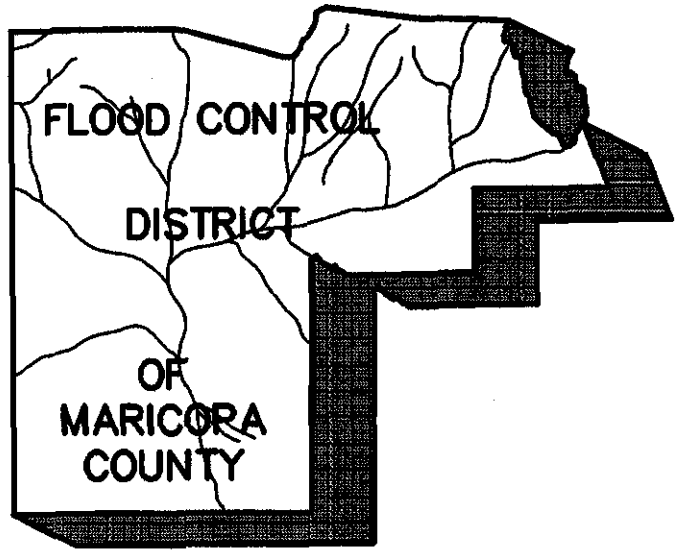
WATERSHED BETWEEN CAVE CREEK AND SKUNK CREEK

VOLUME 1.5

ARIZONA CANAL DIVERSION CHANNEL AREA DRAINAGE MASTER STUDY

ACDC/ADMS PHASE 1



HYDROLOGY REPORT

MARCH 1995

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Volume 1.5

Arizona Canal Diversion Channel Area Drainage Master Study ACDC/ADMS Phase I

HYDROLOGY REPORT

March, 1995

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WATERSHED BETWEEN CAVE CREEK AND SKUNK CREEK

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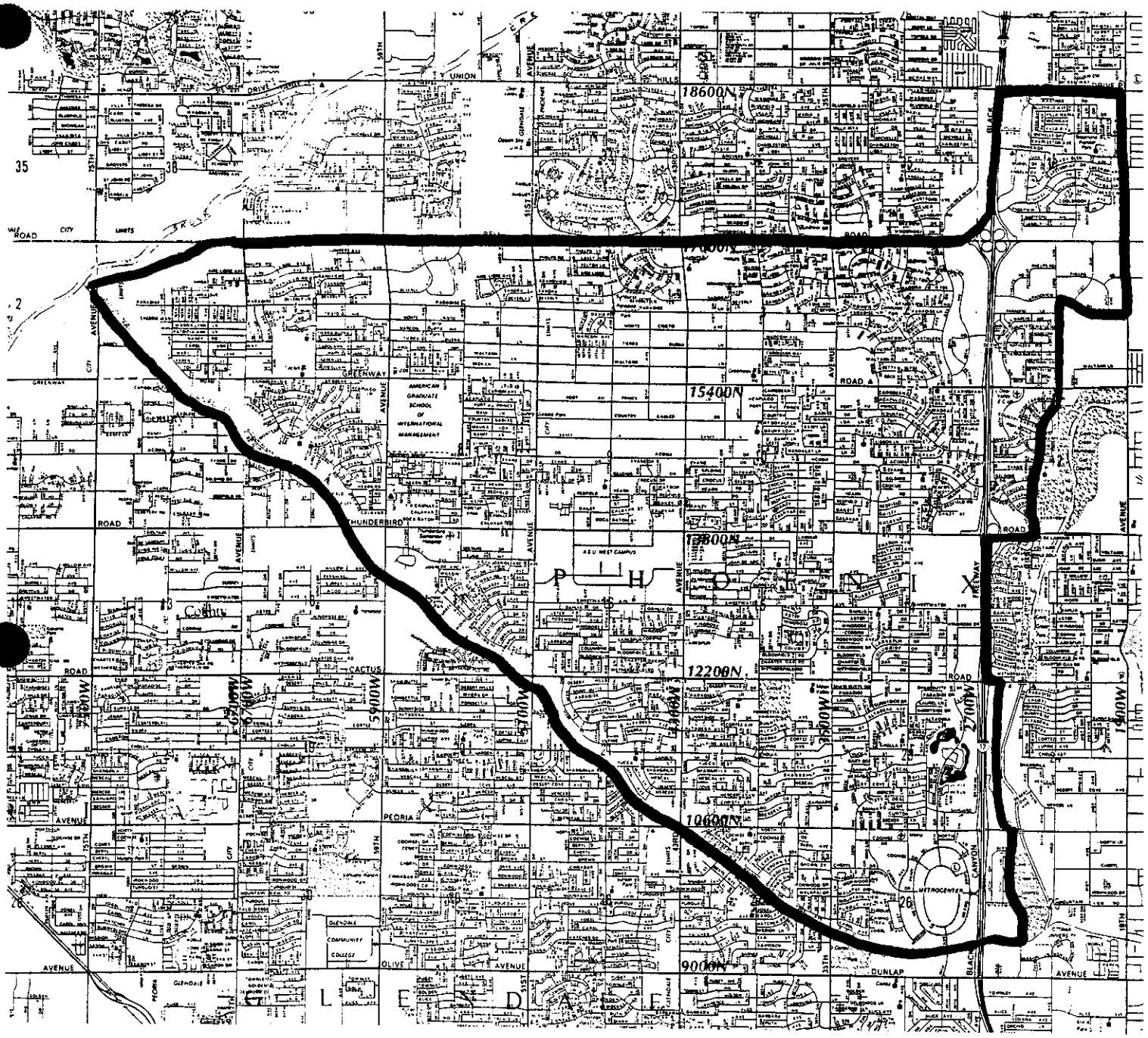
1.0 SYNOPSIS

Kaminski-Hubbard Engineering, Inc. (KHE) was retained by the Flood Control District of Maricopa County (FCDMC) to prepare a comprehensive hydrologic analysis of the watershed contributing to to the Arizona Canal Diversion Channel (ACDC) between Cave Creek and Skunk Creek for both the existing and future conditions. This watershed drains approximately 20 square miles of urban development which drains directly into the ACDC. The study area is located in the communities of Phoenix,Glendale and Peoria as shown on the Vicinity Map.

Within the study area, various drainage improvements associated with the Interstate 17, Bell Road and urban development have altered the historical southwesterly drainage patterns. Detailed topographic mapping was used to develop basin delineations and flow paths in preparation of the hydrologic analyses. The future condition analysis was developed based on changes to the Cave Creek and Skunk Creek watersheds and to changes in vacant parcels of land.

This report presents the hydrologic analysis developed for the watershed between Cave Creek and Skunk Creek for both existing and future conditions. Table 1 summarizes the computed peak discharges for existing conditions resulting from a 24-hour duration storm at specific locations along the ACDC. Table 2 presents the computed peak discharges for future conditions corresponding to a 24-hour duration storm.



Vicinity Map

FIGURE 1

TABLE 1

24-Hour Peak Discharge At ACDC (cfs)
(Existing Conditions)

Location	HEC-1 I.D. No.	Drainage Area (Sq. Mi.)	2-Yr. (cfs)	10-Yr. (cfs)	100-Yr. (cfs)
Interstate 17	DC1	2.39	28	94	243
35th Avenue	DC2	7.07	757	1311	2265
43rd Avenue	DC3	3.97	652	1534	3478
Peoria Avenue	DC4	0.36	34	98	247
51st Avenue	DC5	2.95	428	1376	3974
Cactus Road	DC6	0.57	92	231	504
Thunderbird Road	DC7	1.94	193	1226	3894
59th Avenue	DC8	0.70	88	296	670
Greenway Road	DC9	0.89	125	555	2016
67th Avenue	DC10	0.74	163	467	980
East Of Skunk Creek	DC11	0.83	54	261	766

TABLE 2

24-Hour Peak Discharge At ACDC (cfs)
(Future Conditions)

Location	HEC-1 I.D. No.	Drainage Area (Sq. Mi.)	2-Yr. (cfs)	10-Yr. (cfs)	100-Yr. (cfs)
Interstate 17	DC1	2.37	35	105	264
35th Avenue	DC2	7.06	817	1288	2294
43rd Avenue	DC3	3.97	542	1416	3423
Peoria Avenue	DC4	0.36	35	98	247
51st Avenue	DC5	2.95	215	1418	4078
Cactus Road	DC6	0.57	99	235	510
Thunderbird Road	DC7	1.94	147	1083	3917
59th Avenue	DC8	0.70	95	288	795
Greenway Road	DC9	0.89	165	438	2007
67th Avenue	DC10	0.74	168	438	1074
East Of Skunk Creek	DC11	0.79	110	289	980

2.0 INTRODUCTION

A hydrologic analysis of the watershed between Cave Creek and Skunk Creek for both existing and future conditions was prepared by Kaminski-Hubbard Engineering, Inc. (KHE) for the Flood Control District of Maricopa County (FCDMC) as part of the Arizona Canal Diversion Channel (ACDC) Area Drainage Master Study (ADMS), Phase I. This watershed drains the urban development located south of Bell Road bounded by the Cave Creek watershed on the east and the Skunk watershed to the west.

This watershed includes eleven major concentration points where stormwater runoff enters the ACDC. This study has evaluated the affects of Bell Road improvements, Interstate 17 depressed ramps at major intersections, a storm drain grid system in the major streets along section lines, and on-site retention for existing parcels of land and vacant land which will be required to provide on-site retention in accordance with recently adopted development criteria.

The study area was divided into average one square mile sub-basins and is composed chiefly of urban development within a section of land. This watershed is unique due to its relatively flat slopes with runoff concentrating in major streets located along section lines. Once the capacity of the major streets are exceeded, flows split in a westerly and southerly direction draining into the ACDC.

This report presents the existing and future hydrologic analysis for the watershed contributing to the ACDC from Cave Creek to Skunk Creek. The hydrology was developed using the FCDMC's new design criteria (Ref. 9) and documents the assumptions and methodologies for development of the hydrologic analysis.

3.0 STUDY PARAMETERS

3.1 Study Area

The watershed between Cave Creek and Skunk Creek is located in the urban development of the communities of Phoenix, Glendale and Peoria is outlined on Figure 1. The watershed area is approximately 20 square miles which ultimately drain directly into the eight mile reach of the ACDC. The area is bounded by Bell Road to the north, Cave Creek to the east and Skunk Creek to the west.

The watershed is unique due to urbanization of the area into a development of one square mile draining into major streets located along section lines. These streets do not provide adequate capacity for the higher frequency storms and result in split flows. Due to field survey results, topographic mapping and historical drainage patterns, split flow calculations were assumed to be equally divided in the westerly and southwesterly direction.

3.2 Mapping

The available mapping utilized in this study are as follows:

1. **FCDMC Mapping:** The watershed between Cave Creek and Skunk Creek was flown as part of this study for the purpose of obtaining 1 inch = 400 foot contour and aerial mapping. The contour interval is 2 feet. These maps were flown between July 1990 and August 1991. These maps were used to establish the sub-basin drainage delineations, flow patterns, and storage volume calculations for detention facilities. The aerial maps were also utilized to provide land use information for existing conditions.

2. **USGS Quadrangle Maps:** Hedgpeth Hills, Glendale, Sunnyslope and Union Hills, Arizona, 7.5 minute series. The horizontal scale is 1 inch = 2000 feet. The contour interval is 20 feet. These maps were photo revised in 1981.

3. **City of Phoenix Storm Drain Maps:** These maps are at a scale of 1 inch = 400 feet and provide a schematic location of storm drains and culverts in the area.

4. **City of Phoenix Zoning Maps:** These maps are at a scale of 1 inch = 400 feet and provide zoning designations and boundaries in the area.

5. **As-Built Plans:** As-built plans for storm drains associated with the Northwest Storm Drainage Structure (Ref. 1). City of Glendale Storm Drain Plans and City of Peoria Master Storm Drain Plans (Ref. 12).

6. **Field Reconnaissance:** - Field investigations were undertaken to verify hydrologic information obtained from aerial and topographic mapping. Areas of new development or developments under construction and existing on-site retention areas were identified. All major drainage structures along the Bell Road and Interstate 17 were identified. The flow paths of all major mile and half-mile streets were identified. Some drainage patterns were documented for local streets.

7. **General Plan For Phoenix:** This general plan was used to determine the extent of future development. Areas of future parks, open spaces, and traffic corridors were considered during the future hydrologic analysis.

8. **Glendale General Plan:** This general plan was used to determine the extent of future development. Areas of future parks, open spaces and traffic corridors were considered during the future hydrologic analysis.

9. **Peoria Comprehensive Master Plan:** This general plan was used to determine the extent of future development. Areas of future parks, opens spaces and traffic corridors were considered during the future hydrologic analysis.

10. **City of Glendale Zoning Maps:** These maps are at a scale of 1 inch = 400 feet and provide zoning designations and boundaries in the area.

11. **Maricopa County Zoning Maps:** These maps are at a scale of 1 inch = 1,200 feet and provide zoning designations and boundaries in the area.

12. **City of Peoria Zoning Maps:** These maps are at a scale of 1 inch = 1,200 feet and provide zoning designations and boundaries in the area.

3.3 Study Criteria

The following criteria and guidelines were set forth by the FCDMC prior to and during the drainage study:

1. Hydrology calculations will be completed for the 2-, 10-, and 100-year storms.

2. Storm durations of 6- and 24-hours will be evaluated for all three storms.

3. The U.S. Army Corps of Engineers (COE) HEC-1 computer program will be used for hydrograph computations.

4. Sub-basins will be an average one (1) square mile in area.

5. The Clark Unit Hydrograph method will be utilized

6. The Green-Ampt Loss Method will be utilized for estimation of precipitation losses.

7. The Maricopa County Unit Hydrograph Procedure 1 (MCUHP 1) computer program, as provided by the FCDMC, will be used to compute times of concentration and storage coefficients for the Clark Unit Hydrograph Method.

8. Rainfall distributions and depth area relations for the 6-hour storm duration will be based on NOAA HYDRO-40 (Ref. 18) and COE (Ref. 15) data, as presented in the FCDMC's Hydrologic Design Manual (Ref. 9). This data is included in the MCUHP 1 program to develop areal reduction for the watershed.

9. The SCS Type II rainfall distribution will be used for the 24-hour storm, with corresponding depth-area ratios based on NOAA HYDRO-40 (Ref. 18). This data is included in the MCUHP 1 Program.

10. Transmission losses will be estimated based on existing field data or literature. Existing field data or literature was not available to estimate infiltration losses. Due to this study's detailed determination for the watershed roughness coefficient (Kb), the exclusion of transmission losses has little impact on the flow peaks and volumes.

11. Existing and future flow rates will be developed.

4.0 HYDROLOGY

4.1 General

The existing and future hydrologic analysis for the watershed between Cave Creek and Skunk Creek was prepared for the 2-, 10-, and 100-year storms. The 6- and 24-hour storm durations were evaluated for all three storms. The watershed was modeled using the COE HEC-1 computer program. The May, 1991, version of HEC-1 was used for this study. The Clark Unit Graph, the Green-Amp Loss Rate, and the Muskingum-Cunge Routing options were used in the HEC-1 computer model. The HEC-1 modeling also included allowances for routing hydrographs through detention basins using the Modified Puls Method. This section describes the assumptions and methodologies used to develop the HEC-1 computer model for existing and future conditions within the watershed between Cave Creek and Skunk Creek.

4.2 Previous Hydrologic Investigations

Previous hydrologic investigations of the watershed were reviewed for historical, as well as, hydrologic information which could be used as a part of our analysis for both existing and future conditions. Particular attention was given to hydrologic modeling techniques, sub-basin delineation, storm frequency and duration, reach routing methods, location of concentration points, treatment of detention basin areas, and location of future drainage structures. A brief summary of previous investigations reviewed for the hydrologic analysis of the watershed between Cave Creek and Skunk Creek are presented below.

Northwest Storm Drainage Study, Volumes I & II (Ref. 1)

In 1977, a City of Phoenix storm drainage study was prepared by Arthur Beard Engineers, Inc. for the area bounded by I-17 on the east, the Arizona Canal on the south and southwest, and the City of Phoenix corporate boundary on the west. This study also included the area between Interstate 17 and Cave Creek. The Soil Conservation Service (SCS) TR-20 computer model was used to evaluate the 1-, 2- 10- and 50-year, 24-hour storms. The report was vague in treating both CAP Canal and I-17 impoundment areas. It appears flow was routed through I-17 culverts without accounting for detention or diversion affects.

I-17 Drainage Design Study (Ref. 13)

In 1987, a comprehensive drainage study was prepared for all depressed intersection ramps along Interstate 17. This study evaluated the 100-year storm water runoff with a pump designed to drain the 25-year event from the depressed ramps. The Soil Conservation Services (SCS) TR-20 computer model was used in this analysis.

Bell Road Project Drainage Study Volume IV (Ref. 11)

The purpose of the Bell Road drainage study was to prepare a stormwater/floodwater management plan for the expansion of Bell Road between Grand Avenue and Bell Road. This report documents the procedures, methodologies and criteria used to develop peak discharges along major intersections in Bell Road. The COE HEC-1 computer model was used to evaluate the 24-hour storm. This report was vague in addressing drainage patterns downstream of Bell Road.

Arrowhead Ranch Development - Specific Area & Storm Drainage Plan (Ref. 5)

The purpose of this report was to develop a master planned community. The drainage plan provided for a detention system through the development through recreational multi-purpose lakes and golf courses. The Soil Conservation Service (SCS) TR-20 computer model was used to evaluate the 100 year, 24-hour storm. This information was used to determine reservoir routing characteristics.

4.3 Parameter Estimation

4.3.1 Drainage Area Boundaries

Existing Conditions

The sub-basin boundaries were delineated using 1 inch = 400 feet topographic and aerial mapping, which was flown as a part of this study. Particular attention was given to areas contributing to major road crossings along section lines. In-house drainage delineations were also supplemented by as-built drawings of major collector streets, storm drains and field surveys.

The initial delineation was then verified or revised based on field investigations. This field investigation included driving major mile and half-mile streets to distinguish flow patterns and possible flow split locations. These flow patterns were recorded and later referred to in determining lag times for each sub-basin. The field investigations also included the determination of on-site retention locations within the watershed. Observations were also made to determine non-contributing areas within the watershed that occur during the 2- and 10-year storm analysis.

The sub-basins were delineated so that concentration points were provided at major street intersections and impoundment areas. The sub-basin areas were limited to an average one square mile. Concentration points were located along areas of the ACDC to determine magnitudes of storm water runoff.

Future Conditions

The drainage delineation for future conditions was predominately the same as presented for the existing conditions. Due to slight modifications in existing vacant parcels of land, impervious areas were increased to account for increased stormwater runoff. In addition, changes in the future Cave Creek and Skunk Creek watersheds may affect the magnitude of stormwater runoff at major intersections and key locations along the ACDC.

4.3.2 Rainfall Parameters

Rainfall Distributions

The rainfall distribution used for the 6-hour storm duration are as documented in the FCDMC's Hydrologic Design Manual (Ref. 9) and contained in the MCUHP 1 Program. The SCS Type II distribution was used for the 24-hour storm. The rainfall distributions are presented in Tables 5 and 6 in Section I of the Appendix.

Precipitation Data

The point precipitation values used in this analysis were obtained from isopluvial maps for Maricopa County as published in the FCDMC's Hydrology Design Manual (Ref. 9). The point precipitation values are presented in Table 3 in Section I of the Appendix.

Areal Reduction Factors

The point precipitation values used for this study were adjusted to account for the reduction in precipitation depth over a very large area. Reduction factors for the 6-hour duration storms were obtained from the FDCMC's Hydrologic Design Manual (Ref. 9). This information was also included in the FCDMC's MCUHP 1 Program. The 24-hour storm reduction factors were obtained from the NOAA Technical Memorandum NWS HYDRO-40 (Ref. 18). These factors are presented in Table 4 in Section I of the Appendix.

4.3.3 Physical Parameters

Loss Rate Estimation

The Green-Ampt loss rate method in HEC-1 was used to estimate rainfall losses. This method involves a two phase process in simulating rainfall losses. The first phase involves no infiltration of rainfall until the accumulated rainfall equals the initial loss (IA). Recommended IA values are presented in Table 4.1 in the Hydrology Design Manual (Ref. 9).

The second phase is the infiltration of rainfall into the soil immediately after IA is completely satisfied. The three Green-Ampt infiltration parameters as coded in HEC-1 are: hydraulic conductivity at natural saturation (XKSAT); wetting front capillary suction (PSIF); and volummetric soil moisture deficit at the start of rainfall (DTHETA).

The Green-Ampt parameters were determined using a spreadsheet provided by the FCDMC, Watershed Management Branch. The XKSAT values were determined by the FCDMC for all map units contained in the SCS Soil Surveys (Ref. 16) using log averaging of major and minor soil XKSAT values. These map units along with their corresponding XKSAT and percent rock outcrop values are presented in lookup tables within the Green-Ampt Spreadsheet.

The area of each soil unit within each sub-basin was determined and used as input into the Green-Amp Loss Parameter spreadsheet. These area calculations were determined using ARC INFO GIS. The spreadsheet subsequently computed average sub-basin XKSAT values using log averaging methods. Next, values for PSIF and each DTHETA condition (i.e. dry, normal, wet) were interpolated using the computed XKSAT. These tables were contained within the spreadsheet and were similar to Table 4.2 (Ref. 9).

The Green-Ampt parameters computed above were based strictly on soil characteristics and adjustments were necessary to account for vegetative cover and land use. These guidelines are presented in the FCDMC's Hydrologic Design Manual (Ref. 9) and are incorporated in the Green-Ampt Loss Parameter Spreadsheet. The area of each land use within each sub-basin was also determined and used as input into the spreadsheet. Again, these area calculations were performed using ARC INFO GIS.

The "percent impervious" for each sub-basin was computed as a function of both natural rock outcrop and land use. The percentage of impervious rock outcrop within each sub-basin was estimated from soil unit data provided in the SCS Soil Surveys (Ref. 16). A factor of 0.6 was used to convert the "percentage of rock outcrops" to the "percent impervious" for each sub-basin.

Next, the impervious areas associates with various land use categories were determined for each sub-basin. The City of Phoenix, Glendale and Peoria zoning designations were classified into land use categories based on aerial mapping are presented in Table 7 in Section II of the Appendix.

The total "percent impervious" value for each sub-basin was computed as a summation of the above two "percent impervious" values. The computation was also incorporated into the Green-Ampt Loss Parameter spreadsheet. The average Green-Ampt parameters for each sub-basin are presented on Tables 8 and 9 in Section II of the Appendix.

Time of Concentration

The Clark Unit Hydrograph Method requires the estimation of the time of concentration, T_c. The following empirical equation was used to compute the time of concentration as a function of watershed characteristics (Ref. 9):

$$T_c = 1.14 L^{0.5} K_b^{0.52} S^{-0.31} i^{-0.38}$$

where

T_c	=	time of concentration, in hours.
L	=	length of the flow path for T_c, in miles.
K_b	=	representative watershed resistance coefficient.
S	=	watercourse slope, in feet/mile.
i	=	the average rainfall excess intensity, during the time T_c, in inches/hour.

The length of flow path for T_c and its corresponding slope within each sub-basin were determined using 1 inch = 400 feet topographic maps. Street flow patterns observed from the field investigations were also used to determine the flow path for T_c considerations. The MCUHP1 Program, as provided by the FCDMC, was used to calculate the time of concentration, T_c, and storage coefficient, R, for each sub-basin.

The watershed resistance coefficient, K_b, necessary to determine T_c was estimated using the following equation (Ref. 18):

$$K_b = m \log A + b$$

where:

K_b = watershed resistance coefficient.
A = drainage area, in acres.
m&b = parameters dependent on land use and vegetation cover.

The watershed resistance coefficient, K_b, for each sub-basin was weighted to account for varying roughness conditions associated with mixed land use classifications. The land use classifications within each sub-basin were categorized into roughness types using the descriptions presented in Table 5.1 (Ref. 9). All vacant areas were placed under the category of moderately high roughness (Type C). Low and very low density residential areas were labelled as having moderately low roughness (Type B). Medium density and multi-family residential areas were placed under the category of minimal roughness (Type A).

The time of concentration and flow paths for existing and future conditions are presented in Plates 10, 11, 12, 22, 23 and 24. The hydrologic sub-basin characteristics for existing conditions are presented in Tables 10, 11, and 12 in Section III of the Appendix. The characteristics for future conditions are presented in Tables 14, 15 and 16 in Section III of the Appendix.

4.3.4 Routing Parameters

Channel Routing

For this study, the Muskingum-Cunge method was used to route a hydrograph through a downstream sub-basin. Channel cross-section information, slopes, and Manning's roughness coefficients were estimated using topographic mapping and observations made during the field investigation. Channel routing flow paths for existing and future conditions are presented in Plates 10, 11, 12, 22, 23, and 24. Channel routing work sheets are presented in Section IV of the Appendix.

Reservoir Routing

The Modified Puls method was used for reservoir routing through detention basins. A total of six detention basins were modeled for the existing and future conditions. Five of the detention facilities are associated with depressed ramps along Interstate 17 at major road crossings. The sixth detention basin is located at the northeast corner of 47th Avenue and Paradise Lane. This facility is a City of Phoenix Park and drains through a low level pipe. The volume associated with this facility was determined using 1 inch = 400 feet topographic mapping. Field surveys were performed to include spot elevations for overflow weir calculations and pipe inverts for low-level spillway calculations. These calculations are included in Section IV of the Appendix.

4.4 Special Considerations

4.4.1 Flow Splits

Flow splits are a major problem to consider when developing the hydrologic model for a relatively flat watershed. For the watershed between Cave Creek and Skunk Creek the area is relatively flat with slopes averaging 0.5%. Runoff typically "sheet flows" across the watershed in a southwesterly direction, concentrating in major streets. As a result of this condition, flow splits occur whenever the capacity of a street is exceeded.

Sub-basin boundaries were selected at major streets along section lines in order to evaluate the urban watershed. This sub-basin delineation was based on the assumption that all stormwater runoff from a section of land will enter the major street intersections and no flow splits occur at collector and local street intersections. This procedure resulted in simplification of extensive analysis. First, peak flows were compared with down stream street capacities at each location using topographic mapping and field survey verification. It was determined that 100-year peak flows exceeded street capacities. The weir flow equation was then evaluated along the roadway crown at selected major intersections. Results of this analysis indicated that there was no consistency in southerly or westerly split flow diversions particularly for multi-frequency analysis. Therefore, the split flow diversions were assumed to be 50 percent to the west and 50 percent to the south. This was due to evaluation and comparison of historical south westerly drainage patterns with urban street slopes. The flow split calculations are included in Section IV of the Appendix.

4.4.2 Storm Drain Pipes

The study area is composed of a network of storm drains mainly in major streets which ultimately drain southerly to the ACDC. Storm drain design flows have been diverted out of calculated peak flows at each sub-basin based on design flows documented in Reference 1.

4.4.2 I-17 Depressed Ramps

The Interstate 17 was constructed with depressed roadway at major street intersections. These ramps have been modeled in HEC-1 using reservoir routing relationships. The topographic mapping along with supportive field surveys were used to develop the relationships. Depressed ramp calculations are included in Section IV of the Appendix.

4.4.4 On-Site Retention And Non-Contributing Areas

Existing Conditions

The City of Phoenix requires that all developments retain the 100-year 2-hour duration storm volume which falls on-site. Based on field investigations within the watershed, a majority of lots had no on-site retention or minimal retention at best. However, a few commercial, industrial and multi-family sites constructed within the last few years had complied with the on-site retention requirements. As directed by the FCDMC, the on-site retention volumes were estimated for sites found to have well constructed retention areas based on our field investigations.

The topographic mapping flown for this study was not sufficient to estimate the retention volume for parcels found to have well constructed retention areas. Parcels having questionable on-site retention were eliminated from consideration. On-site retention volume calculations performed prior to September, 1985, within the City of Phoenix, were made using a 10-year, 2-hour duration storm. Some of these pre-1985 parcels may have been included as having sufficient retention area to require volume calculations. Therefore, instead of separating out retention areas completed before 1985 from those completed after 1985, all existing condition on-site retention volumes were estimated for the 10-year, 2-hour duration storm. The volume calculations were performed using the procedures outlined in the Drainage Design Manual (Ref. 9).

The total estimated retention volume within each sub-basin was subtracted from the front of the hydrographs by diverting the estimated volume. The remaining hydrograph was then routed through the downstream sub-basin. These computations are presented in Section V of the Appendix.

Non-contributing areas for all storm frequencies were located within the watershed using topographic mapping and verified based on field investigation. Each sub-basin was analyzed to determine how much area would contribute for 2 two-year and 10-year storm frequency. Sub-basins having vacant land use were treated as providing 100-year, 2-hour retention in the future condition model and were treated as non-contributing areas. These computations are presented in Section V of the Appendix.

5.0 RESULTS AND CONCLUSIONS

The HEC-1 computer model was used to compute the 2-, 10-, and 100-year peak discharges for the watershed between Cave Creek and Skunk Creek. This hydrologic analysis has been a synthesis of new topographic mapping observations, ongoing construction improvements, increased urbanization and previous hydrologic investigations. The results of sub-basin peak discharges for the above storm frequencies are presented in Tables 13 and 17 for both the 6-hour and 24-hour events.

As indicated in Tables 1 and 2, computed 24-hour peak discharges entering the ACDC were slightly lower during the future conditions model. This is believed to be due to vacant parcels of land providing 100-year, 2-hour retention volumes. Slight reductions in peak discharges indicate the retention policy to be worthwhile.

SECTION I

Rainfall & Physical Hydrologic Parameters

TABLE 3

Point Precipitation Values For The Watershed Between Cave Creek & Skunk Creek Study Area (Inches)

Return Period (Years)	Storm Duration	
	6-Hr.	24-Hr.
2	1.20	1.40
10	2.00	2.30
100	3.00	3.80

Source: NOAA Atlas Isopluvial Maps For Arizona

TABLE 4

Areal Precipitation Reduction Data

Watershed Area (Sq. Mi.)	Storm Duration	
	6-Hr[1]	24-Hr[2]
0	1.00	1.00
1	0.99	---
3	---	0.98
5	0.96	---
10	0.94	0.96
20	0.91	0.92
30	0.89	0.90
40	0.87	0.89

[1] **Drainage Design Manual For Maricopa County, (Ref. 15)**
[2] **NOAA Technical memorandum NWS HYDRO-40, (Ref. 27)**

TABLE 5

6-HOUR STORM RAINFALL DISTRIBUTIONS
(Furnished by FCDMC's Maricopa County Unit Hydrograph Procedure 2)
Cumulative Rainfall Table

Storm Time (Hours)	Watershed (Sq. Mi.)				
	≤0.5	2.8	16	90	500
0.00	0.000	0.000	0.000	0.000	0.000
0.25	0.008	0.009	0.015	0.021	0.024
0.50	0.016	0.016	0.020	0.035	0.043
0.75	0.025	0.025	0.030	0.051	0.059
1.00	0.033	0.034	0.048	0.071	0.078
1.25	0.041	0.042	0.063	0.087	0.098
1.50	0.050	0.051	0.076	0.105	0.119
1.75	0.058	0.059	0.090	0.125	0.141
2.00	0.066	0.067	0.105	0.143	0.162
2.25	0.074	0.076	0.119	0.160	0.186
2.50	0.087	0.087	0.135	0.179	0.212
2.75	0.099	0.100	0.152	0.201	0.239
3.00	0.118	0.120	0.175	0.232	0.271
3.25	0.138	0.163	0.222	0.281	0.321
3.50	0.216	0.252	0.304	0.364	0.408
3.75	0.377	0.451	0.472	0.500	0.515
4.00	0.834	0.694	0.670	0.658	0.627
4.25	0.911	0.837	0.796	0.773	0.735
4.50	0.931	0.900	0.868	0.841	0.814
4.75	0.950	0.938	0.912	0.888	0.864
5.00	0.962	0.950	0.946	0.927	0.907
5.25	0.972	0.963	0.960	0.945	0.930
5.50	0.983	0.975	0.973	0.964	0.954
5.75	0.991	0.988	0.987	0.982	0.977
6.00	1.000	1.000	1.000	1.000	1.000

TABLE 6

24-HOUR STORM RAINFALL DISTRIBUTIONS
(Standard SCS 24-Hour, Type II Distribution Cumulative Rainfall Table)

Storm Time (Hours)	Precipitation Ratio
0.0	0.000
0.5	0.005
1.0	0.011
1.5	0.016
2.0	0.022
2.5	0.028
3.0	0.035
3.5	0.041
4.0	0.048
4.5	0.056
5.0	0.063
5.5	0.071
6.0	0.080
6.5	0.089
7.0	0.098
7.5	0.109
8.0	0.120
8.5	0.133
9.0	0.147
9.5	0.163
10.0	0.181
10.5	0.204
11.0	0.235
11.5	0.283
12.0	0.663

Storm Time (Hours	Precipitation Ratio
12.5	0.735
13.0	0.772
13.5	0.799
14.0	0.820
14.5	0.838
15.0	0.854
15.5	0.868
16.0	0.880
16.5	0.891
17.0	0.902
17.5	0.912
18.0	0.921
18.5	0.929
19.0	0.937
19.5	0.945
20.0	0.952
20.5	0.959
21.0	0.965
21.5	0.972
22.0	0.978
22.5	0.984
23.0	0.989
23.5	0.995
24.0	1.000

SECTION II

Green-Ampt & Land Use Parameters

TABLE 7

Percent Impervious Estimates
For Zoning/Land Use Classifications

Zoning Unit	Zoning Description	Land Use Description	Land Use Unit	Percent Impervious
S-1 S-2 RE-43	Ranch or Farm Res. Ranch Or Farm Commercial Single Family, 1 acre min.	Very Low Density Residential	V.L.D.R. or VLO Res	15
RE-35 RE-24 R1-18 R1-14	Single Family, 35000 S.F. min. Single Family, 24000 S.F. min Single Family, 18000 S.F. min Single Family, 14000 S.F. min.	Low Density Residential	L.D.R. or LO RES	25
RI-10 RI-8 RI-6 R-0	Single Family, 10000 S.F. min. Single Family, 8000 S.F. min Single Family, 6000 S.F. min Residential Office	Medium Density Residential	M.D.R. or MED RES	45
R-2 R-3 R-3A R-4 R-4A R-5 CP/BP R-H	Multi-Family, 4000 S.F. per unit Multi-Family, 3000 S.F. per unit Multi Family Multi-Family, 1500 S.F. per unit Multi-Family, 1000 S.F. per unit Multi-Family, 1000 S.F. per unit Business Park Resort District	Multiple Family Residential	M.F.R. or. MF RES	65
C-1 C-2 C-3 C-O H-R CP/GCP	Neighborhood Commercial Intermediate Commercial General Commercial Commercial Office/Restricted Comm. High Rise District General Commerce Park	Commercial	COMM or COMM.	90
IND PARK A-1 A-2	Industrial Park Light Industrial Heavy Industrial	Industrial	IND or INDUST.	75
PAD	Planned Area Development	Variable	---	Variable
PSC	Planned Shopping Center	Planned Shopping Center	PSC or PLND.SHP	85
P-1	Parking (Open)	Parking	PARKING	Variable
P-2	Parking (Structure)	Parking	PARKING	85
MISCELLANEOUS CATEGORIES: Evaluated On A Case By Case Basis				
		Desert Cover	DESERT	0
		Undeveloped Parcel	VACANT or OPEN	0
		Golf Course	GC	0
		Park	PARK	0
		School	SCHOOL	Variable
		Airport	AIRPORT	Variable

Green-Ampt Parameters
(Existing Condition)

TABLE 8

Average Green-Ampt Parameters (Existing Conditions)

Sub-Basin	IA(in)	DTHETA	PSIF (in)	XKSAT(in/Hr.)	RTIMP (%)
356	0.133	0.232	6.96	0.150	49.41
357	0.100	0.170	7.32	0.126	53.19
358	0.133	0.193	7.32	0.129	48.86
359	0.339	0.346	3.50	0.291	4.01
360	0.296	0.307	7.50	0.115	19.10
361	0.137	0.165	8.60	0.070	40.78
362	0.128	0.161	8.60	0.070	50.44
363	0.100	0.150	8.05	0.092	63.39
364	0.110	0.254	3.50	0.291	46.41
365	0.275	0.312	3.50	0.324	13.42
366	0.169	0.278	3.61	0.308	53.80
367	0.170	0.265	3.66	0.384	40.82
369	0.151	0.278	6.60	0.178	42.81
370	0.106	0.152	8.05	0.094	47.41
371	0.122	0.260	4.74	0.243	52.72
372	0.100	0.250	3.50	0.286	71.31
373	0.099	0.241	3.55	0.299	52.04
374	0.111	0.256	5.05	0.226	73.45
376	0.137	0.216	7.14	0.139	40.10
377	0.104	0.152	7.50	0.117	41.53
378	0.128	0.265	5.98	0.199	46.41
379	0.108	0.251	5.36	0.228	45.97
380	0.100	0.250	3.98	0.393	49.90
382A	0.125	0.164	7.50	0.121	43.33
382B	0.109	0.256	6.60	0.174	36.65
383	0.114	0.239	6.78	0.163	36.67
384	0.186	0.288	4.12	0.267	37.15
385	0.104	0.152	8.05	0.093	49.63
387	0.155	0.189	7.78	0.105	33.91
388	0.151	0.278	5.98	0.200	40.04

TABLE 8

Average Green-Ampt Parameters (Existing Conditions)

Sub-Basin	IA(in)	DTHETA	PSIF (in)	XKSAT(in/Hr.)	RTIMP (%)
389	0.165	0.189	8.05	0.093	43.70
390	0.136	0.164	8.40	0.058	40.20
391	0.171	0.193	8.05	0.093	36.61
406	0.240	0.317	4.74	0.244	23.40

LOSS PARAMETERS FOR SUBBASIN: 356

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.084	36.18	0.25	-0.218	0.00	0.00
Mr	0.078	33.43	0.05	-0.435	0.00	0.00
Es	0.063	27.08	0.25	-0.163	0.00	0.00
Vf	0.008	3.30	0.01	-0.066	0.00	0.00
TOTAL =	0.233 SQ.MI.		XKSAT =	0.13	%ROCK=	0.00

DTHETA

Dry = 0.38
Normal = 0.21
Wet = 0

PSIF

= 6.96

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.031	VACANT	13.18	DRY	25.00	0.00	0.00	0.35	0.046
0.015	M.F.R.	6.22	NORMAL	25.00	65.00	0.01	0.10	0.006
0.127	M.D.R.	54.68	NORMAL	25.00	45.00	0.06	0.10	0.055
0.040	IND	17.12	NORMAL	20.00	75.00	0.03	0.10	0.017
0.021	COMM	8.80	NORMAL	20.00	90.00	0.02	0.10	0.009
0.233	=TOTAL AREA	OK	AVERAGE =	23.70	TOTAL =	0.12	AVG. =	0.133
					% =	49.41		

