH CH5 TO THE *
 133          KM   * WEST SIDE OF CIVIC CENTER AVE.           *
 134          KM   ********************************************
 135          RC   0.013   0.016   0.013   525.0  0.0029   10.00
 136          RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
 137          RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00
```

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

 138          KK      N4
 139          KM
 140          KM   *****************************************
 141          KM   * DRAINAGE AREA N4 DISCHARGE COMPUTATION *
 142          KM   *****************************************
 143          KM
 144          BA   .0029
 145          LS       0    79.0    85.0
 146          UD   0.060       0       0

 147          KK     O4N
 148          KM
 149          KM   ******************************************
 150          KM   * DRAINAGE AREA O4N DISCHARGE COMPUTATION *
 151          KM   ******************************************
 152          KM
 153          BA   .0008
 154          LS       0    98.0
 155          UD   0.060       0       0

 156          KK     O2S
 157          KM
 158          KM   ******************************************
 159          KM   * DRAINAGE AREA O2S DISCHARGE COMPUTATION *
 160          KM   ******************************************
 161          KM
 162          BA   .0012
 163          LS       0    98.0
 164          UD   0.060       0       0

 165          KK     CH6
 166          KM
 167          KM   ***********************************************
 168          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH5  *
 169          KM   * WITH THE HYDROGRAPHS FROM COMBINED N4,    *
 170          KM   * ON4, AND O2S.  THIS CONCENTRATION POINT   *
 171          KM   * IS WEST OF CIVIC CENTER AVE AND COMBINES  *
 172          KM   * THE FLOWS FROM NORTH, SOUTH AND ON-SITE   *
 173          KM   * FOR OSBORN ROAD.                          *
 174          KM   ***********************************************
 175          HC       4

 176          KK     EC1
 177          KM
 178          KM   ***********************************************
 179          KM   * DRAINAGE AREA CONSISTING OF MEDICAL       *
 180          KM   * OFFICES DRAINING TO WELLS FARGO AND        *
 181          KM   * MONTEREY.                                  *
 182          KM   ***********************************************
 183          BA   .0078
 184          LS       0    82.0    71.0
 185          UD   .0835
```

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

 186          KK     EC2
 187          KM
 188          KM   ***********************************************
 189          KM   * DRAINAGE AREA AT NE CORNER OF SCOTTSDALE  *
 190          KM   * ROAD AND MONTEREY.                         *
 191          KM   ***********************************************
 192          BA   .0037
 193          LS       0    79.0    85.0
 194          UD   .0971

 195          KK    CH01
 196          KM
 197          KM   ***********************************************
 198          KM   * COMBINE HYDROGRAPHS EC1 & EC2.             *
 199          KM   ***********************************************
 200          HC       2

 201          KK     EC3
 202          KM
 203          KM   ***********************************************
 204          KM   * DRAINAGE AREA CONSISTING OF SCOTTSDALE     *
 205          KM   * MEDICAL PAVILION.                           *
 206          KM   ***********************************************
 207          BA   .0038
 208          LS       0    79.0    85.0
 209          UD   .0222

 210          KK     EC4
 211          KM
 212          KM   ***********************************************
 213          KM   * DRAINAGE AREA CONSISTING OF HOSPITAL       *
 214          KM   * PARKING LOT.                                *
 215          KM   ***********************************************
 216          BA   .0062
 217          LS       0    98.0
 218          UD   .0644

 219          KK    CH02
 220          KM
 221          KM   ***********************************************
 222          KM   * COMBINE HYDROGRAPHS CH01, EC3 AND EC4      *
 223          KM   ***********************************************
 224          HC       3

 225          KK     EC5
 226          KM
 227          KM   ***********************************************
 228          KM   * DRAINAGE AREA CONSISTING OF THE COUPLET    *
 229          KM   * ROADWAY.                                    *
 230          KM   ***********************************************
 231          BA   .0061
 232          LS       0    98.0
 233          UD   0.075
```

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

 234          KK     EC6
 235          KM
 236          KM   ***********************************************
 237          KM   * DRAINAGE AREA CONSISTING OF NURSING HOME  *
 238          KM   ***********************************************
 239          BA   .0009
 240          LS       0    69.0    85.0
 241          UD   .0122

 242          KK    CH03
 243          KM
 244          KM   ***********************************************
 245          KM   * COMBINED CH02, EC5 AND EC6                 *
 246          KM   ***********************************************
 247          HC       3

 248          KK     R04
 249          KM
 250          KM   ***********************************************
 251          KM   * ROUTE ALL E. COUPLET HYDROGRAPHS TO        *
 252          KM   * INTERSECTION CIVIC CENTER/OSBORN           *
 253          KM   ***********************************************
 254          RC   0.013   0.016   0.013   850.0  .0045   102
 255          RX     100     110     110   128.5    147   147  157  160
 256          RY     101   100.5   100.0  100.57  100.0 100.5  101  101

 257          KK    CH04
 258          KM
 259          KM   ***********************************************
 260          KM   * COMBINE COUPLET HYDROGRAPH WITH CH6        *
 261          KM   ***********************************************
 262          HC       2

 263          KK      4N
 264          KM
 265          KM   *********************************************
 266          KM   * DRAINAGE AREA 4N DISCHARGE COMPUTATION  *
 267          KM   * OFFSITE NORTH SIDE FOR THE AREA NORTH   *
 268          KM   * OF 4TH STREET FORM BROWN EAST TO CCB    *
 269          KM   *********************************************
 270          KM
 271          BA   .0128       0       0
 272          LS       0    79.0    85.0
 273          UD   0.080       0       0

 274          KK      4S
 275          KM
 276          KM   *********************************************
 277          KM   * DRAINAGE AREA 4S DISCHARGE COMPUTATION  *
 278          KM   * FOR 4TH STREET SOUTH FROM BROWN AVE.    *
 279          KM   * TO CIVIC CENTER BOULEVARD. ON THE WEST. *
 280          KM   *********************************************
 281          KM
 282          BA   .0043
```

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

 283          LS       0    79.0    85.0
 284          UD   0.060       0       0

 285          KK     CH4
 286          KM
 287          KM   *******************************************
 288          KM   * THIS IS THE COMBINED HYDROGRAPH FOR 4TH *
 289          KM   * STREET AT CIVIC CENTER BOULEVARD.       *
 290          KM   *******************************************
 291          HC       2

 292          KK    CC1W
 293          KM
 294          KM   ****************************************************
 295          KM   * DRAINAGE AREA CC1W DISCHARGE COMPUTATION        *
 296          KM   * FOR THE AREA NORTH OF 4TH STREET CONCENTRATING *
 297          KM   * IN CIVIC CENTER BOULEVARD ON THE WEST SIDE      *
 298          KM   ****************************************************
 299          KM
 300          BA   .0032
 301          LS       0    79.0    85.0
 302          UD   0.061       0       0

 303          KK   CHCCN
 304          KM
 305          KM   ************************************************
 306          KM   * COMBINE THE COMBINED HYDROGRAPH, CH4 WITH    *
 307          KM   * CC1W.  THIS IS THE COMBINED FLOW FOR 4TH ST. *
 308          KM   * AND CIVIC CENTER BOULEVARD AT 4TH STREET.    *
 309          KM   ************************************************
 310          HC       2

 311          KK     RCC
 312          KM
 313          KM   ************************************************************
 314          KM   * ROUTE THE COMBINED HYDROGRAPH CHCCN TO THE INTERSECTION *
 315          KM   * OSBORN ROAD AND CIVIC CENTER BOULEVARD.                 *
 316          KM   ************************************************************
 317          RC   0.013   0.016   0.013   545.0  0.0030  241.88
 318          RX   100.0   105.0  105.42   105.5   107.0  127.98  127.99   128.0
 319          RY  241.88  241.80  241.80  241.30  241.38  241.68  241.80  241.88

 320          KK     N5W
 321          KM
 322          KM   *******************************************
 323          KM   * DRAINAGE AREA N5W DISCHARGE COMPUTATION *
 324          KM   * FOR CIVIC CENTER BOULEVARD FROM 4TH ST. *
 325          KM   * TO CIVIC CENTER BOULEVARD. ON THE WEST. *
 326          KM   *******************************************
 327          KM
 328          BA   .0029
 329          LS       0    79.0    85.0
 330          UD   0.060       0       0
```

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

 331          KK     N5E
 332          KM
 333          KM   *********************************************
 334          KM   * DRAINAGE AREA N5E DISCHARGE COMPUTATION *
 335          KM   *********************************************
 336          KM
 337          BA   .0019
 338          LS       0    98.0
 339          UD   0.085       0

 340          KK  CHCCNT
 341          KM
 342          KM   ****************************************************
 343          KM   * THIS WILL PRODUCE THE COMBINED HYDROGRAPH FOR *
 344          KM   * CIVIC CENTER AT OSBORN ROAD FROM THE NORTH.   *
 345          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CHCCN     *
 346          KM   * WITH D.A. N5W AND N5E.                       *
 347          KM   ****************************************************
 348          HC       3

 349          KK     CH7
 350          KM
 351          KM   ************************************************
 352          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH6   *
 353          KM   * AND CHCCNT WITH THE HYDROGRAPH FROM EC1.   *
 354          KM   * THIS CONCENTRATION POINT IS EAST OF CIVIC  *
 355          KM   * CENTER AVE AND COMBINES THE FLOWS FROM     *
 356          KM   * NORTH, SOUTH AND ON-SITE FOR OSBORN ROAD.  *
 357          KM   ************************************************
 358          HC       2

 359          KK      R3
 360          KM
 361          KM   *********************************************
 362          KM   * ROUTE THE COMBINED HYDROGRAPH CH7 TO THE *
 363          KM   * WEST SIDE OF 75TH STREET                 *
 364          KM   *********************************************
 365          RC   0.013   0.016   0.013   670.0  0.0047   10.00
 366          RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
 367          RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00

 368          KK     O5N
 369          KM
 370          KM   *********************************************
 371          KM   * DRAINAGE AREA O5N DISCHARGE COMPUTATION *
 372          KM   *********************************************
 373          KM
 374          BA   .0007
 375          LS       0    98.0
 376          UD   0.060       0       0
```

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

 377          KK     O3S
 378          KM
 379          KM   *******************************************
 380          KM   * DRAINAGE AREA O3S DISCHARGE COMPUTATION *
 381          KM   *******************************************
 382          KM
 383          BA   .0019
 384          LS       0    86.0    53.7
 385          UD   0.060       0       0

 386          KK     CH8
 387          KM
 388          KM   ***********************************************
 389          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH7  *
 390          KM   * WITH THE HYDROGRAPHS FROM COMBINED O5N,   *
 391          KM   * AND O3S.  THIS CONCENTRATION POINT IS     *
 392          KM   * EAST OF CIVIC CENTER AVE AND COMBINES     *
 393          KM   * THE FLOWS FROM NORTH, SOUTH AND ON-SITE   *
 394          KM   * FOR OSBORN ROAD.                          *
 395          KM   ***********************************************
 396          HC       3

 397          KK     N6W
 398          KM
 399          KM   *******************************************
 400          KM   * DRAINAGE AREA N6W DISCHARGE COMPUTATION *
 401          KM   *******************************************
 402          KM
 403          BA   .0008
 404          LS       0    83.8    48.8
 405          UD   0.064       0       0

 406          KK     N6E
 407          KM
 408          KM   *******************************************
 409          KM   * DRAINAGE AREA N6E DISCHARGE COMPUTATION *
 410          KM   *******************************************
 411          KM
 412          BA   .0004
 413          LS       0    98.0
 414          UD   0.060       0

 415          KK    CH8A
 416          KM
 417          KM   ***********************************************
 418          KM   * COMBINE HYDROGRAPHS FOR D.A. N6W AND N6E *
 419          KM   * THIS IS THE FLOW COMING FROM THE NORTH    *
 420          KM   * ALONG 75TH STREET TO OSBORN.               *
 421          KM   ***********************************************
 422          KM
 423          HC       2
```

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

 424          KK    BOYS
 425          KM
 426          KM   *********************************************
 427          KM   * DRAINAGE AREA BOYS DISCHARGE COMPUTATION *
 428          KM   *********************************************
 429          KM
 430          BA   .0013
 431          LS       0    79.0    85.0
 432          UD   0.060       0       0

 433          KK     S1W
 434          KM
 435          KM   *********************************************
 436          KM   * DRAINAGE AREA S1W DISCHARGE COMPUTATION *
 437          KM   * AREA SOUTH 1 WEST SIDE OF CONTRIBUTING  *
 438          KM   * SIDE STREET.                            *
 439          KM   *********************************************
 440          KM
 441          BA   .0012
 442          LS       0    83.8    63.8
 443          UD   0.060       0       0

 444          KK     S1E
 445          KM
 446          KM   *********************************************
 447          KM   * DRAINAGE AREA S1E DISCHARGE COMPUTATION *
 448          KM   *********************************************
 449          KM
 450          BA   .0012
 451          LS       0    82.2    70.8
 452          UD   0.060       0       0

 453          KK     CH9
 454          KM
 455          KM   ***************************************************
 456          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH8       *
 457          KM   * WITH THE COMBINED HYDROGRAPH CH8A WITH THE     *
 458          KM   * HYDROGRAPHS FROM S1W, S1E, BOYS                 *
 459          KM   * THIS CONCENTRATION POINT IS EAST OF 75TH ROAD  *
 460          KM   * AND COMBINES THE FLOWS FROM NORTH, SOUTH AND   *
 461          KM   * ON-SITE FOR OSBORN ROAD.                       *
 462          KM   ***************************************************
 463          HC       5

 464          KK      R4
 465          KM
 466          KM   *********************************************
 467          KM   * ROUTE THE COMBINED HYDROGRAPH CH9 TO STA  *
 468          KM   * 22+85.00 APPROXIMATELY HALF WAY TO MILLER *
 469          KM   *********************************************
 470          KM
 471          RC   0.013   0.016   0.013  365.00  0.0044   10.00
 472          RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
 473          RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00
```

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

  474         KK    O6N1
  475         KM
  476         KM   *********************************************
  477         KM   * DRAINAGE AREA O6N1 DISCHARGE COMPUTATION *
  478         KM   *********************************************
  479         KM
  480         BA   .0048
  481         LS       0    88.4    19.0
  482         UD   0.126       0       0

  483         KK    O4S1
  484         KM
  485         KM   *********************************************
  486         KM   * DRAINAGE AREA O4S1 DISCHARGE COMPUTATION *
  487         KM   *********************************************
  488         KM
  489         BA   .0012
  490         LS       0    79.0    85.0
  491         UD   0.060       0       0

  492         KK    CH10
  493         KM
  494         KM   ************************************************
  495         KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH9     *
  496         KM   * WITH THE HYDROGRAPHS FROM O6N1 AND O4S1      *
  497         KM   * THIS CONCENTRATION POINT IS AT STA. 22+85.00 *
  498         KM   ************************************************
  499         KM
  500         HC       3

  501         KK      R5
  502         KM
  503         KM   *********************************************
  504         KM   * ROUTE THE COMBINED HYDROGRAPH CH10 TO THE *
  505         KM   * WEST SIDE OF MILLER ROAD                  *
  506         KM   *********************************************
  507         KM
  508         RC   0.013   0.016   0.013  290.00  0.0044   10.00
  509         RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
  510         RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00

  511         KK    O6N2
  512         KM
  513         KM   *********************************************
  514         KM   * DRAINAGE AREA O6N2 DISCHARGE COMPUTATION *
  515         KM   *********************************************
  516         KM
  517         BA   .0024
  518         LS       0    79.0    65.0
  519         UD   0.071       0       0
```

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

 520          KK    O4S2
 521          KM
 522          KM   *********************************************
 523          KM   * DRAINAGE AREA O4S2 DISCHARGE COMPUTATION *
 524          KM   *********************************************
 525          KM
 526          BA   .0021
 527          LS       0    79.0    85.0
 528          UD   0.060       0       0

 529          KK    CH10
 530          KM
 531          KM   **********************************************
 532          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH10 *
 533          KM   * WITH THE HYDROGRAPHS FROM O6N2 AND O4S2   *
 534          KM   * THIS CONCENTRATION POINT IS WEST OF        *
 535          KM   * MILLER ROAD AND COMBINES THE FLOWS FROM    *
 536          KM   * NORTH, SOUTH AND ON-SITE FOR OSBORN ROAD. *
 537          KM   **********************************************
 538          HC       3

 539          KK     N7W
 540          KM
 541          KM   **********************************************
 542          KM   * COMPUTED HYDROGRAPH FOR D.A. N7W THE WEST *
 543          KM   * SIDE OF MILLER ROAD AT OSBORN ROAD.       *
 544          KM   **********************************************
 545          BA   .0134
 546          LS       0    79.0    71.1
 547          UD   0.106

 548          KK     N7E
 549          KM
 550          KM   *********************************************
 551          KM   * COMPUTE HYDROGRAPH FOR D.A. N7E THE EAST *
 552          KM   * SIDE OF MILLER ROAD AT OSBORN ROAD.      *
 553          KM   *********************************************
 554          KM
 555          BA   .0047
 556          LS       0    79.0    54.0
 557          UD   0.275

 558          KK    CH11
 559          KM
 560          KM   **********************************************
 561          KM   * COMBINE THE HYDROGRAPH FOR D.A. N7W WITH *
 562          KM   * N7E TO COMPUTE THE TOTAL FLOW FROM THE    *
 563          KM   * NORTH FOR MILLER ROAD.                    *
 564          KM   **********************************************
 565          HC       2
```

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

 566          KK    CH12
 567          KM
 568          KM   ********************************************
 569          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH10 *
 570          KM   * WITH CH11 TO COMPUTE THE TOTAL FLOW FOR  *
 571          KM   * OSBORN ROAD JUST EAST OF MILLER RD.      *
 572          KM   ********************************************
 573          HC       2

 574          KK      R6
 575          KM
 576          KM   ********************************************
 577          KM   * ROUTE THE COMBINED HYDROGRAPH CH12 TO THE *
 578          KM   * WEST SIDE OF THE 1ST ENTRANCE TO THE      *
 579          KM   * APARTMENT COMPLEX.                        *
 580          KM   ********************************************
 581          KM
 582          RC   0.013   0.016   0.013   470.0  0.0042   100.0       0       0
 583          RX  1000.0 1000.25 1000.50 1000.58 1055.58 1056.00 1056.25 1056.50
 584          RY  100.00  100.00  100.00   99.82   99.82  100.00  100.00  100.00

 585          KK     O7N
 586          KM
 587          KM   ***************************************************
 588          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O7N JUST       *
 589          KM   * WEST OF THE WESTERN MOST ENTRANCE TO THE       *
 590          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE       *
 591          KM   * INDIAN BEND WASH ON THE NORTH SIDE OF OSBORN. *
 592          KM   ***************************************************
 593          KM
 594          BA   .0009
 595          LS       0    98.0       0
 596          UD   0.060       0       0

 597          KK     O5S
 598          KM
 599          KM   ***************************************************
 600          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O5S JUST       *
 601          KM   * WEST OF THE WESTERN MOST ENTRANCE TO THE       *
 602          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE       *
 603          KM   * INDIAN BEND WASH ON THE SOUTH SIDE OF OSBORN. *
 604          KM   ***************************************************
 605          KM
 606          BA   .0006
 607          LS       0    96.6
 608          UD   0.060       0       0

 609          KK    CH13
 610          KM
 611          KM   *****************************************************
 612          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH12          *
 613          KM   * WITH D.A. O7N AND O5S LOCATED JUST WEST OF        *
 614          KM   * THE WESTERN MOST ENTRANCE TO THE APARTMENT        *
 615          KM   * COMPLEX BETWEEN MILLER AND THE INDIAN BEND WASH. *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 616          KM   ****************************************************
 617          HC       3

 618          KK      R6
 619          KM
 620          KM   ***********************************************
 621          KM   * ROUTE THE COMBINED HYDROGRAPH CH12 TO THE *
 622          KM   * WEST SIDE OF THE WESTER ENTRANCE TO THE   *
 623          KM   * APARTMENT COMPLEX.                        *
 624          KM   ***********************************************
 625          RC   0.013   0.016   0.013   470.0  0.0042   100.0       0       0
 626          RX  1000.0 1000.25 1000.50 1000.58 1055.58 1056.00 1056.25 1056.50
 627          RY  100.00  100.00  100.00   99.82   99.82  100.00  100.00  100.00

 628          KK     O8N
 629          KM
 630          KM   ****************************************************
 631          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O8N JUST      *
 632          KM   * WEST OF THE EASTERN MOST ENTRANCE TO THE      *
 633          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE      *
 634          KM   * INDIAN BEND WASH ON THE NORTH SIDE OF OSBORN. *
 635          KM   ****************************************************
 636          KM
 637          BA   .0008
 638          LS       0    98.0       0
 639          UD   0.060       0       0

 640          KK     O6S
 641          KM
 642          KM   ****************************************************
 643          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O6S JUST      *
 644          KM   * WEST OF THE EASTERN MOST ENTRANCE TO THE      *
 645          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE      *
 646          KM   * INDIAN BEND WASH ON THE SOUTH SIDE OF OSBORN. *
 647          KM   ****************************************************
 648          KM
 649          BA   .0010
 650          LS       0    95.9
 651          UD   0.060       0       0

 652          KK    CH14
 653          KM
 654          KM   *****************************************************
 655          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH13         *
 656          KM   * WITH D.A. O8N AND O6S LOCATED JUST WEST OF       *
 657          KM   * THE EASTERN MOST ENTRANCE TO THE APARTMENT       *
 658          KM   * COMPLEX BETWEEN MILLER AND THE INDIAN BEND WASH. *
 659          KM   *****************************************************
 660          HC       3
```

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

  661         KK     O9N
  662         KM
  663         KM   ******************************************************
  664         KM   * COMPUTE THE HYDROGRAPH FOR D.A. O9N LOCATED AT THE *
  665         KM   * END OF THE PROJECT AT THE INDIAN BEND WASH.        *
  666         KM   ******************************************************
  667         BA   .0017
  668         LS       0    93.9
  669         UD   0.060       0

  670         KK     O7S
  671         KM
  672         KM   ******************************************************
  673         KM   * COMPUTE THE HYDROGRAPH FOR D.A. O7S LOCATED AT THE *
  674         KM   * END OF THE PROJECT AT THE INDIAN BEND WASH.        *
  675         KM   ******************************************************
  676         BA   .0019
  677         LS       0    95.1
  678         UD   0.060       0

  679         KK     N8E
  680         KM
  681         BA   .0017
  682         LS       0      79
  683         UD    .319       0

  684         KK     N10
  685         KM
  686         BA   .0017
  687         LS       0      79
  688         UD    .310       0

  689         KK     N11
  690         KM
  691         BA   .0011
  692         LS       0    91.1
  693         UD    .280       0

  694         KK      N9
  695         KM
  696         BA   .0182
  697         LS       0      79
  698         UD    .122       0

  699         KK    CH15
  700         KM
  701         HC       4

  702         KK     N12
  703         KM
  704         BA   .0006
  705         LS       0      79
  706         UD    .261       0
```

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

 707          KK     N13
 708          KM
 709          BA   .0043
 710          LS       0       91
 711          UD    .248        0

 712          KK     N8W
 713          KM
 714          BA   .0312
 715          LS       0       79
 716          UD    .248        0

 717          KK      CP
 718          KM
 719          BA   .0043
 720          LS       0       91
 721          UD    .027        0

 722          KK    CH16
 723          KM   ****************************************************
 724          KM    COMBINE N8E, N10, N11, N9, N12, N13, N8W, CP.
 725          KM   ****************************************************
 726          HC       5
 727          ZZ
```

```
483                                  O4S1
492          CH10.......................
               V
               V
501            R5
511                        O6N2
520                                  O4S2
529          CH10.......................
539                        N7W
548                                  N7E
558                        CH11............
566          CH12............
               V
               V
574            R6
585                        O7N
597                                  O5S
609          CH13.......................
               V
               V
618            R6
628                        O8N
640                                  O6S
652          CH14.......................
661                        O9N
670                                  O7S
679                                  N8E
684                                  N10
689                                  N11
694                                  N9
699                                  CH15...................................
702                                  N12
707                                  N13
```

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            FEBRUARY 1981              *
*          REVISED 02 AUG 88            *
*                                       *
*  RUN DATE  04/28/1993  TIME  14:49:56 *
*                                       *
*****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
```

HEC-1 FOR EAST COUPLET, JOB NUMBER E019600
CITY OF SCOTTSDALE PROJECT NUMBERS: S2703 AND F2703
50-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **

DISCHARGE COMPUTATIONS FOR OFFSITE EXISTING DRAINAGE AREAS,
BOTH NORTH AND SOUTH OF OSBORN ROAD, AND ON-SITE
AREAS FROM SCOTTSDALE ROAD IN THE WEST TO THE WEST SIDE MILLER
ROAD IN THE EAST.

INPUT FILE NAME: EAST-50.DAT

```
13 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
```

1

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	O1N	3.	3.07	0.	0.	0.	.00		
+	HYDROGRAPH AT	N1W	35.	3.13	3.	2.	2.	.01		
+	HYDROGRAPH AT	N1E	14.	3.13	1.	1.	1.	.00		
+	2 COMBINED AT	CH1	49.	3.13	4.	2.	2.	.01		
+	2 COMBINED AT	CH2	52.	3.13	4.	2.	2.	.01		
+	HYDROGRAPH AT	O2N	1.	3.07	0.	0.	0.	.00		
+	HYDROGRAPH AT	N2	12.	3.10	1.	0.	0.	.00		
+	HYDROGRAPH AT	N3	16.	3.10	1.	1.	1.	.00		
+	3 COMBINED AT	CH4	29.	3.10	2.	1.	1.	.01		
+	HYDROGRAPH AT	O3N	0.	3.07	0.	0.	0.	.00		
+	HYDROGRAPH AT	O1S	5.	3.10	0.	0.	0.	.00		
+	3 COMBINED AT	CH5	35.	3.10	2.	1.	1.	.01		
+	ROUTED TO	R2	35.	3.10	2.	1.	1.	.01		
+	HYDROGRAPH AT	N4	13.	3.07	1.	0.	0.	.00		
+	HYDROGRAPH AT	O4N	4.	3.07	0.	0.	0.	.00		
+	HYDROGRAPH AT	O2S	6.	3.07	0.	0.	0.	.00		
+	4 COMBINED AT	CH6	57.	3.10	4.	2.	2.	.01		
+	HYDROGRAPH AT	EC1	30.	3.10	2.	1.	1.	.01		
+	HYDROGRAPH AT	EC2	14.	3.13	1.	1.	1.	.00		
+	2 COMBINED AT	CH01	44.	3.10	3.	2.	2.	.01		
+	HYDROGRAPH AT	EC3	20.	3.03	1.	1.	1.	.00		
+	HYDROGRAPH AT	EC4	29.	3.10	2.	1.	1.	.01		
+	3 COMBINED AT	CH02	85.	3.10	6.	4.	4.	.02		
+	HYDROGRAPH AT	EC5	28.	3.10	2.	1.	1.	.01		

+	HYDROGRAPH AT	EC6	5.	3.03	0.	0.	0.	.00
+	3 COMBINED AT	CH03	115.	3.10	8.	5.	5.	.03
+	ROUTED TO	R04	115.	3.10	8.	5.	5.	.03
+	2 COMBINED AT	CH04	172.	3.10	12.	7.	7.	.04
+	HYDROGRAPH AT	4N	53.	3.10	4.	2.	2.	.01
+	HYDROGRAPH AT	4S	19.	3.07	1.	1.	1.	.00
+	2 COMBINED AT	CH4	72.	3.10	5.	3.	3.	.02
+	HYDROGRAPH AT	CC1W	14.	3.07	1.	1.	1.	.00
+	2 COMBINED AT	CHCCN	85.	3.10	6.	3.	3.	.02
+	ROUTED TO	RCC	85.	3.10	6.	3.	3.	.02
+	HYDROGRAPH AT	N5W	13.	3.07	1.	0.	0.	.00
+	HYDROGRAPH AT	N5E	8.	3.10	1.	0.	0.	.00
+	3 COMBINED AT	CHCCNT	106.	3.10	7.	4.	4.	.03
+	2 COMBINED AT	CH7	279.	3.10	19.	11.	11.	.07
+	ROUTED TO	R3	279.	3.10	19.	11.	11.	.07
+	HYDROGRAPH AT	O5N	3.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O3S	8.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH8	289.	3.10	20.	12.	12.	.07
+	HYDROGRAPH AT	N6W	3.	3.10	0.	0.	0.	.00
+	HYDROGRAPH AT	N6E	2.	3.07	0.	0.	0.	.00
+	2 COMBINED AT	CH8A	5.	3.10	0.	0.	0.	.00
+	HYDROGRAPH AT	BOYS	6.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	S1W	5.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	S1E	5.	3.07	0.	0.	0.	.00
+	5 COMBINED AT	CH9	309.	3.10	21.	13.	13.	.07
+	ROUTED TO	R4	309.	3.10	21.	13.	13.	.07
+	HYDROGRAPH AT	O6N1	14.	3.17	1.	1.	1.	.00

+	HYDROGRAPH AT	O4S1	5.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH10	327.	3.10	22.	13.	13.	.08
+	ROUTED TO	R5	327.	3.10	22.	13.	13.	.08
+	HYDROGRAPH AT	O6N2	9.	3.10	1.	0.	0.	.00
+	HYDROGRAPH AT	O4S2	9.	3.07	1.	0.	0.	.00
+	3 COMBINED AT	CH10	345.	3.10	24.	14.	14.	.09
+	HYDROGRAPH AT	N7W	46.	3.13	3.	2.	2.	.01
+	HYDROGRAPH AT	N7E	9.	3.30	1.	1.	1.	.00
+	2 COMBINED AT	CH11	51.	3.13	5.	3.	3.	.02
+	2 COMBINED AT	CH12	392.	3.10	28.	17.	17.	.10
+	ROUTED TO	R6	392.	3.10	28.	17.	17.	.10
+	HYDROGRAPH AT	O7N	4.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O5S	3.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH13	399.	3.10	28.	17.	17.	.10
+	ROUTED TO	R6	399.	3.10	28.	17.	17.	.10
+	HYDROGRAPH AT	O8N	4.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O6S	5.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH14	407.	3.10	29.	17.	17.	.11
+	HYDROGRAPH AT	O9N	7.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O7S	8.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	N8E	2.	3.40	0.	0.	0.	.00
+	HYDROGRAPH AT	N10	2.	3.40	0.	0.	0.	.00
+	HYDROGRAPH AT	N11	2.	3.33	0.	0.	0.	.00
+	HYDROGRAPH AT	N9	31.	3.17	2.	1.	1.	.02
+	4 COMBINED AT	CH15	34.	3.17	3.	2.	2.	.02
+	HYDROGRAPH AT	N12	1.	3.33	0.	0.	0.	.00
+	HYDROGRAPH AT	N13	9.	3.30	1.	1.	1.	.00

+	HYDROGRAPH AT	N8W	36.	3.30	4.	2.	2.	.03
+	HYDROGRAPH AT	CP	19.	3.03	1.	1.	1.	.00
+	5 COMBINED AT	CH16	76.	3.23	9.	5.	5.	.06

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

HEC-1
100-YEAR

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            FEBRUARY 1981             *
*          REVISED 02 AUG 88           *
*                                      *
*  RUN DATE  04/28/1993  TIME  14:58:59 *
*                                      *
****************************************
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```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
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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
```

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

HEC-1 INPUT

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

  1           ID   HEC-1 FOR EAST COUPLET, JOB NUMBER E019600
  2           ID   CITY OF SCOTTSDALE PROJECT NUMBERS: S2703 AND F2703
  3           ID   100-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **
  4           ID
  5           ID   DISCHARGE COMPUTATIONS FOR OFFSITE EXISTING DRAINAGE AREAS,
  6           ID   BOTH NORTH AND SOUTH OF OSBORN ROAD, AND ON-SITE
  7           ID   AREAS FROM SCOTTSDALE ROAD IN THE WEST TO THE WEST SIDE MILLER
  8           ID   ROAD IN THE EAST.
  9           ID
 10           ID   INPUT FILE NAME: EAST-100.DAT
 11           ID
 12           IT       2       0       0     300       0       0       0       0
 13           IO       5       0       0       0       0       0       0       0
              *DIAGRAM

 14           KK    O1N
 15           KM
 16           KM   ***********************************************
 17           KM   * DRAINAGE AREA O1N DISCHARGE COMPUTATION.   *
 18           KM   * ON-SITE AREA 1 NORTH SIDE OF OSBORN ROAD. *
 19           KM   ***********************************************
 20           KM
 21           PH       0       0    0.89    1.62    2.61    2.86    3.03    3.35
 22           BA   .0007
 23           LS       0    84.4    60.7
 24           UD   0.060       0       0

 25           KK    N1W
 26           KM
 27           KM   *********************************************
 28           KM   * DRAINAGE AREA N1W DISCHARGE COMPUTATION *
 29           KM   * OFFSITE NORTH SIDE AREA 1 WEST SIDE OF  *
 30           KM   * CONTRIBUTING STREET                      *
 31           KM   *********************************************
 32           KM
 33           BA   .0097       0       0       0       0       0       0       0
 34           LS       0    81.7    72.9       0       0       0       0       0
 35           UD   0.096

 36           KK    N1E
 37           KM
 38           KM   ************************************************
 39           KM   * DRAINAGE AREA N1E DISCHARGE COMPUTATION.   *
 40           KM   * OFF-SITE AREA NORTH OF OSBORN ROAD FOR     *
 41           KM   * BROWN AVE. ON THE EAST SIDE.               *
 42           KM   ************************************************
 43           KM
 44           BA   .0040
 45           LS       0    79.0    85.0
 46           UD   0.119       0       0
```

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

  47          KK     CH1
  48          KM
  49          KM   ****************************************************
  50          KM   * COMBINE THE HYDROGRAPHS FROM D.A. N1W WITH D.A. *
  51          KM   * N1E                                             *
  52          KM   ****************************************************
  53          KM
  54          HC       2