PERCENT OF SUBBASIN

DRY = 13.18 %
NORMAL = 86.82 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.232

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.150

IMPERVIOUS AREA:

URBAN @ 100 % effective = 49.41
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 49.41

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
356	0.233	0.910	0.030	22.00	0.133	0.232	6.96	0.150	49.41

LOSS PARAMETERS FOR SUBBASIN: 357

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.159	72.62	0.25	-0.437	0.00	0.00
Vf	0.048	21.73	0.01	-0.435	0.00	0.00
Mr	0.012	5.65	0.05	-0.073	0.00	0.00
TOTAL =	0.220 SQ.MI.		XKSAT =	0.11	%ROCK=	0.00

DTHETA

Dry =	0.36
Normal =	0.17
Wet =	0

PSIF

= 7.32

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.160	M.D.R.	72.71	NORMAL	25.00	45.00	0.07	0.10	0.073
0.060	IND	27.29	NORMAL	20.00	75.00	0.04	0.10	0.027
0.220	=TOTAL AREA OK		AVERAGE =	23.64	TOTAL =	0.12	AVG. =	0.100
					% =	53.19		

PERCENT OF SUBBASIN

DRY =	0.00 %
NORMAL =	100.00 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.170

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.126

IMPERVIOUS AREA:

URBAN @	100 %	effective =	53.19
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		53.19

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
357	0.220	0.750	0.027	27.00	0.100	0.170	7.32	0.126	53.19

LOSS PARAMETERS FOR SUBBASIN: 358

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.188	44.74	0.25	-0.269	0.00	0.00
Mr	0.108	25.82	0.05	-0.336	0.00	0.00
Es	0.065	15.58	0.25	-0.094	0.00	0.00
Vf	0.058	13.86	0.01	-0.277	0.00	0.00
TOTAL =	0.419 SQ.MI.		XKSAT =	0.11	%ROCK=	0.00

DTHETA

Dry = 0.36
Normal = 0.17
Wet = 0

PSIF

= 7.32

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.051	VACANT	12.22	DRY	25.00	0.00	0.00	0.35	0.043
0.059	M.F.R.	14.05	NORMAL	25.00	65.00	0.04	0.10	0.014
0.226	M.D.R.	53.83	NORMAL	25.00	45.00	0.10	0.10	0.054
0.072	COMM	17.23	NORMAL	20.00	90.00	0.06	0.10	0.017
0.011	PARK	2.67	NORMAL	90.00	0.00	0.00	0.20	0.005
0.419	=TOTAL AREA	OK	AVERAGE =	25.88	TOTAL =	0.20	AVG. =	0.133
					% =	48.86		

PERCENT OF SUBBASIN
DRY = 12.22 %
NORMAL = 87.78 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.193

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.129

IMPERVIOUS AREA:
URBAN @ 100 % effective = 48.86
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 48.86

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
358	0.419	1.740	0.027	20.00	0.133	0.193	7.32	0.129	48.86

LOSS PARAMETERS FOR SUBBASIN: 359

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.065	100.00	0.25	-0.602	0.00	0.00

TOTAL = 0.065 SQ.MI. XKSAT = 0.25 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.35	=	3.5
Normal =	0.25		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.062	VACANT	95.55	DRY	25.00	0.00	0.00	0.35	0.334
0.003	COMM	4.45	NORMAL	20.00	90.00	0.00	0.10	0.004
0.065	=TOTAL AREA	OK	AVERAGE =	24.78	TOTAL = % =	0.00 4.01	AVG. =	0.339

PERCENT OF SUBBASIN DRY = 95.55 %
NORMAL = 4.45 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.346

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.291

IMPERVIOUS AREA: URBAN @ 100 % effective = 4.01
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 4.01

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
359	0.065	0.310	0.056	84.00	0.339	0.346	3.50	0.291	4.01

LOSS PARAMETERS FOR SUBBASIN: 360

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.157	36.34	0.05	-0.473	0.00	0.00
Mp	0.086	19.86	0.25	-0.120	0.00	0.00
LcA	0.086	19.84	0.25	-0.119	0.00	0.00
Vf	0.051	11.73	0.01	-0.235	0.00	0.00
Tc	0.045	10.34	0.4	-0.041	0.00	0.00
Th	0.008	1.90	0.04	-0.027	0.00	0.00

TOTAL = 0.432 SQ.MI. XKSAT = 0.10 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.35	=	7.5
Normal =	0.15		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.338	VACANT	78.38	DRY	25.00	0.00	0.00	0.35	0.274
0.011	IND	2.43	NORMAL	20.00	75.00	0.01	0.10	0.002
0.083	COMM	19.19	NORMAL	20.00	90.00	0.07	0.10	0.019
0.432	=TOTAL AREA	OK	AVERAGE =	23.92	TOTAL =	0.08	AVG. =	0.296
					% =	19.10		

PERCENT OF SUBBASIN DRY = 78.38 %
NORMAL = 21.62 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.307

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.115

IMPERVIOUS AREA: URBAN @ 100 % effective = 19.10
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 19.10

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
360	0.432	1.120	0.042	25.00	0.296	0.307	7.50	0.115	19.10

LOSS PARAMETERS FOR SUBBASIN: 361

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.049	37.94	0.05	-0.494	0.00	0.00
Vf	0.032	24.58	0.01	-0.492	0.00	0.00
LcA	0.031	24.04	0.25	-0.145	0.00	0.00
Mp	0.018	13.44	0.25	-0.081	0.00	0.00

TOTAL = 0.130 SQ.MI. XKSAT = 0.06 %ROCK= 0.00

DTHETA

Dry = 0.25
Normal = 0.15
Wet = 0

PSIF

= 8.6

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.019	VACANT	14.90	DRY	25.00	0.00	0.00	0.35	0.052
0.016	M.F.R.	12.44	NORMAL	25.00	65.00	0.01	0.10	0.012
0.095	M.D.R.	72.66	NORMAL	25.00	45.00	0.04	0.10	0.073
0.130	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.05	AVG. =	0.137
					% =	40.78		

PERCENT OF SUBBASIN DRY = 14.90 %
NORMAL = 85.10 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.165

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.070

IMPERVIOUS AREA: URBAN @ 100 % effective = 40.78
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 40.78

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
361	0.130	0.630	0.032	22.00	0.137	0.165	8.60	0.070	40.78

LOSS PARAMETERS FOR SUBBASIN: 362

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.063	41.32	0.05	-0.538	0.00	0.00
Mp	0.050	32.90	0.25	-0.198	0.00	0.00
Vf	0.034	22.00	0.01	-0.440	0.00	0.00
Es	0.006	3.79	0.25	-0.023	0.00	0.00

TOTAL = 0.153 SQ.MI. XKSAT = 0.06 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.25	=	8.6
Normal =	0.15		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.017	VACANT	11.10	DRY	25.00	0.00	0.00	0.35	0.039
0.052	M.F.R.	33.94	NORMAL	25.00	65.00	0.03	0.10	0.034
0.072	M.D.R.	46.87	NORMAL	25.00	45.00	0.03	0.10	0.047
0.012	COMM	8.09	NORMAL	20.00	90.00	0.01	0.10	0.008
0.153	=TOTAL AREA	OK	AVERAGE =	24.60	TOTAL =	0.08	AVG. =	0.128
					% =	50.44		

PERCENT OF SUBBASIN DRY = 11.10 %
NORMAL = 88.90 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.161

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.070

IMPERVIOUS AREA: URBAN @ 100 % effective = 50.44
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 50.44

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
362	0.153	0.990	0.030	35.00	0.128	0.161	8.60	0.070	50.44

LOSS PARAMETERS FOR SUBBASIN: 363

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.041	28.97	0.05	-0.377	0.00	0.00
GgA	0.038	26.83	0.25	-0.162	0.00	0.00
Mp	0.034	24.48	0.25	-0.147	0.00	0.00
Vf	0.028	19.72	0.01	-0.394	0.00	0.00

TOTAL = 0.141 SQ.MI. XKSAT = 0.08 %ROCK= 0.00

DTHETA

Dry = 0.3
Normal = 0.15
Wet = 0

PSIF

= 8.05

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.049	M.F.R.	34.52	NORMAL	25.00	65.00	0.03	0.10	0.035
0.050	M.D.R.	35.37	NORMAL	25.00	45.00	0.02	0.10	0.035
0.019	IND	13.74	NORMAL	20.00	75.00	0.01	0.10	0.014
0.023	COMM	16.37	NORMAL	20.00	90.00	0.02	0.10	0.016
0.141	=TOTAL AREA	OK	AVERAGE =	23.49	TOTAL =	0.09	AVG. =	0.100
					% =	63.39		

PERCENT OF SUBBASIN
DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.092

IMPERVIOUS AREA:
URBAN @ 100 % effective = 63.39
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 63.39

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
363	0.141	0.700	0.028	20.00	0.100	0.150	8.05	0.092	63.39

LOSS PARAMETERS FOR SUBBASIN: 364

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.127	93.72	0.25	-0.564	0.00	0.00
Es	0.009	6.28	0.25	-0.038	0.00	0.00
TOTAL =	0.135 SQ.MI.		XKSAT =	0.25	%ROCK=	0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.5

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.005	VACANT	3.91	DRY	25.00	0.00	0.00	0.35	0.014
0.022	M.F.R.	15.88	NORMAL	25.00	65.00	0.01	0.10	0.016
0.109	M.D.R.	80.21	NORMAL	25.00	45.00	0.05	0.10	0.080
0.135	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.06	AVG. =	0.110
					% =	46.41		

PERCENT OF SUBBASIN

DRY = 3.91 %
NORMAL = 96.09 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.254

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.291

IMPERVIOUS AREA:

URBAN @ 100 % effective = 46.41
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 46.41

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
364	0.135	0.630	0.029	17.00	0.110	0.254	3.50	0.291	46.41

LOSS PARAMETERS FOR SUBBASIN: 365

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.092	100.00	0.25	-0.602	0.00	0.00

TOTAL = 0.092 SQ.MI. XKSAT = 0.25 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.35	=	3.5
Normal =	0.25		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.057	VACANT	62.23	DRY	25.00	0.00	0.00	0.35	0.218
0.005	M.F.R.	5.79	NORMAL	25.00	65.00	0.00	0.10	0.006
0.012	IND	12.88	NORMAL	20.00	75.00	0.01	0.10	0.013
0.018	PARK	19.10	NORMAL	90.00	0.00	0.00	0.20	0.038
0.092	=TOTAL AREA	OK	AVERAGE =	36.77	TOTAL = % =	0.01 13.42	AVG. =	0.275

PERCENT OF SUBBASIN DRY = 62.23 %
NORMAL = 37.77 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.312

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.324

IMPERVIOUS AREA: URBAN @ 100 % effective = 13.42
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 13.42

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
365	0.092	0.310	0.046	61.00	0.275	0.312	3.50	0.324	13.42

LOSS PARAMETERS FOR SUBBASIN: 366

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.050	43.62	0.25	-0.263	0.00	0.00
Ge	0.047	40.82	0.26	-0.239	0.00	0.00
Ma	0.010	8.83	0.4	-0.035	0.00	0.00
AbA	0.008	6.73	0.38	-0.028	0.00	0.00

TOTAL = 0.114 SQ.MI. XKSAT = 0.27 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.35	=	3.61
Normal =	0.25		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.032	VACANT	27.53	DRY	25.00	0.00	0.00	0.35	0.096
0.036	M.F.R.	31.03	NORMAL	25.00	65.00	0.02	0.10	0.031
0.028	IND	24.39	NORMAL	20.00	75.00	0.02	0.10	0.024
0.020	COMM	17.05	NORMAL	20.00	90.00	0.02	0.10	0.017
0.114	=TOTAL AREA	OK	AVERAGE =	22.93	TOTAL =	0.06	AVG. =	0.169
					% =	53.80		

PERCENT OF SUBBASIN DRY = 27.53 %
NORMAL = 72.47 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.278

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.308

IMPERVIOUS AREA: URBAN @ 100 % effective = 53.80
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 53.80

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
366	0.114	0.780	0.036	24.00	0.169	0.278	3.61	0.308	53.80

LOSS PARAMETERS FOR SUBBASIN: 367

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Va	0.076	30.23	0.39	-0.124	0.00	0.00
GgA	0.061	24.04	0.25	-0.145	0.00	0.00
Es	0.039	15.42	0.25	-0.093	0.00	0.00
Tc	0.030	12.00	0.4	-0.048	0.00	0.00
Vh	0.020	7.91	0.27	-0.045	0.00	0.00
Ao	0.015	6.00	0.04	-0.084	0.00	0.00
Ge	0.011	4.41	0.26	-0.026	0.00	0.00

TOTAL = 0.252 SQ.MI. XKSAT = 0.27 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.61

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.037	VACANT	14.78	DRY	25.00	0.00	0.00	0.35	0.052
0.132	IND	52.52	NORMAL	20.00	75.00	0.10	0.10	0.053
0.082	PARK	32.70	NORMAL	90.00	0.00	0.00	0.20	0.065
0.252	=TOTAL AREA	OK	AVERAGE =	43.63	TOTAL =	0.10	AVG. =	0.170
					% =	39.39		

PERCENT OF SUBBASIN
DRY = 14.78 %
NORMAL = 85.22 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.265

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.370

IMPERVIOUS AREA:
URBAN @ 100 % effective = 39.39
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 39.39

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
367	0.252	1.040	0.030	24.00	0.170	0.265	3.61	0.370	39.39

LOSS PARAMETERS FOR SUBBASIN: 369

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.315	31.66	0.25	-0.191	0.00	0.00
Mr	0.313	31.40	0.05	-0.409	0.00	0.00
LcA	0.168	16.90	0.25	-0.102	0.00	0.00
Vf	0.104	10.44	0.01	-0.209	0.00	0.00
Tc	0.058	5.86	0.4	-0.023	0.00	0.00
Th	0.028	2.83	0.04	-0.040	0.00	0.00
Tu	0.009	0.90	0.25	-0.005	0.00	0.00

TOTAL = 0.995 SQ.MI. XKSAT = 0.11 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.36	=	7.32
Normal =	0.17		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.185	VACANT	18.56	DRY	25.00	0.00	0.00	0.35	0.065
0.017	V.L.D.R	1.71	NORMAL	25.00	15.00	0.00	0.10	0.002
0.017	L.D.R.	1.71	NORMAL	25.00	25.00	0.00	0.10	0.002
0.052	M.F.R.	5.20	NORMAL	25.00	65.00	0.03	0.10	0.005
0.508	M.D.R.	51.01	NORMAL	25.00	45.00	0.23	0.10	0.051
0.104	IND	10.46	NORMAL	20.00	75.00	0.08	0.10	0.010
0.067	COMM	6.74	NORMAL	20.00	90.00	0.06	0.10	0.007
0.046	PARK	4.61	NORMAL	90.00	0.00	0.00	0.20	0.009
0.995	=TOTAL AREA	OK	AVERAGE =	27.14	TOTAL =	0.41	AVG. =	0.151
					% =	40.93		

PERCENT OF SUBBASIN DRY = 18.56 %
NORMAL = 81.44 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.205

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.131

IMPERVIOUS AREA: URBAN @ 100 % effective = 40.93
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 40.93

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
369	0.995	1.710	0.027	21.00	0.151	0.205	7.32	0.131	40.93

LOSS PARAMETERS FOR SUBBASIN: 370

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.473	49.14	0.05	-0.639	0.00	0.00
Mp	0.209	21.68	0.25	-0.131	0.00	0.00
Vf	0.103	10.69	0.01	-0.214	0.00	0.00
GgA	0.066	6.80	0.25	-0.041	0.00	0.00
LcA	0.063	6.52	0.25	-0.039	0.00	0.00
Es	0.050	5.16	0.25	-0.031	0.00	0.00
TOTAL =	0.963 SQ.MI.		XKSAT =	0.08	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.3	=	8.05
Normal =	0.15		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.015	VACANT	1.56	DRY	25.00	0.00	0.00	0.35	0.005
0.068	M.F.R.	7.02	NORMAL	25.00	65.00	0.04	0.10	0.007
0.803	M.D.R.	83.36	NORMAL	25.00	45.00	0.36	0.10	0.083
0.057	COMM	5.93	NORMAL	20.00	90.00	0.05	0.10	0.006
0.021	PARK	2.14	NORMAL	90.00	0.00	0.00	0.20	0.004
0.963	=TOTAL AREA	OK	AVERAGE =	26.09	TOTAL =	0.46	AVG. =	0.106
					% =	47.41		

PERCENT OF SUBBASIN DRY = 1.56 %
NORMAL = 98.44 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.152

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.094

IMPERVIOUS AREA:

URBAN @	100 %	effective =	47.41
ROCK OUTCROP @	60 %	effective =	0.00
% EFFECTIVE IMP. =			47.41

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
370	0.963	1.800	0.023	22.00	0.106	0.152	8.05	0.094	47.41

LOSS PARAMETERS FOR SUBBASIN: 371

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.709	72.38	0.25	-0.436	0.00	0.00
Es	0.096	9.83	0.25	-0.059	0.00	0.00
Mp	0.089	9.10	0.25	-0.055	0.00	0.00
Mr	0.071	7.25	0.05	-0.094	0.00	0.00
Vf	0.014	1.45	0.01	-0.029	0.00	0.00

TOTAL = 0.980 SQ.MI. XKSAT = 0.21 %ROCK= 0.00

DTHETA

Dry = 0.37
Normal = 0.25
Wet = 0

PSIF

= 4.74

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.084	VACANT	8.52	DRY	25.00	0.00	0.00	0.35	0.030
0.035	M.F.R.	3.55	NORMAL	25.00	65.00	0.02	0.10	0.004
0.563	M.D.R.	57.44	NORMAL	25.00	45.00	0.25	0.10	0.057
0.136	IND	13.84	NORMAL	20.00	75.00	0.10	0.10	0.014
0.154	COMM	15.75	NORMAL	20.00	90.00	0.14	0.10	0.016
0.009	PARK	0.89	NORMAL	90.00	0.00	0.00	0.20	0.002
0.980	=TOTAL AREA	OK	AVERAGE =	24.10	TOTAL =	0.52	AVG. =	0.122
					% =	52.72		

PERCENT OF SUBBASIN
DRY = 8.52 %
NORMAL = 91.48 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.260

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.243

IMPERVIOUS AREA:
URBAN @ 100 % effective = 52.72
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 52.72

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
371	0.980	1.120	0.024	26.00	0.122	0.260	4.74	0.243	52.72

LOSS PARAMETERS FOR SUBBASIN: 372

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.034	100.00	0.25	-0.602	0.00	0.00
TOTAL =	0.034 SQ.MI.		XKSAT =	0.25	%ROCK=	0.00

DTHETA

Dry =	0.35
Normal =	0.25
Wet =	0

PSIF

= 3.5

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.013	M.F.R.	38.24	NORMAL	25.00	65.00	0.01	0.10	0.038
0.007	M.D.R.	20.29	NORMAL	25.00	45.00	0.00	0.10	0.020
0.014	COMM	41.47	NORMAL	20.00	90.00	0.01	0.10	0.041
0.034	=TOTAL AREA	OK	AVERAGE =	22.93	TOTAL =	0.02	AVG. =	0.100
					% =	71.31		

PERCENT OF SUBBASIN

DRY =	0.00 %
NORMAL =	100.00 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.286

IMPERVIOUS AREA:

URBAN @	100 %	effective =	71.31
ROCK OUTCROP @	60 %	effective =	0.00
% EFFECTIVE IMP. =			71.31

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
372	0.034	0.220	0.032	109.00	0.100	0.250	3.50	0.286	71.31

LOSS PARAMETERS FOR SUBBASIN: 373

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.776	80.39	0.25	-0.484	0.00	0.00
Aa	0.062	6.42	0.26	-0.038	0.00	0.00
Vh	0.039	4.06	0.27	-0.023	0.00	0.00
Ge	0.038	3.91	0.26	-0.023	0.00	0.00
Br	0.028	2.87	1.05	0.001	0.00	0.00
Vk	0.018	1.82	0.26	-0.011	0.00	0.00
Ma	0.005	0.53	0.4	-0.002	0.00	0.00

TOTAL = 0.965 SQ.MI. XKSAT = 0.26 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.55

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.009	VACANT	0.94	DRY	25.00	0.00	0.00	0.35	0.003
0.209	M.F.R.	21.68	NORMAL	25.00	65.00	0.14	0.10	0.022
0.612	M.D.R.	63.46	NORMAL	25.00	45.00	0.28	0.10	0.063
0.097	COMM	10.08	NORMAL	20.00	90.00	0.09	0.10	0.010
0.037	LAKE	3.85	WET	0.00	0.00	0.00	0.00	0.000

0.965 =TOTAL AREA OK AVERAGE = 23.53 TOTAL = 0.50 AVG. = 0.099
% = 51.71

PERCENT OF SUBBASIN DRY = 0.94 %
NORMAL = 95.21 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.241

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.299

IMPERVIOUS AREA: URBAN @ 100 % effective = 51.71
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 51.71

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
373	0.965	1.690	0.023	18.00	0.099	0.241	3.55	0.299	51.71

LOSS PARAMETERS FOR SUBBASIN: 374

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.655	87.24	0.25	-0.525	0.00	0.00
Ao	0.084	11.25	0.04	-0.157	0.00	0.00
Aa	0.011	1.52	0.26	-0.009	0.00	0.00
TOTAL =	0.751 SQ.MI.		XKSAT =	0.20	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.38	=	5.05
Normal =	0.25		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.033	VACANT	4.44	DRY	25.00	0.00	0.00	0.35	0.016
0.113	M.F.R.	15.08	NORMAL	25.00	65.00	0.07	0.10	0.015
0.137	M.D.R.	18.19	NORMAL	25.00	45.00	0.06	0.10	0.018
0.030	IND	3.98	NORMAL	20.00	75.00	0.02	0.10	0.004
0.438	COMM	58.31	NORMAL	20.00	90.00	0.39	0.10	0.058
0.751	=TOTAL AREA	OK	AVERAGE =	21.89	TOTAL =	0.55	AVG. =	0.111
					% =	73.45		

PERCENT OF SUBBASIN DRY = 4.44 %
NORMAL = 95.56 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.256

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.226

IMPERVIOUS AREA:

URBAN @	100 %	effective =	73.45
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		73.45

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
374	0.751	1.620	0.024	14.00	0.111	0.256	5.05	0.226	73.45

LOSS PARAMETERS FOR SUBBASIN: 376

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.352	35.71	0.25	-0.215	0.00	0.00
Mr	0.225	22.80	0.05	-0.297	0.00	0.00
Mp	0.100	10.12	0.25	-0.061	0.00	0.00
Le	0.053	5.41	0.04	-0.076	0.00	0.00
RbA	0.051	5.16	0.26	-0.030	0.00	0.00
Te	0.045	4.57	0.25	-0.028	0.00	0.00
Tg	0.033	3.34	0.04	-0.047	0.00	0.00
TfB	0.014	1.38	0.36	-0.006	0.00	0.00
GxA	0.009	0.91	0.23	-0.006	0.00	0.00
Tc	0.008	0.85	0.4	-0.003	0.00	0.00
Th	0.044	4.44	0.04	-0.062	0.00	0.00
Tw	0.011	1.15	0.05	-0.015	0.00	0.00
Vf	0.041	4.17	0.01	-0.083	0.00	0.00

TOTAL = 0.986 SQ.MI. XKSAT = 0.12 %ROCK= 0.00

DTHETA

Dry = 0.37
Normal = 0.19
Wet = 0

PSIF

= 7.14

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.144	VACANT	14.62	DRY	25.00	0.00	0.00	0.35	0.051
0.202	L.D.R.	20.49	NORMAL	25.00	25.00	0.05	0.10	0.020
0.091	M.F.R.	9.26	NORMAL	25.00	65.00	0.06	0.10	0.009
0.466	M.D.R.	47.26	NORMAL	25.00	45.00	0.21	0.10	0.047
0.083	COMM	8.37	NORMAL	20.00	90.00	0.07	0.10	0.008
0.986	=TOTAL AREA	OK	AVERAGE =	24.58	TOTAL = % =	0.39 39.94	AVG. =	0.137

PERCENT OF SUBBASIN DRY = 14.62 %
NORMAL = 85.38 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.216

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.139

IMPERVIOUS AREA: URBAN @ 100 % effective = 39.94
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 39.94

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
376	0.986	1.680	0.029	20.00	0.137	0.216	7.14	0.139	39.94

LOSS PARAMETERS FOR SUBBASIN: 377

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.434	43.55	0.05	-0.567	0.00	0.00
LcA	0.235	23.60	0.25	-0.142	0.00	0.00
Le	0.045	4.47	0.04	-0.062	0.00	0.00
GgA	0.044	4.44	0.25	-0.027	0.00	0.00
LcB	0.025	2.55	0.25	-0.015	0.00	0.00
Mp	0.017	1.67	0.25	-0.010	0.00	0.00
Lb	0.015	1.46	0.4	-0.006	0.00	0.00
Bs	0.011	1.13	0.39	-0.005	0.00	0.00
Ta	0.010	0.97	0.25	-0.006	0.00	0.00
Es	0.007	0.67	0.25	-0.004	0.00	0.00
Tc	0.018	1.76	0.4	-0.007	0.00	0.00
Tg	0.057	5.68	0.04	-0.079	0.00	0.00
Th	0.009	0.88	0.04	-0.012	0.00	0.00
Tw	0.049	4.96	0.05	-0.065	0.00	0.00
Vf	0.022	2.21	0.01	-0.044	0.00	0.00

TOTAL = 0.996 SQ.MI. XKSAT = 0.09 %ROCK= 0.00

DTHETA

Dry = 0.33
Normal = 0.15
Wet = 0

PSIF

= 7.78

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.009	VACANT	0.92	DRY	25.00	0.00	0.00	0.35	0.003
0.016	V.L.D.R	1.65	NORMAL	25.00	15.00	0.00	0.10	0.002
0.194	L.D.R.	19.51	NORMAL	25.00	25.00	0.05	0.10	0.020
0.018	M.F.R.	1.82	NORMAL	25.00	65.00	0.01	0.10	0.002
0.725	M.D.R.	72.80	NORMAL	25.00	45.00	0.33	0.10	0.073
0.018	COMM	1.85	NORMAL	20.00	90.00	0.02	0.10	0.002
0.015	PARK	1.46	NORMAL	90.00	0.00	0.00	0.20	0.003
0.996	=TOTAL AREA	OK	AVERAGE =	25.85	TOTAL =	0.41	AVG. =	0.104
					% =	40.73		

PERCENT OF SUBBASIN DRY = 0.92 %
NORMAL = 99.08 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.152

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.106

IMPERVIOUS AREA:	URBAN @	100 % effective =	40.73
	ROCK OUTCROP @	60 % effective =	0.00
		% EFFECTIVE IMP. =	40.73

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
377	0.996	1.850	0.027	21.00	0.104	0.152	7.78	0.106	40.73

LOSS PARAMETERS FOR SUBBASIN: 378

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.593	59.54	0.05	-0.775	0.00	0.00
Le	0.170	17.03	0.04	-0.238	0.00	0.00
LcA	0.067	6.69	0.25	-0.040	0.00	0.00
Mp	0.061	6.14	0.25	-0.037	0.00	0.00
GgA	0.023	2.26	0.25	-0.014	0.00	0.00
Te	0.021	2.11	0.25	-0.013	0.00	0.00
Es	0.015	1.53	0.25	-0.009	0.00	0.00
Lb	0.011	1.12	0.4	-0.004	0.00	0.00
AbA	0.011	1.06	0.38	-0.004	0.00	0.00
Tg	0.008	0.80	0.04	-0.011	0.00	0.00
Vf	0.017	1.72	0.01	-0.034	0.00	0.00

TOTAL = 0.996 SQ.MI. XKSAT = 0.07 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.28	=	8.28
Normal =	0.15		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.105	VACANT	10.52	DRY	25.00	0.00	0.00	0.35	0.037
0.027	M.F.R.	2.70	NORMAL	25.00	65.00	0.02	0.10	0.003
0.727	M.D.R.	73.01	NORMAL	25.00	45.00	0.33	0.10	0.073
0.007	IND	0.67	NORMAL	20.00	75.00	0.01	0.10	0.001
0.113	COMM	11.33	NORMAL	20.00	90.00	0.10	0.10	0.011
0.018	PARK	1.77	NORMAL	90.00	0.00	0.00	0.20	0.004
0.996	=TOTAL AREA	OK	AVERAGE =	25.55	TOTAL =	0.45	AVG. =	0.128
					% =	45.31		

PERCENT OF SUBBASIN DRY = 10.52 %
NORMAL = 89.48 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.164

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.082

IMPERVIOUS AREA: URBAN @ 100 % effective = 45.31
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 45.31

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
378	0.996	1.770	0.024	19.00	0.128	0.164	8.28	0.082	45.31

LOSS PARAMETERS FOR SUBBASIN: 379

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.405	40.69	0.25	-0.245	0.00	0.00
Es	0.082	8.28	0.25	-0.050	0.00	0.00
Le	0.069	6.90	0.04	-0.096	0.00	0.00
LcA	0.066	6.65	0.25	-0.040	0.00	0.00
Mp	0.037	3.67	0.25	-0.022	0.00	0.00
Bs	0.027	2.72	0.39	-0.011	0.00	0.00
Aa	0.014	1.45	0.26	-0.008	0.00	0.00
Ge	0.011	1.15	0.26	-0.007	0.00	0.00
Cb	0.007	0.68	0.4	-0.003	0.00	0.00
Ma	0.007	0.65	0.4	-0.003	0.00	0.00
Mr	0.180	18.06	0.05	-0.235	0.00	0.00
Tt	0.009	0.87	0.04	-0.012	0.00	0.00
Tw	0.013	1.27	0.05	-0.016	0.00	0.00
Vh	0.069	6.95	0.27	-0.040	0.00	0.00
TOTAL =	0.995 SQ.MI.		XKSAT =	0.16	%ROCK=	0.00

DTHETA

Dry = 0.4
Normal = 0.25
Wet = 0

PSIF

= 6.29

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.010	VACANT	1.03	DRY	25.00	0.00	0.00	0.35	0.004
0.041	M.F.R.	4.12	NORMAL	25.00	65.00	0.03	0.10	0.004
0.850	M.D.R.	85.41	NORMAL	25.00	45.00	0.38	0.10	0.085
0.041	COMM	4.07	NORMAL	20.00	90.00	0.04	0.10	0.004
0.053	PARK	5.37	NORMAL	90.00	0.00	0.00	0.20	0.011
0.995	=TOTAL AREA	OK	AVERAGE =	28.28	TOTAL =	0.45	AVG. =	0.108
					% =	44.77		

PERCENT OF SUBBASIN

DRY = 1.03 %
NORMAL = 98.97 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.252

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.192

IMPERVIOUS AREA:

URBAN @ 100 % effective = 44.77
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 44.77

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
379	0.995	1.570	0.023	30.00	0.108	0.252	6.29	0.192	44.77

LOSS PARAMETERS FOR SUBBASIN: 380

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.186	52.29	0.25	-0.315	0.00	0.00
Vg	0.065	18.35	0.91	-0.008	0.00	0.00
Vh	0.057	16.10	0.27	-0.092	0.00	0.00
Bs	0.035	9.68	0.39	-0.040	0.00	0.00
Ma	0.007	1.88	0.4	-0.007	0.00	0.00
Ge	0.006	1.71	0.26	-0.010	0.00	0.00

TOTAL = 0.357 SQ.MI. XKSAT = 0.34 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.98

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.307	M.D.R.	85.97	NORMAL	25.00	45.00	0.14	0.10	0.086
0.034	IND	9.42	NORMAL	20.00	75.00	0.03	0.10	0.009
0.016	COMM	4.60	NORMAL	20.00	90.00	0.01	0.10	0.005
0.357	=TOTAL AREA	OK	AVERAGE =	24.30	TOTAL = % =	0.18 49.90	AVG. =	0.100

PERCENT OF SUBBASIN
DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.393

IMPERVIOUS AREA:
URBAN @ 100 % effective = 49.90
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 49.90

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
380	0.357	1.540	0.025	12.00	0.100	0.250	3.98	0.393	49.90

LOSS PARAMETERS FOR SUBBASIN: 382A

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.137	58.15	0.05	-0.757	0.00	0.00
LcA	0.091	38.78	0.25	-0.233	0.00	0.00
Mp	0.007	3.07	0.25	-0.018	0.00	0.00

TOTAL = 0.235 SQ.MI. XKSAT = 0.10 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.15
Wet = 0

PSIF

= 7.5

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.017	VACANT	7.24	DRY	25.00	0.00	0.00	0.35	0.025
0.175	M.D.R.	74.58	NORMAL	25.00	45.00	0.08	0.10	0.075
0.026	COMM	10.86	NORMAL	20.00	90.00	0.02	0.10	0.011
0.017	PARK	7.32	NORMAL	90.00	0.00	0.00	0.20	0.015
0.235	=TOTAL AREA	OK	AVERAGE =	29.22	TOTAL =	0.10	AVG. =	0.125
					% =	43.33		

PERCENT OF SUBBASIN
DRY = 7.24 %
NORMAL = 92.76 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.164

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.121

IMPERVIOUS AREA:
URBAN @ 100 % effective = 43.33
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 43.33

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
382A	0.235	0.720	0.028	29.00	0.125	0.164	7.50	0.121	43.33

LOSS PARAMETERS FOR SUBBASIN: 382B

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.437	59.75	0.25	-0.360	0.00	0.00
Mr	0.171	23.29	0.05	-0.303	0.00	0.00
Le	0.040	5.49	0.04	-0.077	0.00	0.00
RbA	0.037	5.05	0.26	-0.030	0.00	0.00
Tw	0.020	2.66	0.05	-0.035	0.00	0.00
Tu	0.012	1.69	0.25	-0.010	0.00	0.00
Th	0.008	1.09	0.04	-0.015	0.00	0.00
Vf	0.007	0.97	0.01	-0.019	0.00	0.00

TOTAL = 0.732 SQ.MI. XKSAT = 0.14 %ROCK= 0.00

DTHETA

Dry = 0.39
Normal = 0.23
Wet = 0

PSIF

= 6.78

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.028	VACANT	3.78	DRY	25.00	0.00	0.00	0.35	0.013
0.368	L.D.R.	50.23	NORMAL	25.00	25.00	0.09	0.10	0.050
0.286	M.D.R.	39.10	NORMAL	25.00	45.00	0.13	0.10	0.039
0.050	COMM	6.89	NORMAL	20.00	90.00	0.05	0.10	0.007
0.732	=TOTAL AREA	OK	AVERAGE =	24.66	TOTAL = % =	0.27 36.35	AVG. =	0.109

PERCENT OF SUBBASIN DRY = 3.78 %
NORMAL = 96.22 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.236

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.163

IMPERVIOUS AREA: URBAN @ 100 % effective = 36.35
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 36.35

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
382B	0.732	1.410	0.034	22.00	0.109	0.236	6.78	0.163	36.35

LOSS PARAMETERS FOR SUBBASIN: 383

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.421	42.53	0.25	-0.256	0.00	0.00
Mr	0.332	33.52	0.05	-0.436	0.00	0.00
Tw	0.067	6.74	0.05	-0.088	0.00	0.00
Mp	0.056	5.63	0.25	-0.034	0.00	0.00
Te	0.041	4.11	0.25	-0.025	0.00	0.00
Le	0.028	2.83	0.04	-0.040	0.00	0.00
Vf	0.024	2.40	0.01	-0.048	0.00	0.00
RbA	0.022	2.23	0.26	-0.013	0.00	0.00

TOTAL = 0.990 SQ.MI. XKSAT = 0.12 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.37	=	7.14
Normal =	0.19		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.057	VACANT	5.79	DRY	25.00	0.00	0.00	0.35	0.020
0.495	L.D.R.	49.95	NORMAL	25.00	25.00	0.12	0.10	0.050
0.061	M.F.R.	6.12	NORMAL	25.00	65.00	0.04	0.10	0.006
0.338	M.D.R.	34.10	NORMAL	25.00	45.00	0.15	0.10	0.034
0.040	COMM	4.05	NORMAL	20.00	90.00	0.04	0.10	0.004
0.990	=TOTAL AREA	OK	AVERAGE =	24.80	TOTAL =	0.35	AVG. =	0.114
					% =	35.45		

PERCENT OF SUBBASIN DRY = 5.79 %
NORMAL = 94.21 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.200

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.140

IMPERVIOUS AREA: URBAN @ 100 % effective = 35.45
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 35.45

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
383	0.990	1.470	0.033	20.00	0.114	0.200	7.14	0.140	35.45

LOSS PARAMETERS FOR SUBBASIN: 384

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.450	45.41	0.25	-0.273	0.00	0.00
Mr	0.328	33.06	0.05	-0.430	0.00	0.00
Mp	0.057	5.78	0.25	-0.035	0.00	0.00
Le	0.056	5.65	0.04	-0.079	0.00	0.00
LcB	0.022	2.20	0.25	-0.013	0.00	0.00
TfB	0.013	1.34	0.36	-0.006	0.00	0.00
Cp	0.011	1.12	0.4	-0.004	0.00	0.00
Te	0.011	1.07	0.25	-0.006	0.00	0.00
GgA	0.010	1.03	0.25	-0.006	0.00	0.00
PeA	0.006	0.61	0.37	-0.003	0.00	0.00
Tg	0.013	1.29	0.04	-0.018	0.00	0.00
Th	0.006	0.56	0.04	-0.008	0.00	0.00
Vf	0.009	0.87	0.01	-0.017	0.00	0.00

TOTAL = 0.991 SQ.MI. XKSAT = 0.13 %ROCK= 0.00

DTHETA

Dry = 0.38
Normal = 0.21
Wet = 0

PSIF

= 6.96

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.341	VACANT	34.38	DRY	25.00	0.00	0.00	0.35	0.120
0.613	M.D.R.	61.91	NORMAL	25.00	45.00	0.28	0.10	0.062
0.037	COMM	3.72	NORMAL	20.00	90.00	0.03	0.10	0.004

0.991 =TOTAL AREA OK AVERAGE = 24.81 TOTAL = 0.31 AVG. = 0.186
% = 31.20

PERCENT OF SUBBASIN DRY = 34.38 %
NORMAL = 65.62 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.268

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.151

IMPERVIOUS AREA: URBAN @ 100 % effective = 31.20
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 31.20