  55          KK     CH2
  56          KM
  57          KM   ************************************************
  58          KM   * COMBINE THE COMBINED HYDROGRAPH OF D.A. N1W *
  59          KM   * AND N1E WITH THE HYDROGRAPH FROM D.A. O1N   *
  60          KM   * THIS FLOW WILL BE TAKEN TO THE EXISTING     *
  61          KM   * SCOTTSDALE ROAD DRAIN.                      *
  62          KM   ************************************************
  63          KM
  64          HC       2

  65          KK     O2N
  66          KM
  67          KM   *******************************************
  68          KM   * DRAINAGE AREA O2N DISCHARGE COMPUTATION *
  69          KM   *******************************************
  70          KM
  71          BA   .0002
  72          LS       0    98.0
  73          UD   0.060       0       0

  74          KK      N2
  75          KM
  76          KM   ******************************************
  77          KM   * DRAINAGE AREA N2 DISCHARGE COMPUTATION *
  78          KM   ******************************************
  79          KM
  80          BA   .0029
  81          LS       0    79.0    85.0
  82          UD    .070       0       0

  83          KK      N3
  84          KM
  85          KM   ******************************************
  86          KM   * DRAINAGE AREA N3 DISCHARGE COMPUTATION *
  87          KM   ******************************************
  88          KM
  89          BA   .0041
  90          LS       0    79.0    85.0
  91          UD   0.090       0       0
```

1

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

 92           KK     CH4
 93           KM
 94           KM   *******************************************
 95           KM   * COMBINE HYDROGRAPH FOR D.A. N2 WITH THE *
 96           KM   * HYDROGRAPH FROM D.A. N3                 *
 97           KM   *******************************************
 98           HC       3

 99           KK     O3N
100           KM
101           KM   *******************************************
102           KM   * DRAINAGE AREA O3N DISCHARGE COMPUTATION *
103           KM   *******************************************
104           KM
105           BA   .0001
106           LS       0    98.0
107           UD   0.060       0       0

108           KK     O1S
109           KM
110           KM   ********************************************
111           KM   * DRAINAGE AREA O1S DISCHARGE COMPUTATION  *
112           KM   * ON-SITE AREA 1 SOUTH                     *
113           KM   ********************************************
114           KM
115           BA   .0014
116           LS       0    79.0    65.0
117           UD   0.062       0       0

118           KK     CH5
119           KM
120           KM   *********************************************
121           KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH4  *
122           KM   * WITH THE HYDROGRAPHS FROM COMBINED         *
123           KM   * O3N, AND O1S.  THIS CONCENTRATION POINT    *
124           KM   * IS ABOUT MID WAY BETWEEN BROWN AVE. AND    *
125           KM   * CIVIC CENTER AND IS FOR THE COMBINED       *
126           KM   * FOR BOTH NORTH, SOUTH AND ON-SITE OSBORN   *
127           KM   *********************************************
128           HC       3

129           KK      R2
130           KM
131           KM   *******************************************
132           KM   * ROUTE THE COMBINED HYDROGRAPH CH5 TO THE *
133           KM   * WEST SIDE OF CIVIC CENTER AVE.           *
134           KM   *******************************************
135           RC   0.013   0.016   0.013   525.0  0.0029   10.00
136           RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
137           RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00
```

1

HEC-1 INPUT

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

 138          KK     N4
 139          KM
 140          KM   ******************************************
 141          KM   * DRAINAGE AREA N4 DISCHARGE COMPUTATION *
 142          KM   ******************************************
 143          KM
 144          BA   .0029
 145          LS       0    79.0    85.0
 146          UD   0.060       0       0

 147          KK     O4N
 148          KM
 149          KM   *******************************************
 150          KM   * DRAINAGE AREA O4N DISCHARGE COMPUTATION *
 151          KM   *******************************************
 152          KM
 153          BA   .0008
 154          LS       0    98.0
 155          UD   0.060       0       0

 156          KK     O2S
 157          KM
 158          KM   *******************************************
 159          KM   * DRAINAGE AREA O2S DISCHARGE COMPUTATION *
 160          KM   *******************************************
 161          KM
 162          BA   .0012
 163          LS       0    98.0
 164          UD   0.060       0       0

 165          KK     CH6
 166          KM
 167          KM   ********************************************
 168          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH5  *
 169          KM   * WITH THE HYDROGRAPHS FROM COMBINED N4,    *
 170          KM   * ON4, AND O2S.  THIS CONCENTRATION POINT   *
 171          KM   * IS WEST OF CIVIC CENTER AVE AND COMBINES  *
 172          KM   * THE FLOWS FROM NORTH, SOUTH AND ON-SITE   *
 173          KM   * FOR OSBORN ROAD.                          *
 174          KM   ********************************************
 175          HC       4

 176          KK     EC1
 177          KM
 178          KM   ********************************************
 179          KM   * DRAINAGE AREA CONSISTING OF MEDICAL       *
 180          KM   * OFFICES DRAINING TO WELLS FARGO AND       *
 181          KM   * MONTEREY.                                 *
 182          KM   ********************************************
 183          BA   .0078
 184          LS       0    82.0    71.0
 185          UD   .0835
```

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

 186          KK     EC2
 187          KM
 188          KM   ***********************************************
 189          KM   * DRAINAGE AREA AT NE CORNER OF SCOTTSDALE  *
 190          KM   * ROAD AND MONTEREY.                         *
 191          KM   ***********************************************
 192          BA   .0037
 193          LS       0    79.0    85.0
 194          UD   .0971

 195          KK    CH01
 196          KM
 197          KM   ***********************************************
 198          KM   * COMBINE HYDROGRAPHS EC1 & EC2.            *
 199          KM   ***********************************************
 200          HC       2

 201          KK     EC3
 202          KM
 203          KM   ***********************************************
 204          KM   * DRAINAGE AREA CONSISTING OF SCOTTSDALE    *
 205          KM   * MEDICAL PAVILION.                          *
 206          KM   ***********************************************
 207          BA   .0038
 208          LS       0    79.0    85.0
 209          UD   .0222

 210          KK     EC4
 211          KM
 212          KM   ***********************************************
 213          KM   * DRAINAGE AREA CONSISTING OF HOSPITAL      *
 214          KM   * PARKING LOT.                               *
 215          KM   ***********************************************
 216          BA   .0062
 217          LS       0    98.0
 218          UD   .0644

 219          KK    CH02
 220          KM
 221          KM   ***********************************************
 222          KM   * COMBINE HYDROGRAPHS CH01, EC3 AND EC4     *
 223          KM   ***********************************************
 224          HC       3

 225          KK     EC5
 226          KM
 227          KM   ***********************************************
 228          KM   * DRAINAGE AREA CONSISTING OF THE COUPLET    *
 229          KM   * ROADWAY.                                   *
 230          KM   ***********************************************
 231          BA   .0061
 232          LS       0    98.0
 233          UD   0.075
```

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

 234          KK     EC6
 235          KM
 236          KM   ***********************************************
 237          KM   * DRAINAGE AREA CONSISTING OF NURSING HOME  *
 238          KM   ***********************************************
 239          BA   .0009
 240          LS       0    69.0    85.0
 241          UD   .0122

 242          KK    CH03
 243          KM
 244          KM   ***********************************************
 245          KM   * COMBINED CH02, EC5 AND EC6                 *
 246          KM   ***********************************************
 247          HC       3

 248          KK     R04
 249          KM
 250          KM   ***********************************************
 251          KM   * ROUTE ALL E. COUPLET HYDROGRAPHS TO        *
 252          KM   * INTERSECTION CIVIC CENTER/OSBORN           *
 253          KM   ***********************************************
 254          RC   0.013   0.016   0.013   850.0  .0045   102
 255          RX     100     110     110   128.5    147   147  157  160
 256          RY     101   100.5   100.0  100.57  100.0 100.5  101  101

 257          KK    CH04
 258          KM
 259          KM   ***********************************************
 260          KM   * COMBINE COUPLET HYDROGRAPH WITH CH6        *
 261          KM   ***********************************************
 262          HC       2

 263          KK      4N
 264          KM
 265          KM   *********************************************
 266          KM   * DRAINAGE AREA 4N DISCHARGE COMPUTATION  *
 267          KM   * OFFSITE NORTH SIDE FOR THE AREA NORTH   *
 268          KM   * OF 4TH STREET FORM BROWN EAST TO CCB    *
 269          KM   *********************************************
 270          KM
 271          BA   .0128       0       0
 272          LS       0    79.0    85.0
 273          UD   0.080       0       0

 274          KK      4S
 275          KM
 276          KM   *********************************************
 277          KM   * DRAINAGE AREA 4S DISCHARGE COMPUTATION  *
 278          KM   * FOR 4TH STREET SOUTH FROM BROWN AVE.    *
 279          KM   * TO CIVIC CENTER BOULEVARD. ON THE WEST. *
 280          KM   *********************************************
 281          KM
 282          BA   .0043
```

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

 283          LS       0    79.0    85.0
 284          UD   0.060       0       0

 285          KK     CH4
 286          KM
 287          KM   *******************************************
 288          KM   * THIS IS THE COMBINED HYDROGRAPH FOR 4TH *
 289          KM   * STREET AT CIVIC CENTER BOULEVARD.       *
 290          KM   *******************************************
 291          HC       2

 292          KK    CC1W
 293          KM
 294          KM   ****************************************************
 295          KM   * DRAINAGE AREA CC1W DISCHARGE COMPUTATION        *
 296          KM   * FOR THE AREA NORTH OF 4TH STREET CONCENTRATING *
 297          KM   * IN CIVIC CENTER BOULEVARD ON THE WEST SIDE     *
 298          KM   ****************************************************
 299          KM
 300          BA   .0032
 301          LS       0    79.0    85.0
 302          UD   0.061       0       0

 303          KK   CHCCN
 304          KM
 305          KM   ************************************************
 306          KM   * COMBINE THE COMBINED HYDROGRAPH, CH4 WITH    *
 307          KM   * CC1W.  THIS IS THE COMBINED FLOW FOR 4TH ST. *
 308          KM   * AND CIVIC CENTER BOULEVARD AT 4TH STREET.    *
 309          KM   ************************************************
 310          HC       2

 311          KK     RCC
 312          KM
 313          KM   ************************************************************
 314          KM   * ROUTE THE COMBINED HYDROGRAPH CHCCN TO THE INTERSECTION *
 315          KM   * OSBORN ROAD AND CIVIC CENTER BOULEVARD.                 *
 316          KM   ************************************************************
 317          RC   0.013   0.016   0.013   545.0  0.0030  241.88
 318          RX   100.0   105.0  105.42   105.5   107.0  127.98  127.99   128.0
 319          RY  241.88  241.80  241.80  241.30  241.38  241.68  241.80  241.88

 320          KK     N5W
 321          KM
 322          KM   *********************************************
 323          KM   * DRAINAGE AREA N5W DISCHARGE COMPUTATION *
 324          KM   * FOR CIVIC CENTER BOULEVARD FROM 4TH ST. *
 325          KM   * TO CIVIC CENTER BOULEVARD. ON THE WEST. *
 326          KM   *********************************************
 327          KM
 328          BA   .0029
 329          LS       0    79.0    85.0
 330          UD   0.060       0       0
```

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

 331          KK     N5E
 332          KM
 333          KM   *********************************************
 334          KM   * DRAINAGE AREA N5E DISCHARGE COMPUTATION *
 335          KM   *********************************************
 336          KM
 337          BA   .0019
 338          LS       0    98.0
 339          UD   0.085       0

 340          KK  CHCCNT
 341          KM
 342          KM   ****************************************************
 343          KM   * THIS WILL PRODUCE THE COMBINED HYDROGRAPH FOR *
 344          KM   * CIVIC CENTER AT OSBORN ROAD FROM THE NORTH.   *
 345          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CHCCN     *
 346          KM   * WITH D.A. N5W AND N5E.                        *
 347          KM   ****************************************************
 348          HC       3

 349          KK     CH7
 350          KM
 351          KM   ************************************************
 352          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH6   *
 353          KM   * AND CHCCNT WITH THE HYDROGRAPH FROM EC1.   *
 354          KM   * THIS CONCENTRATION POINT IS EAST OF CIVIC  *
 355          KM   * CENTER AVE AND COMBINES THE FLOWS FROM     *
 356          KM   * NORTH, SOUTH AND ON-SITE FOR OSBORN ROAD.  *
 357          KM   ************************************************
 358          HC       2

 359          KK      R3
 360          KM
 361          KM   *********************************************
 362          KM   * ROUTE THE COMBINED HYDROGRAPH CH7 TO THE *
 363          KM   * WEST SIDE OF 75TH STREET                 *
 364          KM   *********************************************
 365          RC   0.013   0.016   0.013   670.0  0.0047   10.00
 366          RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
 367          RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00

 368          KK     O5N
 369          KM
 370          KM   *********************************************
 371          KM   * DRAINAGE AREA O5N DISCHARGE COMPUTATION *
 372          KM   *********************************************
 373          KM
 374          BA   .0007
 375          LS       0    98.0
 376          UD   0.060       0       0
```

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

  377         KK     O3S
  378         KM
  379         KM   *******************************************
  380         KM   * DRAINAGE AREA O3S DISCHARGE COMPUTATION *
  381         KM   *******************************************
  382         KM
  383         BA   .0019
  384         LS       0    86.0    53.7
  385         UD   0.060       0       0

  386         KK     CH8
  387         KM
  388         KM   ***********************************************
  389         KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH7  *
  390         KM   * WITH THE HYDROGRAPHS FROM COMBINED O5N,    *
  391         KM   * AND O3S.  THIS CONCENTRATION POINT IS      *
  392         KM   * EAST OF CIVIC CENTER AVE AND COMBINES      *
  393         KM   * THE FLOWS FROM NORTH, SOUTH AND ON-SITE    *
  394         KM   * FOR OSBORN ROAD.                           *
  395         KM   ***********************************************
  396         HC       3

  397         KK     N6W
  398         KM
  399         KM   *******************************************
  400         KM   * DRAINAGE AREA N6W DISCHARGE COMPUTATION *
  401         KM   *******************************************
  402         KM
  403         BA   .0008
  404         LS       0    83.8    48.8
  405         UD   0.064       0       0

  406         KK     N6E
  407         KM
  408         KM   *******************************************
  409         KM   * DRAINAGE AREA N6E DISCHARGE COMPUTATION *
  410         KM   *******************************************
  411         KM
  412         BA   .0004
  413         LS       0    98.0
  414         UD   0.060       0

  415         KK     CH8A
  416         KM
  417         KM   ***********************************************
  418         KM   * COMBINE HYDROGRAPHS FOR D.A. N6W AND N6E *
  419         KM   * THIS IS THE FLOW COMING FROM THE NORTH    *
  420         KM   * ALONG 75TH STREET TO OSBORN.               *
  421         KM   ***********************************************
  422         KM
  423         HC       2
```

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

 424          KK    BOYS
 425          KM
 426          KM   *********************************************
 427          KM   * DRAINAGE AREA BOYS DISCHARGE COMPUTATION *
 428          KM   *********************************************
 429          KM
 430          BA   .0013
 431          LS       0    79.0    85.0
 432          UD   0.060       0       0

 433          KK     S1W
 434          KM
 435          KM   *********************************************
 436          KM   * DRAINAGE AREA S1W DISCHARGE COMPUTATION *
 437          KM   * AREA SOUTH 1 WEST SIDE OF CONTRIBUTING  *
 438          KM   * SIDE STREET.                            *
 439          KM   *********************************************
 440          KM
 441          BA   .0012
 442          LS       0    83.8    63.8
 443          UD   0.060       0       0

 444          KK     S1E
 445          KM
 446          KM   *********************************************
 447          KM   * DRAINAGE AREA S1E DISCHARGE COMPUTATION *
 448          KM   *********************************************
 449          KM
 450          BA   .0012
 451          LS       0    82.2    70.8
 452          UD   0.060       0       0

 453          KK     CH9
 454          KM
 455          KM   ****************************************************
 456          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH8        *
 457          KM   * WITH THE COMBINED HYDROGRAPH CH8A WITH THE      *
 458          KM   * HYDROGRAPHS FROM S1W, S1E, BOYS                 *
 459          KM   * THIS CONCENTRATION POINT IS EAST OF 75TH ROAD   *
 460          KM   * AND COMBINES THE FLOWS FROM NORTH, SOUTH AND    *
 461          KM   * ON-SITE FOR OSBORN ROAD.                        *
 462          KM   ****************************************************
 463          HC       5

 464          KK      R4
 465          KM
 466          KM   ***********************************************
 467          KM   * ROUTE THE COMBINED HYDROGRAPH CH9 TO STA  *
 468          KM   * 22+85.00 APPROXIMATELY HALF WAY TO MILLER *
 469          KM   ***********************************************
 470          KM
 471          RC   0.013   0.016   0.013  365.00  0.0044   10.00
 472          RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
 473          RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00
```

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

 474          KK    O6N1
 475          KM
 476          KM   ********************************************
 477          KM   * DRAINAGE AREA O6N1 DISCHARGE COMPUTATION *
 478          KM   ********************************************
 479          KM
 480          BA   .0048
 481          LS       0    88.4    19.0
 482          UD   0.126       0       0

 483          KK    O4S1
 484          KM
 485          KM   ********************************************
 486          KM   * DRAINAGE AREA O4S1 DISCHARGE COMPUTATION *
 487          KM   ********************************************
 488          KM
 489          BA   .0012
 490          LS       0    79.0    85.0
 491          UD   0.060       0       0

 492          KK    CH10
 493          KM
 494          KM   ************************************************
 495          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH9     *
 496          KM   * WITH THE HYDROGRAPHS FROM O6N1 AND O4S1      *
 497          KM   * THIS CONCENTRATION POINT IS AT STA. 22+85.00 *
 498          KM   ************************************************
 499          KM
 500          HC       3

 501          KK      R5
 502          KM
 503          KM   ***********************************************
 504          KM   * ROUTE THE COMBINED HYDROGRAPH CH10 TO THE *
 505          KM   * WEST SIDE OF MILLER ROAD                  *
 506          KM   ***********************************************
 507          KM
 508          RC   0.013   0.016   0.013  290.00  0.0044   10.00
 509          RX     100     105   105.5  105.51  169.35  169.36  169.86  174.86
 510          RY   10.00    9.92    9.92    9.79    9.79    9.92    9.92   10.00

 511          KK    O6N2
 512          KM
 513          KM   ********************************************
 514          KM   * DRAINAGE AREA O6N2 DISCHARGE COMPUTATION *
 515          KM   ********************************************
 516          KM
 517          BA   .0024
 518          LS       0    79.0    65.0
 519          UD   0.071       0       0
```

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

 520          KK    O4S2
 521          KM
 522          KM   *********************************************
 523          KM   * DRAINAGE AREA O4S2 DISCHARGE COMPUTATION *
 524          KM   *********************************************
 525          KM
 526          BA   .0021
 527          LS       0    79.0    85.0
 528          UD   0.060       0       0

 529          KK    CH10
 530          KM
 531          KM   ************************************************
 532          KM   * COMBINE HYDROGRAPH FROM THE COMBINED CH10 *
 533          KM   * WITH THE HYDROGRAPHS FROM O6N2 AND O4S2   *
 534          KM   * THIS CONCENTRATION POINT IS WEST OF        *
 535          KM   * MILLER ROAD AND COMBINES THE FLOWS FROM    *
 536          KM   * NORTH, SOUTH AND ON-SITE FOR OSBORN ROAD. *
 537          KM   ************************************************
 538          HC       3

 539          KK     N7W
 540          KM
 541          KM   ************************************************
 542          KM   * COMPUTED HYDROGRAPH FOR D.A. N7W THE WEST *
 543          KM   * SIDE OF MILLER ROAD AT OSBORN ROAD.       *
 544          KM   ************************************************
 545          BA   .0134
 546          LS       0    79.0    71.1
 547          UD   0.106

 548          KK     N7E
 549          KM
 550          KM   *********************************************
 551          KM   * COMPUTE HYDROGRAPH FOR D.A. N7E THE EAST *
 552          KM   * SIDE OF MILLER ROAD AT OSBORN ROAD.      *
 553          KM   *********************************************
 554          KM
 555          BA   .0047
 556          LS       0    79.0    54.0
 557          UD   0.275

 558          KK    CH11
 559          KM
 560          KM   *********************************************
 561          KM   * COMBINE THE HYDROGRAPH FOR D.A. N7W WITH *
 562          KM   * N7E TO COMPUTE THE TOTAL FLOW FROM THE   *
 563          KM   * NORTH FOR MILLER ROAD.                   *
 564          KM   *********************************************
 565          HC       2
```

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

 566          KK    CH12
 567          KM
 568          KM   ********************************************
 569          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH10 *
 570          KM   * WITH CH11 TO COMPUTE THE TOTAL FLOW FOR  *
 571          KM   * OSBORN ROAD JUST EAST OF MILLER RD.      *
 572          KM   ********************************************
 573          HC       2

 574          KK      R6
 575          KM
 576          KM   ********************************************
 577          KM   * ROUTE THE COMBINED HYDROGRAPH CH12 TO THE *
 578          KM   * WEST SIDE OF THE 1ST ENTRANCE TO THE      *
 579          KM   * APARTMENT COMPLEX.                        *
 580          KM   ********************************************
 581          KM
 582          RC   0.013   0.016   0.013   470.0  0.0042   100.0       0       0
 583          RX  1000.0 1000.25 1000.50 1000.58 1055.58 1056.00 1056.25 1056.50
 584          RY  100.00  100.00  100.00   99.82   99.82  100.00  100.00  100.00

 585          KK     07N
 586          KM
 587          KM   ***************************************************
 588          KM   * COMPUTE THE HYDROGRAPH FOR D.A. 07N JUST       *
 589          KM   * WEST OF THE WESTERN MOST ENTRANCE TO THE       *
 590          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE       *
 591          KM   * INDIAN BEND WASH ON THE NORTH SIDE OF OSBORN. *
 592          KM   ***************************************************
 593          KM
 594          BA   .0009
 595          LS       0    98.0       0
 596          UD   0.060       0       0

 597          KK     05S
 598          KM
 599          KM   ***************************************************
 600          KM   * COMPUTE THE HYDROGRAPH FOR D.A. 05S JUST       *
 601          KM   * WEST OF THE WESTERN MOST ENTRANCE TO THE       *
 602          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE       *
 603          KM   * INDIAN BEND WASH ON THE SOUTH SIDE OF OSBORN. *
 604          KM   ***************************************************
 605          KM
 606          BA   .0006
 607          LS       0    96.6
 608          UD   0.060       0       0

 609          KK    CH13
 610          KM
 611          KM   ******************************************************
 612          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH12          *
 613          KM   * WITH D.A. 07N AND 05S LOCATED JUST WEST OF        *
 614          KM   * THE WESTERN MOST ENTRANCE TO THE APARTMENT        *
 615          KM   * COMPLEX BETWEEN MILLER AND THE INDIAN BEND WASH. *
```

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

 616          KM   ****************************************************
 617          HC       3

 618          KK      R6
 619          KM
 620          KM   ***********************************************
 621          KM   * ROUTE THE COMBINED HYDROGRAPH CH12 TO THE *
 622          KM   * WEST SIDE OF THE WESTER ENTRANCE TO THE   *
 623          KM   * APARTMENT COMPLEX.                        *
 624          KM   ***********************************************
 625          RC   0.013   0.016   0.013   470.0  0.0042   100.0       0       0
 626          RX  1000.0 1000.25 1000.50 1000.58 1055.58 1056.00 1056.25 1056.50
 627          RY  100.00  100.00  100.00   99.82   99.82  100.00  100.00  100.00

 628          KK     08N
 629          KM
 630          KM   ****************************************************
 631          KM   * COMPUTE THE HYDROGRAPH FOR D.A. 08N JUST       *
 632          KM   * WEST OF THE EASTERN MOST ENTRANCE TO THE       *
 633          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE       *
 634          KM   * INDIAN BEND WASH ON THE NORTH SIDE OF OSBORN. *
 635          KM   ****************************************************
 636          KM
 637          BA   .0008
 638          LS       0    98.0       0
 639          UD   0.060       0       0

 640          KK     06S
 641          KM
 642          KM   ****************************************************
 643          KM   * COMPUTE THE HYDROGRAPH FOR D.A. 06S JUST       *
 644          KM   * WEST OF THE EASTERN MOST ENTRANCE TO THE       *
 645          KM   * APARTMENT COMPLEX BETWEEN MILLER AND THE       *
 646          KM   * INDIAN BEND WASH ON THE SOUTH SIDE OF OSBORN. *
 647          KM   ****************************************************
 648          KM
 649          BA   .0010
 650          LS       0    95.9
 651          UD   0.060       0       0

 652          KK    CH14
 653          KM
 654          KM   *****************************************************
 655          KM   * COMBINE THE COMBINED HYDROGRAPH FOR CH13         *
 656          KM   * WITH D.A. 08N AND 06S LOCATED JUST WEST OF       *
 657          KM   * THE EASTERN MOST ENTRANCE TO THE APARTMENT       *
 658          KM   * COMPLEX BETWEEN MILLER AND THE INDIAN BEND WASH. *
 659          KM   *****************************************************
 660          HC       3
```

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

 661          KK     O9N
 662          KM
 663          KM   ******************************************************
 664          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O9N LOCATED AT THE *
 665          KM   * END OF THE PROJECT AT THE INDIAN BEND WASH.        *
 666          KM   ******************************************************
 667          BA   .0017
 668          LS       0    93.9
 669          UD   0.060       0

 670          KK     O7S
 671          KM
 672          KM   ******************************************************
 673          KM   * COMPUTE THE HYDROGRAPH FOR D.A. O7S LOCATED AT THE *
 674          KM   * END OF THE PROJECT AT THE INDIAN BEND WASH.        *
 675          KM   ******************************************************
 676          BA   .0019
 677          LS       0    95.1
 678          UD   0.060       0

 679          KK     N8E
 680          KM
 681          BA   .0017
 682          LS       0      79
 683          UD    .319       0

 684          KK     N10
 685          KM
 686          BA   .0017
 687          LS       0      79
 688          UD    .310       0

 689          KK     N11
 690          KM
 691          BA   .0011
 692          LS       0    91.1
 693          UD    .280       0

 694          KK      N9
 695          KM
 696          BA   .0182
 697          LS       0      79
 698          UD    .122       0

 699          KK    CH15
 700          KM
 701          HC       4

 702          KK     N12
 703          KM
 704          BA   .0006
 705          LS       0      79
 706          UD    .261       0
```

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

 707          KK     N13
 708          KM
 709          BA   .0043
 710          LS       0      91
 711          UD    .248       0

 712          KK     N8W
 713          KM
 714          BA   .0312
 715          LS       0      79
 716          UD    .248       0

 717          KK      CP
 718          KM
 719          BA   .0043
 720          LS       0      91
 721          UD    .027       0

 722          KK    CH16
 723          KM   ****************************************************
 724          KM    COMBINE N8E, N10, N11, N9, N12, N13, N8W, CP.
 725          KM   ****************************************************
 726          HC       5
 727          ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW
  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW
   14        O1N
              .
              .
   25         .        N1W
              .         .
              .         .
   36         .         .        N1E
              .         .         .
              .         .         .
   47         .        CH1............
              .         .
              .         .
   55       CH2............
              .
              .
   65         .        O2N
              .         .
              .         .
   74         .         .        N2
              .         .         .
              .         .         .
   83         .         .         .        N3
              .         .         .         .
              .         .         .         .
   92         .        CH4........................
              .         .
              .         .
   99         .         .        O3N
              .         .         .
              .         .         .
  108         .         .         .        O1S
              .         .         .         .
              .         .         .         .
  118         .        CH5........................
              .         V
              .         V
  129         .         R2
              .         .
              .         .
  138         .         .        N4
              .         .         .
              .         .         .
  147         .         .         .        O4N
              .         .         .         .
              .         .         .         .
  156         .         .         .         .        O2S
              .         .         .         .         .
              .         .         .         .         .
  165         .        CH6.................................
              .         .
              .         .
  176         .         .        EC1
              .         .         .
              .         .         .
  186         .         .         .        EC2
              .         .         .         .
              .         .         .         .
  195         .         .        CH01...........
              .         .         .
              .         .         .
  201         .         .         .        EC3
              .         .         .         .
              .         .         .         .
  210         .         .         .         .        EC4
              .         .         .         .         .
              .         .         .         .         .
  219         .         .        CH02........................
              .         .         .
              .         .         .
  225         .         .         .        EC5
              .         .         .         .
              .         .         .         .
  234         .         .         .         .        EC6
```

```
242                CH03.......................
                     V
                     V
248                R04
                     .
                     .
257          CH04............
                     .
                     .
263                4N
                     .
                     .
274                .          4S
                     .          .
                     .          .
285                CH4............
                     .
                     .
292                .        CC1W
                     .          .
                     .          .
303                CHCCN............
                     V
                     V
311                RCC
                     .
                     .
320                .        N5W
                     .          .
                     .          .
331                .          .        N5E
                     .          .          .
                     .          .          .
340                CHCCNT......................
                     .
                     .
349          CH7............
               V
               V
359          R3
               .
               .
368                O5N
                     .
                     .
377                .        O3S
                     .          .
                     .          .
386          CH8......................
               .
               .
397                N6W
                     .
                     .
406                .        N6E
                     .          .
                     .          .
415                CH8A............
                     .
                     .
424                .        BOYS
                     .          .
                     .          .
433                .          .        S1W
                     .          .          .
                     .          .          .
444                .          .          .        S1E
                     .          .          .          .
                     .          .          .          .
453          CH9.........................................
               V
               V
464          R4
               .
               .
474                O6N1
                     .
                     .
```

```
483                                   O4S1
492                CH10.......................
                     V
                     V
501                  R5
511                          O6N2
520                                   O4S2
529                CH10.......................
539                          N7W
548                                   N7E
558                          CH11............
566                CH12............
                     V
                     V
574                  R6
585                          O7N
597                                   O5S
609                CH13.......................
                     V
                     V
618                  R6
628                          O8N
640                                   O6S
652                CH14.......................
661                          O9N
670                                   O7S
679                                            N8E
684                                            N10
689                                                     N11
694                                                                  N9
699                                            CH15.....................................
702                                            N12
707                                                     N13
```

```
712                                                          N8W
                                                              .
717                                                           .          CP
                                                              .          .
722                                                CH16.....................
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            FEBRUARY 1981             *
*          REVISED 02 AUG 88           *
*                                      *
*  RUN DATE  04/28/1993  TIME  14:58:59 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
```

HEC-1 FOR EAST COUPLET, JOB NUMBER E019600
CITY OF SCOTTSDALE PROJECT NUMBERS: S2703 AND F2703
100-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **

DISCHARGE COMPUTATIONS FOR OFFSITE EXISTING DRAINAGE AREAS, BOTH NORTH AND SOUTH OF OSBORN ROAD, AND ON-SITE AREAS FROM SCOTTSDALE ROAD IN THE WEST TO THE WEST SIDE MILLER ROAD IN THE EAST.

INPUT FILE NAME: EAST-100.DAT