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
384	0.991	1.480	0.029	15.00	0.186	0.268	6.96	0.151	31.20

LOSS PARAMETERS FOR SUBBASIN: 385

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.252	44.32	0.05	-0.577	0.00	0.00
LcA	0.125	22.06	0.25	-0.133	0.00	0.00
Le	0.099	17.45	0.04	-0.244	0.00	0.00
Tt	0.023	4.06	0.04	-0.057	0.00	0.00
Tw	0.017	2.97	0.05	-0.039	0.00	0.00
Vf	0.016	2.76	0.01	-0.055	0.00	0.00
Ao	0.011	1.88	0.04	-0.026	0.00	0.00
Ta	0.009	1.65	0.25	-0.010	0.00	0.00
GgA	0.009	1.60	0.25	-0.010	0.00	0.00
Mp	0.007	1.23	0.25	-0.007	0.00	0.00

TOTAL = 0.568 SQ.MI. XKSAT = 0.07 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.28	=	8.28
Normal =	0.15		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.009	VACANT	1.58	DRY	25.00	0.00	0.00	0.35	0.006
0.477	M.D.R.	83.99	NORMAL	25.00	45.00	0.21	0.10	0.084
0.055	IND	9.64	NORMAL	20.00	75.00	0.04	0.10	0.010
0.027	COMM	4.79	NORMAL	20.00	90.00	0.02	0.10	0.005
0.568	=TOTAL AREA	OK	AVERAGE =	24.28	TOTAL =	0.28	AVG. =	0.104
					% =	49.33		

PERCENT OF SUBBASIN DRY = 1.58 %
NORMAL = 98.42 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.152

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.081

IMPERVIOUS AREA: URBAN @ 100 % effective = 49.33
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 49.33

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
385	0.568	1.630	0.024	11.00	0.104	0.152	8.28	0.081	49.33

LOSS PARAMETERS FOR SUBBASIN: 387

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.284	30.03	0.05	-0.391	0.00	0.00
LcA	0.259	27.41	0.25	-0.165	0.00	0.00
Tw	0.229	24.17	0.05	-0.314	0.00	0.00
Mp	0.072	7.60	0.25	-0.046	0.00	0.00
RbA	0.027	2.82	0.26	-0.017	0.00	0.00
Le	0.023	2.43	0.04	-0.034	0.00	0.00
Es	0.013	1.34	0.25	-0.008	0.00	0.00
Tg	0.008	0.83	0.04	-0.012	0.00	0.00
Tu	0.007	0.78	0.25	-0.005	0.00	0.00
PeA	0.007	0.71	0.37	-0.003	0.00	0.00
Vf	0.018	1.87	0.01	-0.037	0.00	0.00

TOTAL = 0.945 SQ.MI. XKSAT = 0.09 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.33	=	7.78
Normal =	0.15		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.206	VACANT	21.78	DRY	25.00	0.00	0.00	0.35	0.076
0.198	V.L.D.R	20.91	NORMAL	25.00	15.00	0.03	0.10	0.021
0.048	L.D.R.	5.11	NORMAL	25.00	25.00	0.01	0.10	0.005
0.343	M.D.R.	36.34	NORMAL	25.00	45.00	0.15	0.10	0.036
0.055	IND	5.84	NORMAL	20.00	75.00	0.04	0.10	0.006
0.087	COMM	9.17	NORMAL	20.00	90.00	0.08	0.10	0.009
0.008	PARK	0.85	NORMAL	90.00	0.00	0.00	0.20	0.002

0.945 =TOTAL AREA OK AVERAGE = 24.80 TOTAL = 0.32 AVG. = 0.155
% = 33.40

PERCENT OF SUBBASIN DRY = 21.78 %
NORMAL = 78.22 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.189

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.105

IMPERVIOUS AREA: URBAN @ 100 % effective = 33.40
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 33.40

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
387	0.945	1.630	0.032	20.00	0.155	0.189	7.78	0.105	33.40

LOSS PARAMETERS FOR SUBBASIN: 388

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.392	39.51	0.25	-0.238	0.00	0.00
Mr	0.193	19.44	0.05	-0.253	0.00	0.00
Mp	0.177	17.77	0.25	-0.107	0.00	0.00
Tw	0.092	9.25	0.05	-0.120	0.00	0.00
RbA	0.050	5.03	0.26	-0.029	0.00	0.00
GxA	0.030	3.02	0.23	-0.019	0.00	0.00
Vf	0.028	2.77	0.01	-0.055	0.00	0.00
Tu	0.023	2.31	0.25	-0.014	0.00	0.00
PeA	0.009	0.89	0.37	-0.004	0.00	0.00

TOTAL = 0.993 SQ.MI. XKSAT = 0.14 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.39	=	6.78
Normal =	0.23		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.196	VACANT	19.73	DRY	25.00	0.00	0.00	0.35	0.069
0.125	M.F.R.	12.62	NORMAL	25.00	65.00	0.08	0.10	0.013
0.619	M.D.R.	62.28	NORMAL	25.00	45.00	0.28	0.10	0.062
0.038	COMM	3.78	NORMAL	20.00	90.00	0.03	0.10	0.004
0.016	PARK	1.60	NORMAL	90.00	0.00	0.00	0.20	0.003
0.993	=TOTAL AREA	OK	AVERAGE =	25.85	TOTAL = % =	0.39 39.63	AVG. =	0.151

PERCENT OF SUBBASIN DRY = 19.73 %
NORMAL = 80.27 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.262

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.164

IMPERVIOUS AREA: URBAN @ 100 % effective = 39.63
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 39.63

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
388	0.993	2.110	0.026	14.00	0.151	0.262	6.78	0.164	39.63

LOSS PARAMETERS FOR SUBBASIN: 389

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.373	53.54	0.05	-0.697	0.00	0.00
LcA	0.150	21.49	0.25	-0.129	0.00	0.00
Le	0.060	8.56	0.04	-0.120	0.00	0.00
Vf	0.053	7.54	0.01	-0.151	0.00	0.00
Tg	0.048	6.86	0.04	-0.096	0.00	0.00
Mp	0.008	1.15	0.25	-0.007	0.00	0.00
Ms	0.006	0.86	0.01	-0.017	0.00	0.00
TOTAL =	0.697 SQ.MI.		XKSAT =	0.06	%ROCK=	0.00

DTHETA

Dry = 0.25
Normal = 0.15
Wet = 0

PSIF

= 8.6

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.180	VACANT	25.80	DRY	25.00	0.00	0.00	0.35	0.090
0.150	M.F.R.	21.57	NORMAL	25.00	65.00	0.10	0.10	0.022
0.295	M.D.R.	42.33	NORMAL	25.00	45.00	0.13	0.10	0.042
0.072	COMM	10.30	NORMAL	20.00	90.00	0.06	0.10	0.010
0.697	=TOTAL AREA	OK	AVERAGE =	24.49	TOTAL =	0.30	AVG. =	0.165
					% =	42.34		

PERCENT OF SUBBASIN
DRY = 25.80 %
NORMAL = 74.20 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.176

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.070

IMPERVIOUS AREA:
URBAN @ 100 % effective = 42.34
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 42.34

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
389	0.697	1.370	0.029	11.00	0.165	0.176	8.60	0.070	42.34

LOSS PARAMETERS FOR SUBBASIN: 390

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.282	31.62	0.05	-0.411	0.00	0.00
LcA	0.194	21.73	0.25	-0.131	0.00	0.00
Tw	0.168	18.88	0.05	-0.246	0.00	0.00
Vf	0.142	15.92	0.01	-0.318	0.00	0.00
Le	0.096	10.73	0.04	-0.150	0.00	0.00
Tu	0.010	1.11	0.25	-0.007	0.00	0.00

TOTAL = 0.891 SQ.MI. XKSAT = 0.05 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.25	=	8.4
Normal =	0.15		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.127	VACANT	14.30	DRY	25.00	0.00	0.00	0.35	0.050
0.016	V.L.D.R	1.82	NORMAL	25.00	15.00	0.00	0.10	0.002
0.065	L.D.R.	7.24	NORMAL	25.00	25.00	0.02	0.10	0.007
0.024	M.F.R.	2.64	NORMAL	25.00	65.00	0.02	0.10	0.003
0.598	M.D.R.	67.13	NORMAL	25.00	45.00	0.27	0.10	0.067
0.061	COMM	6.88	NORMAL	20.00	90.00	0.06	0.10	0.007

0.891 =TOTAL AREA OK AVERAGE = 24.66 TOTAL = 0.36 AVG. = 0.136
% = 40.20

PERCENT OF SUBBASIN DRY = 14.30 %
NORMAL = 85.70 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.164

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.058

IMPERVIOUS AREA: URBAN @ 100 % effective = 40.20
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 40.20

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
390	0.891	1.610	0.027	17.00	0.136	0.164	8.40	0.058	40.20

LOSS PARAMETERS FOR SUBBASIN: 391

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.218	29.48	0.05	-0.383	0.00	0.00
Tw	0.214	29.03	0.05	-0.378	0.00	0.00
LcA	0.149	20.23	0.25	-0.122	0.00	0.00
Vf	0.060	8.06	0.01	-0.161	0.00	0.00
Le	0.051	6.88	0.04	-0.096	0.00	0.00
Ao	0.040	5.43	0.04	-0.076	0.00	0.00
Mp	0.007	0.88	0.25	-0.005	0.00	0.00
TOTAL =	0.738 SQ.MI.		XKSAT =	0.06	%ROCK=	0.00

DTHETA

Dry =	0.25
Normal =	0.15
Wet =	0

PSIF

= 8.6

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.210	VACANT	28.43	DRY	25.00	0.00	0.00	0.35	0.100
0.057	M.F.R.	7.74	NORMAL	25.00	65.00	0.04	0.10	0.008
0.448	M.D.R.	60.71	NORMAL	25.00	45.00	0.20	0.10	0.061
0.023	COMM	3.12	NORMAL	20.00	90.00	0.02	0.10	0.003
0.738	=TOTAL AREA	OK	AVERAGE =	24.84	TOTAL =	0.26	AVG. =	0.171
					% =	35.16		

PERCENT OF SUBBASIN

DRY =	28.43 %
NORMAL =	71.57 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.178

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.070

IMPERVIOUS AREA:

URBAN @	100 %	effective =	35.16
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		35.16

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
391	0.738	1.050	0.029	19.00	0.171	0.178	8.60	0.070	35.16

LOSS PARAMETERS FOR SUBBASIN: 406

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP *	% Area %R.O.
LcA	0.447	53.99	0.25	-0.325	0.00	0.00
Mr	0.157	18.94	0.05	-0.246	0.00	0.00
Mp	0.135	16.24	0.25	-0.098	0.00	0.00
Vf	0.052	6.30	0.01	-0.126	0.00	0.00
GgA	0.026	3.18	0.25	-0.019	0.00	0.00
RbA	0.011	1.35	0.26	-0.008	0.00	0.00

TOTAL = 0.828 SQ.MI. XKSAT = 0.15 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.4	=	6.6
Normal =	0.25		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.464	VACANT	55.99	DRY	25.00	0.00	0.00	0.35	0.196
0.017	V.L.D.R	2.03	NORMAL	25.00	15.00	0.00	0.10	0.002
0.333	M.D.R.	40.22	NORMAL	25.00	45.00	0.15	0.10	0.040
0.015	COMM	1.76	NORMAL	20.00	90.00	0.01	0.10	0.002
0.828	=TOTAL AREA	OK	AVERAGE =	24.91	TOTAL =	0.17	AVG. =	0.240
					% =	19.99		

PERCENT OF SUBBASIN DRY = 55.99 %
NORMAL = 44.01 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.334

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.175

IMPERVIOUS AREA: URBAN @ 100 % effective = 19.99
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 19.99

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
406	0.828	1.320	0.034	19.00	0.240	0.334	6.60	0.175	19.99

Green-Ampt Parameters
(Future Condition)

TABLE 9

Average Green Ampt Parameters (Future Conditions)

Sub-Basin	IA(in)	DTHETA	PSIF(in)	XKSAT (in/hr)	RTIMP (1%)
344	0.107	0.150	7.500	0.121	46.590
367	0.100	0.210	6.960	0.149	61.110
378	0.100	0.170	7.320	0.126	53.180
379	0.107	0.170	7.320	0.132	57.430
380	0.100	0.250	3.500	0.278	89.990
381	0.105	0.170	7.320	0.130	54.180
382	0.110	0.190	7.140	0.147	44.800
383	0.100	0.230	6.780	0.163	38.050
384	0.102	0.150	7.780	0.104	48.960
385	0.100	0.150	8.400	0.058	52.450
386	0.100	0.150	7.500	0.111	78.260
387	0.100	0.150	8.600	0.070	52.260
388	0.100	0.150	8.600	0.069	63.790
389	0.102	0.150	8.050	0.094	48.820
390	0.101	0.150	7.780	0.106	41.140
391	0.100	0.190	7.140	0.140	38.690
392	0.102	0.230	6.780	0.164	54.380
393	0.100	0.150	8.600	0.069	55.600
394	0.104	0.250	6.600	0.177	51.900
395	0.100	0.150	8.050	0.092	64.870
396	0.101	0.250	3.500	0.291	51.660
397	0.102	0.250	3.500	0.282	87.120
398	0.101	0.250	4.740	0.241	59.690
399	0.102	0.150	8.280	0.082	51.960
400	0.100	0.210	6.960	0.151	46.930
401	0.102	0.150	8.600	0.070	60.450
402	0.100	0.250	3.500	0.279	86.280
403	0.094	0.240	3.550	0.028	53.050
404	0.100	0.250	6.290	0.186	49.230
405	0.100	0.150	8.280	0.081	50.090
406	0.101	0.250	3.610	0.305	79.940
407	0.140	0.250	3.610	0.371	45.980
408	0.100	0.250	5.050	0.226	77.330
409	0.100	0.250	3.980	0.393	49.900

LOSS PARAMETERS FOR SUBBASIN: 344F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.137	58.15	0.05	-0.757	0.00	0.00
LcA	0.091	38.78	0.25	-0.233	0.00	0.00
Mp	0.007	3.07	0.25	-0.018	0.00	0.00
TOTAL =	0.235 SQ.MI.		XKSAT =	0.10	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.35	=	7.5
Normal =	0.15		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.192	M.D.R.	81.82	NORMAL	25.00	45.00	0.09	0.10	0.082
0.026	COMM	10.86	NORMAL	20.00	90.00	0.02	0.10	0.011
0.017	PARK	7.32	NORMAL	90.00	0.00	0.00	0.20	0.015
0.235	=TOTAL AREA	OK	AVERAGE =	29.22	TOTAL =	0.11	AVG. =	0.107
					% =	46.59		

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.121

IMPERVIOUS AREA:

URBAN @	100 %	effective =	46.59
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		46.59

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
344F	0.235	0.720	0.026	29.00	0.107	0.150	7.50	0.121	46.59

LOSS PARAMETERS FOR SUBBASIN: 367F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.084	36.18	0.25	-0.218	0.00	0.00
Mr	0.078	33.43	0.05	-0.435	0.00	0.00
Es	0.063	27.08	0.25	-0.163	0.00	0.00
Vf	0.008	3.30	0.01	-0.066	0.00	0.00
TOTAL =	0.233 SQ.MI.		XKSAT =	0.13	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.38	=	6.96
Normal =	0.21		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.019	M.F.R.	8.24	NORMAL	25.00	65.00	0.01	0.10	0.008
0.127	M.D.R.	54.70	NORMAL	25.00	45.00	0.06	0.10	0.055
0.034	IND	14.73	NORMAL	20.00	75.00	0.03	0.10	0.015
0.052	COMM/ROW	22.33	NORMAL	20.00	90.00	0.05	0.10	0.022
0.233	=TOTAL AREA	OK	AVERAGE =	23.15	TOTAL =	0.14	AVG. =	0.100
					% =	61.11		

PERCENT OF SUBBASIN

DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.210

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.149

IMPERVIOUS AREA:

URBAN @ 100 % effective = 61.11
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 61.11

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
367F	0.233	0.910	0.026	22.00	0.100	0.210	6.96	0.149	61.11

LOSS PARAMETERS FOR SUBBASIN: 378F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.159	72.62	0.25	-0.437	0.00	0.00
Vf	0.048	21.73	0.01	-0.435	0.00	0.00
Mr	0.012	5.65	0.05	-0.073	0.00	0.00

TOTAL = 0.220 SQ.MI. XKSAT = 0.11 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.36	=	7.32
Normal =	0.17		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.160	M.D.R.	72.71	NORMAL	25.00	45.00	0.07	0.10	0.073
0.060	IND	27.29	NORMAL	20.00	75.00	0.04	0.10	0.027

0.220 =TOTAL AREA OK AVERAGE = 23.64 TOTAL = 0.12 AVG. = 0.100
% = 53.18

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.170

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.126

IMPERVIOUS AREA: URBAN @ 100 % effective = 53.18
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 53.18

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
378F	0.220	0.750	0.027	27.00	0.100	0.170	7.32	0.126	53.18

LOSS PARAMETERS FOR SUBBASIN: 379F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.181	44.41	0.25	-0.267	0.00	0.00
Mr	0.106	25.95	0.05	-0.338	0.00	0.00
Es	0.060	14.82	0.25	-0.089	0.00	0.00
Vf	0.057	13.89	0.01	-0.278	0.00	0.00
Tc	0.003	0.71	0.4	-0.003	0.00	0.00
LcA	0.001	0.22	0.25	-0.001	0.00	0.00

TOTAL = 0.407 SQ.MI. XKSAT = 0.11 %ROCK= 0.00

DTHETA

Dry = 0.36
Normal = 0.17
Wet = 0

PSIF

= 7.32

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.052	M.F.R.	12.78	NORMAL	25.00	65.00	0.03	0.10	0.013
0.206	M.D.R.	50.63	NORMAL	25.00	45.00	0.09	0.10	0.051
0.119	COMM/ROW	29.27	NORMAL	20.00	90.00	0.11	0.10	0.029
0.030	PARK/SCHOOL	7.32	NORMAL	90.00	0.00	0.00	0.20	0.015
0.407	=TOTAL AREA	OK	AVERAGE =	28.30	TOTAL =	0.23	AVG. =	0.107
					% =	57.43		

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.170

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.132

IMPERVIOUS AREA: URBAN @ 100 % effective = 57.43
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 57.43

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
379F	0.407	1.740	0.025	20.00	0.107	0.170	7.32	0.132	57.43

LOSS PARAMETERS FOR SUBBASIN: 380F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.065	100.00	0.25	-0.602	0.00	0.00

TOTAL = 0.065 SQ.MI. XKSAT = 0.25 %ROCK= 0.00

DTHETA		PSIF
Dry =	0.35	= 3.5
Normal =	0.25	
Wet =	0	

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.065	COMM/ROW	99.98	NORMAL	20.00	90.00	0.06	0.10	0.100
0.065	=TOTAL AREA	OK	AVERAGE =	20.00	TOTAL = % =	0.06 89.99	AVG. =	0.100

PERCENT OF SUBBASIN DRY = 0.02 %
NORMAL = 99.98 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.278

IMPERVIOUS AREA: URBAN @ 100 % effective = 89.99
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 89.99

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
380F	0.065	0.310	0.030	84.00	0.100	0.250	3.50	0.278	89.99

LOSS PARAMETERS FOR SUBBASIN: 381F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.315	31.66	0.25	-0.191	0.00	0.00
Mr	0.313	31.40	0.05	-0.409	0.00	0.00
LcA	0.168	16.90	0.25	-0.102	0.00	0.00
Vf	0.104	10.44	0.01	-0.209	0.00	0.00
Tc	0.058	5.86	0.4	-0.023	0.00	0.00
Th	0.028	2.83	0.04	-0.040	0.00	0.00
Tu	0.009	0.90	0.25	-0.005	0.00	0.00

TOTAL = 0.995 SQ.MI. XKSAT = 0.11 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.36	=	7.32
Normal =	0.17		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.017	V.L.D.R	1.71	NORMAL	25.00	15.00	0.00	0.10	0.002
0.017	L.D.R.	1.71	NORMAL	25.00	25.00	0.00	0.10	0.002
0.073	M.F.R.	7.34	NORMAL	25.00	65.00	0.05	0.10	0.007
0.551	M.D.R.	55.40	NORMAL	25.00	45.00	0.25	0.10	0.055
0.166	IND	16.69	NORMAL	20.00	75.00	0.12	0.10	0.017
0.125	COMM	12.54	NORMAL	20.00	90.00	0.11	0.10	0.013
0.046	PARK	4.61	NORMAL	90.00	0.00	0.00	0.20	0.009
0.995	=TOTAL AREA	OK	AVERAGE =	26.54	TOTAL =	0.54	AVG. =	0.105
					% =	54.18		

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.170

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.130

IMPERVIOUS AREA: URBAN @ 100 % effective = 54.18
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 54.18

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
381F	0.995	1.710	0.023	21.00	0.105	0.170	7.32	0.130	54.18

LOSS PARAMETERS FOR SUBBASIN: 382F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.352	35.71	0.25	-0.215	0.00	0.00
Mr	0.225	22.80	0.05	-0.297	0.00	0.00
Mp	0.100	10.12	0.25	-0.061	0.00	0.00
Le	0.053	5.41	0.04	-0.076	0.00	0.00
RbA	0.051	5.16	0.26	-0.030	0.00	0.00
Te	0.045	4.57	0.25	-0.028	0.00	0.00
Tg	0.033	3.34	0.04	-0.047	0.00	0.00
TfB	0.014	1.38	0.36	-0.006	0.00	0.00
GxA	0.009	0.91	0.23	-0.006	0.00	0.00
Tc	0.008	0.85	0.4	-0.003	0.00	0.00
Th	0.044	4.44	0.04	-0.062	0.00	0.00
Tw	0.011	1.15	0.05	-0.015	0.00	0.00
Vf	0.041	4.17	0.01	-0.083	0.00	0.00

TOTAL = 0.986 SQ.MI. XKSAT = 0.12 %ROCK= 0.00

DTHETA

Dry = 0.37
Normal = 0.19
Wet = 0

PSIF

= 7.14

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.202	L.D.R.	20.46	NORMAL	25.00	25.00	0.05	0.10	0.020
0.193	M.F.R.	19.57	NORMAL	25.00	65.00	0.13	0.10	0.020
0.404	M.D.R.	41.00	NORMAL	25.00	45.00	0.18	0.10	0.041
0.093	COMM	9.46	NORMAL	20.00	90.00	0.08	0.10	0.009
0.094	SCHOOL	9.51	NORMAL	90.00	0.00	0.00	0.20	0.019
0.986	=TOTAL AREA	OK	AVERAGE =	30.71	TOTAL =	0.44	AVG. =	0.110
					% =	44.80		

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.190

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.147

IMPERVIOUS AREA: URBAN @ 100 % effective = 44.80
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 44.80

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
382F	0.986	1.680	0.026	20.00	0.110	0.190	7.14	0.147	44.80

LOSS PARAMETERS FOR SUBBASIN: 383F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.437	59.75	0.25	-0.360	0.00	0.00
Mr	0.171	23.29	0.05	-0.303	0.00	0.00
Le	0.040	5.49	0.04	-0.077	0.00	0.00
RbA	0.037	5.05	0.26	-0.030	0.00	0.00
Tw	0.020	2.66	0.05	-0.035	0.00	0.00
Tu	0.012	1.69	0.25	-0.010	0.00	0.00
Th	0.008	1.09	0.04	-0.015	0.00	0.00
Vf	0.007	0.97	0.01	-0.019	0.00	0.00

TOTAL = 0.732 SQ.MI. XKSAT = 0.14 %ROCK= 0.00

DTHETA

Dry = 0.39
Normal = 0.23
Wet = 0

PSIF

= 6.78

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.368	L.D.R.	50.23	NORMAL	25.00	25.00	0.09	0.10	0.050
0.314	M.D.R.	42.88	NORMAL	25.00	45.00	0.14	0.10	0.043
0.050	COMM	6.89	NORMAL	20.00	90.00	0.05	0.10	0.007
0.732	=TOTAL AREA	OK	AVERAGE =	24.66	TOTAL = % =	0.28 38.05	AVG. =	0.100

PERCENT OF SUBBASIN
DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.230

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.163

IMPERVIOUS AREA:
URBAN @ 100 % effective = 38.05
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 38.05

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
383F	0.732	1.410	0.033	22.00	0.100	0.230	6.78	0.163	38.05

LOSS PARAMETERS FOR SUBBASIN: 384F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.284	30.03	0.05	-0.391	0.00	0.00
LcA	0.259	27.41	0.25	-0.165	0.00	0.00
Tw	0.229	24.17	0.05	-0.314	0.00	0.00
Mp	0.072	7.60	0.25	-0.046	0.00	0.00
RbA	0.027	2.82	0.26	-0.017	0.00	0.00
Le	0.023	2.43	0.04	-0.034	0.00	0.00
Es	0.013	1.34	0.25	-0.008	0.00	0.00
Tg	0.008	0.83	0.04	-0.012	0.00	0.00
Tu	0.007	0.78	0.25	-0.005	0.00	0.00
PeA	0.007	0.71	0.37	-0.003	0.00	0.00
Vf	0.018	1.87	0.01	-0.037	0.00	0.00

TOTAL = 0.945 SQ.MI. XKSAT = 0.09 %ROCK= 0.00

DTHETA

Dry = 0.33
Normal = 0.15
Wet = 0

PSIF

= 7.78

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.198	V.L.D.R	20.91	NORMAL	25.00	15.00	0.03	0.10	0.021
0.048	L.D.R.	5.11	NORMAL	25.00	25.00	0.01	0.10	0.005
0.343	M.D.R.	36.30	NORMAL	25.00	45.00	0.15	0.10	0.036
0.252	IND	26.62	NORMAL	20.00	75.00	0.19	0.10	0.027
0.087	COMM	9.16	NORMAL	20.00	90.00	0.08	0.10	0.009
0.018	PARK	1.89	NORMAL	90.00	0.00	0.00	0.20	0.004

0.945 =TOTAL AREA OK AVERAGE = 24.44 TOTAL = 0.46 AVG. = 0.102
% = 48.96

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.104

IMPERVIOUS AREA: URBAN @ 100 % effective = 48.96
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 48.96

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
384F	0.945	1.630	0.028	20.00	0.102	0.150	7.78	0.104	48.96

LOSS PARAMETERS FOR SUBBASIN: 385F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.282	31.62	0.05	-0.411	0.00	0.00
LcA	0.194	21.73	0.25	-0.131	0.00	0.00
Tw	0.168	18.88	0.05	-0.246	0.00	0.00
Vf	0.142	15.92	0.01	-0.318	0.00	0.00
Le	0.096	10.73	0.04	-0.150	0.00	0.00
Tu	0.010	1.11	0.25	-0.007	0.00	0.00
TOTAL =	0.891 SQ.MI.		XKSAT =	0.05	%ROCK=	0.00

DTHETA

Dry = 0.25
Normal = 0.15
Wet = 0

PSIF

= 8.4

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.016	V.L.D.R	1.82	NORMAL	25.00	15.00	0.00	0.10	0.002
0.065	L.D.R.	7.24	NORMAL	25.00	25.00	0.02	0.10	0.007
0.024	M.F.R.	2.64	NORMAL	25.00	65.00	0.02	0.10	0.003
0.610	M.D.R.	68.48	NORMAL	25.00	45.00	0.27	0.10	0.068
0.177	COMM	19.82	NORMAL	20.00	90.00	0.16	0.10	0.020
0.891	=TOTAL AREA	OK	AVERAGE =	24.01	TOTAL =	0.47	AVG. =	0.100
					% =	52.45		

PERCENT OF SUBBASIN

DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.058

IMPERVIOUS AREA:

URBAN @ 100 % effective = 52.45
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 52.45

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
385F	0.891	1.610	0.025	17.00	0.100	0.150	8.40	0.058	52.45

LOSS PARAMETERS FOR SUBBASIN: 386F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.157	36.34	0.05	-0.473	0.00	0.00
Mp	0.086	19.86	0.25	-0.120	0.00	0.00
LcA	0.086	19.84	0.25	-0.119	0.00	0.00
Vf	0.051	11.73	0.01	-0.235	0.00	0.00
Tc	0.045	10.34	0.4	-0.041	0.00	0.00
Th	0.008	1.90	0.04	-0.027	0.00	0.00

TOTAL = 0.432 SQ.MI. XKSAT = 0.10 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.35	=	7.5
Normal =	0.15		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.338	IND	78.25	NORMAL	20.00	75.00	0.25	0.10	0.078
0.083	COMM	19.20	NORMAL	20.00	90.00	0.07	0.10	0.019
0.011	R.O.W.	2.55	NORMAL	20.00	90.00	0.01	0.10	0.003
0.431	=TOTAL AREA	OK	AVERAGE =	20.00	TOTAL =	0.34	AVG. =	0.100
					% =	78.26		

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.111

IMPERVIOUS AREA: URBAN @ 100 % effective = 78.26
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 78.26

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
386F	0.432	1.120	0.025	25.00	0.100	0.150	7.50	0.111	78.26

LOSS PARAMETERS FOR SUBBASIN: 387F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.049	37.94	0.05	-0.494	0.00	0.00
Vf	0.032	24.58	0.01	-0.492	0.00	0.00
LcA	0.031	24.04	0.25	-0.145	0.00	0.00
Mp	0.018	13.44	0.25	-0.081	0.00	0.00
TOTAL =	0.130 SQ.MI.		XKSAT =	0.06	%ROCK=	0.00

DTHETA

Dry =	0.25
Normal =	0.15
Wet =	0

PSIF

= 8.6

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.024	M.F.R.	18.68	NORMAL	25.00	65.00	0.02	0.10	0.019
0.096	M.D.R.	73.48	NORMAL	25.00	45.00	0.04	0.10	0.073
0.010	R.O.W.	7.84	NORMAL	20.00	90.00	0.01	0.10	0.008
0.130	=TOTAL AREA	OK	AVERAGE =	24.61	TOTAL =	0.07	AVG. =	0.100
					% =	52.26		

PERCENT OF SUBBASIN

DRY =	0.00 %
NORMAL =	100.00 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.070

IMPERVIOUS AREA:

URBAN @	100 %	effective =	52.26
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		52.26

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
387F	0.130	0.630	0.028	22.00	0.100	0.150	8.60	0.070	52.26

LOSS PARAMETERS FOR SUBBASIN: 388F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.063	41.32	0.05	-0.538	0.00	0.00
Mp	0.050	32.90	0.25	-0.198	0.00	0.00
Vf	0.034	22.00	0.01	-0.440	0.00	0.00
Es	0.006	3.79	0.25	-0.023	0.00	0.00

TOTAL = 0.153 SQ.MI. XKSAT = 0.06 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.25	=	8.6
Normal =	0.15		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.046	M.F.R.	29.68	NORMAL	25.00	65.00	0.03	0.10	0.030
0.064	M.D.R.	41.75	NORMAL	25.00	45.00	0.03	0.10	0.042
0.031	R.O.W.	20.48	NORMAL	20.00	90.00	0.03	0.10	0.020
0.012	COMM	8.09	NORMAL	20.00	90.00	0.01	0.10	0.008

0.153 =TOTAL AREA OK AVERAGE = 23.57 TOTAL = 0.10 AVG. = 0.100
% = 63.79

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.069

IMPERVIOUS AREA: URBAN @ 100 % effective = 63.79
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 63.79

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
388F	0.153	0.990	0.028	35.00	0.100	0.150	8.60	0.069	63.79

LOSS PARAMETERS FOR SUBBASIN: 389F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.473	49.14	0.05	-0.639	0.00	0.00
Mp	0.209	21.68	0.25	-0.131	0.00	0.00
Vf	0.103	10.69	0.01	-0.214	0.00	0.00
GgA	0.066	6.80	0.25	-0.041	0.00	0.00
LcA	0.063	6.52	0.25	-0.039	0.00	0.00
Es	0.050	5.16	0.25	-0.031	0.00	0.00

TOTAL = 0.963 SQ.MI. XKSAT = 0.08 %ROCK= 0.00

DTHETA

Dry = 0.3
Normal = 0.15
Wet = 0

PSIF

= 8.05

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.068	M.F.R.	7.02	NORMAL	25.00	65.00	0.04	0.10	0.007
0.803	M.D.R.	83.34	NORMAL	25.00	45.00	0.36	0.10	0.083
0.007	R.O.W.	0.73	NORMAL	20.00	90.00	0.01	0.10	0.001
0.065	COMM	6.78	NORMAL	20.00	90.00	0.06	0.10	0.007
0.021	PARK	2.14	NORMAL	90.00	0.00	0.00	0.20	0.004
0.963	=TOTAL AREA	OK	AVERAGE =	26.01	TOTAL = % =	0.47 48.82	AVG. =	0.102

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.094

IMPERVIOUS AREA:
URBAN @ 100 % effective = 48.82
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 48.82

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
389F	0.963	1.800	0.023	22.00	0.102	0.150	8.05	0.094	48.82

LOSS PARAMETERS FOR SUBBASIN: 390F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.434	43.55	0.05	-0.567	0.00	0.00
LcA	0.235	23.60	0.25	-0.142	0.00	0.00
Le	0.045	4.47	0.04	-0.062	0.00	0.00
GgA	0.044	4.44	0.25	-0.027	0.00	0.00
LcB	0.025	2.55	0.25	-0.015	0.00	0.00
Mp	0.017	1.67	0.25	-0.010	0.00	0.00
Lb	0.015	1.46	0.4	-0.006	0.00	0.00
Bs	0.011	1.13	0.39	-0.005	0.00	0.00
Ta	0.010	0.97	0.25	-0.006	0.00	0.00
Es	0.007	0.67	0.25	-0.004	0.00	0.00
Tc	0.018	1.76	0.4	-0.007	0.00	0.00
Tg	0.057	5.68	0.04	-0.079	0.00	0.00
Th	0.009	0.88	0.04	-0.012	0.00	0.00
Tw	0.049	4.96	0.05	-0.065	0.00	0.00
Vf	0.022	2.21	0.01	-0.044	0.00	0.00

TOTAL = 0.996 SQ.MI. XKSAT = 0.09 %ROCK= 0.00

DTHETA

Dry = 0.33
Normal = 0.15
Wet = 0

PSIF

= 7.78

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.016	V.L.D.R	1.65	NORMAL	25.00	15.00	0.00	0.10	0.002
0.194	L.D.R.	19.51	NORMAL	25.00	25.00	0.05	0.10	0.020
0.018	M.F.R.	1.82	NORMAL	25.00	65.00	0.01	0.10	0.002
0.734	M.D.R.	73.72	NORMAL	25.00	45.00	0.33	0.10	0.074
0.018	COMM	1.85	NORMAL	20.00	90.00	0.02	0.10	0.002
0.015	PARK	1.46	NORMAL	90.00	0.00	0.00	0.20	0.003
0.996	=TOTAL AREA	OK	AVERAGE =	25.85	TOTAL =	0.41	AVG. =	0.101
					% =	41.14		

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.106

IMPERVIOUS AREA:

URBAN @	100 %	effective =	41.14
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		41.14

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
390F	0.996	1.850	0.027	21.00	0.101	0.150	7.78	0.106	41.14

LOSS PARAMETERS FOR SUBBASIN: 391F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.421	42.53	0.25	-0.256	0.00	0.00
Mr	0.332	33.52	0.05	-0.436	0.00	0.00
Tw	0.067	6.74	0.05	-0.088	0.00	0.00
Mp	0.056	5.63	0.25	-0.034	0.00	0.00
Te	0.041	4.11	0.25	-0.025	0.00	0.00
Le	0.028	2.83	0.04	-0.040	0.00	0.00
Vf	0.024	2.40	0.01	-0.048	0.00	0.00
RbA	0.022	2.23	0.26	-0.013	0.00	0.00

TOTAL = 0.990 SQ.MI. XKSAT = 0.12 %ROCK= 0.00

DTHETA

Dry = 0.37
Normal = 0.19
Wet = 0

PSIF

= 7.14

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.495	L.D.R.	49.96	NORMAL	25.00	25.00	0.12	0.10	0.050
0.092	M.F.R.	9.31	NORMAL	25.00	65.00	0.06	0.10	0.009
0.363	M.D.R.	36.68	NORMAL	25.00	45.00	0.16	0.10	0.037
0.040	COMM	4.05	NORMAL	20.00	90.00	0.04	0.10	0.004
0.990	=TOTAL AREA	OK	AVERAGE =	24.80	TOTAL =	0.38	AVG. =	0.100
					% =	38.69		

PERCENT OF SUBBASIN

DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.190

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.140

IMPERVIOUS AREA:

URBAN @ 100 % effective = 38.69
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 38.69

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
391F	0.990	1.470	0.032	20.00	0.100	0.190	7.14	0.140	38.69

LOSS PARAMETERS FOR SUBBASIN: 392F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.392	39.51	0.25	-0.238	0.00	0.00
Mr	0.193	19.44	0.05	-0.253	0.00	0.00
Mp	0.177	17.77	0.25	-0.107	0.00	0.00
Tw	0.092	9.25	0.05	-0.120	0.00	0.00
RbA	0.050	5.03	0.26	-0.029	0.00	0.00
GxA	0.030	3.02	0.23	-0.019	0.00	0.00
Vf	0.028	2.77	0.01	-0.055	0.00	0.00
Tu	0.023	2.31	0.25	-0.014	0.00	0.00
PeA	0.009	0.89	0.37	-0.004	0.00	0.00

TOTAL = 0.993 SQ.MI. XKSAT = 0.14 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.39	=	6.78
Normal =	0.23		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.129	M.F.R.	13.04	NORMAL	25.00	65.00	0.08	0.10	0.013
0.624	M.D.R.	62.82	NORMAL	25.00	45.00	0.28	0.10	0.063
0.129	IND	13.00	NORMAL	20.00	75.00	0.10	0.10	0.013
0.087	COMM	8.76	NORMAL	20.00	90.00	0.08	0.10	0.009
0.024	PARK	2.38	NORMAL	90.00	0.00	0.00	0.20	0.005
0.993	=TOTAL AREA	OK	AVERAGE =	25.46	TOTAL =	0.54	AVG. =	0.102
					% =	54.38		

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.230

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.164

IMPERVIOUS AREA: URBAN @ 100 % effective = 54.38
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 54.38

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
392F	0.993	2.110	0.023	14.00	0.102	0.230	6.78	0.164	54.38