```
13 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
```

1

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	O1N	3.	3.07	0.	0.	0.	.00		
+	HYDROGRAPH AT	N1W	41.	3.13	3.	2.	2.	.01		
+	HYDROGRAPH AT	N1E	16.	3.13	1.	1.	1.	.00		
+	2 COMBINED AT	CH1	57.	3.13	4.	3.	3.	.01		
+	2 COMBINED AT	CH2	60.	3.13	5.	3.	3.	.01		
+	HYDROGRAPH AT	O2N	1.	3.07	0.	0.	0.	.00		
+	HYDROGRAPH AT	N2	14.	3.10	1.	1.	1.	.00		
+	HYDROGRAPH AT	N3	19.	3.10	1.	1.	1.	.00		
+	3 COMBINED AT	CH4	34.	3.10	2.	1.	1.	.01		
+	HYDROGRAPH AT	O3N	1.	3.07	0.	0.	0.	.00		
+	HYDROGRAPH AT	O1S	6.	3.10	0.	0.	0.	.00		
+	3 COMBINED AT	CH5	41.	3.10	3.	2.	2.	.01		
+	ROUTED TO	R2	41.	3.10	3.	2.	2.	.01		
+	HYDROGRAPH AT	N4	15.	3.07	1.	1.	1.	.00		
+	HYDROGRAPH AT	O4N	4.	3.07	0.	0.	0.	.00		
+	HYDROGRAPH AT	O2S	7.	3.07	0.	0.	0.	.00		
+	4 COMBINED AT	CH6	66.	3.10	4.	3.	3.	.01		
+	HYDROGRAPH AT	EC1	35.	3.10	2.	1.	1.	.01		
+	HYDROGRAPH AT	EC2	16.	3.13	1.	1.	1.	.00		
+	2 COMBINED AT	CH01	51.	3.10	4.	2.	2.	.01		
+	HYDROGRAPH AT	EC3	23.	3.03	1.	1.	1.	.00		
+	HYDROGRAPH AT	EC4	33.	3.10	2.	1.	1.	.01		
+	3 COMBINED AT	CH02	98.	3.07	7.	4.	4.	.02		
+	HYDROGRAPH AT	EC5	32.	3.10	2.	1.	1.	.01		

+	HYDROGRAPH AT	EC6	5.	3.03	0.	0.	0.	.00
+	3 COMBINED AT	CH03	133.	3.10	9.	6.	6.	.03
+	ROUTED TO	R04	133.	3.10	9.	6.	6.	.03
+	2 COMBINED AT	CH04	199.	3.10	14.	8.	8.	.04
+	HYDROGRAPH AT	4N	61.	3.10	4.	3.	3.	.01
+	HYDROGRAPH AT	4S	22.	3.07	1.	1.	1.	.00
+	2 COMBINED AT	CH4	83.	3.10	6.	3.	3.	.02
+	HYDROGRAPH AT	CC1W	16.	3.07	1.	1.	1.	.00
+	2 COMBINED AT	CHCCN	98.	3.10	7.	4.	4.	.02
+	ROUTED TO	RCC	98.	3.10	7.	4.	4.	.02
+	HYDROGRAPH AT	N5W	15.	3.07	1.	1.	1.	.00
+	HYDROGRAPH AT	N5E	9.	3.10	1.	0.	0.	.00
+	3 COMBINED AT	CHCCNT	122.	3.10	8.	5.	5.	.03
+	2 COMBINED AT	CH7	321.	3.10	22.	13.	13.	.07
+	ROUTED TO	R3	321.	3.10	22.	13.	13.	.07
+	HYDROGRAPH AT	O5N	4.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O3S	9.	3.07	1.	0.	0.	.00
+	3 COMBINED AT	CH8	333.	3.10	23.	14.	14.	.07
+	HYDROGRAPH AT	N6W	4.	3.10	0.	0.	0.	.00
+	HYDROGRAPH AT	N6E	2.	3.07	0.	0.	0.	.00
+	2 COMBINED AT	CH8A	6.	3.10	0.	0.	0.	.00
+	HYDROGRAPH AT	BOYS	7.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	S1W	6.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	S1E	6.	3.07	0.	0.	0.	.00
+	5 COMBINED AT	CH9	357.	3.10	24.	15.	15.	.07
+	ROUTED TO	R4	357.	3.10	24.	15.	15.	.07
+	HYDROGRAPH AT	O6N1	16.	3.17	1.	1.	1.	.00

+	HYDROGRAPH AT	O4S1	6.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH10	377.	3.10	26.	16.	16.	.08
+	ROUTED TO	R5	377.	3.10	26.	16.	16.	.08
+	HYDROGRAPH AT	O6N2	11.	3.10	1.	0.	0.	.00
+	HYDROGRAPH AT	O4S2	11.	3.07	1.	0.	0.	.00
+	3 COMBINED AT	CH10	398.	3.10	27.	16.	16.	.09
+	HYDROGRAPH AT	N7W	53.	3.13	4.	2.	2.	.01
+	HYDROGRAPH AT	N7E	10.	3.30	1.	1.	1.	.00
+	2 COMBINED AT	CH11	59.	3.13	5.	3.	3.	.02
+	2 COMBINED AT	CH12	453.	3.10	33.	20.	20.	.10
+	ROUTED TO	R6	453.	3.10	33.	20.	20.	.10
+	HYDROGRAPH AT	O7N	5.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O5S	3.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH13	461.	3.10	33.	20.	20.	.10
+	ROUTED TO	R6	461.	3.10	33.	20.	20.	.10
+	HYDROGRAPH AT	O8N	4.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O6S	5.	3.07	0.	0.	0.	.00
+	3 COMBINED AT	CH14	471.	3.10	34.	20.	20.	.11
+	HYDROGRAPH AT	O9N	8.	3.07	0.	0.	0.	.00
+	HYDROGRAPH AT	O7S	10.	3.07	1.	0.	0.	.00
+	HYDROGRAPH AT	N8E	2.	3.40	0.	0.	0.	.00
+	HYDROGRAPH AT	N10	2.	3.37	0.	0.	0.	.00
+	HYDROGRAPH AT	N11	3.	3.33	0.	0.	0.	.00
+	HYDROGRAPH AT	N9	40.	3.17	3.	2.	2.	.02
+	4 COMBINED AT	CH15	43.	3.17	4.	2.	2.	.02
+	HYDROGRAPH AT	N12	1.	3.33	0.	0.	0.	.00
+	HYDROGRAPH AT	N13	11.	3.30	1.	1.	1.	.00

```
        HYDROGRAPH AT
+                       N8W      47.   3.30        5.        3.        3.      .03
        HYDROGRAPH AT
+                       CP       22.   3.03        1.        1.        1.      .00
        5 COMBINED AT
+                       CH16     97.   3.23       11.        7.        7.      .06

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

APPENDIX B

"STORM" INPUT AND OUTPUT

SUMMARY OF HYDRAULIC CALCULATIONS

Pressure Flow Design

Project: Osborn Road Storm Drain – Scottsdale Rd. to Indian Bend Wash — *Freq: 100-Year*

Beginning Station	Ending Station	SD Size	Q	A	V	S_F	L	Losses H_F	H_B	H_J	H_{AP}	H_{MH}	ΣH_L	E.G.	h_v	H.G.
														41.11	0.358	40.75
10+06.00	11+31.44	48"	60	12.57	4.8	.0015	139.71	.210			.032	.018	.260	41.37	0.360	41.07
11+31.44	14+35.41	48"	60	12.57	4.8	.0015	303.87	.460		.712		.018	1.19	42.56	0.360	42.20
																19.00
50+76.41	48+77.00	84"	514	38.48	13.36	.0060	226.59	1.36	0.47				1.83	23.60	2.77	20.83
48+77.00	45+88.00	84"	464	38.48	12.06	.0045	294.26	1.32			.150	.110	1.58	25.18	2.26	22.52
45+88.00	44+70.00	84"	464	38.48	12.06	.0045	124.02	.560			.045		.61	26.19	2.26	23.93
44+70.00	42+67.00	84"	464	38.48	12.06	.0045	205.81	.930			.045		.98	27.57	2.26	25.31
42+67.00	39+04.50	84"	464	38.48	12.06	.0045	362.50	1.63			.077		1.71	29.28	2.26	27.02
39.04.50	37+08.22	8' x 5'	447	40.00	11.18	.0046	196.28	.900			.060		.906	30.24	1.94	28.30
37+08.22	36+30.98	8' x 5'	447	40.00	11.18	.0046	119.02	.550		.600			1.15	31.39	1.94	29.45
36+30.98	35+70.00	8' x 5'	392	40.00	9.80	.0074	60.98	.450					.450	31.84	2.65	29.19
35+70.00	32+80.00	72"	392	28.27	13.87	.0073	290.0	2.12			.270		2.39	33.78	2.99	30.79
32+80.00	32+10.00	72"	392	28.27	13.87	.0073	75.77	.550			.270			34.60	2.99	31.61
32+10.00	29+70.92	72"	392	28.27	13.87	.0073	239.08	1.75		.760			2.51	36.42	2.99	33.43
29+70.92	25+10.00	72"	333	28.27	11.78	.0053	460.92	2.43			.170		2.60	39.02	2.15	36.87
25+10.00	24+40.00	72"	333	28.27	11.78	.0053	75.77	.400			.170		.570	39.59	2.15	37.44
24+40.00	23+85.00	72"	321	28.27	11.35	.0049	86.90	.430		.540			.970	40.13	2.00	38.13
23+85.00	23+39.00	72"	188	28.27	6.65	.0017	46.00	.077		.190			.267	40.64	.690	39.95
23+39.00	22+26.50	54"	66	15.90	4.15	.0010	112.50	.110			.02		.130	40.77	.27	40.50
22+26.50	21+44.42	54"	66	15.90	4.15	.0010	82.08	.08			.02		.100	40.87	.27	40.60
21+44.42	16+22.75	54"	66	15.90	4.15	.0010	521.67	.50					.50	41.37	.27	41.10
														42.56		
Brown Road Lateral		48"	60	12.57	4.77	.0015	205.00	.31					.31	42.87	.36	42.51

SUMMARY OF HYDRAULIC CALCULATIONS

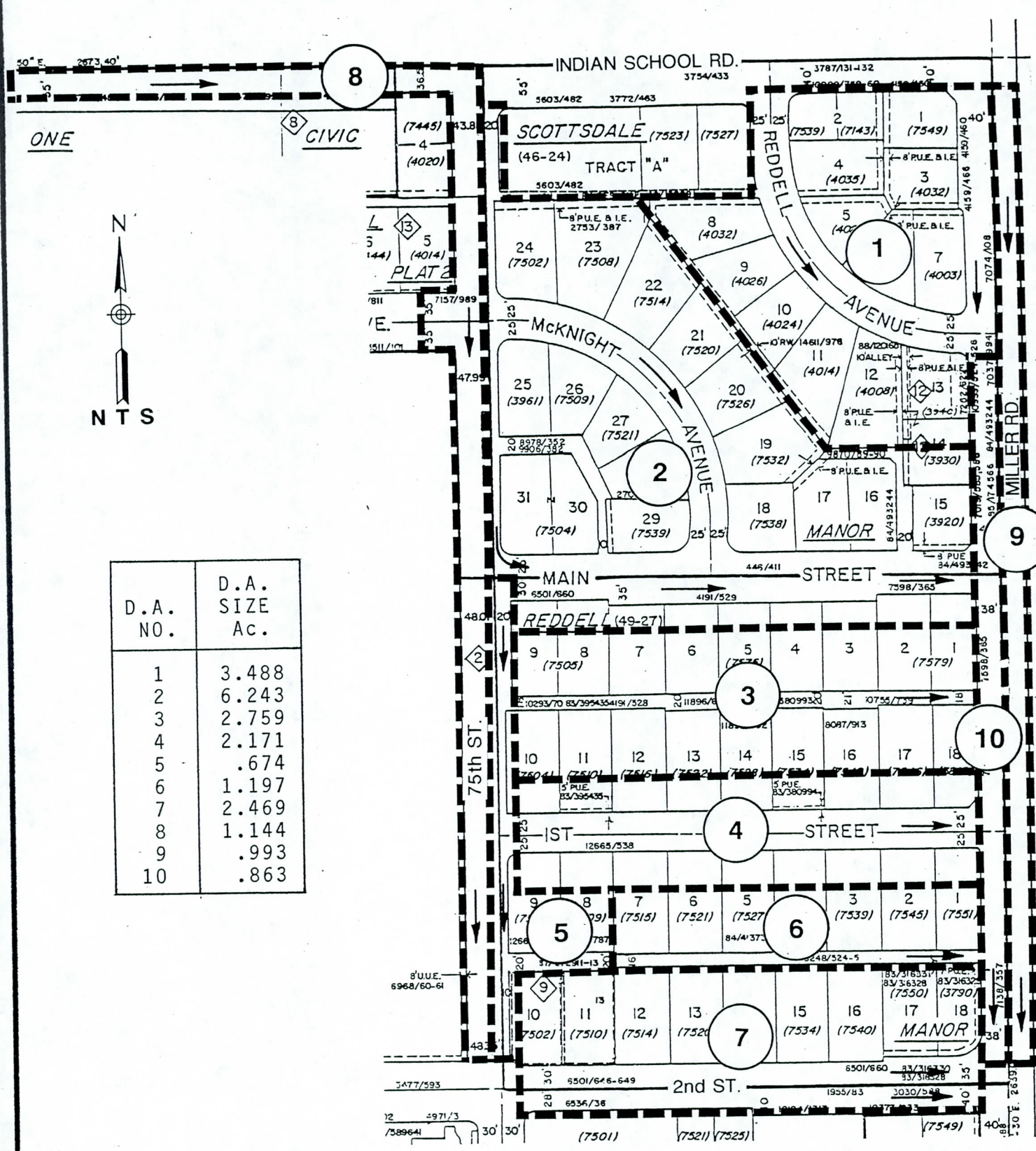
Pressure Flow Design

Project: Osborn Road Storm Drain – Scottsdale Rd. to Indian Bend Wash *Freq: 100-Year*

Beginning Station	Ending Station	SD Size	Q	A	V	S_F	L	Losses H_F	H_B	H_J	H_{AP}	H_{MH}	ΣH_L	E.G.	h_v	H.G.
														40.64		
E. Couplet Lateral		40" x 65"	133	15.60	8.50	.0040	66.68	.27	.18				.45	41.09	1.12	39.97
														40.64		
Civic Center Lateral		60"	122	19.63	6.21	.0019	111.48	.21					.21	40.85	.600	40.25
														30.24		
Miller Road Lateral		54"	59	15.90	3.70	.0008	194.00	.15					.15	30.39	.210	30.18
														36.30		
75th St./Osborn Road Lateral		24"	16	3.14	5.10	.0043	78.95	.34				.02	.36	37.08		36.66
														37.32		
75th Street/2nd St. Lateral		36"	50	7.07	7.10	.0047	473.00	2.24						39.56	1.32	38.24

APPENDIX C

SECOND STREET FLOWBY CALCULATIONS



D.A. NO.	D.A. SIZE Ac.
1	3.488
2	6.243
3	2.759
4	2.171
5	.674
6	1.197
7	2.469
8	1.144
9	.993
10	.863

LEGEND

Drainage Area Boundary

1 Drainage Area Number

CITY OF SCOTTSDALE

OSBORN RD. STORM DRAIN

SCOTTSDALE ROAD TO
INDIAN BEND WASH
2nd ST./75th ST. & 2nd ST./MILLER RD.
DRAINAGE AREA MAP
FOR FLOWBY ANALYSIS

Greiner

```
****************************************
*                                      *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*          FEBRUARY 1981               *
*        REVISED 02 AUG 88             *
*                                      *
*  RUN DATE  01/20/1993  TIME  14:23:20 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*          (916) 551-1748              *
*                                      *
****************************************
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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
```

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

HEC-1 INPUT PAGE 1

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

  1           ID   HEC-1 FOR 75TH ST./2ND ST. AND MILLER ROAD/2ND ST.
  2           ID   CITY OF SCOTTSDALE PROJECT NUMBER: F2703
  3           ID   GREINER PROJECT NUMBER: E019600
  4           ID   10-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **
  5           ID
  6           ID   DISCHARGE COMPUTATIONS FOR DRAINAGE AREA BOUNDED BY
  7           ID   INDIAN SCHOOL ON THE NORTH, SECOND STREET ON THE SOUTH,
  8           ID   75TH STREET ON THE WEST AND MILLER ROAD ON THE EAST.
  9           ID
 10           ID   INPUT FILE NAME: E-10-S1.DAT
 11           ID
 12           IT       2       0       0     300       0       0       0       0
 13           IO       5       0       0       0       0       0       0       0
              *DIAGRAM

 14           KK      A8
 15           KM
 16           KM   ********************************************
 17           KM   * DRAINAGE AREA CONSISTING OF INDIAN SCHOOL *
 18           KM   * ROAD AND WEST SIDE OF 75TH STREET.        *
 19           KM   ********************************************
 20           KM
```

```
21        PH      0      0   0.53   0.97   1.57   1.72   1.83   2.02
22        BA  .0018
23        LS      0   98.0      0
24        UD  .0829      0      0

25        KK     A5
26        KM
27        KM  *********************************************
28        KM  * DRAINAGE AREA CONSISTING OF THE EAST      *
29        KM  * SIDE OF 75TH ST. SOUTH OF MAIN ST. AND    *
30        KM  * INTERVENING AREA.                          *
31        KM  *********************************************
32        KM
33        BA  .0011      0      0      0      0      0      0      0
34        LS      0   79.0   85.0      0      0      0      0      0
35        UD  .0406

36        KK     A1
37        KM
38        KM  *********************************************
39        KM  * DRAINAGE AREA CONSISTING OF THE SOUTHWEST *
40        KM  * CORNER OF INDIAN SCHOOL/MILLER ALONG       *
41        KM  * REDDELL AVE.                               *
42        KM  *********************************************
43        KM
44        BA  .0055
45        LS      0   79.0   85.0
46        UD  .0362      0      0
```


HEC-1 INPUT

1

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

47        KK     R1
48        KM
49        KM  ****************************************************
50        KM  * ROUTE RUNOFF FROM A1 TO MAIN STREET.             *
51        KM  ****************************************************
52        KM
53        KM
54        RC   .013   .016   .013    300  .0045   101.0
55        RX      0      0      5      5     36     67     67     72     72
56        RY    101    100   99.9   99.4   99.9   99.4   99.9    100    101

57        KK     A2
58        KM
59        KM  ****************************************************
60        KM  * DRAINAGE AREA CONSISTING OF PROPERTIES ADJACENT *
61        KM  * TO McKNIGHT AVE. AND MAIN STREET.                *
62        KM  ****************************************************
63        KM
64        BA  .0098
65        LS      0   79.0   85.0
66        UD  .0475      0      0

67        KK    CH1
68        KM
69        KM  *********************************************
70        KM  * COMBINE R1 AND A2                          *
71        KM  *********************************************
```

```
KM
HC      2

KK      A3
KM
KM   ******************************************
KM   * DRAINAGE AREA CONSISTING OF PROPERTIES *
KM   * DRAINING TO ALLEY BETWEEN 1ST ST. AND  *
KM   * MAIN STREET.                           *
KM   ******************************************
KM
BA   .0043
LS       0    79.0    85.0
UD   .1148       0       0

KK      CH2
KM
KM   ******************************************
KM   * COMBINE CH1 AND A3.                    *
KM   ******************************************
KM
HC      2
```



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

KK      R2
KM
KM   ******************************************
KM   * ROUTE CH2 TO 1ST STREET.                *
KM   ******************************************
KM
RC   .013   .016   .013    300   .0045  101.0
RX      0      0      5      5     36     67     67     72     72
RY    101    100   99.9   99.4   99.9   99.4   99.9    100    101

KK      A4
KM
KM   *******************************************
KM   * DRAINAGE AREA CONSISTING OF PROPERTIES   *
KM   * CONTRIBUTING FLOW TO 1ST STREET.         *
KM   *******************************************
KM
BA   .0034
LS       0    79.0    85.0
UD   .0745       0       0

KK      CH3
KM
KM   ***************************************
KM   * COMBINE R2 AND A4.                  *
KM   ***************************************
KM
HC      2