LOSS PARAMETERS FOR SUBBASIN: 393F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.218	29.48	0.05	-0.383	0.00	0.00
Tw	0.214	29.03	0.05	-0.378	0.00	0.00
LcA	0.149	20.23	0.25	-0.122	0.00	0.00
Vf	0.060	8.06	0.01	-0.161	0.00	0.00
Le	0.051	6.88	0.04	-0.096	0.00	0.00
Ao	0.040	5.43	0.04	-0.076	0.00	0.00
Mp	0.007	0.88	0.25	-0.005	0.00	0.00
TOTAL =	0.738 SQ.MI.		XKSAT =	0.06	%ROCK=	0.00

DTHETA

Dry = 0.25
Normal = 0.15
Wet = 0

PSIF

= 8.6

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.082	M.F.R.	11.09	NORMAL	25.00	65.00	0.05	0.10	0.011
0.469	M.D.R.	63.60	NORMAL	25.00	45.00	0.21	0.10	0.064
0.148	IND	20.04	NORMAL	20.00	75.00	0.11	0.10	0.020
0.034	COMM	4.61	NORMAL	20.00	90.00	0.03	0.10	0.005
0.005	AZ CANAL	0.66	NORMAL	0.00	90.00	0.00	0.10	0.001
0.738	=TOTAL AREA	OK	AVERAGE =	23.60	TOTAL =	0.41	AVG. =	0.100
					% =	55.60		

PERCENT OF SUBBASIN

DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.069

IMPERVIOUS AREA:

URBAN @ 100 % effective = 55.60
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 55.60

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
393F	0.738	1.050	0.023	19.00	0.100	0.150	8.60	0.069	55.60

LOSS PARAMETERS FOR SUBBASIN: 394F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.365	46.00	0.25	-0.277	0.00	0.00
Mr	0.154	19.45	0.05	-0.253	0.00	0.00
Mp	0.133	16.71	0.25	-0.101	0.00	0.00
Vf	0.051	6.47	0.01	-0.129	0.00	0.00
GgA	0.029	3.67	0.25	-0.022	0.00	0.00
AbA	0.024	3.01	0.38	-0.013	0.00	0.00
TD	0.013	1.68	1.2	0.001	0.00	0.00
RbA	0.011	1.37	0.26	-0.008	0.00	0.00
Le	0.005	0.59	0.37	-0.003	0.00	0.00
TfA	0.005	0.58	0.04	-0.008	0.00	0.00
Tw	0.004	0.47	0.05	-0.006	0.00	0.00

TOTAL = 0.793 SQ.MI. XKSAT = 0.15 %ROCK= 0.00

DTHETA

Dry = 0.4
Normal = 0.25
Wet = 0

PSIF

= 6.6

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.016	V.L.D.R	2.07	NORMAL	25.00	15.00	0.00	0.10	0.002
0.002	L.D.R.	0.26	NORMAL	25.00	25.00	0.00	0.10	0.000
0.038	M.F.R.	4.74	NORMAL	25.00	65.00	0.02	0.10	0.005
0.489	M.D.R.	61.70	NORMAL	25.00	45.00	0.22	0.10	0.062
0.207	IND	26.09	NORMAL	20.00	75.00	0.16	0.10	0.026
0.010	COMM	1.24	NORMAL	20.00	90.00	0.01	0.10	0.001
0.031	PARK	3.90	NORMAL	90.00	0.00	0.00	0.20	0.008
0.793	=TOTAL AREA	OK	AVERAGE =	26.17	TOTAL =	0.41	AVG. =	0.104
					% =	51.90		

PERCENT OF SUBBASIN
DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.177

IMPERVIOUS AREA:
URBAN @ 100 % effective = 51.90
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 51.90

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
394F	0.793	1.320	0.024	19.00	0.104	0.250	6.60	0.177	51.90

LOSS PARAMETERS FOR SUBBASIN: 395F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.041	28.97	0.05	-0.377	0.00	0.00
GgA	0.038	26.83	0.25	-0.162	0.00	0.00
Mp	0.035	24.48	0.25	-0.147	0.00	0.00
Vf	0.028	19.72	0.01	-0.394	0.00	0.00

TOTAL = 0.141 SQ.MI. XKSAT = 0.08 %ROCK= 0.00

DTHETA

Dry = 0.3
Normal = 0.15
Wet = 0

PSIF

= 8.05

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.048	M.F.R.	34.00	NORMAL	25.00	65.00	0.03	0.10	0.034
0.047	M.D.R.	33.14	NORMAL	25.00	45.00	0.02	0.10	0.033
0.016	IND	11.45	NORMAL	20.00	75.00	0.01	0.10	0.011
0.022	COMM	15.79	NORMAL	20.00	90.00	0.02	0.10	0.016
0.008	R.O.W.	5.62	NORMAL	20.00	90.00	0.01	0.10	0.006

0.141 =TOTAL AREA OK AVERAGE = 23.36 TOTAL = 0.09 AVG. = 0.100
% = 64.87

PERCENT OF SUBBASIN
DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.092

IMPERVIOUS AREA:
URBAN @ 100 % effective = 64.87
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 64.87

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
395F	0.141	0.700	0.028	20.00	0.100	0.150	8.05	0.092	64.87

LOSS PARAMETERS FOR SUBBASIN: 396F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.127	93.72	0.25	-0.564	0.00	0.00
Es	0.009	6.28	0.25	-0.038	0.00	0.00
TOTAL =	0.135 SQ.MI.		XKSAT =	0.25	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.35	=	3.5
Normal =	0.25		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.018	M.F.R.	13.31	NORMAL	25.00	65.00	0.01	0.10	0.013
0.103	M.D.R.	76.48	NORMAL	25.00	45.00	0.05	0.10	0.076
0.006	COMM	4.22	NORMAL	20.00	90.00	0.01	0.10	0.004
0.007	R.O.W.	5.33	NORMAL	20.00	90.00	0.01	0.10	0.005
0.001	GOLF COURSE	0.67	NORMAL	90.00	0.00	0.00	0.20	0.001
0.135	=TOTAL AREA	OK	AVERAGE =	24.96	TOTAL =	0.07	AVG. =	0.101
					% =	51.66		

PERCENT OF SUBBASIN

DRY =	0.00 %
NORMAL =	100.00 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.291

IMPERVIOUS AREA:

URBAN @	100 %	effective =	51.66
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		51.66

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
396F	0.135	0.630	0.028	17.00	0.101	0.250	3.50	0.291	51.66

LOSS PARAMETERS FOR SUBBASIN: 397F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.092	100.00	0.25	-0.602	0.00	0.00
TOTAL =	0.092 SQ.MI.		XKSAT =	0.25	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.35	=	3.5
Normal =	0.25		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.002	M.F.R.	2.07	NORMAL	25.00	65.00	0.00	0.10	0.002
0.001	IND	1.31	NORMAL	20.00	75.00	0.00	0.10	0.001
0.036	COMM	39.52	NORMAL	20.00	90.00	0.03	0.10	0.040
0.050	R.O.W.	54.69	NORMAL	20.00	90.00	0.05	0.10	0.055
0.002	PARK/G.C.	2.40	NORMAL	90.00	0.00	0.00	0.20	0.005
0.092	=TOTAL AREA	OK	AVERAGE =	21.78	TOTAL =	0.08	AVG. =	0.102
					% =	87.12		

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.282

IMPERVIOUS AREA:

URBAN @	100 %	effective =	87.12
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		87.12

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
397F	0.092	0.310	0.029	61.00	0.102	0.250	3.50	0.282	87.12

LOSS PARAMETERS FOR SUBBASIN: 398F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.709	72.38	0.25	-0.436	0.00	0.00
Es	0.096	9.83	0.25	-0.059	0.00	0.00
Mp	0.089	9.10	0.25	-0.055	0.00	0.00
Mr	0.071	7.25	0.05	-0.094	0.00	0.00
Vf	0.014	1.45	0.01	-0.029	0.00	0.00

TOTAL = 0.980 SQ.MI. XKSAT = 0.21 %ROCK= 0.00

DTHETA

Dry = 0.37
Normal = 0.25
Wet = 0

PSIF

= 4.74

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.035	M.F.R.	3.55	NORMAL	25.00	65.00	0.02	0.10	0.004
0.557	M.D.R.	56.83	NORMAL	25.00	45.00	0.25	0.10	0.057
0.206	IND	21.05	NORMAL	20.00	75.00	0.15	0.10	0.021
0.141	COMM	14.40	NORMAL	20.00	90.00	0.13	0.10	0.014
0.033	R.O.W.	3.40	NORMAL	20.00	90.00	0.03	0.10	0.003
0.008	PARK	0.77	NORMAL	90.00	0.00	0.00	0.20	0.002
0.980	=TOTAL AREA	OK	AVERAGE =	23.56	TOTAL =	0.58	AVG. =	0.101
					% =	59.69		

PERCENT OF SUBBASIN

DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.241

IMPERVIOUS AREA:

URBAN @ 100 % effective = 59.69
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 59.69

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
398F	0.980	1.120	0.023	26.00	0.101	0.250	4.74	0.241	59.69

LOSS PARAMETERS FOR SUBBASIN: 399F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.593	59.54	0.05	-0.775	0.00	0.00
Lr	0.170	17.07	0.04	-0.239	0.00	0.00
LcA	0.067	6.73	0.25	-0.041	0.00	0.00
Mp	0.061	6.12	0.25	-0.037	0.00	0.00
GgA	0.023	2.31	0.25	-0.014	0.00	0.00
Te	0.021	2.11	0.25	-0.013	0.00	0.00
Vf	0.017	1.71	0.01	-0.034	0.00	0.00
Es	0.015	1.51	0.25	-0.009	0.00	0.00
Lb	0.011	1.05	0.4	-0.004	0.00	0.00
AbA	0.011	1.05	0.38	-0.004	0.00	0.00
Tg	0.008	0.80	0.04	-0.011	0.00	0.00

TOTAL = 0.996 SQ.MI. XKSAT = 0.07 %ROCK= 0.00

DTHETA

Dry = 0.28
Normal = 0.15
Wet = 0

PSIF

= 8.28

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.122	M.F.R.	12.29	NORMAL	25.00	65.00	0.08	0.10	0.012
0.737	M.D.R.	73.95	NORMAL	25.00	45.00	0.33	0.10	0.074
0.007	IND	0.67	NORMAL	20.00	75.00	0.01	0.10	0.001
0.113	COMM	11.32	NORMAL	20.00	90.00	0.10	0.10	0.011
0.018	PARK	1.77	NORMAL	90.00	0.00	0.00	0.20	0.004

0.996 =TOTAL AREA OK AVERAGE = 25.55 TOTAL = 0.52 AVG. = 0.102
% = 51.96

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.082

IMPERVIOUS AREA: URBAN @ 100 % effective = 51.96
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 51.96

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
399F	0.996	1.770	0.023	19.00	0.102	0.150	8.28	0.082	51.96

LOSS PARAMETERS FOR SUBBASIN: 400F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.450	45.41	0.25	-0.273	0.00	0.00
Mr	0.328	33.06	0.05	-0.430	0.00	0.00
Mp	0.057	5.78	0.25	-0.035	0.00	0.00
Le	0.056	5.65	0.04	-0.079	0.00	0.00
LcB	0.022	2.20	0.25	-0.013	0.00	0.00
TfB	0.013	1.34	0.36	-0.006	0.00	0.00
Cp	0.011	1.12	0.4	-0.004	0.00	0.00
Te	0.011	1.07	0.25	-0.006	0.00	0.00
GgA	0.010	1.03	0.25	-0.006	0.00	0.00
PeA	0.006	0.61	0.37	-0.003	0.00	0.00
Tg	0.013	1.29	0.04	-0.018	0.00	0.00
Th	0.006	0.56	0.04	-0.008	0.00	0.00
Vf	0.009	0.87	0.01	-0.017	0.00	0.00

TOTAL = 0.991 SQ.MI. XKSAT = 0.13 %ROCK= 0.00

DTHETA

Dry = 0.38
Normal = 0.21
Wet = 0

PSIF

= 6.96

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.949	M.D.R.	95.71	NORMAL	25.00	45.00	0.43	0.10	0.096
0.043	COMM	4.29	NORMAL	20.00	90.00	0.04	0.10	0.004

0.991 =TOTAL AREA OK AVERAGE = 24.79 TOTAL = 0.47 AVG. = 0.100
% = 46.93

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.210

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.151

IMPERVIOUS AREA: URBAN @ 100 % effective = 46.93
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 46.93

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
400F	0.991	1.480	0.023	15.00	0.100	0.210	6.96	0.151	46.93

LOSS PARAMETERS FOR SUBBASIN: 401F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.373	53.54	0.05	-0.697	0.00	0.00
LcA	0.150	21.49	0.25	-0.129	0.00	0.00
Le	0.060	8.56	0.04	-0.120	0.00	0.00
Vf	0.053	7.54	0.01	-0.151	0.00	0.00
Tg	0.048	6.86	0.04	-0.096	0.00	0.00
Mp	0.008	1.15	0.25	-0.007	0.00	0.00
Ms	0.006	0.86	0.01	-0.017	0.00	0.00

TOTAL = 0.697 SQ.MI. XKSAT = 0.06 %ROCK= 0.00

DTHETA

Dry = 0.25
Normal = 0.15
Wet = 0

PSIF

= 8.6

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.174	M.F.R.	24.97	NORMAL	25.00	65.00	0.11	0.10	0.025
0.296	M.D.R.	42.47	NORMAL	25.00	45.00	0.13	0.10	0.042
0.113	IND	16.16	NORMAL	20.00	75.00	0.08	0.10	0.016
0.101	COMM	14.43	NORMAL	20.00	90.00	0.09	0.10	0.014
0.014	PARK	1.97	NORMAL	90.00	0.00	0.00	0.20	0.004
0.697	=TOTAL AREA	OK	AVERAGE =	24.75	TOTAL =	0.42	AVG. =	0.102
					% =	60.45		

PERCENT OF SUBBASIN

DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.070

IMPERVIOUS AREA:

URBAN @ 100 % effective = 60.45
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 60.45

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
401F	0.697	1.370	0.023	11.00	0.102	0.150	8.60	0.070	60.45

LOSS PARAMETERS FOR SUBBASIN: 402F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.034	100.00	0.25	-0.602	0.00	0.00
TOTAL =	0.034 SQ.MI.		XKSAT =	0.25	%ROCK=	0.00

DTHETA

Dry =	0.35
Normal =	0.25
Wet =	0

PSIF

= 3.5

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.002	M.F.R.	6.45	NORMAL	25.00	65.00	0.00	0.10	0.006
0.002	M.D.R.	4.69	NORMAL	25.00	45.00	0.00	0.10	0.005
0.003	COMM	7.62	NORMAL	20.00	90.00	0.00	0.10	0.008
0.028	R.O.W.	81.23	NORMAL	20.00	90.00	0.02	0.10	0.081
0.034	=TOTAL AREA	OK	AVERAGE =	20.56	TOTAL = % =	0.03 86.28	AVG. =	0.100

PERCENT OF SUBBASIN

DRY =	0.00 %
NORMAL =	100.00 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.279

IMPERVIOUS AREA:

URBAN @	100 %	effective =	86.28
ROCK OUTCROP @	60 %	effective =	0.00
% EFFECTIVE IMP. =			86.28

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
402F	0.034	0.220	0.032	109.00	0.100	0.250	3.50	0.279	86.28

LOSS PARAMETERS FOR SUBBASIN: 403F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.776	80.39	0.25	-0.484	0.00	0.00
Aa	0.062	6.42	0.26	-0.038	0.00	0.00
Vh	0.039	4.06	0.27	-0.023	0.00	0.00
Ge	0.038	3.91	0.26	-0.023	0.00	0.00
Br	0.028	2.87	1.05	0.001	0.00	0.00
Vk	0.018	1.82	0.26	-0.011	0.00	0.00
Ma	0.005	0.53	0.4	-0.002	0.00	0.00

TOTAL = 0.965 SQ.MI. XKSAT = 0.26 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.35	=	3.55
Normal =	0.25		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.192	M.F.R.	19.90	NORMAL	25.00	65.00	0.12	0.10	0.020
0.611	M.D.R.	63.37	NORMAL	25.00	45.00	0.28	0.10	0.063
0.124	COMM	12.88	NORMAL	20.00	90.00	0.11	0.10	0.013
0.037	LAKE	3.85	WET	0.00	0.00	0.00	0.00	0.000
0.965	=TOTAL AREA	OK	AVERAGE =	23.39	TOTAL =	0.51	AVG. =	0.096
					% =	53.05		

PERCENT OF SUBBASIN
DRY = 0.00 %
NORMAL = 96.15 %
WET = 3.85 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.240

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.298

IMPERVIOUS AREA:
URBAN @ 100 % effective = 53.05
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 53.05

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
403F	0.965	1.690	0.023	18.00	0.096	0.240	3.55	0.298	53.05

LOSS PARAMETERS FOR SUBBASIN: 404F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.405	40.69	0.25	-0.245	0.00	0.00
Es	0.082	8.28	0.25	-0.050	0.00	0.00
Le	0.069	6.90	0.04	-0.096	0.00	0.00
LcA	0.066	6.65	0.25	-0.040	0.00	0.00
Mp	0.037	3.67	0.25	-0.022	0.00	0.00
Bs	0.027	2.72	0.39	-0.011	0.00	0.00
Aa	0.014	1.45	0.26	-0.008	0.00	0.00
Ge	0.011	1.15	0.26	-0.007	0.00	0.00
Cb	0.007	0.68	0.4	-0.003	0.00	0.00
Ma	0.007	0.65	0.4	-0.003	0.00	0.00
Mr	0.180	18.06	0.05	-0.235	0.00	0.00
Tt	0.009	0.87	0.04	-0.012	0.00	0.00
Tw	0.013	1.27	0.05	-0.016	0.00	0.00
Vh	0.069	6.95	0.27	-0.040	0.00	0.00

TOTAL = 0.995 SQ.MI. XKSAT = 0.16 %ROCK= 0.00

DTHETA

Dry = 0.4
Normal = 0.25
Wet = 0

PSIF

= 6.29

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.094	M.F.R.	9.48	NORMAL	25.00	65.00	0.06	0.10	0.009
0.849	M.D.R.	85.27	NORMAL	25.00	45.00	0.38	0.10	0.085
0.002	IND	0.17	NORMAL	20.00	75.00	0.00	0.10	0.000
0.051	COMM	5.08	NORMAL	20.00	90.00	0.05	0.10	0.005
0.995	=TOTAL AREA	OK	AVERAGE =	24.74	TOTAL = % =	0.49 49.23	AVG. =	0.100

PERCENT OF SUBBASIN
DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.186

IMPERVIOUS AREA:
URBAN @ 100 % effective = 49.23
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 49.23

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
404F	0.995	1.570	0.023	30.00	0.100	0.250	6.29	0.186	49.23

LOSS PARAMETERS FOR SUBBASIN: 405F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.252	44.32	0.05	-0.577	0.00	0.00
LcA	0.125	22.06	0.25	-0.133	0.00	0.00
Le	0.099	17.45	0.04	-0.244	0.00	0.00
Tt	0.023	4.06	0.04	-0.057	0.00	0.00
Tw	0.017	2.97	0.05	-0.039	0.00	0.00
Vf	0.016	2.76	0.01	-0.055	0.00	0.00
Ao	0.011	1.88	0.04	-0.026	0.00	0.00
Ta	0.009	1.65	0.25	-0.010	0.00	0.00
GgA	0.009	1.60	0.25	-0.010	0.00	0.00
Mp	0.007	1.23	0.25	-0.007	0.00	0.00

TOTAL = 0.568 SQ.MI. XKSAT = 0.07 %ROCK= 0.00

DTHETA

Dry = 0.28
Normal = 0.15
Wet = 0

PSIF

= 8.28

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.487	M.D.R.	85.62	NORMAL	25.00	45.00	0.22	0.10	0.086
0.052	IND	9.17	NORMAL	20.00	75.00	0.04	0.10	0.009
0.030	COMM	5.21	NORMAL	20.00	90.00	0.03	0.10	0.005
0.568	=TOTAL AREA	OK	AVERAGE =	24.28	TOTAL = % =	0.28 50.09	AVG. =	0.100

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.081

IMPERVIOUS AREA: URBAN @ 100 % effective = 50.09
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 50.09

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
405F	0.568	1.630	0.024	11.00	0.100	0.150	8.28	0.081	50.09

LOSS PARAMETERS FOR SUBBASIN: 406F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.050	43.62	0.25	-0.263	0.00	0.00
Ge	0.047	40.82	0.26	-0.239	0.00	0.00
Ma	0.010	8.83	0.4	-0.035	0.00	0.00
AbA	0.008	6.73	0.38	-0.028	0.00	0.00

TOTAL = 0.114 SQ.MI. XKSAT = 0.27 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.61

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.031	M.F.R.	26.75	NORMAL	25.00	65.00	0.02	0.10	0.027
0.022	IND	19.32	NORMAL	20.00	75.00	0.02	0.10	0.019
0.017	COMM	15.21	NORMAL	20.00	90.00	0.02	0.10	0.015
0.044	R.O.W.	38.20	NORMAL	20.00	90.00	0.04	0.10	0.038
0.001	PARK	0.52	NORMAL	90.00	0.00	0.00	0.20	0.001

0.114 =TOTAL AREA OK AVERAGE = 21.70 TOTAL = 0.09 AVG. = 0.101
% = 79.94

PERCENT OF SUBBASIN
DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.305

IMPERVIOUS AREA:
URBAN @ 100 % effective = 79.94
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 79.94

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
406F	0.114	0.780	0.028	24.00	0.101	0.250	3.61	0.305	79.94

LOSS PARAMETERS FOR SUBBASIN: 407F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Va	0.076	30.23	0.39	-0.124	0.00	0.00
GgA	0.061	24.04	0.25	-0.145	0.00	0.00
Es	0.039	15.42	0.25	-0.093	0.00	0.00
Tc	0.030	12.00	0.4	-0.048	0.00	0.00
Vh	0.020	7.91	0.27	-0.045	0.00	0.00
Ao	0.015	6.00	0.04	-0.084	0.00	0.00
Ge	0.011	4.41	0.26	-0.026	0.00	0.00

TOTAL = 0.252 SQ.MI. XKSAT = 0.27 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.61

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.132	IND	52.34	NORMAL	20.00	75.00	0.10	0.10	0.052
0.019	R.O.W.	7.47	NORMAL	20.00	90.00	0.02	0.10	0.007
0.016	DRAINAGEWAY	6.20	NORMAL	25.00	0.00	0.00	0.20	0.012
0.086	PARK	33.99	NORMAL	90.00	0.00	0.00	0.20	0.068
0.252	=TOTAL AREA	OK	AVERAGE =	44.11	TOTAL =	0.12	AVG. =	0.140
					% =	45.98		

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.371

IMPERVIOUS AREA: URBAN @ 100 % effective = 45.98
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 45.98

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
407F	0.252	1.040	0.026	24.00	0.140	0.250	3.61	0.371	45.98

LOSS PARAMETERS FOR SUBBASIN: 408F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.655	87.24	0.25	-0.525	0.00	0.00
Ao	0.084	11.25	0.04	-0.157	0.00	0.00
Aa	0.011	1.52	0.26	-0.009	0.00	0.00

TOTAL = 0.751 SQ.MI. XKSAT = 0.20 %ROCK= 0.00

DTHETA

Dry = 0.38
Normal = 0.25
Wet = 0

PSIF

= 5.05

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.117	M.F.R.	15.63	NORMAL	25.00	65.00	0.08	0.10	0.016
0.136	M.D.R.	18.17	NORMAL	25.00	45.00	0.06	0.10	0.018
0.029	IND	3.86	NORMAL	20.00	75.00	0.02	0.10	0.004
0.454	COMM	60.47	NORMAL	20.00	90.00	0.41	0.10	0.060
0.014	R.O.W.	1.87	NORMAL	20.00	90.00	0.01	0.10	0.002
0.751	=TOTAL AREA	OK	AVERAGE =	21.69	TOTAL =	0.58	AVG. =	0.100
					% =	77.33		

PERCENT OF SUBBASIN
DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.226

IMPERVIOUS AREA:
URBAN @ 100 % effective = 77.33
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 77.33

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
408F	0.751	1.620	0.023	14.00	0.100	0.250	5.05	0.226	77.33

LOSS PARAMETERS FOR SUBBASIN: 409F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.186	52.29	0.25	-0.315	0.00	0.00
Vg	0.065	18.35	0.91	-0.008	0.00	0.00
Vh	0.057	16.10	0.27	-0.092	0.00	0.00
Bs	0.035	9.68	0.39	-0.040	0.00	0.00
Ma	0.007	1.88	0.4	-0.007	0.00	0.00
Ge	0.006	1.71	0.26	-0.010	0.00	0.00

TOTAL = 0.357 SQ.MI. XKSAT = 0.34 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.35	=	3.98
Normal =	0.25		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.307	M.D.R.	85.97	NORMAL	25.00	45.00	0.14	0.10	0.086
0.034	IND	9.42	NORMAL	20.00	75.00	0.03	0.10	0.009
0.016	COMM	4.60	NORMAL	20.00	90.00	0.01	0.10	0.005
0.357	=TOTAL AREA	OK	AVERAGE =	24.30	TOTAL = % =	0.18 49.90	AVG. =	0.100

PERCENT OF SUBBASIN DRY = 0.00 %
NORMAL = 100.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.393

IMPERVIOUS AREA: URBAN @ 100 % effective = 49.90
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 49.90

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
409F	0.357	1.540	0.025	12.00	0.100	0.250	3.98	0.393	49.90

SECTION III

Hydrologic Sub-Basin Characteristics

Hydrologic Sub-Basin Characteristics
(Existing Condition)

TABLE 10

Existing Hydrologic Sub-Basin Characteristics
2-Year Storm

Sub-Basin I.D.	Area (Sq. Mile)	Flow Path Length (Miles)	Adjusted Slope (Ft./Mile)	Kb	6-Hr. Time of Concentration (Hours)	24-Hr. Time of Contrentation (Hours)
356	0.233	0.91	22	0.030	0.729	0.788
357	0.220	0.75	27	0.027	0.512	0.529
358	0.357	1.74	20	0.027	1.104	1.192
359	0.065	0.31	84	0.056	0.512	0.512
360	0.359	1.12	25	0.042	1.342	1.462
361	0.130	0.63	22	0.032	0.563	0.583
362	0.111	0.99	35	0.030	0.587	0.613
363	0.098	0.70	20	0.028	0.546	0.571
364	0.135	0.63	17	0.029	0.629	0.688
365	0.092	0.31	61	0.046	0.425	0.467
366	0.069	0.78	24	0.036	0.729	0.800
367	0.252	1.04	24	0.030	0.867	0.954
369	0.793	1.71	21	0.027	1.246	1.279
370	0.864	1.80	22	0.023	0.967	0.988
371	0.677	1.12	26	0.024	0.725	0.729
372	0.034	0.22	109	0.032	0.162	0.196
373	0.722	1.69	18	0.023	1.083	1.125
374	0.559	1.62	14	0.024	1.058	1.138
376	0.873	1.68	20	0.029	1.292	1.304
377	0.757	1.85	21	0.027	1.192	1.208
378	0.866	1.77	19	0.024	1.183	1.221
379	0.855	1.57	15	0.023	1.171	1.208
380	0.357	1.54	12	0.025	1.283	1.425
382A	0.182	0.72	29	0.028	0.508	0.525
382B	0.726	1.41	22	0.034	1.250	1.317
383	0.438	1.47	20	0.033	1.350	1.362
384	0.507	1.48	15	0.029	1.454	1.492
385	0.559	1.63	11	0.024	1.225	1.300
387	0.589	1.63	20	0.032	1.354	1.354
388	0.628	2.11	14	0.026	1.500	1.500
389	0.551	1.37	11	0.029	1.337	1.388
390	0.757	1.61	17	0.027	1.121	1.533
391	0.690	1.05	19	0.029	0.892	0.904
406	0.828	1.32	19	0.034	1.500	1.500

TABLE 11

Existing Hydrologic Sub-Basin Characteristics
10-Year Storm

Sub-Basin I.D.	Area (Sq. Mile)	Flow Path Length (Miles)	Adjusted Slope (Ft./Mile)	Kb	6-Hr. Time of Concentration (Hours)	24-hr. Time of Concentration (Hours)
356	0.233	0.91	22	0.030	0.508	0.550
357	0.220	0.75	27	0.027	0.371	0.421
358	0.419	1.74	20	0.027	0.767	0.854
359	0.065	0.31	84	0.056	0.246	0.325
360	0.432	1.12	25	0.042	0.813	0.875
361	0.130	0.63	22	0.032	0.404	0.450
362	0.153	0.99	35	0.030	0.429	0.467
363	0.141	0.70	20	0.028	0.404	0.450
364	0.135	0.63	17	0.029	0.438	0.483
365	0.092	0.31	61	0.046	0.242	0.317
366	0.114	0.78	24	0.036	0.512	0.558
367	0.252	1.04	24	0.030	0.587	0.646
369	0.995	1.71	21	0.027	0.829	1.554
370	0.963	1.80	22	0.023	0.688	0.721
371	0.980	1.12	26	0.024	0.508	0.508
372	0.034	0.22	109	0.032	0.129	0.162
373	0.965	1.69	18	0.023	0.754	0.796
374	0.751	1.62	14	0.024	0.783	0.846
376	0.986	1.68	20	0.029	0.850	0.904
377	0.996	1.85	21	0.027	0.813	0.867
378	0.996	1.77	19	0.024	0.804	0.842
379	0.995	1.57	15	0.023	0.796	0.833
380	0.357	1.54	12	0.025	0.892	0.996
382A	0.235	0.72	29	0.028	0.363	0.417
382B	0.732	1.41	22	0.034	0.825	0.883
383	0.990	1.47	20	0.033	0.875	0.925
384	0.991	1.48	15	0.029	0.946	0.988
385	0.568	1.63	11	0.024	0.858	0.946
387	0.945	1.63	20	0.032	0.883	0.942
388	0.993	2.11	14	0.026	1.146	1.208
389	0.697	1.37	11	0.029	0.904	0.988
390	0.891	1.61	17	0.027	0.783	0.837
391	0.738	1.05	19	0.029	0.600	0.633
406	0.828	1.32	19	0.034	0.962	1.000

TABLE 12

Existing Hydrologic Sub-Basin Characteristics
100-Year Storm

Sub-Basin I.D.	Area (Sq. Mile)	Flow Path Length (Miles)	Adjusted Slope (Ft. Mile)	Kb	6-Hr. Time Of Concentration (Hours)	24-Hr. Time Of Concentration (Hurs)
356	0.233	0.91	22	.030	0.400	0.442
357	0.220	0.75	27	.027	0.300	0.354
358	0.419	1.74	20	.027	0.596	0.642
359	0.065	0.31	84	.056	0.200	0.250
360	0.432	1.12	25	.042	0.575	0.608
361	0.130	0.63	22	.032	0.325	0.375
362	0.153	0.99	35	.030	0.346	0.392
363	0.141	0.70	20	.028	0.329	0.379
364	0.135	0.63	17	.029	0.346	0.396
365	0.092	0.31	61	.046	0.196	0.246
366	0.114	0.78	24	.036	0.400	0.442
367	0.252	1.04	24	.030	0.438	0.471
369	0.995	1.71	21	.027	0.629	0.633
370	0.963	1.80	22	.023	0.550	0.550
371	0.980	1.12	26	.024	0.404	0.417
372	0.034	0.22	109	.032	0.112	0.133
373	0.965	1.69	18	.023	0.587	0.596
374	0.751	1.62	14	.024	0.621	0.650
376	0.986	1.68	20	.029	0.654	0.667
377	0.996	1.85	21	.027	0.642	0.654
378	0.996	1.77	19	.024	0.613	0.621
379	0.995	1.57	15	.023	0.608	0.613
380	0.357	1.54	12	.025	0.675	0.729
382A	0.235	0.72	29	.028	0.292	0.346
382B	0.732	1.41	22	.034	0.621	0.646
383	0.990	1.47	20	.033	0.663	0.675
384	0.991	1.48	15	.029	0.696	0.712
385	0.568	1.63	11	.024	0.675	0.725
387	0.945	1.63	20	.032	0.679	0.696
388	0.993	2.11	14	.026	0.842	0.875
389	0.697	1.37	11	.029	0.704	0.742
390	0.891	1.61	17	.027	0.625	0.642
391	0.738	1.05	19	.029	0.475	0.483
406	0.828	1.32	19	.034	0.671	0.688

TABLE 13

Summary Of Sub-Basin Peak Discharges (CFS)
(Existing Conditions)

Sub-Basin	2-Year		10-Year		100-Year	
	6-hr.	24-Hr.	6-Hr.	24-hr.	6-Hr.	24-Hr
356	43	46	117	127	219	267
357	61	72	141	157	243	301
358	52	50	166	154	320	351
359	1	1	19	26	54	77
360	19	23	134	148	328	413
361	33	38	78	86	138	166
362	27	29	85	89	150	174
363	29	32	89	96	151	179
364	24	26	66	74	126	155
365	6	6	34	45	83	116
366	11	11	47	50	93	112
367	32	28	84	94	190	243
369	101	102	385	254	801	1004
370	190	198	508	534	916	1118
371	150	176	560	677	1024	1364
372	13	16	26	31	42	55
373	121	124	427	453	827	1023
374	127	118	373	366	669	774
376	117	128	415	426	824	999
377	129	135	459	462	865	1024
378	122	123	403	426	817	1016
379	124	128	416	447	839	1055
380	41	34	102	98	222	247
382A	46	57	148	167	259	328
382B	82	87	278	293	585	720
383	51	58	395	418	817	1013
384	53	52	331	359	745	926
385	98	92	249	231	464	504
387	79	87	401	404	792	935
388	62	61	281	276	636	718
389	88	88	309	296	589	670
390	159	125	455	458	827	980
391	138	163	416	467	760	980
406	55	54	216	261	581	766

Kb Estimation For Watershed Between Cave Creek & Skunk Creek

Sub Basin	Type D	Type C	Type B	Type A	Weighted m %	Weighted b %	Area Acres	Kb
356	0.0%	0.0%	13.2%	86.8%	-0.00724	0.04528	149.12	0.0295
357	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	140.80	0.0266
358	0.0%	0.0%	12.2%	87.8%	-0.00717	0.04488	268.16	0.0275
359	0.0%	0.0%	95.5%	4.5%	-0.01341	0.07820	41.60	0.0565
360	0.0%	0.0%	78.4%	21.6%	-0.01213	0.07136	276.48	0.0417
361	0.0%	0.0%	14.9%	85.1%	-0.00737	0.04596	83.20	0.0318
362	0.0%	0.0%	11.1%	88.9%	-0.00708	0.04444	97.92	0.0303
363	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	90.24	0.0278
364	0.0%	0.0%	3.9%	96.1%	-0.00654	0.04156	86.40	0.0289
365	0.0%	0.0%	62.2%	37.8%	-0.01092	0.06488	58.88	0.0456
366	0.0%	0.0%	27.5%	72.5%	-0.00831	0.05100	72.96	0.0355
367	0.0%	0.0%	14.8%	85.2%	-0.00736	0.04592	161.28	0.0297
369	0.0%	0.0%	22.0%	78.0%	-0.00790	0.04880	636.80	0.0266
370	0.0%	0.0%	1.6%	98.4%	-0.00637	0.04064	616.32	0.0229
371	0.0%	0.0%	8.5%	91.5%	-0.00689	0.04340	627.20	0.0241
372	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	21.76	0.0316
373	0.0%	0.0%	4.8%	95.2%	-0.00661	0.04192	617.60	0.0235
374	0.0%	0.0%	4.4%	95.6%	-0.00658	0.04176	480.64	0.0241
376	0.0%	0.0%	35.1%	64.9%	-0.00888	0.05404	631.04	0.0292
377	0.0%	0.0%	22.1%	77.9%	-0.00791	0.04884	637.44	0.0267
378	0.0%	0.0%	10.5%	89.5%	-0.00704	0.04420	637.44	0.0245
379	0.0%	0.0%	1.0%	99.0%	-0.00633	0.04040	636.80	0.0227
380	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	228.48	0.0253
382A	0.0%	0.0%	7.2%	92.7%	-0.00679	0.04287	150.40	0.0281
382B	0.0%	0.0%	54.0%	46.0%	-0.01030	0.06160	468.48	0.0341
383	0.0%	0.0%	55.7%	44.3%	-0.01043	0.06228	633.60	0.0331
384	0.0%	0.0%	34.4%	65.6%	-0.00883	0.05376	634.24	0.0290
385	0.0%	0.0%	1.6%	98.4%	-0.00637	0.04064	363.52	0.0243
387	0.0%	0.0%	47.8%	52.2%	-0.00984	0.05912	604.80	0.0318
388	0.0%	0.0%	19.7%	80.3%	-0.00773	0.04788	635.52	0.0262
389	0.0%	0.0%	25.8%	74.2%	-0.00819	0.05032	446.08	0.0286
390	0.0%	0.0%	23.4%	76.6%	-0.00801	0.04936	570.24	0.0273
391	0.0%	0.0%	28.4%	71.6%	-0.00838	0.05136	472.32	0.0289
406	0.0%	0.0%	58.0%	42.0%	-0.01060	0.06320	529.92	0.0343

Hydrologic Sub-Basin Characteristics
(Future Condition)

TABLE 14

Future Hydrologic Sub-Basin Characteristics
2-Year Storm

Sub-Basin I.D.	Area (Sq. Mi.)	Flow Path Length (Miles)	Adjusted Slope (Ft. Mile)	Kb	6-Hr. Time Of Concentration (Hours)	24-Hour Time Of Concentration (Hours)
344	0.182	0.72	29	0.026	0.471	0.479
367	0.199	0.91	22	0.026	0.621	0.637
378	0.220	0.75	27	0.027	0.512	0.512
379	0.294	1.74	20	0.025	0.992	1.033
380	0.065	0.31	84	0.030	0.196	0.229
381	0.854	1.71	21	0.023	0.962	0.946
382	0.729	1.68	20	0.026	1.142	1.538
383	0.726	1.41	22	0.033	1.188	1.188
384	0.383	1.63	20	0.028	1.087	1.079
385	0.641	1.61	17	0.025	1.000	1.013
386	0.021	1.12	25	0.025	0.617	0.633
387	0.112	0.63	22	0.028	0.488	0.492
388	0.111	0.99	35	0.028	0.538	0.542
389	0.948	1.80	22	0.023	0.958	0.946
390	0.757	1.85	21	0.027	1.179	1.154
391	0.407	1.47	20	0.032	1.246	1.196
392	0.438	2.11	14	0.023	1.392	1.383
393	0.506	1.05	19	0.023	0.667	0.658
394	0.512	1.32	19	0.024	0.896	0.904
395	0.098	0.70	20	0.028	0.542	0.550
396	0.135	0.63	17	0.028	0.600	0.621
397	0.035	0.31	61	0.029	0.213	0.254
398	0.896	1.12	26	0.023	0.675	1.567
399	0.771	1.77	19	0.023	0.992	0.988
400	0.501	1.48	15	0.023	1.075	1.046
401	0.371	1.37	11	0.023	0.996	1.025
402	0.034	0.22	109	0.032	0.158	0.188
403	0.956	1.69	18	0.023	1.075	1.075
404	0.845	1.57	30	0.023	0.842	0.817
405	0.559	1.63	11	0.024	1.208	1.242
406	0.038	0.78	24	0.028	0.538	0.554
407	0.233	1.04	24	0.026	0.742	0.788
408	0.751	1.62	14	0.023	1.546	1.046
409	0.356	1.54	12	0.025	1.283	1.379