KK      A6
KM
KM   ********************************************
KM   * DRAINAGE AREA CONSISTING OF THE AREA     *
```

```
KM   * NORTH OF THE ALLEY BETWEEN 1ST STREET    *
KM   * AND 2ND STREET.                          *
KM   ***********************************************
KM
BA   .0019
LS       0    79.0    85.0
UD   .0533       0       0

KK     CH4
KM
KM   ***********************************************
KM   * COMBINE CH3 AND A6.                        *
KM   ***********************************************
KM
HC       2
```



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

KK      R3
KM
KM   ***********************************************
KM   * ROUTE CH4 TO 2ND STREET.                    *
KM   ***********************************************
KM
RC    .013   .016   .013    300  .0045  101.0
RX       0      0      5      5     36     67     67     72     72
RY     101    100   99.9   99.4   99.9   99.4   99.9    100    101

KK      A7
KM
KM   ***********************************************
KM   * DRAINAGE AREA CONTRIBUTING FLOW TO 2ND ST.*
KM   ***********************************************
KM
BA   .0039
LS       0   79.0   85.0
UD   .0419

KK     CH5
KM
KM   ***********************************************
KM   * COMBINE R3 AND A7.                         *
KM   ***********************************************
KM
HC       2

KK     A10
KM
KM   ***********************************************
KM   * AREA CONSISTING OF WEST SIDE OF MILLER RD.*
KM   ***********************************************
KM
BA   .0013
LS       0    98.0       0
UD   .0706

KK     CH6
KM
```

```
172          KM   ********************************************
173          KM   * COMBINE CH5 AND A10.                      *
174          KM   ********************************************
175          KM
176          HC      2

177          KK     A9
178          KM
179          KM   ********************************************
180          KM   * AREA CONSISTING OF EAST SIDE OF MILLER RD.*
181          KM   ********************************************
182          KM
183          BA   .0016
184          LS      0    98.0       0
```



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

185          UD   .0982

186          KK     CH7
187          KM
188          KM   ********************************************
189          KM   * COMBINE CH6 AND A9.                      *
190          KM   ********************************************
191          KM
192          HC      2
193          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

   14       A8
             .
             .
   25        .          A5
             .           .
             .           .
   36        .           .          A1
             .           .           V
             .           .           V
   47        .           .          R1
             .           .           .
             .           .           .
   57        .           .           .          A2
             .           .           .           .
             .           .           .           .
   67        .           .          CH1...........
             .           .           .
             .           .           .
   74        .           .           .          A3
             .           .           .           .
             .           .           .           .
   85        .           .          CH2...........
             .           .           V
             .           .           V
   92        .           .          R2
```

```
                .         .         .
                .         .         .
101             .         .         .          A4
                .         .         .           .
                .         .         .           .
111             .         .       CH3............
                .         .         .
                .         .         .
118             .         .         .          A6
                .         .         .           .
                .         .         .           .
129             .         .       CH4............
                .         .         V
                .         .         V
136             .         .         R3
                .         .         .
                .         .         .
145             .         .         .          A7
                .         .         .           .
                .         .         .           .
154             .         .       CH5............
                .         .         .
                .         .         .
161             .         .         .          A10
                .         .         .           .
                .         .         .           .
170             .         .       CH6............
                .         .         .
                .         .         .
177             .         .         .          A9
                .         .         .           .
                .         .         .           .
186             .         .       CH7............
```

***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
    FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             FEBRUARY 1981            *
*           REVISED 02 AUG 88          *
                                       *
   RUN DATE  01/20/1993  TIME  14:23:20 *
*                                      *
 ****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*          (916) 551-1748              *
*                                      *
****************************************
```

HEC-1 FOR 75TH ST./2ND ST. AND MILLER ROAD/2ND ST.
CITY OF SCOTTSDALE PROJECT NUMBER: F2703
GREINER PROJECT NUMBER: E019600
10-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **

DISCHARGE COMPUTATIONS FOR DRAINAGE AREA BOUNDED BY
INDIAN SCHOOL ON THE NORTH, SECOND STREET ON THE SOUTH,
75TH STREET ON THE WEST AND MILLER ROAD ON THE EAST.

INPUT FILE NAME: E-10-S1.DAT

13 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

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	A8	5.	3.10	0.	0.	0.	.00		
+ HYDROGRAPH AT	A5	4.	3.07	0.	0.	0.	.00		
+ HYDROGRAPH AT	A1	18.	3.07	1.	1.	1.	.01		
+ ROUTED TO	R1	18.	3.07	1.	1.	1.	.01		
+ HYDROGRAPH AT	A2	31.	3.07	2.	1.	1.	.01		
2 COMBINED AT	CH1	48.	3.07	3.	2.	2.	.02		
HYDROGRAPH AT	A3	10.	3.13	1.	1.	1.	.00		
2 COMBINED AT	CH2	56.	3.07	4.	2.	2.	.02		
ROUTED TO									

	R2	56.	3.07	4.	2.	2.	.02
HYDROGRAPH AT	A4	10.	3.10	1.	0.	0.	.00
2 COMBINED AT	CH3	65.	3.07	4.	3.	3.	.02
HYDROGRAPH AT	A6	6.	3.07	0.	0.	0.	.00
2 COMBINED AT	CH4	71.	3.07	5.	3.	3.	.02
ROUTED TO	R3	71.	3.07	5.	3.	3.	.02
HYDROGRAPH AT	A7	12.	3.07	1.	0.	0.	.00
2 COMBINED AT	CH5	83.	3.07	6.	3.	3.	.03
HYDROGRAPH AT	A10	4.	3.10	0.	0.	0.	.00
2 COMBINED AT	CH6	87.	3.07	6.	4.	4.	.03
HYDROGRAPH AT	A9	4.	3.13	0.	0.	0.	.00
2 COMBINED AT	CH7	91.	3.07	6.	4.	4.	.03

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

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
*  RUN DATE  01/20/1993  TIME  14:27:07 *
*                                       *
*****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
```

```
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

HEC-1 INPUT PAGE 1

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

  1           ID   HEC-1 FOR 75TH ST./2ND ST. AND MILLER ROAD/2ND ST.
  2           ID   CITY OF SCOTTSDALE PROJECT NUMBER: F2703
  3           ID   GREINER PROJECT NUMBER: E019600
  4           ID   25-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **
  5           ID
  6           ID   DISCHARGE COMPUTATIONS FOR DRAINAGE AREA BOUNDED BY
  7           ID   INDIAN SCHOOL ON THE NORTH, SECOND STREET ON THE SOUTH,
  8           ID   75TH STREET ON THE WEST AND MILLER ROAD ON THE EAST.
  9           ID
 10           ID   INPUT FILE NAME: E-25-S1.DAT
 11           ID
 12           IT       2       0       0     300       0       0       0       0
 13           IO       5       0       0       0       0       0       0       0
              *DIAGRAM

 14           KK     A8
 15           KM
 16           KM   ********************************************
 17           KM   * DRAINAGE AREA CONSISTING OF INDIAN SCHOOL *
 18           KM   * ROAD AND WEST SIDE OF 75TH STREET.        *
 19           KM   ********************************************
 20           KM
```

```
21          PH      0      0   0.66   1.20   1.94   2.13   2.26   2.50
22          BA  .0018
23          LS      0   98.0      0
24          UD  .0829      0      0

25          KK     A5
26          KM
27          KM  *******************************************
28          KM  * DRAINAGE AREA CONSISTING OF THE EAST    *
29          KM  * SIDE OF 75TH ST. SOUTH OF MAIN ST. AND  *
30          KM  * INTERVENING AREA.                       *
31          KM  *******************************************
32          KM
33          BA  .0011      0      0      0      0      0      0      0
34          LS      0   79.0   85.0      0      0      0      0      0
35          UD  .0406

36          KK     A1
37          KM
38          KM  ********************************************
39          KM  * DRAINAGE AREA CONSISTING OF THE SOUTHWEST *
40          KM  * CORNER OF INDIAN SCHOOL/MILLER ALONG      *
41          KM  * REDDELL AVE.                              *
42          KM  ********************************************
43          KM
44          BA  .0055
45          LS      0   79.0   85.0
46          UD  .0362      0      0
```



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

47          KK     R1
48          KM
49          KM  ****************************************************
50          KM  * ROUTE RUNOFF FROM A1 TO MAIN STREET.            *
51          KM  ****************************************************
52          KM
53          KM
54          RC   .013   .016   .013    300  .0045   101.0
55          RX      0      0      5      5     36     67     67     72     72
56          RY    101    100   99.9   99.4   99.9   99.4   99.9    100    101

57          KK     A2
58          KM
59          KM  ****************************************************
60          KM  * DRAINAGE AREA CONSISTING OF PROPERTIES ADJACENT *
61          KM  * TO McKNIGHT AVE. AND MAIN STREET.               *
62          KM  ****************************************************
63          KM
64          BA  .0098
65          LS      0   79.0   85.0
66          UD  .0475      0      0

67          KK    CH1
68          KM
69          KM  *******************************************
70          KM  * COMBINE R1 AND A2                       *
71          KM  *******************************************
```

```
 72          KM
 73          HC       2

 74          KK      A3
 75          KM
 76          KM   *****************************************
 77          KM   * DRAINAGE AREA CONSISTING OF PROPERTIES *
 78          KM   * DRAINING TO ALLEY BETWEEN 1ST ST. AND  *
 79          KM   * MAIN STREET.                           *
 80          KM   *****************************************
 81          KM
 82          BA   .0043
 83          LS       0    79.0    85.0
 84          UD   .1148       0       0

 85          KK     CH2
 86          KM
 87          KM   ******************************************
 88          KM   * COMBINE CH1 AND A3.                    *
 89          KM   ******************************************
 90          KM
 91          HC       2
```



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


 92          KK      R2
 93          KM
 94          KM   ******************************************
 95          KM   * ROUTE CH2 TO 1ST STREET.                *
 96          KM   ******************************************
 97          KM
 98          RC    .013   .016   .013    300   .0045  101.0
 99          RX       0      0      5      5      36     67     67     72     72
100          RY     101    100   99.9   99.4    99.9   99.4   99.9    100    101

101          KK      A4
102          KM
103          KM   *******************************************
104          KM   * DRAINAGE AREA CONSISTING OF PROPERTIES   *
105          KM   * CONTRIBUTING FLOW TO 1ST STREET.         *
106          KM   *******************************************
107          KM
108          BA   .0034
109          LS       0    79.0    85.0
110          UD   .0745       0       0

111          KK     CH3
112          KM
113          KM   ****************************************
114          KM   * COMBINE R2 AND A4.                   *
115          KM   ****************************************
116          KM
117          HC       2

118          KK      A6
119          KM
120          KM   *********************************************
121          KM   * DRAINAGE AREA CONSISTING OF THE AREA     *
```

```
122          KM   * NORTH OF THE ALLEY BETWEEN 1ST STREET    *
123          KM   * AND 2ND STREET.                           *
124          KM   ********************************************
125          KM
126          BA   .0019
127          LS       0    79.0    85.0
128          UD   .0533       0       0

129          KK     CH4
130          KM
131          KM   *******************************************
132          KM   * COMBINE CH3 AND A6.                     *
133          KM   *******************************************
134          KM
135          HC       2
```



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

136          KK      R3
137          KM
138          KM   *******************************************
139          KM   * ROUTE CH4 TO 2ND STREET.                *
140          KM   *******************************************
141          KM
142          RC    .013   .016   .013    300  .0045  101.0
143          RX       0      0      5      5     36     67     67     72     72
144          RY     101    100   99.9   99.4   99.9   99.4   99.9    100    101

145          KK      A7
146          KM
147          KM   **********************************************
148          KM   * DRAINAGE AREA CONTRIBUTING FLOW TO 2ND ST.*
149          KM   **********************************************
150          KM
151          BA   .0039
152          LS       0   79.0   85.0
153          UD   .0419

154          KK     CH5
155          KM
156          KM   **********************************************
157          KM   * COMBINE R3 AND A7.                        *
158          KM   **********************************************
159          KM
160          HC       2

161          KK     A10
162          KM
163          KM   **********************************************
164          KM   * AREA CONSISTING OF WEST SIDE OF MILLER RD.*
165          KM   **********************************************
166          KM
167          BA   .0013
168          LS       0    98.0       0
169          UD   .0706

170          KK     CH6
171          KM
```

```
172          KM   ***********************************************
173          KM   * COMBINE CH5 AND A10.                        *
174          KM   ***********************************************
175          KM
176          HC      2

177          KK     A9
178          KM
179          KM   ***********************************************
180          KM   * AREA CONSISTING OF EAST SIDE OF MILLER RD.*
181          KM   ***********************************************
182          KM
183          BA   .0016
184          LS      0    98.0       0
```



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

185          UD   .0982

186          KK    CH7
187          KM
188          KM   ***********************************************
189          KM   * COMBINE CH6 AND A9.                        *
190          KM   ***********************************************
191          KM
192          HC      2
193          ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

  14        A8
             .
             .
  25         .        A5
             .         .
             .         .
  36         .         .        A1
             .         .         V
             .         .         V
  47         .         .        R1
             .         .         .
             .         .         .
  57         .         .         .        A2
             .         .         .         .
             .         .         .         .
  67         .         .       CH1.........
             .         .         .
             .         .         .
  74         .         .         .        A3
             .         .         .         .
             .         .         .         .
  85         .         .       CH2.........
             .         .         V
             .         .         V
  92         .         .        R2
```

```
                .          .          .
                .          .          .
101             .          .          .          A4
                .          .          .           .
                .          .          .           .
111             .          .        CH3............
                .          .          .
                .          .          .
118             .          .          .          A6
                .          .          .           .
                .          .          .           .
129             .          .        CH4............
                .          .          V
                .          .          V
136             .          .         R3
                .          .          .
                .          .          .
145             .          .          .          A7
                .          .          .           .
                .          .          .           .
154             .          .        CH5............
                .          .          .
                .          .          .
161             .          .          .          A10
                .          .          .           .
                .          .          .           .
170             .          .        CH6............
                .          .          .
                .          .          .
177             .          .          .          A9
                .          .          .           .
                .          .          .           .
186             .          .        CH7............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            FEBRUARY 1981             *
*          REVISED 02 AUG 88           *
*                                      *
*  RUN DATE  01/20/1993  TIME  14:27:07 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*          (916) 551-1748              *
*                                      *
****************************************
```

HEC-1 FOR 75TH ST./2ND ST. AND MILLER ROAD/2ND ST.
CITY OF SCOTTSDALE PROJECT NUMBER: F2703
GREINER PROJECT NUMBER: E019600
25-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **

DISCHARGE COMPUTATIONS FOR DRAINAGE AREA BOUNDED BY
INDIAN SCHOOL ON THE NORTH, SECOND STREET ON THE SOUTH,
75TH STREET ON THE WEST AND MILLER ROAD ON THE EAST.

INPUT FILE NAME: E-25-S1.DAT

```
13 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
```

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	A8	7.	3.10	0.	0.	0.	.00		
+ HYDROGRAPH AT	A5	4.	3.07	0.	0.	0.	.00		
+ HYDROGRAPH AT	A1	22.	3.07	1.	1.	1.	.01		
+ ROUTED TO	R1	22.	3.07	1.	1.	1.	.01		
+ HYDROGRAPH AT	A2	39.	3.07	2.	1.	1.	.01		
2 COMBINED AT	CH1	61.	3.07	4.	2.	2.	.02		
HYDROGRAPH AT	A3	13.	3.13	1.	1.	1.	.00		
2 COMBINED AT	CH2	71.	3.07	5.	3.	3.	.02		
ROUTED TO									

	R2	71.	3.07	5.	3.	3.	.02
HYDROGRAPH AT							
	A4	12.	3.10	1.	0.	0.	.00
2 COMBINED AT							
	CH3	82.	3.07	6.	3.	3.	.02
HYDROGRAPH AT							
	A6	7.	3.07	0.	0.	0.	.00
2 COMBINED AT							
+	CH4	89.	3.07	6.	4.	4.	.02
ROUTED TO							
+	R3	89.	3.07	6.	4.	4.	.02
HYDROGRAPH AT							
+	A7	16.	3.07	1.	1.	1.	.00
2 COMBINED AT							
+	CH5	105.	3.07	7.	4.	4.	.03
HYDROGRAPH AT							
	A10	5.	3.10	0.	0.	0.	.00
2 COMBINED AT							
	CH6	110.	3.07	7.	4.	4.	.03
HYDROGRAPH AT							
	A9	5.	3.13	0.	0.	0.	.00
2 COMBINED AT							
	CH7	115.	3.07	8.	5.	5.	.03

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

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            FEBRUARY 1981             *
*          REVISED 02 AUG 88           *
*                                      *
*  RUN DATE  01/20/1993  TIME  14:29:15 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*        DAVIS, CALIFORNIA 95616       *
*           (916) 551-1748             *
*                                      *
****************************************
```

```
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

HEC-1 INPUT PAGE 1

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

  1           ID   HEC-1 FOR 75TH ST./2ND ST. AND MILLER ROAD/2ND ST.
  2           ID   CITY OF SCOTTSDALE PROJECT NUMBER: F2703
  3           ID   GREINER PROJECT NUMBER: E019600
  4           ID   50-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **
  5           ID
  6           ID   DISCHARGE COMPUTATIONS FOR DRAINAGE AREA BOUNDED BY
  7           ID   INDIAN SCHOOL ON THE NORTH, SECOND STREET ON THE SOUTH,
  8           ID   75TH STREET ON THE WEST AND MILLER ROAD ON THE EAST.
  9           ID
 10           ID   INPUT FILE NAME: E-50-S1.DAT
 11           ID
 12           IT       2       0       0     300       0       0       0       0
 13           IO       5       0       0       0       0       0       0       0
              *DIAGRAM

 14           KK      A8
 15           KM
 16           KM   ********************************************
 17           KM   * DRAINAGE AREA CONSISTING OF INDIAN SCHOOL *
 18           KM   * ROAD AND WEST SIDE OF 75TH STREET.        *
 19           KM   ********************************************
 20           KM
```

```
172          KM   ********************************************
173          KM   * COMBINE CH5 AND A10.                     *
174          KM   ********************************************
175          KM
176          HC       2

177          KK      A9
178          KM
179          KM   ********************************************
180          KM   * AREA CONSISTING OF EAST SIDE OF MILLER RD.*
181          KM   ********************************************
182          KM
183          BA   .0016
184          LS       0    98.0       0
```