TABLE 15

Future Hydrologic Sub-Basin Characteristics
10-Year Storm

Sub-Basin I.D.	Area (Sq. Mile)	Flow Path Length (Miles)	Adjusted Slope (Ft. Mile)	Kb	6-Hr. Time Of Concentration (Hours)	24-Hr. Time Of Concentration (Hours)
344	0.235	0.72	29	0.026	0.346	0.396
367	0.199	0.91	22	0.026	0.450	0.488
378	0.220	0.75	27	0.027	0.371	0.421
379	0.356	1.74	20	0.025	0.712	0.788
380	0.065	0.31	84	0.030	0.158	0.196
381	0.854	1.71	21	0.023	0.683	0.717
382	0.842	1.68	20	0.026	0.771	0.817
383	0.732	1.41	22	0.033	0.788	0.850
384	0.739	1.63	20	0.028	0.767	0.817
385	0.775	1.61	17	0.025	0.733	0.779
386	0.094	1.12	25	0.025	0.463	0.500
387	0.112	0.63	22	0.028	0.367	0.417
388	0.153	0.99	35	0.028	0.404	0.450
389	0.948	1.80	22	0.023	0.688	0.721
390	0.996	1.85	21	0.027	0.808	0.863
391	0.959	1.47	20	0.032	0.825	0.875
392	0.803	2.11	14	0.023	0.958	1.029
393	0.554	1.05	19	0.023	0.492	0.508
394	0.517	1.32	19	0.024	0.629	0.663
395	0.141	0.70	20	0.028	0.404	0.450
396	0.135	0.63	17	0.028	0.425	0.471
397	0.035	0.31	61	0.029	0.175	0.217
398	0.896	1.12	26	0.023	0.483	0.488
399	0.901	1.77	19	0.023	0.717	0.754
400	0.985	1.48	15	0.023	0.733	0.771
401	0.517	1.37	11	0.023	0.729	0.792
402	0.034	0.22	109	0.032	0.129	0.158
403	0.956	1.69	18	0.023	0.754	0.792
404	0.985	1.57	30	0.023	0.583	0.592
405	0.568	1.63	11	0.024	0.850	0.942
406	0.083	0.78	24	0.028	0.408	0.454
407	0.233	1.04	24	0.026	0.508	0.558
408	0.751	1.62	14	0.023	0.754	0.813
409	0.357	1.54	12	0.025	0.892	0.996

TABLE 16

Future Hydrologic Sub-Basin Characteristics
100-Year Storm

Sub-Basin I.D.	Area (Sq. Mile)	Flow Path Length (Miles)	Adusted Slope (Ft. Mile)	Kb	6-Hr. Time Of Concentration (Hours)	24-Hour Time Of Concentration (Hours)
344	.235	0.72	29	0.026	0.275	0.333
367	.233	0.91	22	0.026	0.358	0.404
378	.220	0.75	27	0.027	0.300	0.354
379	.407	1.74	20	0.025	0.558	0.600
380	.065	0.31	84	0.030	0.138	0.167
381	.995	1.71	21	0.023	0.546	0.542
382	.986	1.68	20	0.026	0.604	0.608
383	.732	1.41	22	0.033	0.604	0.625
384	.945	1.63	20	0.028	0.613	0.621
385	.891	1.61	17	0.025	0.592	0.604
386	.432	1.12	25	0.025	0.375	0.421
387	.130	0.63	22	0.028	0.296	0.350
388	.153	0.99	35	0.028	0.329	0.379
389	.963	1.80	22	0.023	0.550	0.550
390	.996	1.85	21	0.027	0.642	0.654
391	.990	1.47	20	0.032	0.642	0.650
392	.993	2.11	14	0.023	0.742	0.771
393	.738	1.05	19	0.023	0.400	0.425
394	.793	1.32	19	0.024	0.492	0.496
395	.141	0.70	20	0.028	0.329	0.379
396	.135	0.63	17	0.028	0.338	0.387
397	.092	0.31	61	0.029	0.150	0.179
398	.980	1.12	26	0.023	0.387	0.404
399	.996	1.77	19	0.023	0.575	0.579
400	.991	1.48	15	0.023	0.575	0.579
401	.697	1.37	11	0.023	0.587	0.613
402	.034	0.22	109	0.032	0.108	0.133
403	.965	1.69	18	0.023	0.587	0.592
404	.995	1.57	30	0.023	0.458	0.458
405	.568	1.63	11	0.024	0.675	0.721
406	.114	0.78	24	0.028	0.329	0.379
407	.252	1.04	24	0.026	0.392	0.433
408	.751	1.62	14	0.023	0.600	0.625
409	.357	1.54	12	0.025	0.675	0.729

TABLE 17

Summary Of Peak Discharges (CFS)
Future Conditions

Sub-Basin I.D.	2-Year		10-Year		100-Year	
	6 Hr.	24 Hr.	6 Hr.	24 Hr.	6 Hr.	24 Hr.
344	52	64	156	175	266	335
367	49	55	115	125	238	286
378	61	73	141	157	243	301
379	53	51	157	146	330	362
380	30	36	55	757	84	108
381	187	204	457	480	952	1183
382	119	102	392	406	871	1070
383	92	104	303	314	609	748
384	80	85	382	385	877	1053
385	163	165	436	438	866	1028
386	7	8	64	69	482	578
387	34	40	74	80	144	175
388	32	35	92	95	156	180
389	213	228	511	529	919	1120
390	134	144	473	468	871	1031
391	61	71	436	453	870	1071
392	64	64	318	302	760	852
393	166	168	384	438	847	1074
394	98	110	264	289	759	980
395	30	33	90	96	152	179
396	27	30	70	78	130	160
397	16	19	29	34	119	153
398	233	156	554	657	1066	1405
399	182	190	493	505	957	1152
400	88	101	485	518	916	1140
401	96	95	292	288	678	795
402	16	19	28	33	44	57
403	164	172	429	454	832	1030
404	159	185	506	581	962	1256
405	103	99	259	235	469	510
406	11	11	49	50	114	133
407	36	35	94	105	210	264
408	143	177	394	385	690	802
409	41	35	103	98	222	247

Kb Estimation For Watershed Between Cave Creek & Skunk Creek Future Conditions

Sub Basin	Type D %	Type C %	Type B %	Type A %	Weighted m %	Weighted b %	Area Acres	Kb
344	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	150.40	0.0264
367	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	149.12	0.0264
378	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	140.80	0.0266
379	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	260.48	0.0249
380	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	41.60	0.0299
381	0.0%	0.0%	3.4%	96.6%	-0.00651	0.04136	636.80	0.0231
382	0.0%	0.0%	20.5%	79.5%	-0.00779	0.04820	631.04	0.0264
383	0.0%	0.0%	50.2%	49.8%	-0.01002	0.06008	468.48	0.0333
384	0.0%	0.0%	26.0%	74.0%	-0.00820	0.05040	604.80	0.0276
385	0.0%	0.0%	9.1%	90.9%	-0.00693	0.04364	570.24	0.0245
386	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	276.48	0.0247
387	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	83.20	0.0280
388	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	97.92	0.0276
389	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	616.32	0.0226
390	0.0%	0.0%	21.2%	78.8%	-0.00784	0.04848	637.44	0.0265
391	0.0%	0.0%	50.0%	50.0%	-0.01000	0.06000	633.60	0.0320
392	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	635.52	0.0225
393	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	472.32	0.0233
394	0.0%	0.0%	2.3%	97.7%	-0.00642	0.04092	507.52	0.0235
395	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	90.24	0.0278
396	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	86.40	0.0279
397	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	58.88	0.0289
398	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	627.20	0.0225
399	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	637.44	0.0225
400	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	634.24	0.0225
401	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	446.08	0.0234
402	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	21.76	0.0316
403	0.0%	0.0%	3.8%	96.2%	-0.00654	0.04152	617.60	0.0233
404	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	636.80	0.0225
405	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	363.52	0.0240
406	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	72.96	0.0284
407	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	161.28	0.0262
408	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	480.64	0.0232
409	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	228.48	0.0253

SECTION IV

Hydrograph Routing Parameters

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I-17 & BELL ROAD INTERSECTION
STAGE - STORAGE - DISCHARGE RELATIONSHIP

SE	SV			SQ
Stage (msl)	Storage Volume (Ac-Ft)	Pump* Discharge (cfs)	Weir Discharge (cfs)	Total Discharge (cfs)
14.0	0	0	0	0
20.0	9.15	0	0	0
29.06	90.00	0	0	0
29.5	96.00	0	32	32
30.0	106.21	0	447	447
31.0	140.00	0	4346	4346

* Assume Pump Fails to Operate

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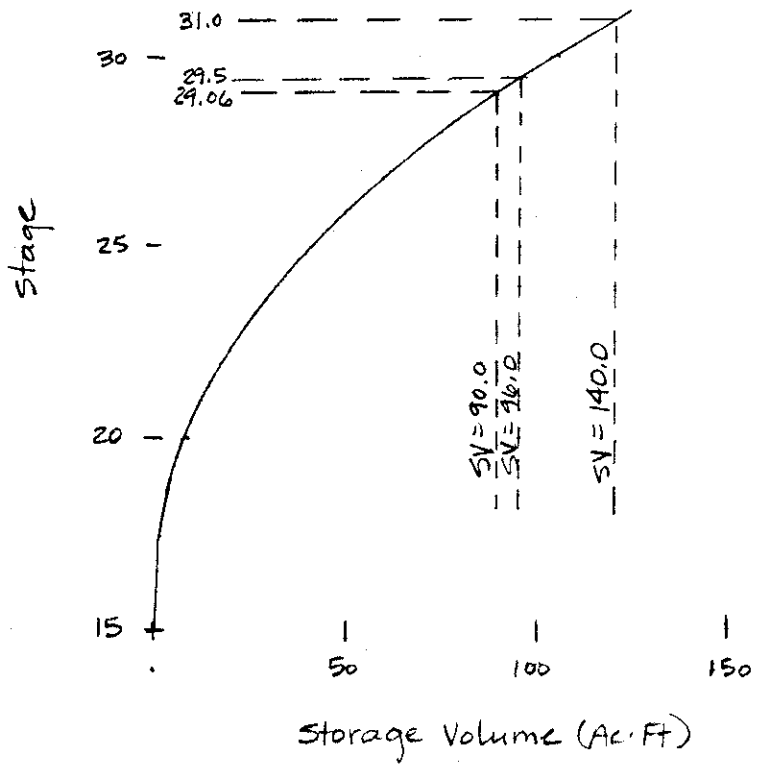
STAGE - STORAGE RELATIONSHIP FOR I-17 & BELL ROAD

Stage (MSL)	Interval (Ft)	Area (Ac)	Volume (Ac-Ft)	Storage Volume (Ac-Ft)
14.0		0.55		0
	6.0		9.15	
20.0		2.50		9.15
	9.06			
29.06				90.00 *
	0.44			
29.5				96.00 *
	0.5		97.07	
30.0		16.92		106.21
	1.0			
31.0				140.00 *

* VALUE TAKEN FROM CURVE BELOW



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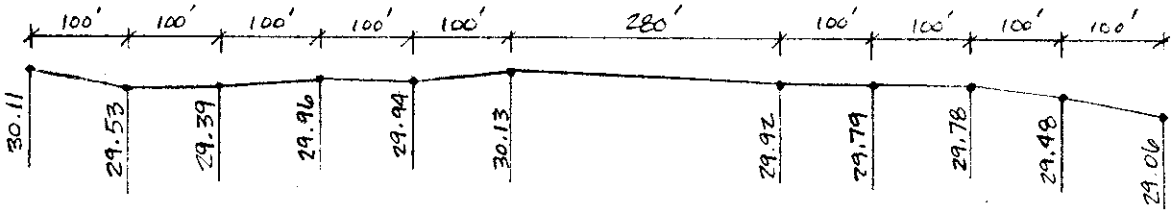
WEIR FLOW CALCULATIONS FOR I-17 & BELL ROAD INTERSECTION



WSE = 29.06

$Q = 0$

WSE = 29.5

$$Q = 2.63\left[79 \times \frac{.11}{2}^{1.5} + 19 \times \frac{.11}{2}^{1.5} + 7 \times \frac{.02}{2}^{1.5} + 100 \times \left(\frac{0.02+.44}{2}\right)^{1.5}\right] = \underline{32\text{ cfs}}$$

WSE = 30.0

$$Q = 2.63\Big[81 \times \frac{.47}{2}^{1.5} + 100 \times \left(\frac{.47+.61}{2}\right)^{1.5} + 100 \times \left(\frac{.61+.04}{2}\right)^{1.5} + 100 \times \left(\frac{.04+.06}{2}\right)^{1.5}$$
$$+ 32 \times \frac{.06}{2}^{1.5} + 107 \times \frac{.08}{2}^{1.5} + 100 \times \left(\frac{.08+.21}{2}\right)^{1.5} + 100 \times \left(\frac{.21+.22}{2}\right)^{1.5}$$
$$+ 100 \times \left(\frac{.22+.52}{2}\right)^{1.5} + 100 \times \left(\frac{.52+.94}{2}\right)^{1.5}\Big] = \underline{447\text{ cfs}}$$

WSE = 31.0

$$Q = 2.63\Big[100 \times \left(\frac{.89+1.47}{2}\right)^{1.5} + 100 \times \left(\frac{1.47+1.61}{2}\right)^{1.5} + 100 \times \left(\frac{1.61+1.04}{2}\right)^{1.5} + 100 \times \left(\frac{1.04+1.06}{2}\right)^{1.5}$$
$$+ 100 \times \left(\frac{1.06+.87}{2}\right)^{1.5} + 280 \times \left(\frac{.87+1.08}{2}\right)^{1.5} + 100 \times \left(\frac{1.08+1.21}{2}\right)^{1.5}$$
$$+ 100 \times \left(\frac{1.21+1.22}{2}\right)^{1.5} + 100 \times \left(\frac{1.22+1.52}{2}\right)^{1.5} + 100 \times \left(\frac{1.52+1.94}{2}\right)^{1.5}\Big] = \underline{4346\text{ cfs}}$$

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I-17 & GREENWAY RD INTERSECTION

STAGE - STORAGE - DISCHARGE RELATIONSHIP

SE	SV			SQ
Stage (msl)	Storage Volume (Ac-Ft)	Pump* Discharge (cfs)	Weir Discharge (cfs)	Total Discharge cfs
1296.0	0	0	0	0
1300.0	8.96	0	0	0
1306.0	57.28	0	0	0
1306.77	65.00	0	0	0
1308.0	82.00	0	193	193
1309.0	97.00	0	609	609
1310.0	112.00	0	2690	2690

* Assume Pump Fails to Operate.

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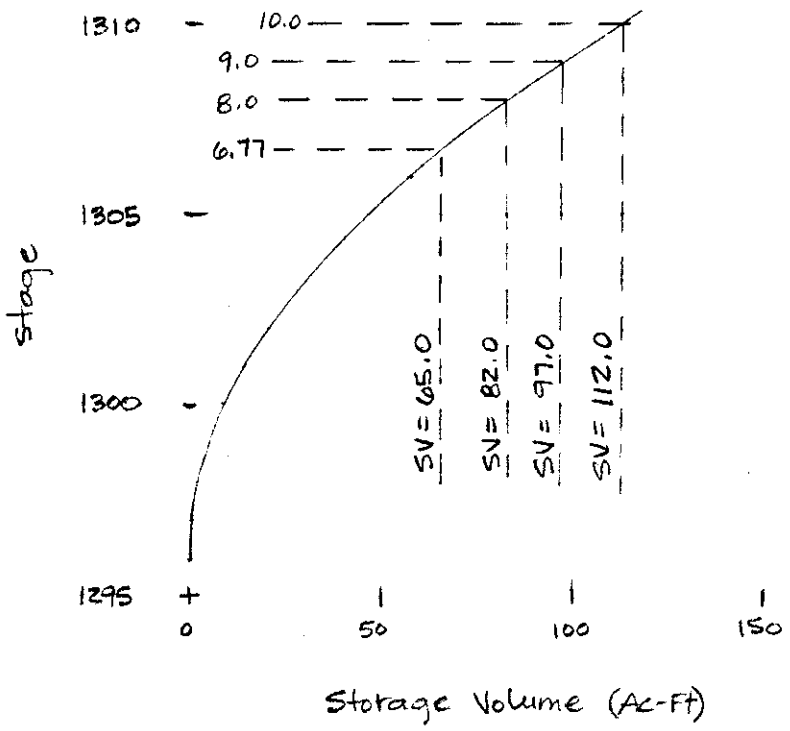
STAGE – STORAGE RELATIONSHIP FOR I-17 & GREENWAY RD.

Stage (MSL)	Interval (Ft)	Area (Ac)	Volume (Ac-Ft)	Storage Volume (Ac-Ft)
1296.0		0.83		0
	4.0		8.96	
1300.0		3.66		8.96
	6.0		48.32	
1306.0		12.45		57.28
	0.77			
1306.77				65.00*
	1.23			
1308.0				82.00*
	1.0			
1309.0				97.00*
	1.0			
1310.0				112.00*

* VALUE TAKEN FROM CURVE BELOW



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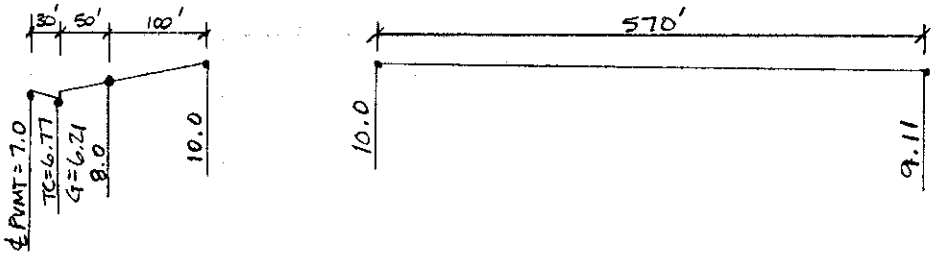
WEIR FLOW CALCULATION FOR I-17 & GREENWAY RD. INTERSECTION



WSE = 6.77

Q = 0

WSE = 8.0

$$Q = 2.63\left[30 \times \left(\frac{1.0+1.79}{2}\right)^{1.5} + 50 \times \frac{1.23}{2}^{1.5}\right] = \underline{193\ cfs}$$

WSE = 9.0

$$Q = 2.63\left[30 \times \left(\frac{2.0+2.79}{2}\right)^{1.5} + 50 \times \left(\frac{2.23+1.0}{2}\right)^{1.5} + 50 \times \frac{1.0}{2}^{1.5}\right] = \underline{609\ cfs}$$

WSE = 10.0

$$Q = 2.63\left[30 \times \left(\frac{3.0+3.79}{2}\right)^{1.5} + 50 \times \left(\frac{3.23+2.0}{2}\right)^{1.5} + 100 \times \frac{2.0}{2}^{1.5} + 570 \times \frac{1.89}{2}^{1.5}\right] = \underline{2690\ cfs}$$

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 12/92	Job No. 0146
	Checked by	Date	Sheet No.
	For ACDC ADMS		

I-17 & THUNDERBIRD RD. INTERSECTION

STAGE - STORAGE - DISCHARGE RELATIONSHIP

SE	SV			SQ
Stage (msl)	Storage Volume (Ac-Ft)	Pump* Discharge (cfs)	Weir Discharge (cfs)	Total Discharge (cfs)
80.0	0	0	0	0
89.84	39.50	0	0	0
90.0	39.67	0	0.1	0.1
90.9	47.00	0	35	35
92.0	57.00	0	257	257
93.0	67.00	0	1179	1179
94.0	79.00	0	3178	3178

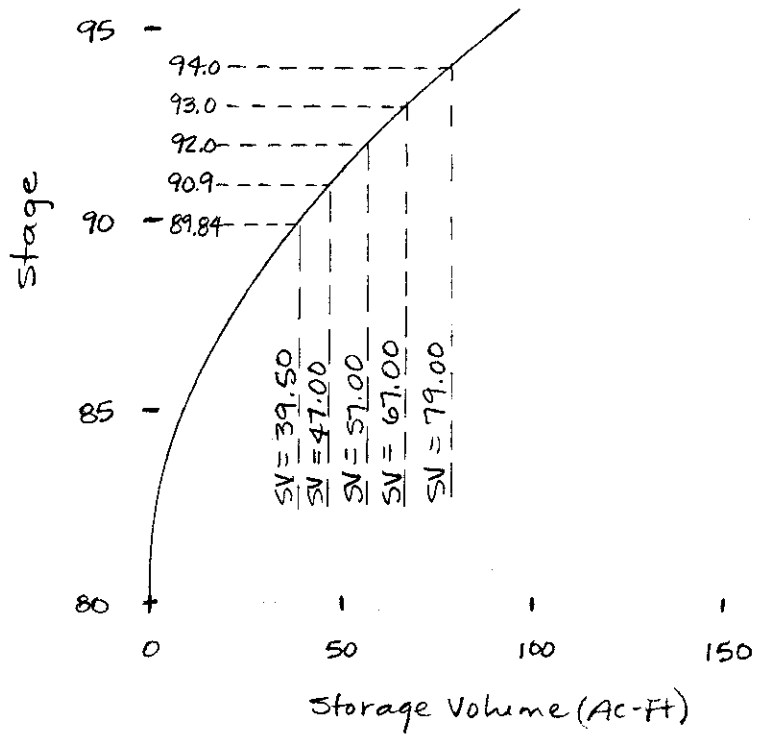
* Assume Pump Fails to Operate.

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 12/92	Job No. 0146
	Checked by	Date	Sheet No.
	For ACDC ADMS		

STAGE - STORAGE RELATIONSHIP FOR I-17 & THUNDERBIRD RD

Stage (msl)	Interval (Ft)	Area (Ac)	Volume (Ac-Ft)	Storage Volume (Ac-Ft)
80.0		0.83		0
	9.84			
89.84			39.67	39.50*
	0.16			
90.0		7.11		39.67
	0.9			
90.9				47.00*
	1.1			
92.0				57.00*
	1.0			
93.0				67.00*
	1.0			
94.0				79.00*

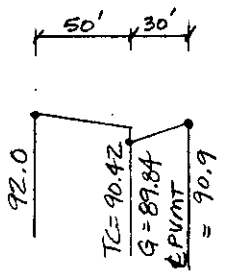
*VALUE TAKEN FROM CURVE BELOW



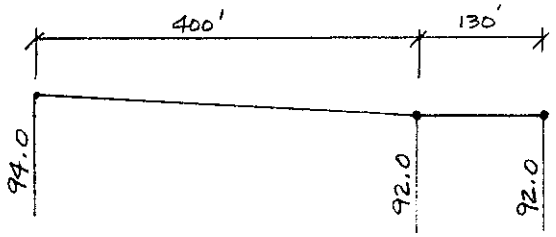
KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 12/92	Job No. 0146
	Checked by	Date	Sheet No.
	For ACDC ADMS		

WEIR FLOW CALCULATIONS FOR I-17 & THUNDERBIRD RD. INTERSECTION

$Q = CLH^{1.5}$ where: $C = 2.63$



West overflow



Southwest overflow

WSE = 89.84

$Q = 0$

WSE = 90.0

$Q = 2.63\left(4.5 \times \frac{.16}{2}^{1.5}\right) = \underline{0.1\text{cfs}}$

WSE = 90.9

$Q = 2.63\left(30 \times \frac{1.06}{2}^{1.5} + 15 \times \frac{.48}{2}^{1.5}\right) = \underline{35\text{ cfs}}$

WSE = 92.0

$Q = 2.63\left[50 \times \frac{1.58}{2}^{1.5} + 30 \times \left(\frac{2.16+1.10}{2}\right)^{1.5}\right] = \underline{257\text{cfs}}$

WSE = 93.0

$Q = 2.63\left[50 \times \left(\frac{1.04\ 2.58}{2}\right)^{1.5} + 30 \times \left(\frac{3.16+2.10}{2}\right)^{1.5} + 130 \times 1.0^{1.5} + 200 \times \frac{1.0}{2}^{1.5}\right] = \underline{1179\text{cfs}}$

WSE = 94.0

$Q = 2.63\left[50 \times \left(\frac{2.0+3.58}{2}\right)^{1.5} + 30 \times \left(\frac{4.16+3.10}{2}\right)^{1.5} + 130 \times 2.0^{1.5} + 400 \times \frac{2.0}{2}^{1.5}\right] = \underline{3178\text{cfs}}$

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 12/92	Job No. 0146
	Checked by	Date	Sheet No.
	For ACDC AOMS		

I-17 & CACTUS RD. INTERSECTION

STAGE - STORAGE - DISCHARGE RELATIONSHIP

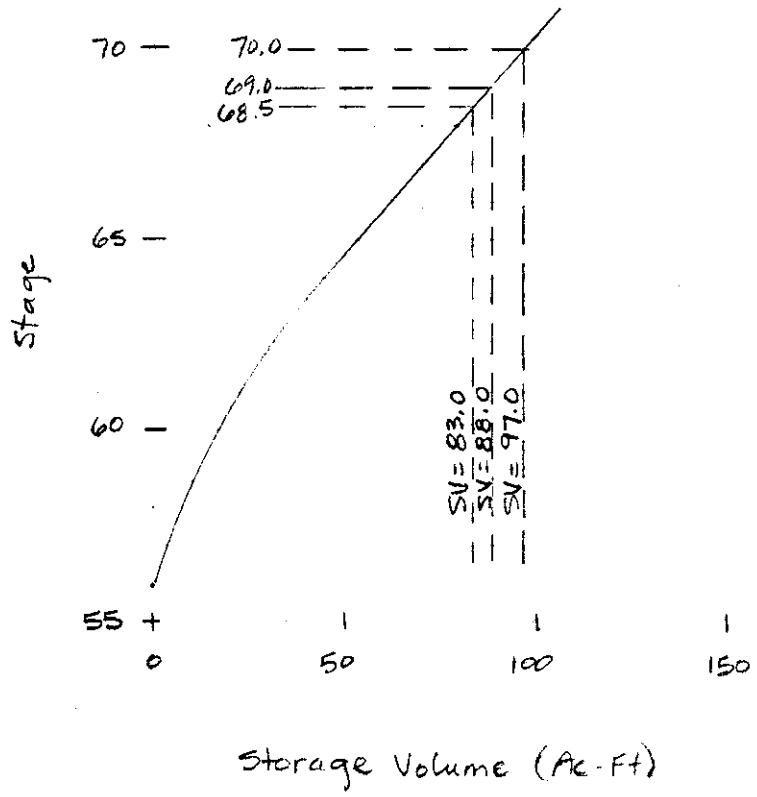
SE	SV			SQ
Stage (msl)	Storage Volume (Ac-Ft.)	Pump * Discharge (cfs)	Weir Discharge (cfs)	Total Discharge (cfs)
56.0	0	0	0	0
68.0	78.68	0	0	0
68.5	83.00	0	120	120
69.0	88.00	0	416	416
70.0	97.00	0	1612	1612

* Assume Pump Fails to Operate.

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 12/92	Job No. 0146
	Checked by	Date	Sheet No.
	For ACDC ADMS		

STAGE - STORAGE RELATIONSHIP FOR I-17 & CACTUS RD. INTERSECTION

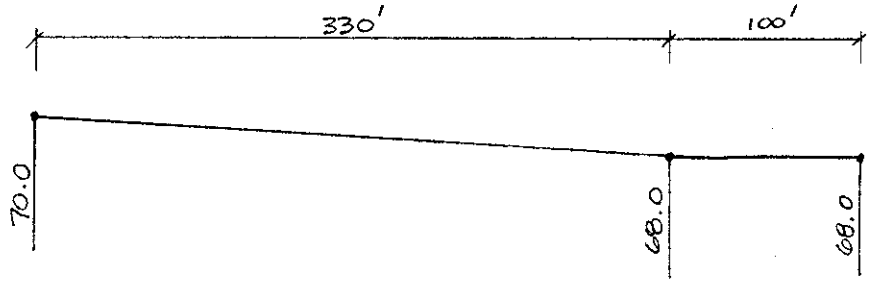
Stage (msl)	Interval (Ft)	Area (Ac)	Volume (Ac-Ft)	Storage Volume (Ac-Ft)
56.0		1.139		0
	10.0		78.68	
68.0		11.974		78.68
	0.5			
68.5				83.0 *
	0.5			
69.0				88.0 *
	1.0			
70.0				97.0 *



KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 12/92	Job No. 0146
	Checked by	Date	Sheet No.
	For ACDC ADMS		

WEIR FLOW CALCULATIONS FOR I-17 & CACTUS RD. INTERSECTION

$Q = CLH^{1.5}$ where: $C = 2.63$



WSE = 68.0

$Q = 0$

WSE = 68.5

$Q = 2.63\left(82.5 \times \frac{0.5}{2}^{1.5} + 100 \times 0.5^{1.5}\right) = \underline{120 \text{ cfs}}$

WSE = 69.0

$Q = 2.63\left(165 \times \frac{1.0}{2}^{1.5} + 100 \times 1.0^{1.5}\right) = \underline{416 \text{ cfs}}$

WSE = 70.0

$Q = 2.63\left(330 \times \frac{2.0}{2}^{1.5} + 100 \times 2.0^{1.5}\right) = \underline{1612 \text{ cfs}}$

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 12/92	Job No. 0146
	Checked by	Date	Sheet No.
	For ACDC ADMS		

I-17 & PEORIA AVE. INTERSECTION

STAGE - STORAGE - DISCHARGE RELATIONSHIP

SE	SV			SQ
Stage (msl.)	Storage Volume (Ac-Ft)	Pump * Discharge (cfs)	Weir Discharge (cfs)	Total Discharge (cfs)
33.4	0	0	0	0
40.0	2.59	0	0	0
46.0	44.96	0	0	0
46.5	53.00	0	286	286
47.0	60.00	0	905	905
48.0	76.00	0	3113	3113

* Assume Pump Fails to Operate.

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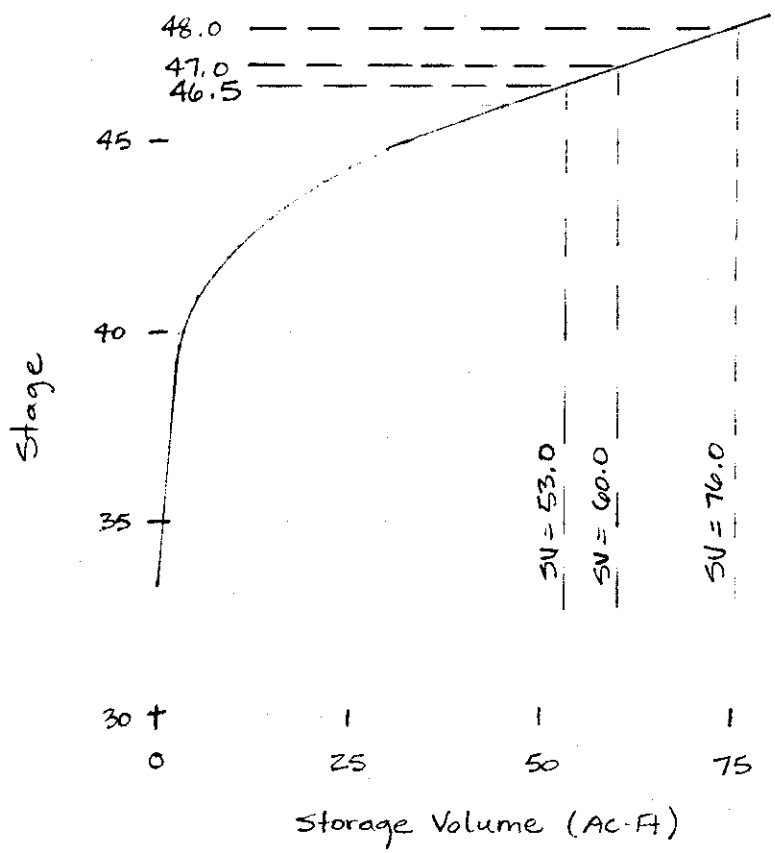
	For ACDC ADMS		

STAGE - STORAGE RELATIONSHIP FOR I-17 & PEORIA AVE. INTERSECTION

Stage (msl)	Interval (Ft.)	Area (Ac)	Volume (Ac-Ft)	Storage Volume (Ac-Ft)
33.4		0		0
	6.6		2.59	
40.0		1.18		2.59
	6.0		44.96	
46.0		12.95		44.96
	0.5			
46.5				53.00 *
	0.5			
47.0				60.00 *
	1.0			
48.0				76.00 *

* VALUE TAKEN FROM CURVE BELOW



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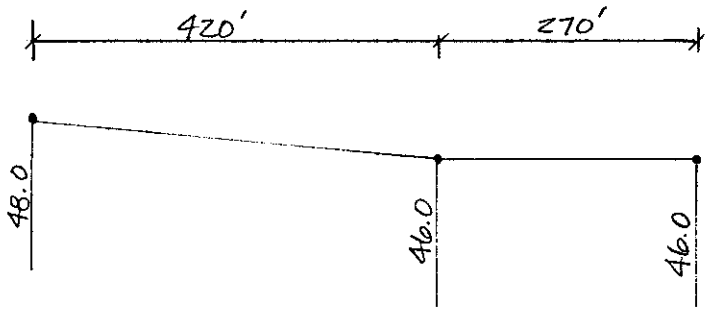
	Checked by	Date	Sheet No.
	For ACDC ADMS		

WEIR FLOW CALCULATIONS FOR I-17 & PEORIA AVE. INTERSECTION

$Q = CLH^{1.5}$ where: $C = 2.63$



WSE = 46.0

$Q = 0$

WSE = 46.5

$Q = 2.63\left(105 \times \frac{0.50}{2}^{1.5} + 270 \times 0.50^{1.5}\right) = \underline{286 cfs}$

WSE = 47.0

$Q = 2.63\left(210 \times \frac{1.0}{2}^{1.5} + 270 \times 1.0^{1.5}\right) = \underline{905 cfs}$

WSE = 48.0

$Q = 2.63\left(420 \times \frac{2.0}{2}^{1.5} + 270 \times 2.0^{1.5}\right) = \underline{3113 cfs}$

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 5/93	Job No. 0146
	Checked by	Date	Sheet No.
	For NE Cor. Paradise Ln. & 47th Ave.		

STAGE - STORAGE - DISCHARGE RELATIONSHIP

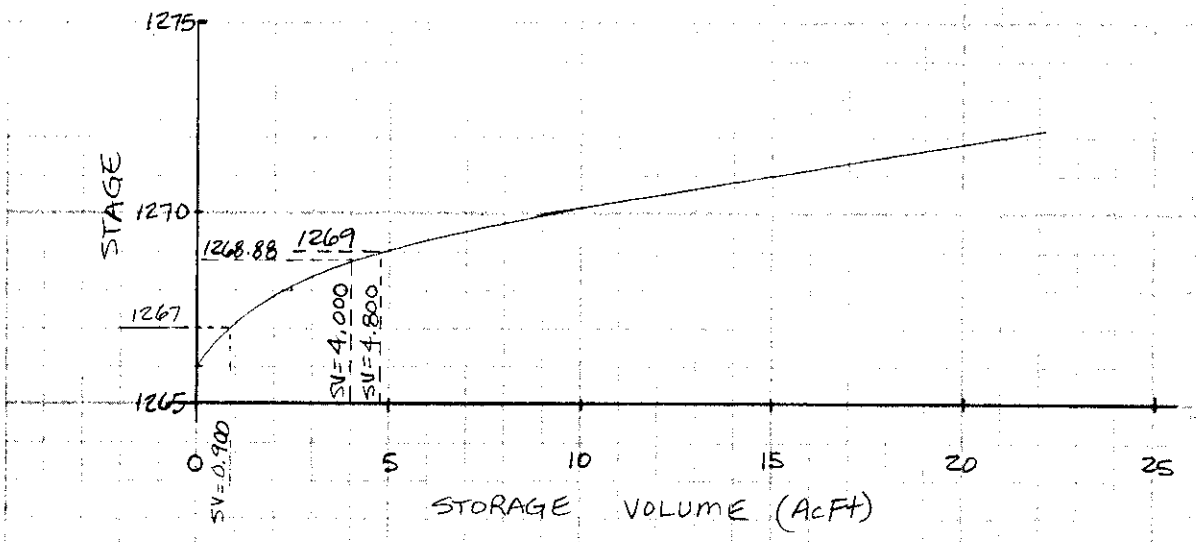
SE	SV			SQ
Stage (Ft)	Storage Volume (Ac-Ft)	Culvert Discharge (cfs)	Weir Discharge (cfs)	Total Discharge (cfs)
1266	0	0	0	0
1267	0.900	2.3	0	2.3
1268	2.846	4.7	0	4.7
1268.88	4.000	6.0	0	6.0
1269	4.800	6.2	2.6	8.8
1270	9.365	7.5	636.6	644.1
1272	21.155	10.0	8338.7	8348.7

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by CMT	Date 5/93	Job No. 0146
	Checked by	Date	Sheet No.
	For NE Cor Paradise Ln & 47th Ave.		

STAGE, STORAGE RELATIONSHIP FOR DETENTION BASIN IN 38Z A

STAGE	INTERVAL (FT)	AREA (AC)	VOLUME (ACFT)	STORAGE VOLUME (ACFT)
1266		0.771		0
	1.00			
1267			2.846	0.900*
	1.00			
1268		2.075		2.846
	0.88			
1268.88				4.000*
	0.12		6.519	
1269				4.800*
	1.00			
1270		4.444		9.365
	2.00		11.790	
1272		7.346		21.155

* VALUES TAKEN FROM CURVE BELOW



PROJECT: ACDC AOMS

NE Cor. Paradise Ln. & 47th Ave.

DESIGNER: LMT

DATE: 5/93

HYDROLOGIC AND CHANNEL INFORMATION

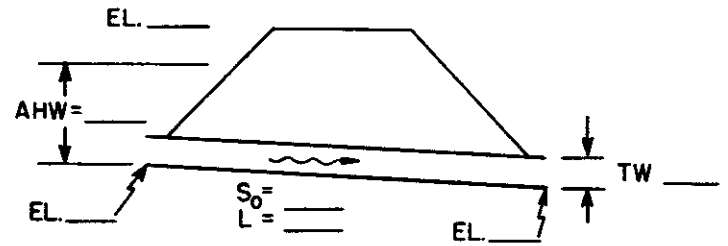
Q_1 = _____ TW_1 = _____

Q_2 = _____ TW_2 = _____

(Q_1 = DESIGN DISCHARGE, SAY Q_{25}
Q_2 = CHECK DISCHARGE, SAY Q_{50} OR Q_{100})

SKETCH

STATION : _____



MEAN STREAM VELOCITY = _____

MAX. STREAM VELOCITY = _____

CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE	HEADWATER COMPUTATION: INLET CONT.		OUTLET CONTROL HW=H + h_o − LS_o								CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS
			$\frac{HW}{D}$	HW	K_e	H	d_c	$\frac{d_c+D}{2}$	TW	h_o	LS_o	HW				
12" ϕ	2.3	12"	1	1												WSE = 1267
W/45° Wingwall	4.7		2	2												WSE = 1268
	6.0		2.88	2.88												WSE = 1268.88
	6.2		3	3												WSE = 1269
	7.5		4	4												WSE = 1270
	10.0	12"	6	6												WSE = 1272

SUMMARY & RECOMMENDATIONS:

Figure 7

SECTION V

Divert & Onsite Retention Parameters

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by L. Thomas	Date 2-4-94	Job No. 146
	Checked by	Date	Sheet No.
	For ACDC ADMS		

SUMMARY OF SPLIT FLOW ANALYSIS

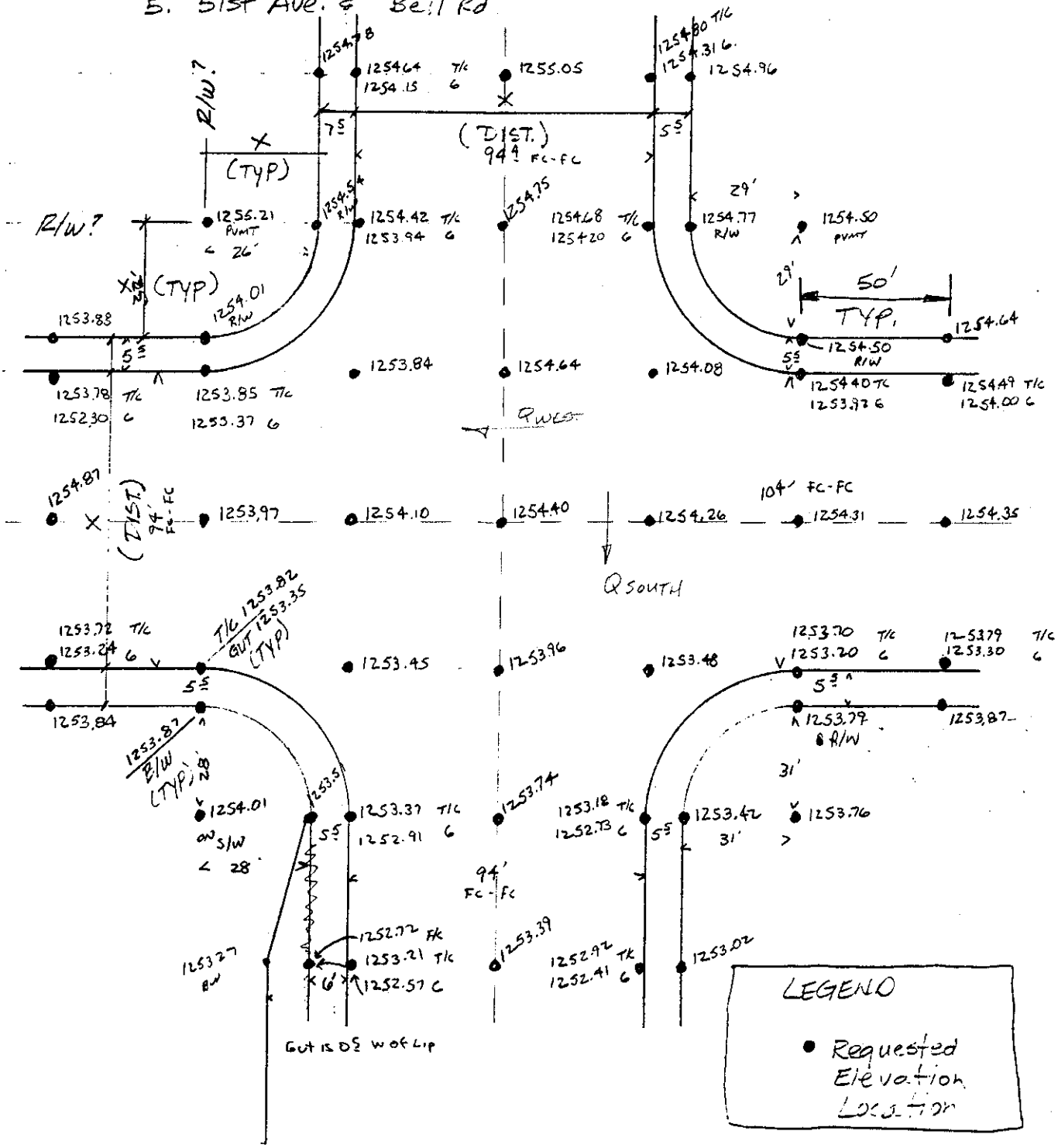
- Subbasins were delineated for average one square mile areas.
- Historical drainage patterns are southwesterly.
- Major street intersection is subbasin's downstream concentration point.
- Major street intersections were surveyed and evaluated for 100-year event. Downstream street capacities were calculated using Manning's equation and compared to HEC-1 peak discharges. In addition, water depths were calculated using the weir equation. It was determined that intersections would be inundated at average flood water depths of 1½ feet and drain to the south and west. Based on longitudinal street slopes, a 50 percent flow split was assumed and modeled as a diversion in HEC-1.

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 9-25-92	Job No. 0146
	Checked by	Date	Sheet No. 4 of 5
	For ACDC ADMS 43rd AVE & T-Bird		

N

SURVEY REQUEST

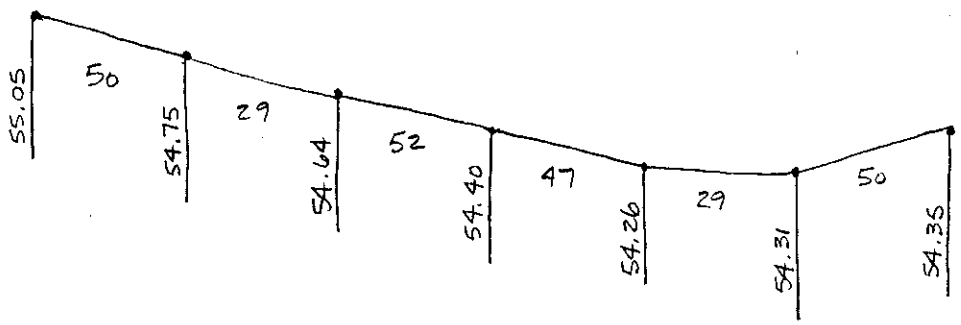
1. 31st Ave & Cactus Rd.
2. 35th Avenue & Greenway Rd.
3. 43rd Avenue & Thunderbird Rd. BC INTH = 1253.84
4. 43rd Ave. & Sweetwater
5. 51st Ave. & Bell Rd



KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by	Date	Job No.
	Checked by	Date	Sheet No.
	For		

$Q = CLH^{1.5}$ where $C = 2.63$

43rd Ave. & T-Bird



WSE = 54.35

$Q_1 - Q_3 = 0$
$Q_4 = 2.63 \times 16.8 \times (.09/2)^{1.5} = 0.42$
$Q_5 = 2.63 \times 29 \times [(.09 + .04)/2]^{1.5} = 1.26$
$Q_6 = 2.63 \times 50 \times .04^{1.5} = 1.05$

$Q_{WEST} = 0$
$Q_{SOUTH} = 2.73$ 100%
$Q_{TOTAL} = 2.73$

WSE = 55.05

$Q_1 = 2.63 \times 50 \times (.3/2)^{1.5} = 7.64$
$Q_2 = 2.63 \times 29 \times [(.3 + .41)/2]^{1.5} = 16.13$
$Q_3 = 2.63 \times 52 \times [(.41 + .65)/2]^{1.5} = 52.77$
$Q_4 = 2.63 \times 47 \times [(.65 + .79)/2]^{1.5} = 75.52$
$Q_5 = 2.63 \times 29 \times [(.79 + .74)/2]^{1.5} = 51.03$
$Q_6 = 2.63 \times 50 \times [(.74 + .70)/2]^{1.5} = 80.34$

$Q_{WEST} = 76.54$ (27%)
$Q_{SOUTH} = 206.89$ (73%)
$Q_{TOTAL} = 283.43$

WSE = 56.00

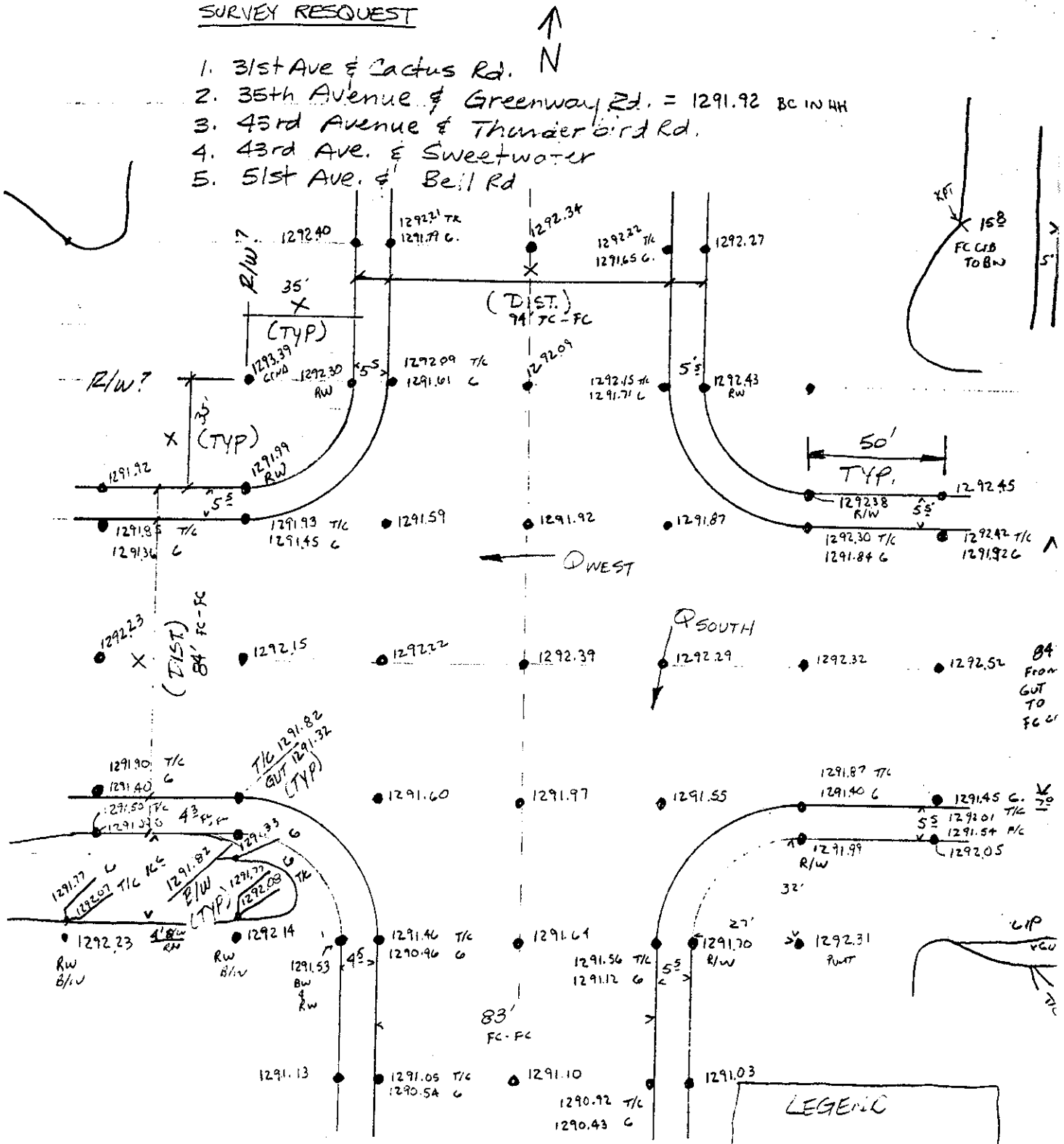
$Q_1 = 2.63 \times 50 \times [(.95 + 1.25)/2]^{1.5} = 151.71$
$Q_2 = 2.63 \times 29 \times [(1.25 + 1.36)/2]^{1.5} = 113.70$
$Q_3 = 2.63 \times 52 \times [(1.36 + 1.60)/2]^{1.5} = 246.24$
$Q_4 = 2.63 \times 47 \times [(1.60 + 1.74)/2]^{1.5} = 266.76$
$Q_5 = 2.63 \times 29 \times [(1.74 + 1.69)/2]^{1.5} = 171.30$
$Q_6 = 2.63 \times 50 \times [(1.69 + 1.65)/2]^{1.5} = 283.79$

$Q_{WEST} = 511.65$ (41%)
$Q_{SOUTH} = 721.85$ (59%)
$Q_{TOTAL} = 1233.50$

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 7-25-92	Job No. 0146
	Checked by	Date	Sheet No. 2 of 5
	For ACDC ADMS 35th AVE & GREENWAY		

SURVEY REQUEST

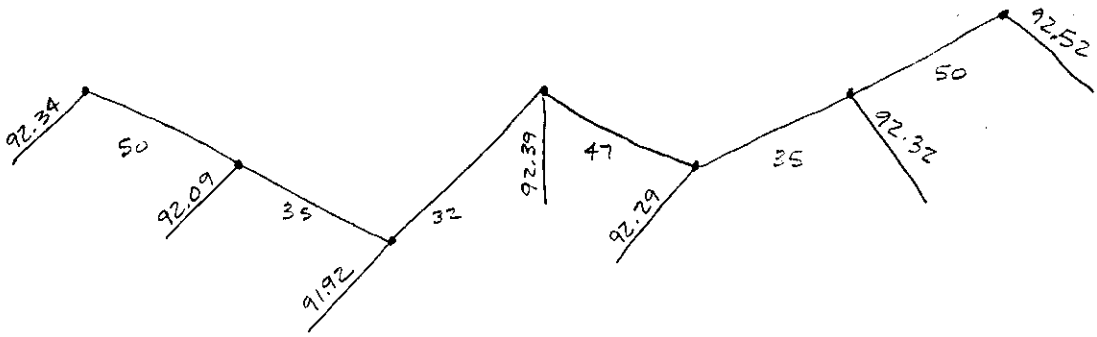
1. 31st Ave & Cactus Rd.
2. 35th Avenue & Greenway Rd. = 1291.92 BC IN HH
3. 45rd Avenue & Thunderbird Rd.
4. 43rd Ave. & Sweetwater
5. 51st Ave. & Bell Rd



KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by	Date	Job No.
	Checked by	Date	Sheet No.
	For		

$Q = CLH^{1.5}$ where $C = 2.63$

35th Avenue & Greenway



WSE = 92.34

$Q_1 = 2.63 \times 50 \times \left(\frac{.25}{2}\right)^{1.5} = 5.81$

$Q_2 = 2.63 \times 35 \times [(.25 + .42)/2]^{1.5} = 17.85$

$Q_3 = 2.63 \times 28.6 \times \left(\frac{.42}{2}\right)^{1.5} = 7.24$

$Q_4 = 2.63 \times 23.5 \times (0.05/2)^{1.5} = 0.24$

$Q_5 = 2.63 \times 35 \times [(0.05 + 0.02)/2]^{1.5} = 0.60$

$Q_6 = 2.63 \times 5 \times (0.02/2)^{1.5} = 0.01$

$Q_{WEST} = 30.90 (97\%)$

$Q_{SOUTH} = 0.85 (3\%)$

$Q_{TOTAL} = 31.75$

WSE = 92.52

$Q_1 = 2.63 \times 50 \times [(.18 + .43)/2]^{1.5} = 22.15$

$Q_2 = 2.63 \times 35 \times [(.43 + .60)/2]^{1.5} = 34.02$

$Q_3 = 2.63 \times 32 \times [(.60 + .13)/2]^{1.5} = 18.56$

$Q_4 = 2.63 \times 47 \times [(.13 + .23)/2]^{1.5} = 9.44$

$Q_5 = 2.63 \times 35 \times [(.23 + .2)/2]^{1.5} = 9.18$

$Q_6 = 2.63 \times 50 \times (.2/2)^{1.5} = 4.16$

$Q_{WEST} = 74.73 (77\%)$

$Q_{SOUTH} = 22.78 (23\%)$

$Q_{TOTAL} = 97.51$

WSE = 93.00

$Q_1 = 2.63 \times 50 \times [(.66 + .91)/2]^{1.5} = 91.46$

$Q_2 = 2.63 \times 35 \times [(.91 + 1.08)/2]^{1.5} = 91.36$

$Q_3 = 2.63 \times 32 \times [(1.08 + .61)/2]^{1.5} = 65.37$

$Q_4 = 2.63 \times 47 \times [(.61 + .71)/2]^{1.5} = 66.28$

$Q_5 = 2.63 \times 35 \times [(.71 + .68)/2]^{1.5} = 53.33$

$Q_6 = 2.63 \times 50 \times [(.68 + .48)/2]^{1.5} = 56.09$

$Q_{WEST} = 248.19 (58\%)$

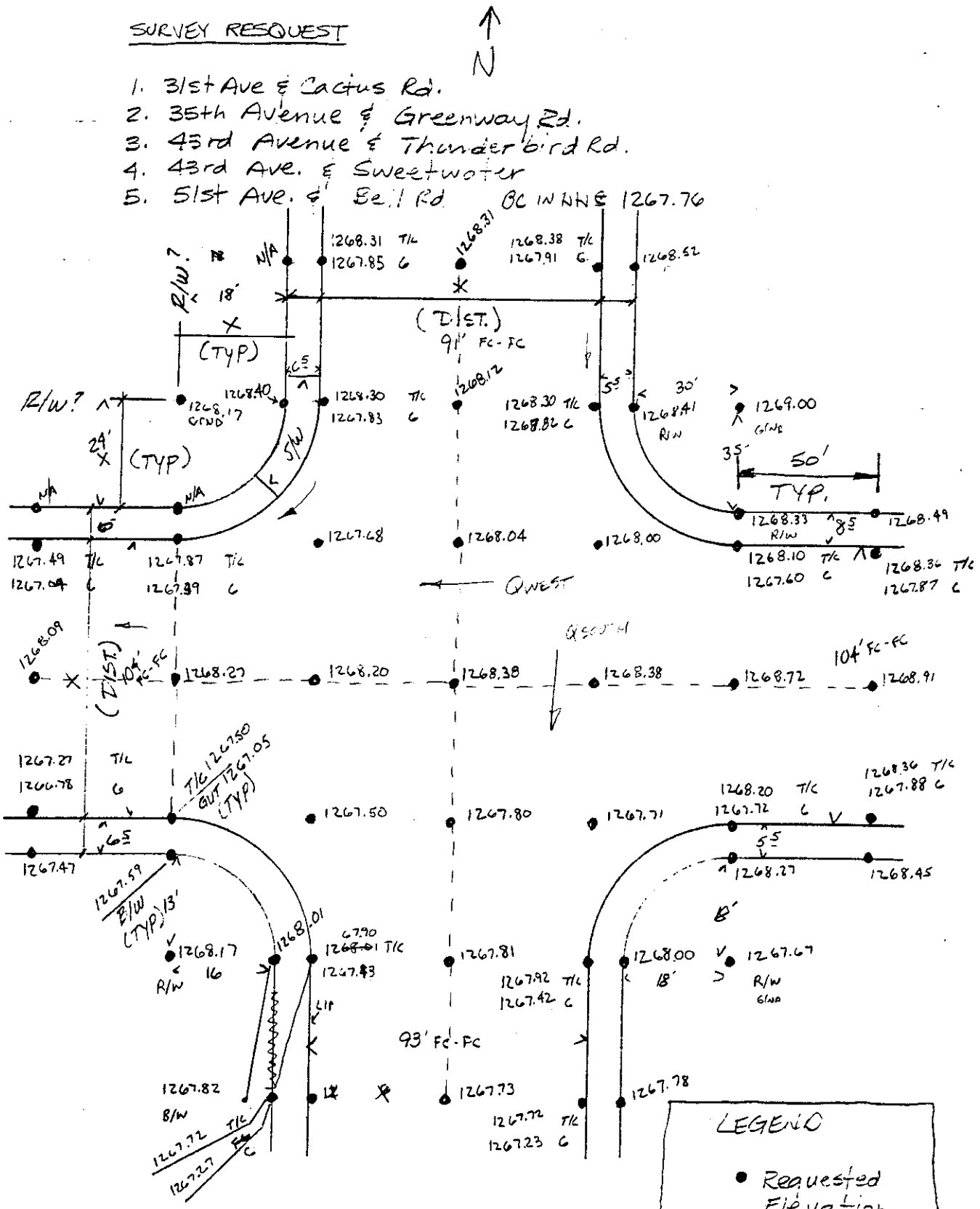
$Q_{SOUTH} = 177.70 (42\%)$

$Q_{TOTAL} = 425.89$

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 7-25-92	Job No. 0146
	Checked by	Date	Sheet No. 5 of 5
	For ACDC ADMS 51st Ave & Bell		

SURVEY REQUEST

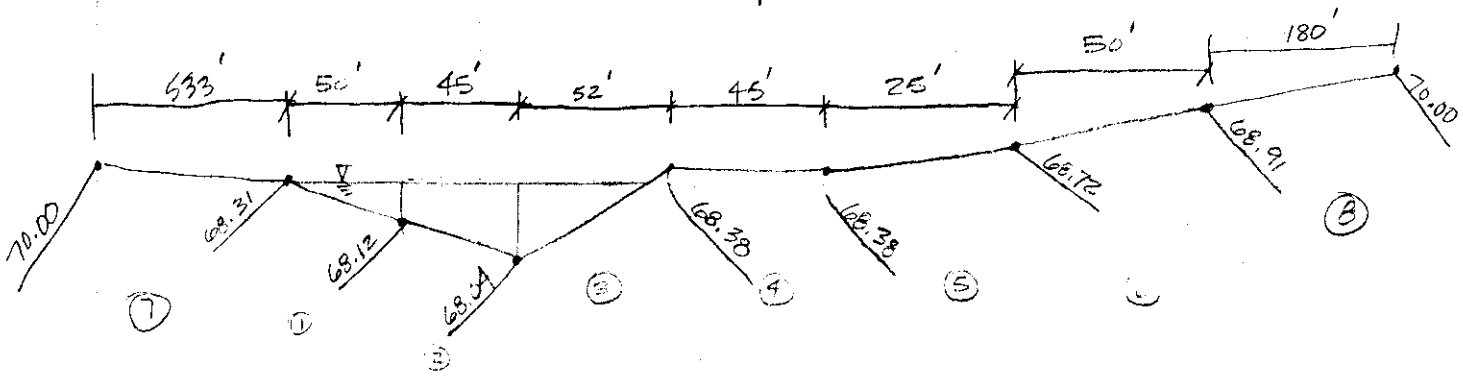
1. 31st Ave & Cactus Rd.
2. 35th Avenue & Greenway Rd.
3. 43rd Avenue & Thunderbird Rd.
4. 43rd Ave. & Sweetwater
5. 51st Ave. & Bell Rd



KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by	Date	Job No.
	Checked by	Date	Sheet No.
	For		

$Q = CLH^{1.5}$ where: $C = 2.63$

51st Ave & Bell Rd.



water surface elev = 68.31
~~depth of water~~ = 68.31

$$Q_1 = 2.63 \times 50 \times \left[\frac{68.31 - 68.12}{2}\right]^{1.5} = 3.85$$

$$Q_2 = 2.63 \times 45 \times \left[\frac{(68.31 - 68.12) + (68.31 - 68.04)}{2}\right]^{1.5} = 13.05$$

$$Q_3 = 2.63 \times \left[\frac{68.31 - 68.04}{\left(\frac{68.38 - 68.04}{52}\right)}\right] \times \left(\frac{68.31 - 68.04}{2}\right)^{1.5} = 5.39$$

41.344

$Q_T = 22.29$
$Q_{west} = 22.29 (100\%)$
$Q_{south} = 0$

water surface elev = 68.91

$Q_1 = 2.63 \times 50 \times [(.6 + .79)/2]^{1.5} = 76.19$
$Q_2 = 2.63 \times 45 \times [(.79 + .87)/2]^{1.5} = 89.49$
$Q_3 = 2.63 \times 52 \times [(.87 + .53)/2]^{1.5} = 80.10$
$Q_4 = 2.63 \times 45 \times .53^{1.5} = 45.66$
$Q_5 = 2.63 \times 25 \times [(.53 + .19)]^{1.5} = 14.20$
$Q_6 = 2.63 \times 50 \times [(.19/2)]^{1.5} = 3.85$
$Q_7 = 2.63 \times \left[\left(\frac{0.6}{1.69} \times 533\right)\left(\frac{0.6}{2}\right)^{1.5}\right. = 81.78$

$Q_{WEST} = 327.56$ (84%)
$Q_{SOUTH} = 63.71$ (16%)
$Q_{TOTAL} = 391.27$

WSE = 70.00

$Q_1 = 2.63 \times 50 \times [(1.69 + 1.88)/2]^{1.5} = 313.61$
$Q_2 = 2.63 \times 45 \times [(1.88 + 1.96)/2]^{1.5} = 314.86$
$Q_3 = 2.63 \times 52 \times [(1.96 + 1.62)/2]^{1.5} = 327.52$
$Q_4 = 2.63 \times 45 \times 1.62^{1.5} = 244.03$
$Q_5 = 2.63 \times 25 \times [(1.62 + 1.28)/2]^{1.5} = 114.80$
$Q_6 = 2.63 \times 50 \times [(1.28 + 1.09)/2]^{1.5} = 169.63$
$Q_7 = 2.63 \times 533 \times (1.69/2)^{1.5} = 1088.85$
$Q_8 = 2.63 \times 180 \times \left(\frac{1.09}{2}\right)^{1.5} = 190.47$

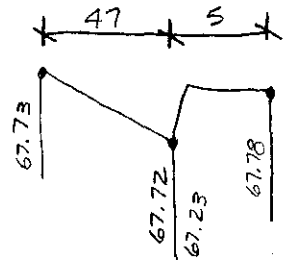
$Q_{WEST} = 2044.84$ (74%)
$Q_{SOUTH} = 718.93$ (26%)
$Q_{TOTAL} = 2763.77$

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by	Date	Job No.
	Checked by	Date	Sheet No.
	For		

51st Ave & Bell Road

HALF STREET CAPACITY 50FT SOUTH OF RETURN

WSE = 70.00 $S = (67.42 - 67.23)/50 = 0.0038$ $n = 0.015$



$A = [(1.27 + 1.77)/2] \times 47 + [(1.28 + 2.22)/2 \times 5) = 80.19$

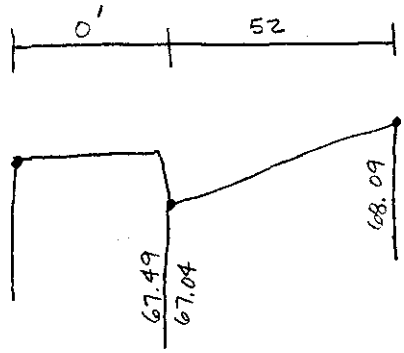
$P = \sqrt{0.50^2 + 47^2} + 0.5 + 5 = 52.5$

$V = \frac{1.486}{n} \left(\frac{A}{P}\right)^{2/3} S^{1/2} = 8.10$

$Q = VA = 649.5$

HALF STREET CAPACITY 50FT WEST OF RETURN

WSE = 70.00 $S = (67.39 - 67.04)/50 = 0.007$ $n = 0.015$



$A = [(1.91 + 2.96)/2] \times 52 = 126.62$

$P = \sqrt{1.05^2 + 52^2} = 52.0106$

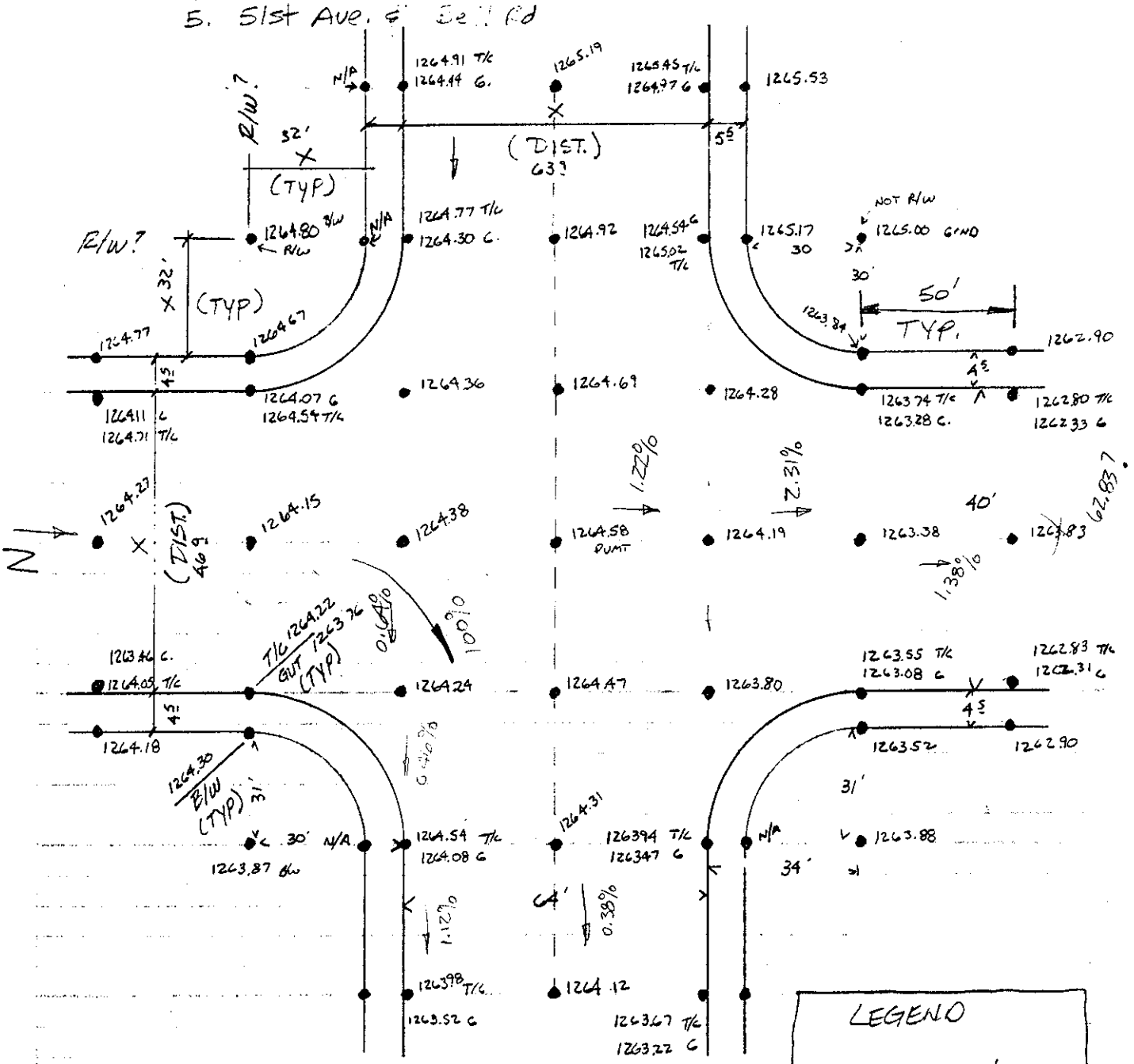
$V = 15.00$

$Q = 1899$

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date [illegible]	Job No. 014
	Checked by	Date	Sheet No. 1 of 5
	For ACDC ALMS 31ST AVE & CACTUS		

SURVEY REQUEST

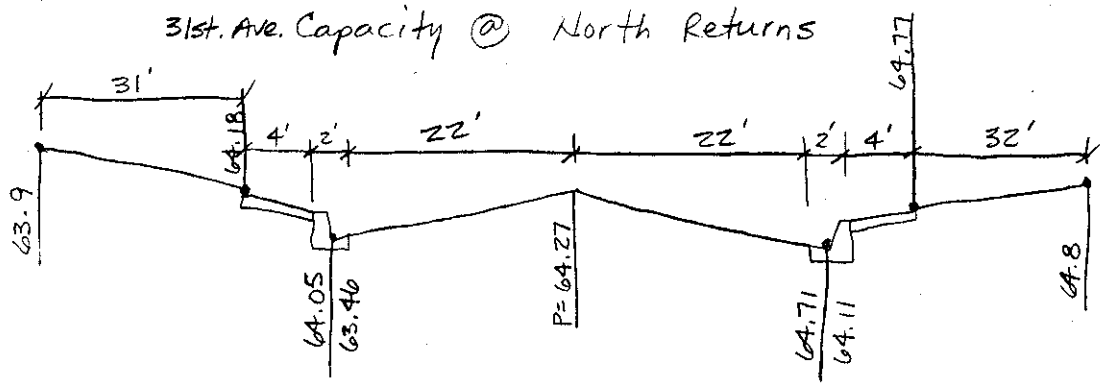
1. 31st Ave & Cactus Rd. BC IN HH = 1264.11
2. 35th Avenue & Greenway Rd.
3. 43rd Avenue & Thunderbird Rd.
4. 43rd Ave. & Sweetwater
5. 51st Ave. & Bell Rd



KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by	Date	Job No.
	Checked by	Date	Sheet No.
	For		

31st Ave. & Cactus

31st. Ave. Capacity @ North Returns



WSE = 64.77 $\quad n = 0.015 \quad S = .12/50 = 0.24\%$

$$A = \left[\frac{.59 + .72}{2} \times 4.5\right] + \left[\frac{1.31 + 0.50}{2} \times 23.5\right] + \left[\frac{0.50 + 0.66}{2} \times 23.5\right] + \left[\frac{0.06}{2} \times 4.5\right] = 37.98$$

(.9475; 21.2675; 13.63; .135)

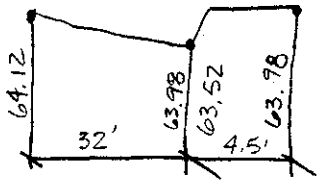
$$P = 6.5 + \sqrt{.81^2 + 22^2} + \sqrt{.16^2 + 22^2} + 6.5 = 57.016$$

(22.015; 22.001)

$V = 3.70$

$Q = 141\text{cfs}$

North ½ street Capacity of Cactus @ west return



$n = 0.015$

$S_{CROWN} = .19/50 = 0.38\%$

$S_{GUTTER} = .56/50 = 1.12\%$

WSE = 64.12

$$A = \frac{1}{2}\, 0.60 \times 32 + 0.14 \times 4.5 = 10.23$$

(9.6; .63)

$$P = \sqrt{0.60^2 + 32^2} + 5 = 37.006$$

$V = 4.45$

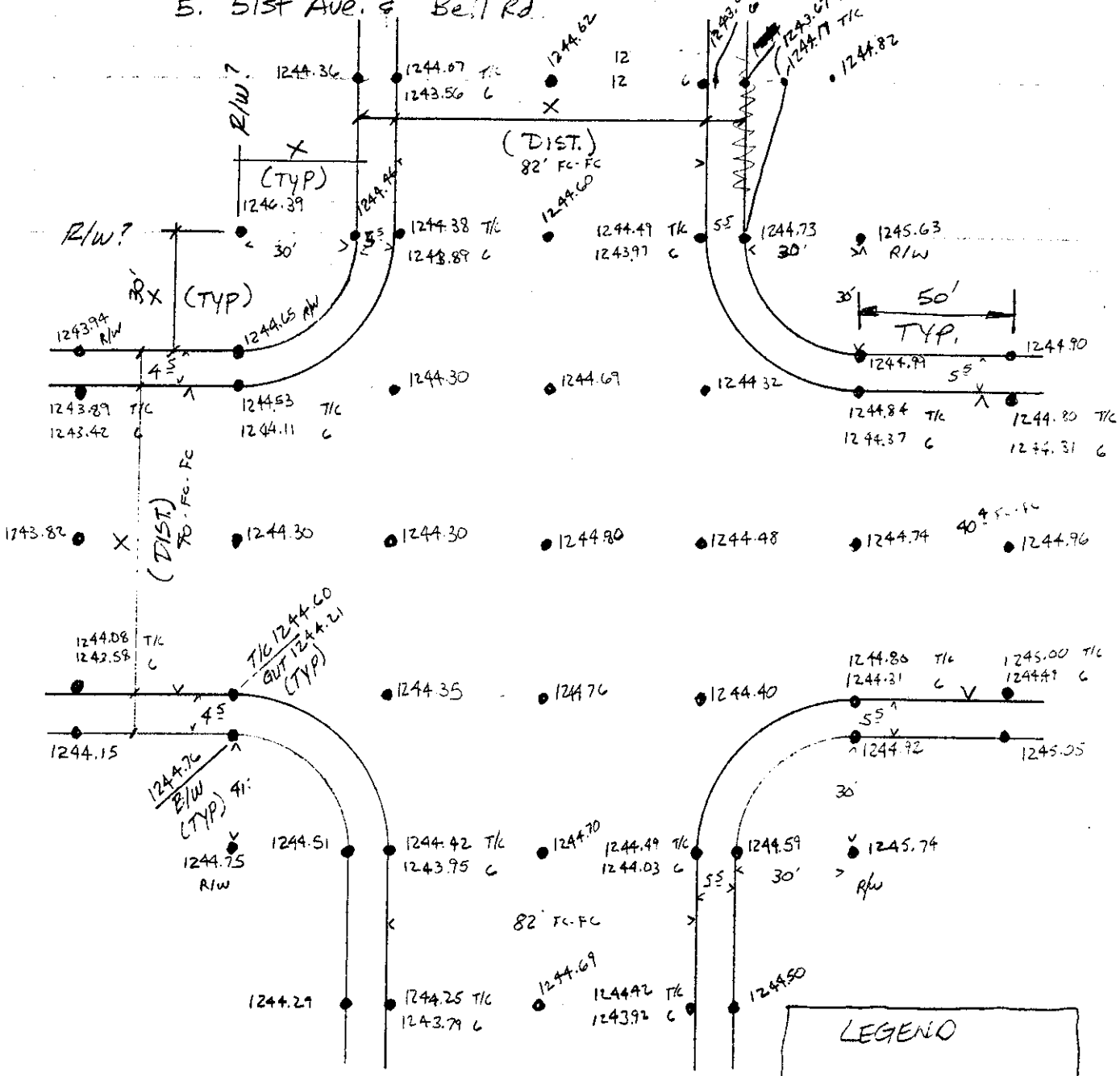
$Q = 46$

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 9-25-92	Job No. 0146
	Checked by	Date	Sheet No. 3 of 5
	For ACDC ADMS 43rd AVE & SWEETWATER		

SURVEY REQUEST

N

1. 31st Ave & Cactus Rd.
2. 35th Avenue & Greenway Rd.
3. 43rd Avenue & Thunderbird Rd.
4. 43rd Ave. & Sweetwater BC INTN: 1244.07
5. 51st Ave. & Bell Rd.