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

185          UD   .0982

186          KK     CH7
187          KM
188          KM   ********************************************
189          KM   * COMBINE CH6 AND A9.                     *
190          KM   ********************************************
191          KM
192          HC       2
193          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

 14          A8
              .
              .
 25           .          A5
              .           .
              .           .
 36           .           .          A1
              .           .           V
              .           .           V
 47           .           .          R1
              .           .           .
              .           .           .
 57           .           .           .          A2
              .           .           .           .
              .           .           .           .
 67           .           .         CH1............
              .           .           .
              .           .           .
 74           .           .           .          A3
              .           .           .           .
              .           .           .           .
 85           .           .         CH2............
              .           .           V
              .           .           V
 92           .           .          R2
```

```
                .         .         .
                .         .         .
101             .         .         .          A4
                .         .         .           .
                .         .         .           .
111             .         .       CH3............
                .         .         .
                .         .         .
118             .         .         .          A6
                .         .         .           .
                .         .         .           .
129             .         .       CH4............
                .         .         V
                .         .         V
136             .         .        R3
                .         .         .
                .         .         .
145             .         .         .          A7
                .         .         .           .
                .         .         .           .
154             .         .       CH5............
                .         .         .
                .         .         .
161             .         .         .          A10
                .         .         .           .
                .         .         .           .
170             .         .       CH6............
                .         .         .
                .         .         .
177             .         .         .          A9
                .         .         .           .
                .         .         .           .
186             .         .       CH7............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            FEBRUARY 1981             *
*          REVISED 02 AUG 88           *
*                                      *
*  RUN DATE  01/20/1993  TIME  14:29:15 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*          (916) 551-1748              *
*                                      *
****************************************
```

HEC-1 FOR 75TH ST./2ND ST. AND MILLER ROAD/2ND ST.
CITY OF SCOTTSDALE PROJECT NUMBER: F2703
GREINER PROJECT NUMBER: E019600
50-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **

DISCHARGE COMPUTATIONS FOR DRAINAGE AREA BOUNDED BY
INDIAN SCHOOL ON THE NORTH, SECOND STREET ON THE SOUTH,
75TH STREET ON THE WEST AND MILLER ROAD ON THE EAST.

INPUT FILE NAME: E-50-S1.DAT

```
13 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
```

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	A8	8.	3.10	1.	0.	0.	.00		
HYDROGRAPH AT +	A5	5.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT +	A1	27.	3.07	2.	1.	1.	.01		
ROUTED TO +	R1	27.	3.07	2.	1.	1.	.01		
HYDROGRAPH AT +	A2	46.	3.07	3.	2.	2.	.01		
2 COMBINED AT	CH1	73.	3.07	4.	3.	3.	.02		
HYDROGRAPH AT	A3	16.	3.13	1.	1.	1.	.00		
2 COMBINED AT	CH2	85.	3.07	6.	3.	3.	.02		
ROUTED TO									

	R2	85.	3.07	6.	3.	3.	.02
HYDROGRAPH AT	A4	14.	3.10	1.	1.	1.	.00
2 COMBINED AT	CH3	98.	3.07	7.	4.	4.	.02
HYDROGRAPH AT	A6	9.	3.07	1.	0.	0.	.00
2 COMBINED AT	CH4	107.	3.07	7.	4.	4.	.02
ROUTED TO	R3	107.	3.07	7.	4.	4.	.02
HYDROGRAPH AT	A7	19.	3.07	1.	1.	1.	.00
2 COMBINED AT	CH5	126.	3.07	8.	5.	5.	.03
HYDROGRAPH AT	A10	6.	3.10	0.	0.	0.	.00
2 COMBINED AT	CH6	131.	3.07	9.	5.	5.	.03
HYDROGRAPH AT	A9	7.	3.13	0.	0.	0.	.00
2 COMBINED AT	CH7	137.	3.07	9.	5.	5.	.03

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

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
*  RUN DATE  01/20/1993  TIME  14:31:27 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748              *
*                                       *
*****************************************
```

```
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

HEC-1 INPUT PAGE 1

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

  1           ID   HEC-1 FOR 75TH ST./2ND ST. AND MILLER ROAD/2ND ST.
  2           ID   CITY OF SCOTTSDALE PROJECT NUMBER: F2703
  3           ID   GREINER PROJECT NUMBER: E019600
  4           ID   100-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **
  5           ID
  6           ID   DISCHARGE COMPUTATIONS FOR DRAINAGE AREA BOUNDED BY
  7           ID   INDIAN SCHOOL ON THE NORTH, SECOND STREET ON THE SOUTH,
  8           ID   75TH STREET ON THE WEST AND MILLER ROAD ON THE EAST.
  9           ID
 10           ID   INPUT FILE NAME: E-100-S1.DAT
 11           ID
 12           IT       2       0       0     300       0       0       0       0
 13           IO       5       0       0       0       0       0       0       0
              *DIAGRAM

 14           KK      A8
 15           KM
 16           KM   ********************************************
 17           KM   * DRAINAGE AREA CONSISTING OF INDIAN SCHOOL *
 18           KM   * ROAD AND WEST SIDE OF 75TH STREET.        *
 19           KM   ********************************************
 20           KM
```

```
21          PH      0      0   0.89   1.62   2.61   2.86   3.03   3.35
22          BA  .0018
23          LS      0   98.0      0
24          UD  .0829      0      0

25          KK     A5
26          KM
27          KM  *******************************************
28          KM  * DRAINAGE AREA CONSISTING OF THE EAST    *
29          KM  * SIDE OF 75TH ST. SOUTH OF MAIN ST. AND  *
30          KM  * INTERVENING AREA.                       *
31          KM  *******************************************
32          KM
33          BA  .0011      0      0      0      0      0      0      0
34          LS      0   79.0   85.0      0      0      0      0      0
35          UD  .0406

36          KK     A1
37          KM
38          KM  ********************************************
39          KM  * DRAINAGE AREA CONSISTING OF THE SOUTHWEST *
40          KM  * CORNER OF INDIAN SCHOOL/MILLER ALONG      *
41          KM  * REDDELL AVE.                              *
42          KM  ********************************************
43          KM
44          BA  .0055
45          LS      0   79.0   85.0
46          UD  .0362      0      0
```



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

47          KK     R1
48          KM
49          KM  ****************************************************
50          KM  * ROUTE RUNOFF FROM A1 TO MAIN STREET.            *
51          KM  ****************************************************
52          KM
53          KM
54          RC   .013   .016   .013    300  .0045   101.0
55          RX      0      0      5      5     36     67     67     72     72
56          RY    101    100   99.9   99.4   99.9   99.4   99.9    100    101

57          KK     A2
58          KM
59          KM  ****************************************************
60          KM  * DRAINAGE AREA CONSISTING OF PROPERTIES ADJACENT *
61          KM  * TO McKNIGHT AVE. AND MAIN STREET.               *
62          KM  ****************************************************
63          KM
64          BA  .0098
65          LS      0   79.0   85.0
66          UD  .0475      0      0

67          KK    CH1
68          KM
69          KM  *******************************************
70          KM  * COMBINE R1 AND A2                       *
71          KM  *******************************************
```

```
 72          KM
 73          HC       2

 74          KK      A3
 75          KM
 76          KM   ******************************************
 77          KM   * DRAINAGE AREA CONSISTING OF PROPERTIES *
 78          KM   * DRAINING TO ALLEY BETWEEN 1ST ST. AND  *
 79          KM   * MAIN STREET.                           *
 80          KM   ******************************************
 81          KM
 82          BA   .0043
 83          LS       0    79.0    85.0
 84          UD   .1148       0       0

 85          KK     CH2
 86          KM
 87          KM   *******************************************
 88          KM   * COMBINE CH1 AND A3.                     *
 89          KM   *******************************************
 90          KM
 91          HC       2
```



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


 92          KK      R2
 93          KM
 94          KM   *******************************************
 95          KM   * ROUTE CH2 TO 1ST STREET.                *
 96          KM   *******************************************
 97          KM
 98          RC    .013   .016   .013    300   .0045  101.0
 99          RX       0      0      5      5      36     67     67     72     72
100          RY     101    100   99.9   99.4    99.9   99.4   99.9    100    101

101          KK      A4
102          KM
103          KM   ********************************************
104          KM   * DRAINAGE AREA CONSISTING OF PROPERTIES   *
105          KM   * CONTRIBUTING FLOW TO 1ST STREET.         *
106          KM   ********************************************
107          KM
108          BA   .0034
109          LS       0    79.0    85.0
110          UD   .0745       0       0

111          KK     CH3
112          KM
113          KM   ***************************************
114          KM   * COMBINE R2 AND A4.                  *
115          KM   ***************************************
116          KM
117          HC       2

118          KK      A6
119          KM
120          KM   *********************************************
121          KM   * DRAINAGE AREA CONSISTING OF THE AREA     *
```

```
KM   * NORTH OF THE ALLEY BETWEEN 1ST STREET    *
KM   * AND 2ND STREET.                          *
KM   ***********************************************
KM
BA   .0019
LS       0    79.0    85.0
UD   .0533       0       0

KK     CH4
KM
KM   ***********************************************
KM   * COMBINE CH3 AND A6.                        *
KM   ***********************************************
KM
HC       2
```



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

KK      R3
KM
KM   ***********************************************
KM   * ROUTE CH4 TO 2ND STREET.                    *
KM   ***********************************************
KM
RC    .013    .016    .013     300   .0045   101.0
RX       0       0       5       5      36      67      67      72      72
RY     101     100    99.9    99.4    99.9    99.4    99.9     100     101

KK      A7
KM
KM   ************************************************
KM   * DRAINAGE AREA CONTRIBUTING FLOW TO 2ND ST.*
KM   ************************************************
KM
BA   .0039
LS       0    79.0    85.0
UD   .0419

KK     CH5
KM
KM   ************************************************
KM   * COMBINE R3 AND A7.                         *
KM   ************************************************
KM
HC       2

KK     A10
KM
KM   ************************************************
KM   * AREA CONSISTING OF WEST SIDE OF MILLER RD.*
KM   ************************************************
KM
BA   .0013
LS       0    98.0       0
UD   .0706

KK     CH6
KM
```

```
 172          KM   ***********************************************
 173          KM   * COMBINE CH5 AND A10.                        *
 174          KM   ***********************************************
 175          KM
 176          HC      2

 177          KK     A9
 178          KM
 179          KM   ***********************************************
 180          KM   * AREA CONSISTING OF EAST SIDE OF MILLER RD.*
 181          KM   ***********************************************
 182          KM
 183          BA   .0016
 184          LS      0    98.0       0
```



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

 185          UD   .0982

 186          KK    CH7
 187          KM
 188          KM   ***********************************************
 189          KM   * COMBINE CH6 AND A9.                        *
 190          KM   ***********************************************
 191          KM
 192          HC      2
 193          ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

  14        A8
             .
             .
  25         .          A5
             .           .
             .           .
  36         .           .         A1
             .           .          V
             .           .          V
  47         .           .         R1
             .           .          .
             .           .          .
  57         .           .          .         A2
             .           .          .          .
             .           .          .          .
  67         .           .        CH1............
             .           .          .
             .           .          .
  74         .           .          .         A3
             .           .          .          .
             .           .          .          .
  85         .           .        CH2............
             .           .          V
             .           .          V
  92         .           .         R2
```

```
                .         .         .
                .         .         .
  101           .         .         .         A4
                .         .         .          .
                .         .         .          .
  111           .         .       CH3............
                .         .         .
                .         .         .
  118           .         .         .         A6
                .         .         .          .
                .         .         .          .
  129           .         .       CH4............
                .         .         V
                .         .         V
  136           .         .        R3
                .         .         .
                .         .         .
  145           .         .         .         A7
                .         .         .          .
                .         .         .          .
  154           .         .       CH5............
                .         .         .
                .         .         .
  161           .         .         .        A10
                .         .         .          .
                .         .         .          .
  170           .         .       CH6............
                .         .         .
                .         .         .
  177           .         .         .         A9
                .         .         .          .
                .         .         .          .
  186           .         .       CH7............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             FEBRUARY 1981            *
*           REVISED 02 AUG 88          *
*                                      *
*  RUN DATE  01/20/1993  TIME  14:31:27 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
```

HEC-1 FOR 75TH ST./2ND ST. AND MILLER ROAD/2ND ST.
CITY OF SCOTTSDALE PROJECT NUMBER: F2703
GREINER PROJECT NUMBER: E019600
100-YEAR, 6-HOUR HYPOTHETICAL STORM ** DEVELOPED CONDITIONS **

DISCHARGE COMPUTATIONS FOR DRAINAGE AREA BOUNDED BY
INDIAN SCHOOL ON THE NORTH, SECOND STREET ON THE SOUTH,
75TH STREET ON THE WEST AND MILLER ROAD ON THE EAST.

INPUT FILE NAME: E-100-S1.DAT

```
13 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
```

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	A8	9.	3.10	1.	0.	0.	.00		
+ HYDROGRAPH AT	A5	6.	3.07	0.	0.	0.	.00		
+ HYDROGRAPH AT	A1	31.	3.07	2.	1.	1.	.01		
+ ROUTED TO	R1	31.	3.07	2.	1.	1.	.01		
+ HYDROGRAPH AT	A2	53.	3.07	3.	2.	2.	.01		
2 COMBINED AT	CH1	84.	3.07	5.	3.	3.	.02		
HYDROGRAPH AT	A3	18.	3.13	1.	1.	1.	.00		
2 COMBINED AT	CH2	98.	3.07	6.	4.	4.	.02		
ROUTED TO									

	R2	98.	3.07	6.	4.	4.	.02
HYDROGRAPH AT							
	A4	17.	3.10	1.	1.	1.	.00
2 COMBINED AT							
	CH3	113.	3.07	8.	5.	5.	.02
HYDROGRAPH AT							
	A6	10.	3.07	1.	0.	0.	.00
2 COMBINED AT							
+	CH4	123.	3.07	8.	5.	5.	.02
ROUTED TO							
+	R3	123.	3.07	8.	5.	5.	.02
HYDROGRAPH AT							
+	A7	22.	3.07	1.	1.	1.	.00
2 COMBINED AT							
+	CH5	145.	3.07	9.	6.	6.	.03
HYDROGRAPH AT							
	A10	7.	3.10	0.	0.	0.	.00
2 COMBINED AT							
	CH6	151.	3.07	10.	6.	6.	.03
HYDROGRAPH AT							
	A9	7.	3.13	1.	0.	0.	.00
2 COMBINED AT							
	CH7	158.	3.07	10.	6.	6.	.03

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

Catch Basin Summary

STATION	DA NO	INLET TYPE	Q cfs	Q_c cfs	Q_T cfs	S_o %	GUTTER		PAVEMENT		D FT	T FT	a IN	INLET LENGTH		Q_i/Q	Q_i cfs	Q_c cfs
							S_x	z/n	S_x	z/n				ACT.	CORR.			
75th Street – West Side		M2, L17	9.0	0	9.0	.0045	.055	1399	.015	4167	.42	28	.167	37	28	.95	8.6	0.4
75th Street – East Side		M2, L10	6.0	0	6.0	.0045	.055	1399	.015	4167	.37	19	.167	20	16	.87	5.2	0.8
Miller Road – West Side		M2, L17	23.8	0	23.8	.0045	.055	1399	.015	4167	.70	40	.167	37	28	.95	22.6	1.2
Miller Road – East Side		M2, L17	23.8	0	23.8	.0045	.055	1399	.015	4167	.70	40	.167	37	28	.95	22.6	1.2

APPENDIX D

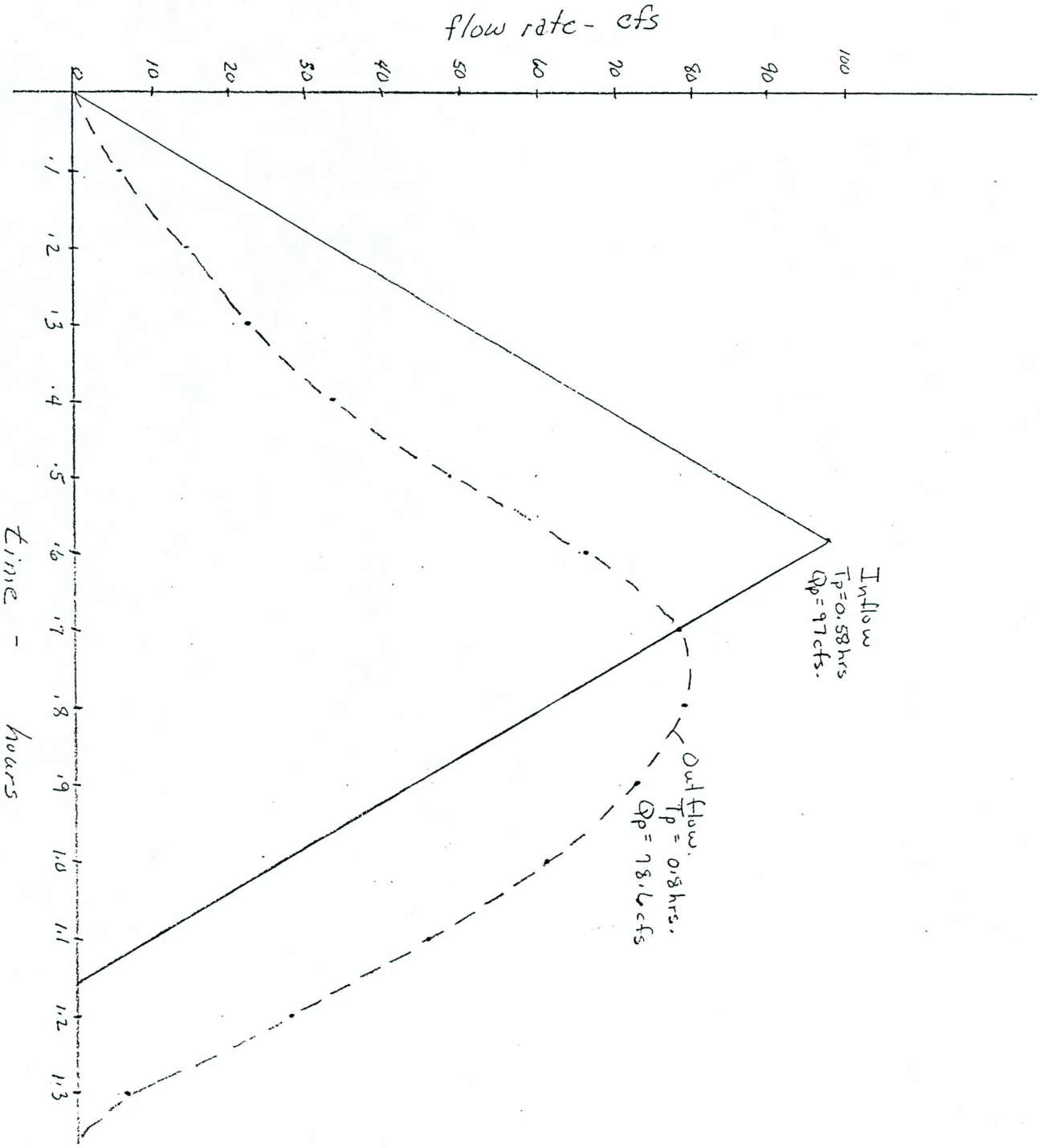
STORAGE AND ROUTING CALCULATIONS FOR CHOCKTAW PARK

Greiner

Job: Osborn Road Drain | Computed By: RDB | Date: 1-2-93

Description: Choctaw Park | Checked By: | Date:

Inflow Hydrograph | Sheet 1 of



Greiner

Job Osborn Road Drain Computed By RDB Date 1-2-93

Description Mass Inflow Checked By Date

Sheet 2 of

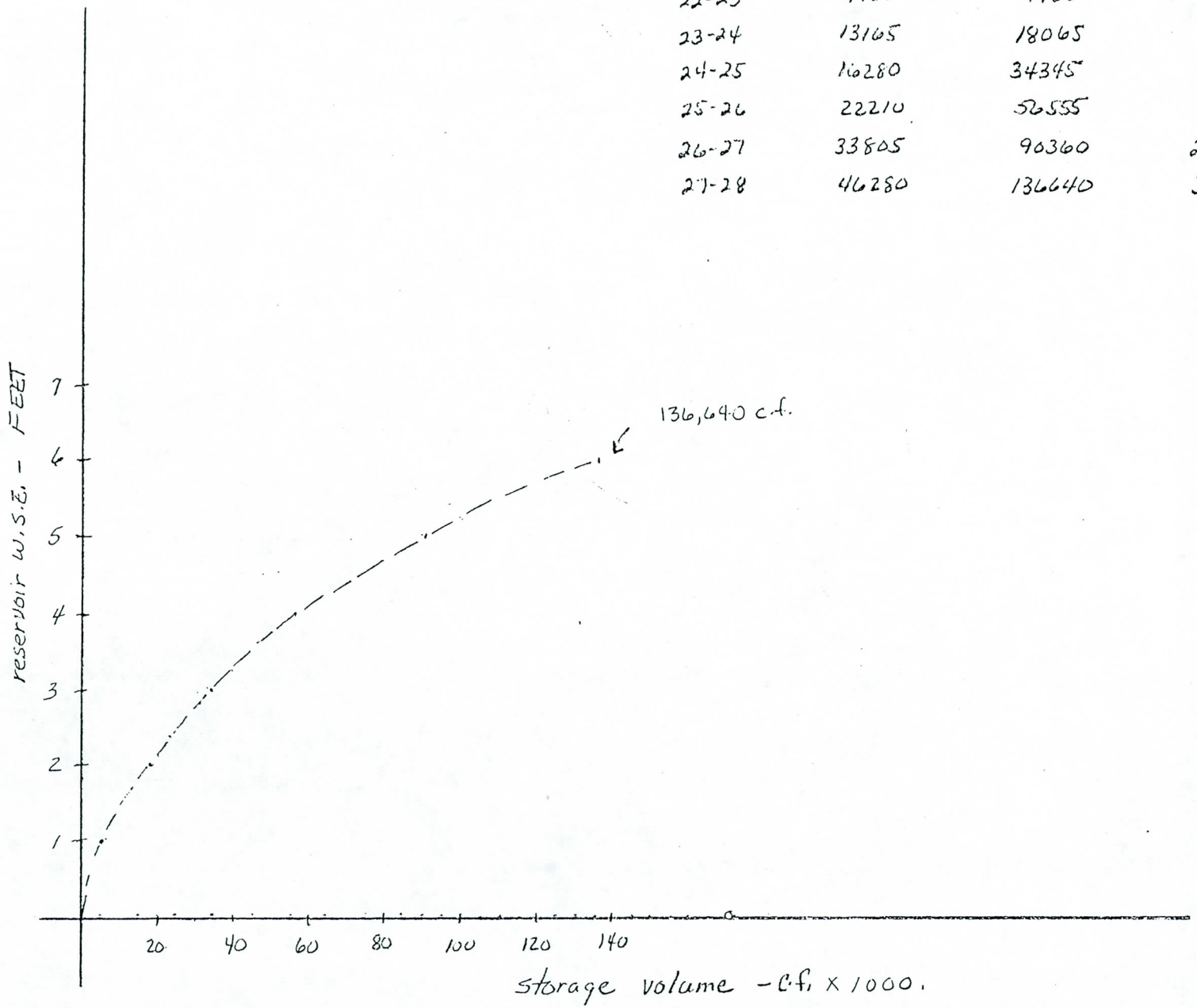
Time Inc.	Inflow - cfs	Inc. mass - cf.	Acc. mass - cf.
0 - .1	8.5	3060	3060
.1 - .2	25	9000	12060
.2 - .3	42	15120	27180
.3 - .4	58	20880	48060
.4 - .5	75	26820	74880
.5 - .6	89	32040	106920
.6 - .7	87	31320	138240
.7 - .8	69	24840	163080
.8 - .9	52	18720	181800
.9 - 1.0	35	12600	194400
1.0 - 1.1	18	6480	200880
1.1 - 1.2	5	1800	202680

Greiner

Job: Osborn Road Drain Computed By: RDB Date: 1-2-93

Description: Reservoir Storage Curve Checked By: Date: Sheet 4 of

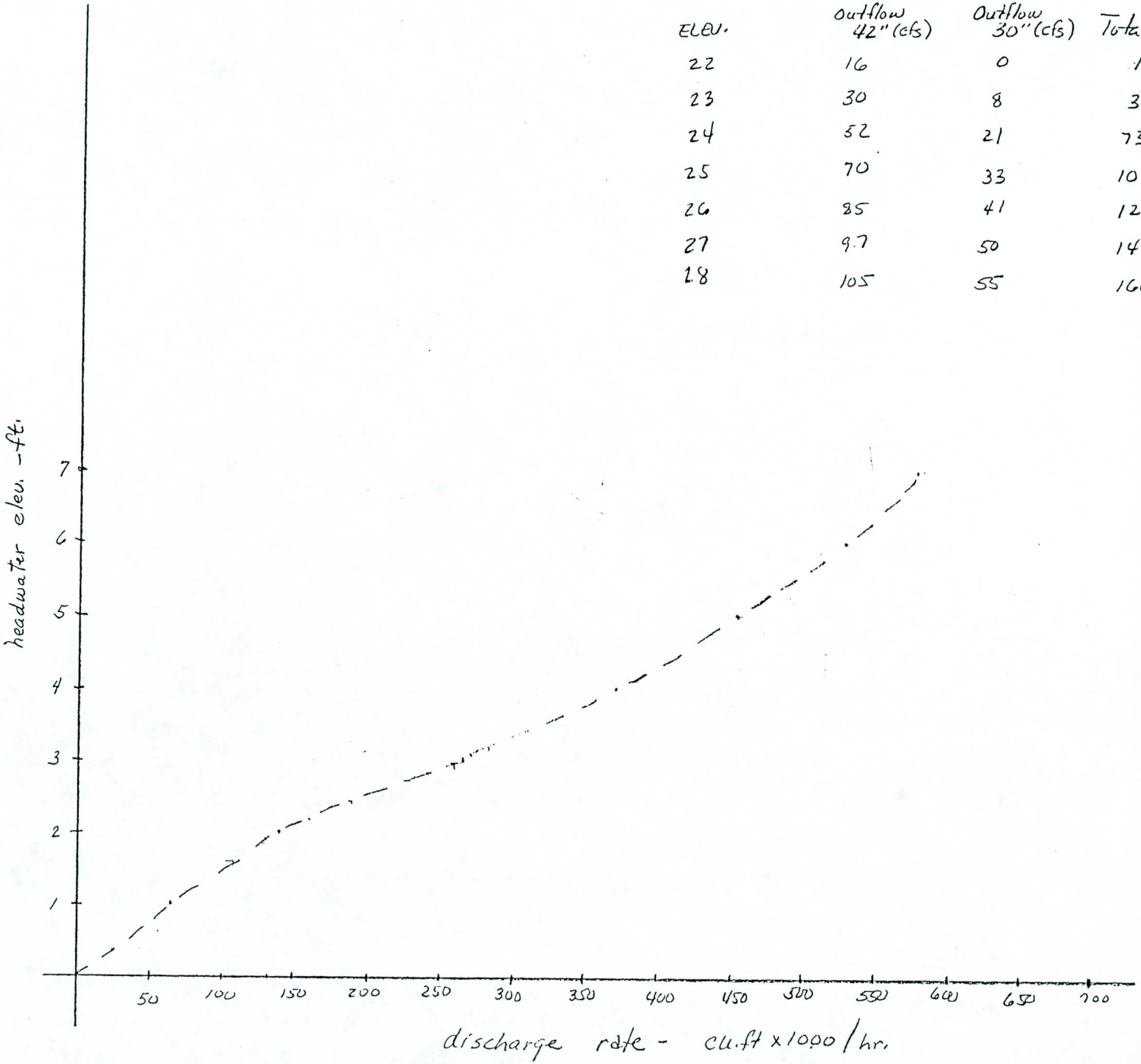
ELEV.	VOL.-C.F.	ACC.VOL-C.F.	ACC.VOL.-A-F
22-23	4900	4900	0.11
23-24	13165	18065	0.41
24-25	16280	34345	0.79
25-26	22210	56555	1.30
26-27	33805	90360	2.07
27-28	46280	136640	3.14

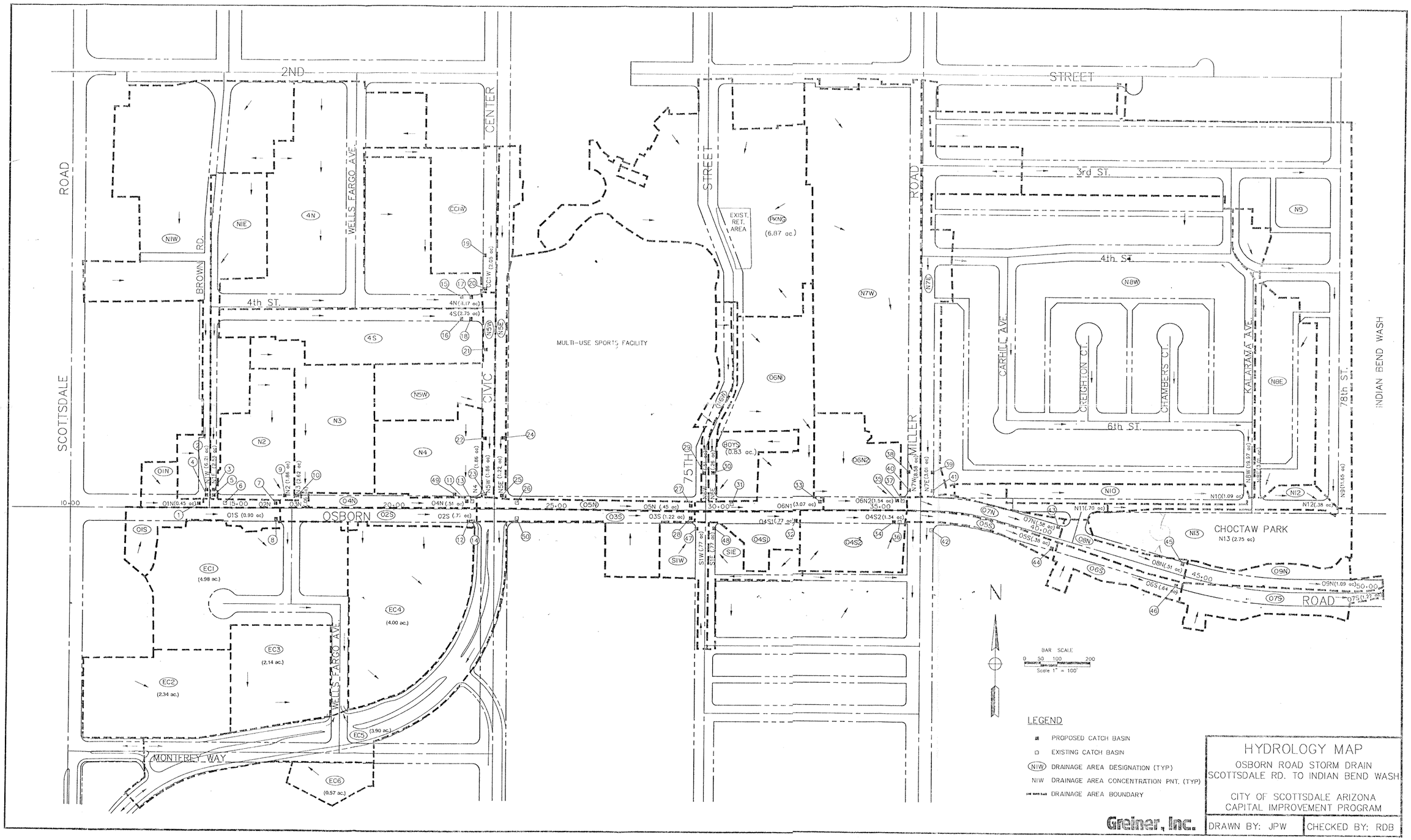


Greiner

Job: Osborn Road Drain
Description: Elev-Discharge for Outlet Structures
Computed By: RDB
Checked By:
Date: 1-2-93
Date:
Sheet 5 of

ELEV.	Outflow 42" (cfs)	Outflow 30" (cfs)	Total. (cfs)	
22	16	0	16	(57.6)
23	30	8	38	(136.8)
24	52	21	73	(262.8)
25	70	33	103	(370.8)
26	85	41	126	(453.6)
27	97	50	147	(529.2)
28	105	55	160	(576.0)





HYDROLOGY MAP

OSBORN ROAD STORM DRAIN
SCOTTSDALE RD. TO INDIAN BEND WASH

CITY OF SCOTTSDALE ARIZONA
CAPITAL IMPROVEMENT PROGRAM

DRAWN BY: JPW | CHECKED BY: RDB