LEGEND

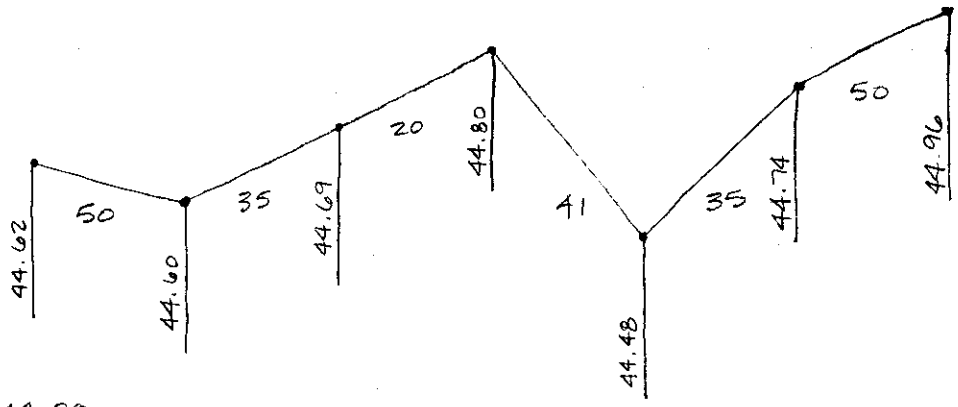
• Requested Elevation Location

9:00 P.M. 1-228-3228

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by	Date	Job No.
	Checked by	Date	Sheet No.
	For		

$Q = CLH^{1.5}$ where $C = 2.63$

43rd Ave & Sweetwater



WSE = 44.80

$Q_1 = 2.63 \times 50 \times [(.18 + .20)/2]^{1.5} = 10.89$

$Q_2 = 2.63 \times 35 \times [(.20 + .11)/2]^{1.5} = 5.62$

$Q_3 = 2.63 \times 20 \times (.11/2)^{1.5} = 0.68$

$Q_4 = 2.63 \times 41 \times (.32/2)^{1.5} = 6.90$

$Q_5 = 2.63 \times 35 \times [(.32 + 0.06)/2]^{1.5} = 7.62$ $\qquad Q_T = 31.90$

$Q_6 = 2.63 \times 13.6 \times (.06/2)^{1.5} = 0.19$

WSE = 45.00

$Q_1 = 2.63 \times 50 \times [(.38 + .40)/2]^{1.5} = 32.03$

$Q_2 = 2.63 \times 35 [(.40 + .31)/2]^{1.5} = 19.47$

$Q_3 = 2.63 \times 20 [(.31 + .20)/2]^{1.5} = 6.77$

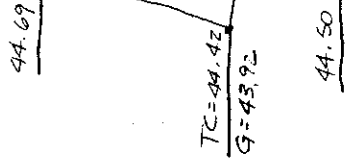
$Q_4 = 2.63 \times 41 [(.20 + .52)/2]^{1.5} = 23.29$

$Q_5 = 2.63 \times 35 [(.52 + .26)/2]^{1.5} = 22.42$

$Q_6 = 2.63 \times 50 [(.26 + .04)/2]^{1.5} = 7.64$ $\qquad Q_T = 111.62$

HALF STREET CAPACITY 50FT SOUTH OF SW RETURN

WSE = 45.00 $\quad S = (44.03 - 43.92)/50 = 0.0022 \quad n = 0.015$



$A = \overbrace{[(.31 + 1.08)/2] \times 41}^{28.495} + \overbrace{[(.58 + 0.50)/2] \times 5}^{2.7} = 31.195$

$P = \sqrt{.27^2 + 41^2} + 0.5 + 5 = 46.501$

$V = \frac{1.486}{n} \left(\frac{A}{P}\right)^{2/3} S^{1/2} = 3.56$

$Q = VA = 111.08$

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by L. Thomas	Date 5/95	Job No. 0146
	Checked by	Date	Sheet No. 1
	For ACDC AOMS		

SUMMARY OF ONSITE RETENTION CALCULATIONS

Sub-Basin I.D. (future)	Watershed Area (Sq. Mi.)	Existing Retention Area (Sq. Mi.)	Existing Retention Volume (AC-Ft)	Future Retention Area (Sq. Mi.)	Future Retention Volume (AC-Ft)	2YR Area (Sq. Mi.)	10YR Area (Sq. Mi.)
344	0.235	0.053	2.62	—	—	0.182	0.235
367	0.233	—	—	0.031	3.328	0.199	0.199
378	0.220	—	—	—	—	0.220	0.220
379	0.407	0.062	2.913	0.051	5.800	0.294	0.356
380	0.065	—	—	—	—	0.065	0.065
381	0.995	—	—	0.141	14.629	0.854	0.854
382	0.986	0.113	6.54	0.144	10.704	0.729	0.842
383	0.732	0.006	0.39	—	—	0.726	0.732
384	0.945	0.356	16.11	0.206	20.731	0.383	0.739
385	0.891	0.134	6.35	0.116	12.868	0.641	0.775
386	0.432	0.073	10.435	0.338	35.228	0.021	0.094
387	0.130	—	—	0.018	1.775	0.112	0.112
388	0.153	0.042	10.889	—	—	0.111	0.153
389	0.963	—	—	0.015	1.664	0.948	0.948
390	0.996	0.239	9.532	—	—	0.757	0.996
391	0.990	0.552	21.070	0.031	2.579	0.407	0.959
392	0.993	0.365	13.30	0.190	19.462	0.438	0.803
393	0.738	0.048	2.61	0.184	18.692	0.506	0.554
394	0.793	0.005	0.384	0.276	25.765	0.512	0.517
395	0.141	0.043	2.888	—	—	0.098	0.141
396	0.135	—	—	—	—	0.135	0.135
397	0.092	—	—	0.057	6.323	0.035	0.035
398	0.980	—	—	0.084	8.833	0.896	0.896
399	0.996	0.130	17.022	0.095	7.904	0.771	0.901
400	0.991	0.484	12.395	0.006	0.666	0.501	0.985
401	0.697	0.146	7.79	0.180	17.451	0.371	0.517
402	0.034	—	—	—	—	0.034	0.034
403	0.965	—	—	0.009	0.998	0.956	0.956
404	0.995	0.140	5.441	0.010	1.109	0.845	0.985
405	0.568	0.009	0.506	—	—	0.559	0.568
406	0.114	0.045	2.541	0.031	2.579	0.038	0.083
407	0.252	—	—	0.019	1.976	0.233	0.233
408	0.751	—	—	—	—	0.751	0.751
409	0.357	0.001	0.096	—	—	0.356	0.357

ME-101-0274 20M

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by L. Thomas	Date 5/95	Job No. 0146
	Checked by	Date	Sheet No. 1
	For ACDC ADMS		

Existing Retention Calculations

Volume = $C\left(\frac{P}{12}\right)A$ where: P = 1.65 inch

Sub-Basin I.D.	Area (AC)	Area (Sq. Mi.)	Land Use	C	Volume (AC·FT)
358	15.259	0.024	Comm	0.80	1.678
358	5.243	0.008	Comm	0.80	0.577
358	19.155	0.030	School/Park	0.25	0.658
		Σ = 0.062			Σ = 2.913
360	21.311	0.033	Comm	0.80	2.344
360	18.000	0.028	Comm	0.80	1.980
360	7.639	0.012	Comm	0.80	6.111
		Σ = 0.073			Σ = 10.435
362	16.747	0.026	MF	0.60	1.382
362	10.190	0.016	MF	0.60	0.841
		Σ = 0.042			Σ = 2.223
363	2.410	0.004	MF	0.60	0.199
363	15.840	0.025	Comm	0.80	1.742
363	9.183	0.014	Ind	0.75	0.947
		Σ = 0.043			Σ = 2.888
366	8.678	0.014	Ind	0.75	0.895
366	19.950	0.031	MF	0.60	1.646
		Σ = 0.045			Σ = 2.541
376	1.343	0.002	MF	0.60	0.11
376	11.101	0.017	Comm	0.80	1.22
376	18.576	0.029	MF	0.60	1.51
376	4.270	0.007	Comm	0.80	0.47
376	1.569	0.002	Comm	0.80	0.17
376	8.402	0.013	Comm	0.80	0.92
376	9.068	0.014	School	0.25	0.31
376	1.343	0.002	Comm	0.80	0.15
376	7.840	0.012	Comm	0.80	0.86
376	6.891	0.011	MF	0.60	0.57
376	2.223	0.003	Comm	0.80	0.25
		Σ = 0.113			Σ = 6.54

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by L. Thomas	Date 5/95	Job No. 0146
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	For ACDC ADMS		

Existing Retention Calculations (Continued)

Volume = $C\left(\frac{P}{12}\right)A$ where: P = 1.65 inch

Sub-Basin I.D.	Area (Ac)	Area (Sq. Mi.)	Land Use	C	Volume (Ac-Ft)
377	1.791	0.003	Comm	0.80	0.197
377	5.062	0.008	Vacant	0.35	0.244
377	11.708	0.018	MF	0.60	0.966
377	0.583	0.001	Comm	0.80	0.064
377	10.227	0.016	VLO Res	0.30	0.422
377	115.960	0.181	LO Res	0.40	6.378
377	5.107	0.008	School	0.25	0.176
377	2.712	0.004	LO Res	0.40	1.085
		Σ = 0.239			Σ = 9.532
378	10.631	0.017	Comm	0.80	1.169
378	4.104	0.006	Comm	0.80	0.451
378	9.191	0.014	Comm	0.80	1.011
378	6.839	0.011	Comm	0.80	0.752
378	4.559	0.007	Ind	0.75	0.470
378	1.880	0.003	Park	0.25	0.065
378	20.090	0.031	Comm	0.80	2.210
378	16.437	0.026	MF	0.60	9.862
378	9.383	0.015	Comm	0.80	1.032
		Σ = 0.130			Σ = 17.022
379	7.109	0.011	MF	0.60	0.586
379	7.109	0.011	Comm	0.80	0.782
379	3.393	0.005	MF	0.60	0.280
379	10.502	0.016	MF	0.60	0.866
379	6.203	0.010	MF	0.60	0.512
379	55.539	0.087	School/Park	0.25	1.909
		Σ = 0.140			Σ = 5.441
380	0.876	0.001	Comm	0.80	0.096
382A	1.817	0.003	LoRes	0.40	0.10
382A	0.605	0.001	Med Res	0.50	0.04
382A	2.278	0.004	Med Res	0.50	0.16
382A	12.719	0.020	Church	0.30	0.52
382A	16.392	0.026	Comm	0.80	1.80
		Σ = 0.053			Σ = 2.62

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by L. Thomas	Date 5/95	Job No. 0146
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	For ACOC ADMS		

Existing Retention Calculations (Continued)

Volume = $C\left(\frac{P}{12}\right)A$ where: P = 1.6 inch

Sub-Basin I.D.	Area (Ac)	Area (Sq. Mi.)	Land Use	C	Volume (Ac-Ft)
382B	1.190	0.002	Med Res	0.50	0.08
382B	2.793	0.004	Comm	0.80	0.31
		Σ = 0.006			Σ = 0.39
383	17.814	0.028	MF	0.60	1.470
383	9.819	0.015	Comm	0.80	1.080
383	3.990	0.006	Lo Res	0.40	0.219
383	4.506	0.007	Med Res	0.50	0.310
383	10.243	0.016	Comm	0.80	1.127
383	306.622	0.479	Lo Res	0.40	16.864
		Σ = 0.552			Σ = 21.070
384	10.932	0.017	Comm	0.80	1.203
384	7.223	0.011	Comm	0.80	0.795
384	302.450	0.473	School	0.25	10.397
		Σ = 0.484			Σ = 12.395
385	1.271	0.002	School	0.25	0.044
385	4.202	0.007	Comm	0.80	0.462
		Σ = 0.009			Σ = 0.506
387	52.153	0.082	Comm	0.80	5.74
387	140.887	0.220	Vacant	0.35	6.78
387	34.848	0.054	Ind	0.75	3.59
		Σ = 0.356			Σ = 16.11
388	1.829	0.003	Comm	0.80	0.20
388	1.874	0.003	Comm	0.80	0.21
388	8.422	0.013	Comm	0.80	0.93
388	17.762	0.028	MF	0.60	1.47
388	1.448	0.002	MF	0.60	0.12
388	10.050	0.016	Comm	0.80	1.11
388	31.801	0.050	MF	0.60	2.62
388	80.196	0.125	Vacant	0.35	3.86
388	78.234	0.122	School	0.25	2.69
388	2.119	0.003	Church	0.30	0.09
		Σ = 0.365			Σ = 13.30

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by L. Thomas	Date 5/95	Job No. 0146
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	For ACDC ADMS		

Existing Retention Calculations (Continued)

$$\text{Volume} = C\left(\frac{P}{12}\right)A \text{ where } P = 1.6 \text{ inch}$$

Sub-Basin I.D.	Area (Ac)	Area (Sq. Mi.)	Land Use	C	Volume (Ac-Ft)
389	4.991	0.008	Comm	0.80	0.55
389	13.430	0.021	Comm	0.80	1.48
389	14.850	0.023	MF	0.60	1.23
389	3.352	0.005	Comm	0.80	0.37
389	17.314	0.027	Comm	0.80	1.90
389	39.513	0.062	MF	0.60	3.26
		Σ=0.146			Σ=7.79
390	3.778	0.006	School	0.25	0.13
390	10.417	0.016	Comm	0.80	1.15
390	1.213	0.002	School	0.25	0.04
390	4.494	0.007	Comm	0.80	0.49
390	35.300	0.055	Vacant	0.35	1.70
390	5.069	0.008	Comm	0.80	0.56
390	2.066	0.003	Comm	0.80	0.23
390	4.437	0.007	Vacant	0.35	0.21
390	15.214	0.024	Comm	0.80	1.67
390	3.506	0.005	Vacant	0.35	0.17
		Σ=0.134			Σ=6.35
391	2.755	0.004	Comm	0.80	0.30
391	27.979	0.044	MF	0.60	2.31
		Σ=0.048			Σ=2.61
406	3.489	0.005	Comm	0.80	0.384

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by L. Thomas	Date 5/95	Job No. 0146
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	For ACDC ADMS		

Future Retention Calculations

$$\text{Volume} = C\left(\frac{P}{12}\right)A \quad \text{where: } P = 2.60 \text{ inch}$$

Sub-Basin I.D.	Area (Ac)	(Sq. Mi.)	Land Use	C	Volume (Ac-Ft)
367	2.56	0.004	MF	0.60	0.333
367	17.28	0.027	Comm/ROW	0.80	2.995
		Σ = 0.031			Σ = 3.328
379	2.56	0.004	Park/School	0.25	0.139
379	30.08	0.047	Comm/ROW	0.80	5.658
		Σ = 0.051			Σ = 5.800
381	37.12	0.058	Comm	0.80	6.434
381	13.44	0.021	MF	0.60	1.747
381	39.68	0.062	Ind	0.75	6.448
		Σ = 0.141			Σ = 14.629
382	65.28	0.102	MF	0.60	8.486
382	6.40	0.010	Comm	0.80	1.109
382	20.48	0.032	School	0.25	1.109
		Σ = 0.144			Σ = 10.704
384	125.44	0.196	Ind	0.75	20.384
384	6.40	0.010	Park	0.25	0.347
		Σ = 0.206			Σ = 20.731
385	74.24	0.116	Comm	0.80	12.868
386	7.04	0.011	ROW	0.80	1.220
386	209.28	0.327	Ind	0.75	34.008
		Σ = 0.338			Σ = 35.228
387	5.12	0.008	MF	0.60	0.666
387	6.40	0.010	ROW	0.80	1.109
		Σ = 0.018			Σ = 1.775
388	IGNORE *				

* Existing vacant land use with future land use of I-17 R.O.W. has been assume to provide no future onsite retent.

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by L. Thomas	Date 5/95	Job No. 0146
	Checked by	Date	Sheet No. 2
	For ACDC ADMS		

Future Retention Calculations (Continued)

Volume = $C\left(\frac{P}{12}\right)A$ where: P = 2.60 inch

Sub-Basin I.D.	Area (Ac)	Area (Sq. Mi.)	Land Use	C	Volume (Ac-Ft)
389	5.12	0.008	Comm	0.80	0.887
389	4.48	0.007	ROW	0.80	0.777
		Σ = 0.015			Σ = 1.664
391	19.84	0.031	MF	0.65	2.579
392	5.12	0.008	Park	0.25	0.277
392	2.56	0.004	MF	0.60	0.333
392	82.56	0.129	Ind	0.75	13.416
392	31.36	0.049	Comm	0.80	5.436
		Σ = 0.190			Σ = 19.462
393	7.04	0.011	Comm	0.80	1.220
393	16.00	0.025	MF	0.60	2.080
393	94.72	0.148	Ind	0.75	15.392
		Σ = 0.184			Σ = 18.692
394	132.48	0.207	Ind	0.75	21.528
394	24.32	0.038	MF	0.60	3.162
394	19.84	0.031	Park	0.25	1.075
		Σ = 0.276			Σ = 25.765
396	IGNORE *				
397	36.48	0.057	Comm	0.80	6.323
398	44.80	0.070	Ind	0.75	7.280
398	8.96	0.014	Comm	0.80	1.553
		Σ = 0.084			Σ = 8.833
399	60.80	0.095	MF	0.60	7.904
400	3.84	0.006	Comm	0.80	0.666

* Existing vacant land use with future land use changed to I-17 R.O.W. has been assumed to provide no future onsite retention.

ME 10-0374 2M

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by L. Thomas	Date 5/95	Job No. 0146
	Checked by	Date	Sheet No. 3
	For ACDC ADMS		

Future Retention Calculations (Continued)

Volume = $C\left(\frac{P}{12}\right)A$ where: P = 2.60 inch

Sub-Basin I.D.	Area (Ac)	Area (Sq. Mi.)	Land Use	C	Volume (Ac-Ft)
401	15.36	0.024	MF	0.60	1.997
401	72.32	0.113	Ind	0.75	11.752
401	18.56	0.029	Comm	0.80	3.217
401	8.96	0.014	Park	0.25	0.485
		Σ = 0.180			Σ = 17.451
403	5.76	0.009	Comm	0.80	0.998
404	6.40	0.010	Comm	0.80	1.109
406	19.84	0.031	MF	0.60	2.579
407	12.16	0.019	Ind	0.75	1.976
408	IGNORE *				

* Existing vacant land use with future land use changed to I-17 R.O.W. has been assumed to provide no future onsite retention.

SECTION VI

HEC-1 Hydrology Results, 100-Year 24-Hour Storm (Existing Conditions)

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             MAY   1991               *
*           VERSION 4.0.1E             *
*                                      *
* RUN DATE  05/20/95  TIME  08:21:17   *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    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   ACDC AREA DRAINAGE MASTER STUDY
  2           ID   WATERSHED BETWEEN CAVE CREEK AND SKUNK CREEK
  3           ID   FILENAME:  W100-24.DAT   KHE JOB NO. 0146
  4           ID   100-YEAR 24-HOUR DURATION STORM
  5           ID   SCS TYPE-II DISTRIBUTION
              *DIAGRAM
  6           IT       4 10OCT92    1200     800
  7           IO       5

  8           KK    356S
  9           KM   RUNOFF GENERATED ON SUB-BASIN 356
 10           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 11           KM    L= 0.91 mi. S= 22 ft/mi  Kb= .030 Tc = 0.442 Hr. R = 0.318
 12           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 13           BA    .233
 14           IN      30
 15           KM   RAINFALL DEPTH OF 3.80 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 16           KM   AN AREAL REDUCTION COEFFICIENT OF .920 WAS USED
 17           PB    3.50
 18           KM   THE FOLLOWING PC RECORD USED A 24-HOUR SCS TYPE II RAINFALL
 19           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 20           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 21           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 22           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 23           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 24           LG    .133    .232   6.96    .150   49.41
 25           UC    .442    .318
 26           UA       0       5      16      30      65      77      84      90      94      97
 27           UA     100

 28           KK   356RE
 29           KM   DIVERT FLOW FROM SUB-BASIN 356 ACROSS I-17 CULVERT (50"x31"ACMP) CROSSING
 30           KM            THROUGH SUB-BASIN 368
 31           KM   SOURCE:  Preliminary Design Report IR-17-1(151)
 32           KM            I-17, Deer Valley Road to Peoria Avenue
 33           DT   368D2
 34           DI       0     100   10000
 35           DQ       0      25      25

 36           KK    357S
 37           KM   RUNOFF GENERATED ON SUB-BASIN 357
 38           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 39           KM    L= 0.75 mi. S= 27 ft/mi  Kb= .027 Tc = 0.354 Hr. R = 0.220
 40           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 41           BA    .220
 42           LG    .100    .170   7.32    .126   53.19
 43           UC    .354    .220
 44           UA       0       5      16      30      65      77      84      90      94      97
 45           UA     100
```

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

  46          KK   358S
  47          KM   RUNOFF GENERATED ON SUB-BASIN 358
  48          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  49          KM    L= 1.74 mi. S= 20 ft/mi  Kb= .027 Tc = 0.642 Hr. R = 0.578
  50          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
  51          BA    .419
  52          LG    .133    .193    7.32    .129   48.86
  53          UC    .642    .578
  54          UA      0       5      16      30      65      77      84      90      94      97
  55          UA    100

  56          KK   DT358
  57          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.91 AC-FT FROM SUB-BASIN 358
  58          KM                                              (Hydrograph identified as OR358)
  59          KM                                            2) Balance of runoff continues on.
  60          KM                                              (Hydrograph identified as DT358)
  61          DT   OR358    2.91
  62          DI       0   10000
  63          DQ       0   10000

  64          KK    R261
  65          KM    RETRIEVE DIVERTED HYDROGRAPH FROM BELL ROAD AND 19TH AVENUE.  THIS
  66          KM    HYDROGRAPH WAS GENERATED IN THE CAVE CREEK WATERSHED MODEL AND STORED
  67          KM    UNDER THE FILENAME:  CCW324.DSS
  68          BA    0.00
  69          ZR    =QI  A=BELL ROAD  B=R261  C=FLOW  F=CAVE CREEK

  70          KK   HC357
  71          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 356, 357 & 358 WITH ROUTED FLOW FROM 261.
  72          HC       4

  73          KK   357RE
  74          KM   DIVERT FLOW FROM SUB-BASIN 357 ACROSS I-17 CULVERT (2-6'x3' BC) CROSSING
  75          KM           THROUGH SUB-BASIN 369
  76          KM   SOURCE:  Preliminary Design Report IR-17-1(151)
  77          KM           I-17, Deer Valley Road to Peoria Avenue
  78          DT   369D1
  79          DI       0     350   10000
  80          DQ       0     350     350

  81          KK    359S
  82          KM   RUNOFF GENERATED ON SUB-BASIN 359
  83          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  84          KM    L= 0.31 mi. S= 84 ft/mi  Kb= .056 Tc = 0.250 Hr. R = 0.148
  85          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
  86          BA    .065
  87          LG    .339    .346    3.50    .291    4.01
  88          UC    .250    .148
  89          UA      0       3       5       8      12      20      43      75      90      96
  90          UA    100
```

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

 91           KK   HC359
 92           KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 357 & 359
 93           HC       2

 94           KK   359RR
 95           KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & BELL ROAD
 96           KM            ASSUME PUMP FAILS TO OPERATE
 97           RS       1    ELEV    14.0
 98           SV       0    9.15   90.00   96.00  106.21  140.00
 99           SE    14.0    20.0   29.06    29.5    30.0    31.0
100           SQ       0       0       0      32     447    4346

101           KK   359RE
102           KM   DIVERT FLOW FROM SUB-BASIN 359 CROSSING THROUGH SUB-BASIN 369
103           DT   369D2
104           DI       0   10000
105           DQ       0   10000

106           KK    360S
107           KM   RUNOFF GENERATED ON SUB-BASIN 360
108           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
109           KM    L= 1.12 mi. S= 25 ft/mi  Kb= .042 Tc = 0.608 Hr. R = 0.376
110           KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
111           BA    .432
112           LG    .296    .307    7.50    .115   19.10
113           UC    .608    .376
114           UA       0       3       5       8      12      20      43      75      90      96
115           UA     100

116           KK   DT360
117           KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 10.43 AC-FT FROM SUB-BASIN 360
118           KM                                              (Hydrograph identified as OR360)
119           KM                                            2) Balance of runoff continues on.
120           KM                                              (Hydrograph identified as DT360)
121           DT   OR360   10.43
122           DI       0   10000
123           DQ       0   10000

124           KK   360RE
125           KM   DIVERT FLOW FROM SUB-BASIN 360 ACROSS I-17 CULVERT (3-10'x3' BC) CROSSING
126           KM            THROUGH SUB-BASIN 369
127           KM   SOURCE:  Preliminary Design Report IR-17-1(151)
128           KM            I-17, Deer Valley Road to Peoria
129           DT   369D3
130           DI       0     800   10000
131           DQ       0     800     800

132           KK    361S
133           KM   RUNOFF GENERATED ON SUB-BASIN 361
134           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
135           KM    L= 0.63 mi. S= 22 ft/mi  Kb= .032 Tc = 0.375 Hr. R = 0.275
136           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
137           BA    .130
138           LG    .137    .165    8.60    .070   40.78
```

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

 139          UC    .375    .275
 140          UA       0       5      16      30      65      77      84      90      94      97
 141          UA     100

 142          KK   HC361
 143          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 359, 360 & 361
 144          HC       3

 145          KK   361RE
 146          KM   DIVERT FLOW FROM SUB-BASIN 361 ACROSS I-17 CULVERT (2-6'x3' BC) CROSSING
 147          KM            THROUGH SUB-BASIN 369
 148          KM   SOURCE:  Preliminary Design Report IR-17-1(151)
 149          KM            I-17, Deer Valley Road to Peoria Avenue
 150          DT   369D4
 151          DI       0     350   10000
 152          DQ       0     350     350

 153          KK    362S
 154          KM   RUNOFF GENERATED ON SUB-BASIN 362
 155          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 156          KM    L= 0.99 mi. S= 35 ft/mi  Kb= .030 Tc = 0.392 Hr. R = 0.378
 157          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 158          BA    .153
 159          LG    .128    .161    8.60    .070   50.44
 160          UC    .392    .378
 161          UA       0       5      16      30      65      77      84      90      94      97
 162          UA     100

 163          KK   DT362
 164          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 10.89 AC-FT FROM SUB-BASIN 362
 165          KM                                              (Hydrograph identified as OR362)
 166          KM                                            2) Balance of runoff continues on.
 167          KM                                              (Hydrograph identified as DT362)
 168          DT   OR362   10.89
 169          DI       0   10000
 170          DQ       0   10000

 171          KK   HC362
 172          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 361 & 362
 173          HC       2

 174          KK   362RR
 175          KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & GREENWAY ROAD
 176          KM            ASSUME PUMP FAILS TO OPERATE
 177          RS       1    ELEV  1296.0
 178          SV       0    8.96   57.28   65.00   82.00   97.00  112.00
 179          SE  1296.0  1300.0  1306.0 1306.77  1308.0  1309.0  1310.0
 180          SQ       0       0       0       0     193     609    2690

 181          KK   362RE
 182          KM   DIVERT FLOW FROM SUB-BASIN 362 CROSSING THROUGH SUB-BASIN 370
 183          DT   370D1
 184          DI       0   10000
 185          DQ       0   10000
```

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

 186          KK   363S
 187          KM   RUNOFF GENERATED ON SUB-BASIN 363
 188          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 189          KM    L= 0.70 mi. S= 20 ft/mi  Kb= .028 Tc = 0.379 Hr. R = 0.290
 190          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 191          BA   .141
 192          LG   .100    .150    8.05    .092   63.39
 193          UC   .379    .290
 194          UA     0       5      16      30      65      77      84      90      94      97
 195          UA   100

 196          KK   DT363
 197          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.89 AC-FT FROM SUB-BASIN 363
 198          KM                                              (Hydrograph identified as OR363)
 199          KM                                            2) Balance of runoff continues on.
 200          KM                                              (Hydrograph identified as DT363)
 201          DT   OR363    2.89
 202          DI       0   10000
 203          DQ       0   10000

 204          KK   363RE
 205          KM   DIVERT FLOW FROM SUB-BASIN 363 ACROSS I-17 CULVERT (2-6'x3' BC) CROSSING
 206          KM           THROUGH SUB-BASIN 370
 207          KM   SOURCE:  Preliminary Design Report IR-17-1(151)
 208          KM           I-17, Deer Valley Road to Peoria Avenue
 209          DT   370D2
 210          DI       0     350   10000
 211          DQ       0     350     350

 212          KK   364S
 213          KM   RUNOFF GENERATED ON SUB-BASIN 364
 214          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 215          KM    L= 0.63 mi. S= 17 ft/mi  Kb= .029 Tc = 0.396 Hr. R = 0.286
 216          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 217          BA   .135
 218          LG   .110    .254    3.50    .291   46.41
 219          UC   .396    .286
 220          UA     0       5      16      30      65      77      84      90      94      97
 221          UA   100

 222          KK   HC364
 223          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 362, 363 & 364
 224          HC       3

 225          KK   364RE
 226          KM   DIVERT FLOW FROM SUB-BASIN 364 ACROSS I-17 CULVERT (2-6'x3' BC) CROSSING
 227          KM           THROUGH SUB-BASIN 370
 228          KM   SOURCE:  Preliminary Design Report IR-17-1(151)
 229          KM           I-17, Deer Valley Road to Peoria Avenue
 230          DT   370D3
 231          DI       0     350   10000
 232          DQ       0     350     350
```

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

 233          KK   365S
 234          KM   RUNOFF GENERATED ON SUB-BASIN 365
 235          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 236          KM    L= 0.31 mi. S= 61 ft/mi  Kb= .046 Tc = 0.246 Hr. R = 0.119
 237          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 238          BA   .092
 239          LG   .275    .312    3.50    .324   13.42
 240          UC   .246    .119
 241          UA      0       3       5       8      12      20      43      75      90      96
 242          UA    100

 243          KK   HC365
 244          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 364 & 365
 245          HC      2

 246          KK   365RR
 247          KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & THUNDERBIRD ROAD
 248          KM           ASSUME PUMP FAILS TO OPERATE
 249          RS      1    ELEV    80.0
 250          SV      0   39.50   39.67   47.00   57.00   67.00   79.00
 251          SE   80.0   89.84    90.0    90.9    92.0    93.0    94.0
 252          SQ      0       0     0.1      35     257    1179    3178

 253          KK   365RE
 254          KM   DIVERT FLOW FROM SUB-BASIN 365 CROSSING THROUGH SUB-BASIN 371
 255          DT    371D
 256          DI      0   10000
 257          DQ      0   10000

 258          KK    366S
 259          KM   RUNOFF GENERATED ON SUB-BASIN 366
 260          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 261          KM    L= 0.78 mi. S= 24 ft/mi  Kb= .036 Tc = 0.442 Hr. R = 0.422
 262          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 263          BA   .114
 264          LG   .169    .278    3.61    .308   53.80
 265          UC   .442    .422
 266          UA      0       5      16      30      65      77      84      90      94      97
 267          UA    100

 268          KK   DT366
 269          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.54 AC-FT FROM SUB-BASIN 366
 270          KM                                              (Hydrograph identified as OR366)
 271          KM                                            2) Balance of runoff continues on.
 272          KM                                              (Hydrograph identified as DT366)
 273          DT   OR366    2.54
 274          DI      0   10000
 275          DQ      0   10000
```

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

 276          KK   HC366
 277          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 365 & 366
 278          HC       2

 279          KK   366RR
 280          KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & PEORIA AVENUE
 281          KM            ASSUME PUMP FAILS TO OPERATE
 282          RS       1    ELEV    33.4
 283          SV       0    2.59   44.96   53.00   60.00   76.00
 284          SE    33.4    40.0    46.0    46.5    47.0    48.0
 285          SQ       0       0       0     286     905    3113

 286          KK   366RE
 287          KM   DIVERT FLOW FROM SUB-BASIN 366 CROSSING THROUGH SUB-BASIN 374
 288          DT    374D
 289          DI       0   10000
 290          DQ       0   10000

 291          KK    367S
 292          KM   RUNOFF GENERATED ON SUB-BASIN 367
 293          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 294          KM    L= 1.04 mi. S= 24 ft/mi  Kb= .030 Tc = 0.471 Hr. R = 0.363
 295          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 296          BA    .252
 297          LG    .170    .265    3.66    .384   40.82
 298          UC    .471    .363
 299          UA       0       5      16      30      65      77      84      90      94      97
 300          UA     100

 301          KK   HC367
 302          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 366 & 367
 303          HC       2

 304          KK   367RE
 305          KM   DIVERT FLOW FROM SUB-BASIN 367 INTO THE ACDC
 306          DT     DC1
 307          DI       0   10000
 308          DQ       0   10000

 309          KK    R368
 310          KM   RETRIEVE HYDROGRAPH FROM SPLIT FLOWING SOUTH AT 35TH AVENUE AND BELL ROAD.
 311          KM   THIS HYDROGRAPH WAS GENERATED IN THE SKUNK CREEK WATERSHED MODEL AND IS
 312          KM   STORED IN FILENAME:  CCW324.DSS
 313          BA    0.00
 314          ZR    =QI  A=SKUNK CREEK  B=369D5  C=FLOW  F=WEST

 315          KK   RM369
 316          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 368 THROUGH SUB-BASIN 369
 317          KM            1) Reach Length = 5240 ft.
 318          RD
 319          RC    .030    .020    .030    5240  0.0042
 320          RX     140     140     150     150     190     190     200     200
 321          RY       5     0.5     0.5       0       0     0.5     0.5       5
```

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

 322          KK    R357
 323          KM   RETRIEVE FLOWS DIVERTED THROUGH 2-6'x3' BC AT I-17 & BELL ROAD
 324          DR   369D1

 325          KK    R359
 326          KM   RETRIEVE FLOWS OVERTOPPING DEPRESSED INTERSECTION AT I-17 & BELL ROAD
 327          DR   369D2

 328          KK    R360
 329          KM   RETRIEVE FLOWS DIVERTED THROUGH 3-10'x3' BC AT I-17 & PARADISE LANE
 330          DR   369D3

 331          KK    R361
 332          KM   RETRIEVE FLOWS DIVERTED THROUGH 2-6'x3' BC AT I-17 & TIERRA BUENA DRIVE
 333          DR   369D4

 334          KK   HC361
 335          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 357, 359, 360 & 361
 336          HC       4

 337          KK    369S
 338          KM   RUNOFF GENERATED ON SUB-BASIN 369
 339          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 340          KM    L= 1.71 mi. S= 21 ft/mi  Kb= .027 Tc = 0.633 Hr. R = 0.343
 341          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 342          BA    .995
 343          LG    .151    .278    6.60    .178   42.81
 344          UC    .633    .343
 345          UA       0       5      16      30      65      77      84      90      94      97
 346          UA     100

 347          KK   DT369
 348          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 15.28 AC-FT FROM SUB-BASIN 369
 349          KM                                              (Hydrograph identified as OR369)
 350          KM                                            2) Balance of runoff continues on.
 351          KM                                              (Hydrograph identified as DT369)
 352          DT   OR369   15.28
 353          DI       0   10000
 354          DQ       0   10000

 355          KK   HC369
 356          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 361, 368 & 369
 357          HC       3

 358          KK   369RE
 359          KM   DIVERT FLOW FROM SUB-BASIN 369 THROUGH SUB-BASIN 376
 360          KM           ASSUME 50% SPLIT FLOW AT 35TH AVENUE & GREENWAY ROAD
 361          KM           STORM DRAIN CAPACITY FLOWING SOUTH IN 35TH AVENUE = 270CFS
 362          KM   SOURCE:  Northwest Storm Drain Study
 363          KM           Project ST-74206.00
 364          DT   376D1
 365          DI       0     270     540    1000    5000
 366          DQ       0       0     135     365    2365
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 367          KK   RM370
 368          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 369 THROUGH SUB-BASIN 370
 369          KM            1) Reach Length = 5245 ft.
 370          RD
 371          RC    .030    .020    .030    5245  0.0040
 372          RX     140     140     150     150     190     190     200     200
 373          RY       5     0.5     0.5       0       0     0.5     0.5       5

 374          KK    R362
 375          KM   RETRIEVE FLOWS OVERTOPPING DEPRESSED INTERSECTION AT I-17 & GREENWAY ROAD
 376          DR   370D1

 377          KK    R363
 378          KM   RETRIEVE FLOWS DIVERTED THROUGH 2-6'x3' BC AT I-17 & ACOMA DRIVE
 379          DR   370D2

 380          KK    R364
 381          KM   RETRIEVE FLOWS DIVERTED THROUGH 2-6'x3' BC AT I-17 & GELDING DRIVE
 382          DR   370D3

 383          KK    370S
 384          KM   RUNOFF GENERATED ON SUB-BASIN 370
 385          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 386          KM    L= 1.80 mi. S= 22 ft/mi  Kb= .023 Tc = 0.550 Hr. R = 0.312
 387          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 388          BA    .963
 389          LG    .106    .152    8.05    .094   47.41
 390          UC    .550    .312
 391          UA       0       5      16      30      65      77      84      90      94      97
 392          UA     100

 393          KK   DT370
 394          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 4.29 AC-FT FROM SUB-BASIN 370
 395          KM                                              (Hydrograph identified as OR370)
 396          KM                                            2) Balance of runoff continues on.
 397          KM                                              (Hydrograph identified as DT370)
 398          DT   OR370    4.29
 399          DI       0   10000
 400          DQ       0   10000

 401          KK   HC370
 402          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 362, 363, 364, 369 & 370
 403          HC       5

 404          KK   370RE
 405          KM   DIVERT FLOW FROM SUB-BASIN 370 THROUGH SUB-BASIN 377
 406          KM            ASSUME 50% SPLIT FLOW AT 35TH AVENUE & THUNDERBIRD ROAD
 407          KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 35TH AVENUE = 396 cfs
 408          KM   SOURCE:  Northwest Storm Drain Study
 409          KM            Project ST-74206.00
 410          DT    377D
 411          DI       0     396     500    1000    5000
 412          DQ       0       0      52     302    2302
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

413         KK   RM371
414         KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 370 THROUGH SUB-BASIN 371
415         KM            1) Reach Length = 5260 ft.
416         RD
417         RC    .030    .020    .030    5260  0.0034
418         RX     140     140     150     150     190     190     200     200
419         RY       5     0.5     0.5       0       0     0.5     0.5       5

420         KK    R365
421         KM   RETRIEVE FLOWS OVERTOPPING DEPRESSED AT I-17 & THUNDERBIRD ROAD
422         DR    371D

423         KK    371S
424         KM   RUNOFF GENERATED ON SUB-BASIN 371
425         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
426         KM    L= 1.12 mi. S= 26 ft/mi  Kb= .024 Tc = 0.417 Hr. R = 0.155
427         KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
428         BA    .980
429         LG    .122    .260    4.74    .243   52.72
430         UC    .417    .155
431         UA       0       5      16      30      65      77      84      90      94      97
432         UA     100

433         KK   DT371
434         KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 16.84 AC-FT FROM SUB-BASIN 371
435         KM                                              (Hydrograph identified as OR371)
436         KM                                            2) Balance of runoff continues on.
437         KM                                              (Hydrograph identified as DT371)
438         DT   OR371   16.84
439         DI       0   10000
440         DQ       0   10000

441         KK   HC371
442         KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 365, 370 & 371
443         HC       3

444         KK   371RE
445         KM   DIVERT FLOW FROM SUB-BASIN 371 THROUGH SUB-BASIN 378
446         KM            ASSUME 50% SPLIT FLOW AT 35TH AVENUE & CACTUS ROAD
447         KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 35TH AVENUE = 514CFS
448         KM   SOURCE:  Northwest Storm Drain Study
449         KM            Project ST-74206.00
450         DT    378D
451         DI       0     514    1028    2000    5000
452         DQ       0       0     257     743    2243

453         KK   RM373
454         KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 371 THROUGH SUB-BASIN 373
455         KM            1) Reach Length = 5265 ft.
456         RD
457         RC    .030    .020    .030    5265  0.0040
458         RX     120     120     130     130     190     190     200     200
459         RY       5     0.5     0.5       0       0     0.5     0.5       5
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

460         KK   372S
461         KM   RUNOFF GENERATED ON SUB-BASIN 372
462         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
463         KM    L= 0.22 mi. S= 109 ft/mi  Kb= .032 Tc = 0.133 Hr. R = 0.081
464         KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
465         BA    .034
466         LG    .100    .250    3.50    .286   71.31
467         UC    .133    .081
468         UA      0       5      16      30      65      77      84      90      94      97
469         UA    100

470         KK   372RR
471         KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & CACTUS ROAD
472         KM           ASSUME PUMP FAILS TO OPERATE
473         RS      1    ELEV    56.0
474         SV      0   78.68   83.00   88.00   97.00
475         SE   56.0    68.0    68.5    69.0    70.0
476         SQ      0       0     120     416    1612

477         KK   373S
478         KM   RUNOFF GENERATED ON SUB-BASIN 373
479         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
480         KM    L= 1.69 mi. S= 18 ft/mi  Kb= .023 Tc = 0.596 Hr. R = 0.323
481         KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
482         BA    .965
483         LG    .099    .241    3.55    .299   52.04
484         UC    .596    .323
485         UA      0       5      16      30      65      77      84      90      94      97
486         UA    100

487         KK   DT373
488         KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 13.36 AC-FT FROM SUB-BASIN 373
489         KM                                              (Hydrograph identified as OR373)
490         KM                                            2) Balance of runoff continues on.
491         KM                                              (Hydrograph identified as DT373)
492         DT   OR373   13.36
493         DI      0   10000
494         DQ      0   10000

495         KK   HC373
496         KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 371, 372 & 373
497         HC      3

498         KK   373RE
499         KM   DIVERT FLOW FROM SUB-BASIN 373 THROUGH SUB-BASIN 379
500         KM           ASSUME 50% SPLIT FLOW AT 35TH AVENUE & PEORIA AVENUE
501         KM           STORM DRAIN CAPACITY FLOWING SOUTH IN 35TH AVENUE = 563CFS
502         KM   SOURCE:  Northwest Storm Drain Study
503         KM           Project ST-74206.00
504         DT    379D
505         DI      0     563    1127    2001    5001
506         DQ      0       0     282     719    2219
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 507          KK   RM374
 508          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 373 THROUGH SUB-BASIN 374
 509          KM            1) Reach Length = 3500 ft.
 510          RD
 511          RC    .030    .020    .030    3500  0.0037
 512          RX     120     120     130     130     190     190     200     200
 513          RY       5     0.5     0.5       0       0     0.5     0.5       5

 514          KK    R366
 515          KM   RETRIEVE FLOWS OVERTOPPING DEPRESSED INTERSECTION AT I-17 & PEORIA AVENUE
 516          DR    374D

 517          KK    374S
 518          KM   RUNOFF GENERATED ON SUB-BASIN 374
 519          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 520          KM    L= 1.62 mi. S= 14 ft/mi  Kb= .024 Tc = 0.650 Hr. R = 0.397
 521          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 522          BA    .751
 523          LG    .111    .256    5.05    .226   73.45
 524          UC    .650    .397
 525          UA       0       5      16      30      65      77      84      90      94      97
 526          UA     100

 527          KK   DT374
 528          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 11.42 AC-FT FROM SUB-BASIN 374
 529          KM                                              (Hydrograph identified as OR374)
 530          KM                                            2) Balance of runoff continues on.
 531          KM                                              (Hydrograph identified as DT374)
 532          DT   OR374   11.42
 533          DI       0   10000
 534          DQ       0   10000

 535          KK   HC374
 536          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 366, 373 & 374
 537          HC       4

 538          KK   374RE
 539          KM   DIVERT FLOW FROM SUB-BASIN 374 INTO THE ACDC
 540          DT     DC2
 541          DI       0   10000
 542          DQ       0   10000

 543          KK    R375
 544          KM   RETRIEVE HYDROGRAPH FROM SPLIT FLOWING SOUTH AT 43RD AVENUE & BELL ROAD.
 545          KM   THIS HYDROGRAPH WAS GENERATED IN THE SKUNK CREEK WATERSHED MODEL AND IS
 546          KM   STORED IN FILENAME:  CCW324.DSS
 547          BA    0.00
 548          ZR    =QI  A=SKUNK CREEK  B=376D  C=FLOW  F=WEST
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

549           KK   RM376
550           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 375 THROUGH SUB-BASIN 376
551           KM            1) Reach Length = 5150 ft.
552           RD
553           RC    .030    .020    .030    5150  0.0029
554           RX     140     140     150     150     190     190     200     200
555           RY       5     0.5     0.5       0       0     0.5     0.5       5

556           KK    R369
557           KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 369 WESTERLY IN GREENWAY ROAD
558           DR   376D1

559           KK   RM376
560           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 369 THROUGH SUB-BASIN 376
561           KM            1) Reach Length = 5315 ft.
562           RD
563           RC    .030    .020    .030    5315  0.0034
564           RX     140     140     150     150     190     190     200     200
565           RY       5     0.5     0.5       0       0     0.5     0.5       5

566           KK    376S
567           KM   RUNOFF GENERATED ON SUB-BASIN 376
568           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
569           KM    L= 1.68 mi. S= 20 ft/mi  Kb= .029 Tc = 0.667 Hr. R = 0.360
570           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
571           BA    .986
572           LG    .137    .216    7.14    .139   40.10
573           UC    .667    .360
574           UA       0       5      16      30      65      77      84      90      94      97
575           UA     100

576           KK   DT376
577           KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 6.54 AC-FT FROM SUB-BASIN 376
578           KM                                              (Hydrograph identified as OR376)
579           KM                                            2) Balance of runoff continues on.
580           KM                                              (Hydrograph identified as DT376)
581           DT   OR376    6.54
582           DI       0   10000
583           DQ       0   10000

584           KK   HC376
585           KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 369, 375 & 376
586           HC       3

587           KK   376RE
588           KM   DIVERT FLOW FROM SUB-BASIN 376 THROUGH SUB-BASIN 382
589           KM            ASSUME 50% SPLIT FLOW AT 43RD AVENUE & GREENWAY ROAD
590           KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 43RD AVENUE = 193CFS
591           KM   SOURCE:  Northwest Storm Drain Study
592           KM            Project ST-74206.00
593           DT   382D1
594           DI       0     193     501    1001    5001
595           DQ       0       0     154     404    2404
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 596          KK   RM377
 597          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 376 THROUGH SUB-BASIN 377
 598          KM           1) Reach Length = 5255 ft.
 599          RD
 600          RC    .030    .020    .030    5255  0.0038
 601          RX     140     140     150     150     190     190     200     200
 602          RY     5.0     0.5     0.5     0.0     0.0     0.5     0.5     5.0

 603          KK    R370
 604          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 370 WESTERLY IN THUNDERBIRD ROAD
 605          DR    377D

 606          KK   RM377
 607          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 370 THROUGH SUB-BASIN 377
 608          KM           1) Reach Length = 5280 ft.
 609          RD
 610          RC    .030    .020    .030    5280  0.0032
 611          RX     120     120     130     130     190     190     200     200
 612          RY       5     0.5     0.5       0       0     0.5     0.5       5

 613          KK    377S
 614          KM   RUNOFF GENERATED ON SUB-BASIN 377
 615          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 616          KM    L= 1.85 mi. S= 21 ft/mi  Kb= .027 Tc = 0.654 Hr. R = 0.379
 617          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 618          BA    .996
 619          LG    .104    .152    7.50    .117   41.53
 620          UC    .654    .379
 621          UA       0       5      16      30      65      77      84      90      94      97
 622          UA     100

 623          KK   DT377
 624          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 9.53 AC-FT FROM SUB-BASIN 377
 625          KM                                              (Hydrograph identified as OR377)
 626          KM                                            2) Balance of runoff continues on.
 627          KM                                              (Hydrograph identified as DT377)
 628          DT   OR377    9.53
 629          DI       0   10000
 630          DQ       0   10000

 631          KK   HC377
 632          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 370, 376 & 377
 633          HC       3

 634          KK   377RE
 635          KM   DIVERT FLOW FROM SUB-BASIN 377 THROUGH SUB-BASIN 383
 636          KM           ASSUME 50% SPLIT FLOW AT 43RD AVENUE & THUNDERBIRD ROAD
 637          KM           STORM DRAIN CAPACITY FLOWING SOUTH IN 43RD AVENUE = 283CFS
 638          KM   SOURCE:  Northwest Storm Drain Study
 639          KM           Project ST-74206.00
 640          DT    383D
 641          DI       0     283     567    1001    5001
 642          DQ       0       0     142     359    2359
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

643           KK   RM378
644           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 377 THROUGH SUB-BASIN 378
645           KM            1) Reach Length = 5260 ft.
646           RD
647           RC    .030    .020    .030    5260  0.0029
648           RX     120     120     130     130     190     190     200     200
649           RY       5     0.5     0.5       0       0     0.5     0.5       5

650           KK    R371
651           KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 371 WESTERLY IN CACTUS ROAD
652           DR    378D

653           KK   RM378
654           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 371 THROUGH SUB-BASIN 378
655           KM            1) Reach Length = 5290 ft.
656           RD
657           RC    .030    .020    .030    5290  0.0028
658           RX     140     140     150     150     190     190     200     200
659           RY       5     0.5     0.5       0       0     0.5     0.5       5

660           KK    378S
661           KM   RUNOFF GENERATED ON SUB-BASIN 378
662           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
663           KM    L= 1.77 mi. S= 19 ft/mi  Kb= .024 Tc = 0.621 Hr. R = 0.345
664           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
665           BA    .996
666           LG    .128    .265    5.98    .199   46.41
667           UC    .621    .345
668           UA       0       5      16      30      65      77      84      90      94      97
669           UA     100

670           KK   DT378
671           KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 17.02 AC-FT FROM SUB-BASIN 378
672           KM                                              (Hydrograph identified as OR378)
673           KM                                            2) Balance of runoff continues on.
674           KM                                              (Hydrograph identified as DT378)
675           DT   OR378   17.02
676           DI       0   10000
677           DQ       0   10000

678           KK   HC378
679           KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 371, 377 & 378
680           HC       3

681           KK   378RE
682           KM   DIVERT FLOW FROM SUB-BASIN 378 THROUGH SUB-BASIN 384
683           KM            ASSUME 50% SPLIT FLOW AT 43RD AVENUE & CACTUS ROAD
684           KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 43RD AVENUE = 373CFS
685           KM   SOURCE:  Northwest Storm Drain Study
686           KM            Project ST-74206.00
687           DT    384D
688           DI       0     373     747    1001    5001
689           DQ       0       0     187     314    2314
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

690           KK   RM379
691           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 378 THROUGH SUB-BASIN 379
692           KM            1) Reach Length = 5105 ft.
693           RD
694           RC    .030    .020    .030    5105  0.0027
695           RX     130     130     140     140     190     190     200     200
696           RY       5     0.5     0.5       0       0     0.5     0.5       5

697           KK    R373
698           KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 373 WESTERLY IN PEORIA AVENUE
699           DR    379D

700           KK   RM379
701           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 373 THROUGH SUB-BASIN 379
702           KM            1) Reach Length = 5365 ft.
703           RD
704           RC    .030    .020    .030    5365  0.0032
705           RX     140     140     150     150     190     190     200     200
706           RY       5     0.5     0.5       0       0     0.5     0.5       5

707           KK    379S
708           KM   RUNOFF GENERATED ON SUB-BASIN 379
709           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
710           KM    L= 1.57 mi. S= 15 ft/mi  Kb= .023 Tc = 0.613 Hr. R = 0.309
711           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
712           BA    .995
713           LG    .108    .251    5.36    .228   45.97
714           UC    .613    .309
715           UA       0       5      16      30      65      77      84      90      94      97
716           UA     100

717           KK   DT379
718           KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 5.44 AC-FT FROM SUB-BASIN 379
719           KM                                              (Hydrograph identified as OR379)
720           KM                                            2) Balance of runoff continues on.
721           KM                                              (Hydrograph identified as DT379)
722           DT   OR379    5.44
723           DI       0   10000
724           DQ       0   10000

725           KK   HC379
726           KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 373, 378 & 379
727           HC       3

728           KK   379RE
729           KM   DIVERT FLOW FROM SUB-BASIN 379 INTO THE ACDC
730           DT     DC3
731           DI       0   10000
732           DQ       0   10000
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

733         KK   380S
734         KM   RUNOFF GENERATED ON SUB-BASIN 380
735         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
736         KM    L= 1.54 mi. S= 12 ft/mi  Kb= .025 Tc = 0.729 Hr. R = 0.662
737         KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
738         BA    .357
739         LG    .100    .250    3.98    .393   49.90
740         UC    .729    .662
741         UA      0       5      16      30      65      77      84      90      94      97
742         UA    100

743         KK   380RE
744         KM   DIVERT FLOW FROM SUB-BASIN 380 INTO THE ACDC
745         DT     DC4
746         DI       0   10000
747         DQ       0   10000

748         KK   HC380
749         KM   COMBINE EXCESS RUNOFF WHICH IS NOT DIVERTED TO ACDC
750         HC       3

751         KK    R381
752         KM   RETRIEVE HYDROGRAPH FROM SPLIT FLOWING SOUTH AT 51ST AVENUE & BELL ROAD.
753         KM   THIS HYDROGRAPH WAS GENERATED IN THE SKUNK CREEK WATERSHED MODEL AND IS
754         KM   STORED IN FILENAME:  CCW324.DSS
755         BA    0.00
756         ZR    =QI  A=SKUNK CREEK  B=382D  C=FLOW  F=WEST

757         KK  RM382B
758         KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 381 THROUGH SUB-BASIN 382B
759         KM            1) Reach Length = 5055 ft.
760         RD
761         RC    .030    .020    .030    5055  0.0036
762         RX     140     140     150     150     190     190     200     200
763         RY       5     0.5     0.5       0       0     0.5     0.5       5

764         KK    R376
765         KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 376 WESTERLY IN GREENWAY ROAD
766         DR   382D1

767         KK  RM382B
768         KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 376 THROUGH SUB-BASIN 382B
769         KM            1) Reach Length = 5275 ft.
770         RD
771         RC    .030    .020    .030    5275  0.0047
772         RX     150     150     160     160     190     190     200     200
773         RY       5     0.5     0.5       0       0     0.5     0.5       5

774         KK   382AS
775         KM   RUNOFF GENERATED ON SUB-BASIN 382A
776         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
777         KM    L= 0.72 mi. S= 29 ft/mi  Kb= .028 Tc = 0.346 Hr. R = 0.200
778         KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
779         BA    .235
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  780         LG    .125    .164    7.50    .121   43.33
  781         UC    .346    .200
  782         UA       0       5      16      30      65      77      84      90      94      97
  783         UA     100

  784         KK  DT382A
  785         KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.62 AC-FT FROM SUB-BASIN 382A
  786         KM                                             (Hydrograph identified as OR382A)
  787         KM                                            2) Balance of runoff continues on.
  788         KM                                             (Hydrograph identified as DT382A)
  789         DT  OR382A    2.62
  790         DI       0   10000
  791         DQ       0   10000

  792         KK  382ARR
  793         KM   ROUTE FLOW THROUGH DETENTION BASIN LOCATED AT NE COR. 47TH AVE & PARADISE LN
  794         RS       1    ELEV    1266
  795         SV       0   1.300   2.846   4.000   4.800   9.365  21.155
  796         SE    1266    1267    1268 1268.88    1269    1270    1272
  797         SQ       0     2.3     4.7     6.0     8.8   644.1  8348.7

  798         KK  RM382B
  799         KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 382A THROUGH SUB-BASIN 382B
  800         KM            1) Reach Length = 5210 ft.
  801         RD
  802         RC    .030    .020    .030    5210  0.0038
  803         RX     150     150     160     160     190     190     200     200
  804         RY       5     0.5     0.5       0       0     0.5     0.5       5

  805         KK   382BS
  806         KM   RUNOFF GENERATED ON SUB-BASIN 382B
  807         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  808         KM    L= 1.41 mi. S= 22 ft/mi  Kb= .034 Tc = 0.646 Hr. R = 0.358
  809         KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
  810         BA    .732
  811         LG    .109    .256    6.60    .174   36.65
  812         UC    .646    .358
  813         UA       0       5      16      30      65      77      84      90      94      97
  814         UA     100

  815         KK  DT382B
  816         KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.39 AC-FT FROM SUB-BASIN 382B
  817         KM                                             (Hydrograph identified as OR382B)
  818         KM                                            2) Balance of runoff continues on.
  819         KM                                             (Hydrograph identified as DT382B)
  820         DT  OR382B    0.39
  821         DI       0   10000
  822         DQ       0   10000

  823         KK  HC382B
  824         KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 376, 381, 382A & 382B
  825         HC       4
```

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

826         KK   382RE
827         KM   DIVERT FLOW FROM SUB-BASIN 382 THROUGH SUB-BASIN 387
828         KM            ASSUME 50% SPLIT FLOW AT 51ST AVENUE & GREENWAY ROAD
829         KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 51ST AVENUE = 193CFS
830         KM   SOURCE:  Northwest Storm Drain Study
831         KM            Project ST-74206.00
832         DT   387D1
833         DI       0     193     501    1001    5001
834         DQ       0       0     154     404    2404

835         KK   RM383
836         KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 382 THROUGH SUB-BASIN 383
837         KM            1) Reach Length = 5245 ft.
838         RD
839         RC    .030    .020    .030    5245  0.0029
840         RX     140     140     150     150     190     190     200     200
841         RY       5     0.5     0.5       0       0     0.5     0.5       5

842         KK    R377
843         KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 377 WESTERLY IN THUNDERBIRD ROAD
844         DR    383D

845         KK   RM383
846         KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 377 THROUGH SUB-BASIN 383
847         KM            1) Reach Length = 5300 ft.
848         RD
849         RC    .030    .020    .030    5300  0.0038
850         RX     110     110     120     120     190     190     200     200
851         RY       5     0.5     0.5       0       0     0.5     0.5       5

852         KK    383S
853         KM   RUNOFF GENERATED ON SUB-BASIN 383
854         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
855         KM    L= 1.47 mi. S= 20 ft/mi  Kb= .033 Tc = 0.675 Hr. R = 0.327
856         KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
857         BA    .990
858         LG    .114    .239    6.78    .163   36.67
859         UC    .675    .327
860         UA       0       5      16      30      65      77      84      90      94      97
861         UA     100

862         KK   DT383
863         KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 21.07 AC-FT FROM SUB-BASIN 383
864         KM                                              (Hydrograph identified as OR383)
865         KM                                            2) Balance of runoff continues on.
866         KM                                              (Hydrograph identified as DT383)
867         DT   OR383   21.07
868         DI       0   10000
869         DQ       0   10000
```

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

870           KK   HC383
871           KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 377, 382 & 383
872           HC      3

873           KK   383RE
874           KM   DIVERT FLOW FROM SUB-BASIN 383 THROUGH SUB-BASIN 388 & 389
875           KM           ASSUME 50% SPLIT FLOW AT 51ST AVENUE & THUNDERBIRD ROAD
876           KM           STORM DRAIN CAPACITY FLOWING SOUTH IN 51ST AVENUE = 232CFS
877           KM   SOURCE:  Northwest Storm Drain Study
878           KM           Project ST-74206.00
879           DT    388D
880           DI      0     232     500    1000    5000
881           DQ      0       0     134     384    2384

882           KK   RM384
883           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 383 THROUGH SUB-BASIN 384
884           KM           1) Reach Length = 5405 ft.
885           RD
886           RC   .030    .020    .030    5405  0.0026
887           RX    140     140     150     150     190     190     200     200
888           RY      5     0.5     0.5       0       0     0.5     0.5       5

889           KK    R378
890           KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 378 WESTERLY IN CACTUS ROAD
891           DR    384D

892           KK   RM384
893           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 378 THROUGH SUB-BASIN 384
894           KM           1) Reach Length = 5275 ft.
895           RD
896           RC   .030    .020    .030    5275  0.0034
897           RX    140     140     150     150     190     190     200     200
898           RY      5     0.5     0.5       0       0     0.5     0.5       5

899           KK    384S
900           KM   RUNOFF GENERATED ON SUB-BASIN 384
901           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
902           KM    L= 1.48 mi. S= 15 ft/mi  Kb= .029 Tc = 0.712 Hr. R = 0.346
903           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
904           BA   .991
905           LG   .186    .288    4.12    .267   37.15
906           UC   .712    .346
907           UA      0       5      16      30      65      77      84      90      94      97
908           UA    100

909           KK   DT384
910           KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 12.40 AC-FT FROM SUB-BASIN 384
911           KM                                              (Hydrograph identified as OR384)
912           KM                                            2) Balance of runoff continues on.
913           KM                                              (Hydrograph identified as DT384)
914           DT   OR384   12.40
915           DI      0   10000
916           DQ      0   10000
```

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

 917          KK   HC384
 918          KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 378, 383 & 384
 919          HC      3

 920          KK   384RE
 921          KM   DIVERT FLOW FROM SUB-BASIN 384 INTO THE ACDC
 922          DT    DC5
 923          DI      0   10000
 924          DQ      0   10000

 925          KK    385S
 926          KM   RUNOFF GENERATED ON SUB-BASIN 385
 927          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 928          KM    L= 1.63 mi. S= 11 ft/mi  Kb= .024 Tc = 0.725 Hr. R = 0.528
 929          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 930          BA    .568
 931          LG    .104    .152    8.05    .093   49.63
 932          UC    .725    .528
 933          UA      0       5      16      30      65      77      84      90      94      97
 934          UA     100

 935          KK   DT385
 936          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.51 AC-FT FROM SUB-BASIN 385
 937          KM                                              (Hydrograph identified as OR385)
 938          KM                                            2) Balance of runoff continues on.
 939          KM                                              (Hydrograph identified as DT385)
 940          DT   OR385    0.51
 941          DI      0   10000
 942          DQ      0   10000

 943          KK   385RE
 944          KM   DIVERT FLOW FROM SUB-BASIN 385 INTO THE ACDC
 945          DT    DC6
 946          DI      0   10000
 947          DQ      0   10000

 948          KK   HC385
 949          KM   COMBINE EXCESS RUNOFF WHICH IS NOT DIVERTED TO ACDC
 950          HC      3

 951          KK    R386
 952          KM   RETRIEVE HYDROGRAPH FROM SPLIT FLOWING SOUTH AT 59TH AVENUE & BELL ROAD.
 953          KM   THIS HYDROGRAPH WAS GENERATED IN THE SKUNK CREEK WATERSHED MODEL AND IS
 954          KM   STORED IN FILENAME:  CCW324.DSS
 955          BA    0.00
 956          ZR    =QI  A=SKUNK CREEK  B=387D  C=FLOW  F=WEST

 957          KK   RM387
 958          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 386 THROUGH SUB-BASIN 387
 959          KM           1) Reach Length = 4975 ft.
 960          RD
 961          RC    .030    .020    .030    4975  0.0038
 962          RX     130     130     140     140     190     190     200     200
 963          RY       5     0.5     0.5       0       0     0.5     0.5       5
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 964        KK   R382
 965        KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 382 WESTERLY IN GREENWAY ROAD
 966        DR   387D1

 967        KK   RM387
 968        KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 382 THROUGH SUB-BASIN 387
 969        KM           1) Reach Length = 5295 ft.
 970        RD
 971        RC    .030    .020    .030    5295  0.0032
 972        RX     150     150     160     160     190     190     200     200
 973        RY       5     0.5     0.5       0       0     0.5     0.5       5

 974        KK   387S
 975        KM   RUNOFF GENERATED ON SUB-BASIN 387
 976        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 977        KM    L= 1.63 mi. S= 20 ft/mi  Kb= .032 Tc = 0.696 Hr. R = 0.378
 978        KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 979        BA    .945
 980        LG    .155    .189    7.78    .105   33.91
 981        UC    .696    .378
 982        UA       0       5      16      30      65      77      84      90      94      97
 983        UA     100

 984        KK   DT387
 985        KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 16.11 AC-FT FROM SUB-BASIN 387
 986        KM                                              (Hydrograph identified as OR387)
 987        KM                                            2) Balance of runoff continues on.
 988        KM                                              (Hydrograph identified as DT387)
 989        DT   OR387   16.11
 990        DI       0   10000
 991        DQ       0   10000

 992        KK   HC387
 993        KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 382, 386 & 387
 994        HC       3

 995        KK   387RE
 996        KM   DIVERT FLOW FROM SUB-BASIN 387 THROUGH SUB-BASIN 390
 997        KM           ASSUME 50% SPLIT FLOW AT 59TH AVENUE & GREENWAY ROAD
 998        KM           STORM DRAIN CAPACITY FLOWING SOUTH IN 59TH AVENUE = 120CFS
 999        KM   SOURCE:  Glendale - Peoria Area Drainage Master Plan
1000        DT    390D
1001        DI       0     120     500    1000    5000
1002        DQ       0       0     190     440    2440

1003        KK   RM388
1004        KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 387 THROUGH SUB-BASIN 388
1005        KM           1) Reach Length = 5250 ft.
1006        RD
1007        RC    .030    .020    .030    5250  0.0027
1008        RX     140     140     150     150     190     190     200     200
1009        RY       5     0.5     0.5       0       0     0.5     0.5       5
```

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

1010        KK   R383
1011        KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 383 WESTERLY IN THUNDERBIRD ROAD
1012        DR   388D

1013        KK   RM388
1014        KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 383 THROUGH SUB-BASIN 388
1015        KM           1) Reach Length = 5300 ft.
1016        RD
1017        RC   .030    .020    .030    5300  0.0030
1018        RX    130     130     140     140     190     190     200     200
1019        RY      5     0.5     0.5       0       0     0.5     0.5       5

1020        KK   388S
1021        KM   RUNOFF GENERATED ON SUB-BASIN 388
1022        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1023        KM    L= 2.11 mi. S= 14 ft/mi  Kb= .026 Tc = 0.875 Hr. R = 0.582
1024        KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
1025        BA   .993
1026        LG   .151    .278    5.98    .200   40.04
1027        UC   .875    .582
1028        UA      0       5      16      30      65      77      84      90      94      97
1029        UA    100

1030        KK   DT388
1031        KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 13.30 AC-FT FROM SUB-BASIN 388
1032        KM                                              (Hydrograph identified as OR388)
1033        KM                                            2) Balance of runoff continues on.
1034        KM                                              (Hydrograph identified as DT388)
1035        DT   OR388   13.30
1036        DI      0   10000
1037        DQ      0   10000

1038        KK   HC388
1039        KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 383 ,387 & 388
1040        HC      3

1041        KK   388RE
1042        KM   DIVERT FLOW FROM SUB-BASIN 388 INTO THE ACDC
1043        DT    DC7
1044        DI      0   10000
1045        DQ      0   10000

1046        KK   389S
1047        KM   RUNOFF GENERATED ON SUB-BASIN 389
1048        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1049        KM    L= 1.37 mi. S= 11 ft/mi  Kb= .029 Tc = 0.742 Hr. R = 0.420
1050        KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
1051        BA   .697
1052        LG   .165    .189    8.05    .093   43.70
1053        UC   .742    .420
1054        UA      0       5      16      30      65      77      84      90      94      97
1055        UA    100
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1056          KK   DT389
1057          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 7.79 AC-FT FROM SUB-BASIN 389
1058          KM                                             (Hydrograph identified as OR389)
1059          KM                                           2) Balance of runoff continues on.
1060          KM                                             (Hydrograph identified as DT389)
1061          DT   OR389    7.79
1062          DI       0   10000
1063          DQ       0   10000

1064          KK   389RE
1065          KM   DIVERT FLOW FROM SUB-BASIN 389 INTO THE ACDC
1066          DT     DC8
1067          DI       0   10000
1068          DQ       0   10000

1069          KK   HC389
1070          KM   COMBINE EXCESS RUNOFF WHICH IS NOT DIVERTED TO ACDC
1071          HC       3

1072          KK    R387
1073          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 387 WESTERLY IN GREENWAY ROAD
1074          DR    390D

1075          KK   RM390
1076          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 387 THROUGH SUB-BASIN 390
1077          KM            1) Reach Length = 5110 ft.
1078          RD
1079          RC    .030    .020    .030    5110  0.0027
1080          RX     140     140     150     150     190     190     200     200
1081          RY       5     0.5     0.5       0       0     0.5     0.5       5

1082          KK    390S
1083          KM   RUNOFF GENERATED ON SUB-BASIN 390
1084          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1085          KM    L= 1.61 mi. S= 17 ft/mi  Kb= .027 Tc = 0.642 Hr. R = 0.353
1086          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
1087          BA    .891
1088          LG    .136    .164    8.40    .058   40.20
1089          UC    .642    .353
1090          UA       0       5      16      30      65      77      84      90      94      97
1091          UA     100

1092          KK   DT390
1093          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 6.35 AC-FT FROM SUB-BASIN 390
1094          KM                                             (Hydrograph identified as OR390)
1095          KM                                           2) Balance of runoff continues on.
1096          KM                                             (Hydrograph identified as DT390)
1097          DT   OR390    6.35
1098          DI       0   10000
1099          DQ       0   10000
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1100        KK   HC390
1101        KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 387 & 390
1102        HC       2

1103        KK   390RE
1104        KM   DIVERT FLOW FROM SUB-BASIN 390 INTO THE ACDC
1105        DT     DC9
1106        DI       0   10000
1107        DQ       0   10000

1108        KK    391S
1109        KM   RUNOFF GENERATED ON SUB-BASIN 391
1110        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1111        KM    L= 1.05 mi. S= 19 ft/mi  Kb= .029 Tc = 0.483 Hr. R = 0.204
1112        KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
1113        BA    .738
1114        LG    .171    .193    8.05    .093   36.61
1115        UC    .483    .204
1116        UA       0       5      16      30      65      77      84      90      94      97
1117        UA     100

1118        KK   DT391
1119        KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.61 AC-FT FROM SUB-BASIN 391
1120        KM                                              (Hydrograph identified as OR391)
1121        KM                                            2) Balance of runoff continues on.
1122        KM                                              (Hydrograph identified as DT391)
1123        DT   OR391    2.61
1124        DI       0   10000
1125        DQ       0   10000

1126        KK   391RE
1127        KM   DIVERT FLOW FROM SUB-BASIN 391 INTO THE ACDC
1128        DT    DC10
1129        DI       0   10000
1130        DQ       0   10000

1131        KK   HC391
1132        KM   COMBINE EXCESS RUNOFF WHICH IS NOT DIVERTED TO ACDC
1133        HC       3

1134        KK    406S
1135        KM   RUNOFF GENERATED ON SUB-BASIN 406
1136        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1137        KM    L= 1.32 mi. S= 19 ft/mi  Kb= .034 Tc = 0.688 Hr. R = 0.339
1138        KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
1139        BA    .828
1140        LG    .240    .317    4.74    .244   23.40
1141        UC    .688    .339
1142        UA       0       3       5       8      12      20      43      75      90      96
1143        UA     100
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1144        KK   406RE
1145        KM   DIVERT FLOW FROM SUB-BASIN 406 INTO THE ACDC
1146        DT    DC11
1147        DI       0   10000
1148        DQ       0   10000

1149        KK   HC406
1150        KM   COMBINE EXCESS RUNOFF WHICH IS NOT DIVERTED TO ACDC
1151        HC       2
1152        ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

  8        356S
              .
              .
 33           .-------->   368D2
 28       356RE
              .
              .
 36           .        357S
              .           .
              .           .
 46           .           .        358S
              .           .           .
              .           .           .
 61           .           .           .-------->   OR358
 56           .           .       DT358
              .           .           .
              .           .           .
 64           .           .           .        R261
              .           .           .           .
              .           .           .           .
 70       HC357.................................
              .
              .
 78           .-------->   369D1
 73       357RE
              .
              .
 81           .        359S
              .           .
              .           .
 91       HC359............
              V
              V
 94       359RR
              .
              .
103           .-------->   369D2
101       359RE
              .
              .
106           .        360S
              .           .
              .           .
121           .           .-------->   OR360
116           .       DT360
              .           .
              .           .
129           .           .-------->   369D3
124           .       360RE
              .           .
              .           .
132           .           .        361S
              .           .           .
```

```
                .          .          .
142        HC361.......................
                .
                .
160             .-------->   369D4
145        361RE
                .
                .
153             .        362S
                .           .
                .           .
168             .           .-------->   OR362
163             .       DT362
                .           .
                .           .
171        HC362............
               V
               V
174        362RR
                .
                .
183             .-------->   370D1
181        362RE
                .
                .
186             .        363S
                .           .
                .           .
201             .           .-------->   OR363
196             .       DT363
                .           .
                .           .
209             .           .-------->   370D2
204             .       363RE
                .           .
                .           .
212             .           .        364S
                .           .           .
                .           .           .
222        HC364........................
                .
                .
230             .-------->   370D3
225        364RE
                .
                .
233             .        365S
                .           .
                .           .
243        HC365............
               V
               V
246        365RR
                .
                .
265             .-------->    371D
253        365RE
                .
                .
258             .        366S
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273          .          .-------> OR366
268          .      DT366
             .          .
             .          .
276      HC366............
             V
             V
279      366RR
             .
             .
288          .------->   374D
286      366RE
             .
             .
291          .       367S
             .          .
             .          .
301      HC367............
             .
             .
306          .------->    DC1
304      367RE
             .
             .
309          .       R368
             .          V
             .          V
             .      RM369
             .          .
             .          .
324          .          .          .<-------  369D1
322          .          .       R357
             .          .          .
             .          .          .
327          .          .          .          .<-------  369D2
325          .          .          .       R359
             .          .          .          .
             .          .          .          .
330          .          .          .          .          .<-------  369D3
328          .          .          .          .       R360
             .          .          .          .          .
             .          .          .          .          .
333          .          .          .          .          .          .<-------  369D4
331          .          .          .          .          .       R361
             .          .          .          .          .          .
             .          .          .          .          .          .
334          .          .      HC361...................................
             .          .          .
             .          .          .
337          .          .          .       369S
             .          .          .          .
             .          .          .          .
52           .          .          .          .-------> OR369
47           .          .          .      DT369
             .          .          .          .
             .          .          .          .
355          .      HC369........................
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364          .          .-------> 376D1
358          .      369RE
             .          V
             .          V
367          .      RM370
             .          .
             .          .
376          .          .          .<-------  370D1
374          .          .       R362
             .          .          .
             .          .          .
379          .          .          .          .<-------  370D2
377          .          .          .       R363
             .          .          .          .
             .          .          .          .
382          .          .          .          .          .<-------  370D3
380          .          .          .          .       R364
             .          .          .          .          .
             .          .          .          .          .
383          .          .          .          .          .       370S
             .          .          .          .          .          .
             .          .          .          .          .          .
398          .          .          .          .          .          .-------> OR370
393          .          .          .          .          .      DT370
             .          .          .          .          .          .
             .          .          .          .          .          .
401          .      HC370.............................................
             .          .
             .          .
410          .          .-------> 377D
404          .      370RE
             .          V
             .          V
413          .      RM371
             .          .
             .          .
422          .          .          .<-------  371D
420          .          .       R365
             .          .          .
             .          .          .
423          .          .          .       371S
             .          .          .          .
             .          .          .          .
438          .          .          .          .-------> OR371
433          .          .          .      DT371
             .          .          .          .
             .          .          .          .
441          .      HC371......................
             .          .
             .          .
450          .          .-------> 378D
444          .      371RE
             .          V
             .          V
453          .      RM373
             .          .
             .          .
460          .          .       372S
             .          .          V
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          .          .          V
470       .          .      372RR
          .          .          .
          .          .          .
[illegible]7        .          .          .       373S
          .          .          .          .
          .          .          .          .
492       .          .          .          .-------->   OR373
487       .          .          .      DT373
          .          .          .          .
          .          .          .          .
495       .      HC373........................
          .          .
          .          .
504       .          .-------->    379D
498       .      373RE
          .          V
          .          V
507       .      RM374
          .          .
          .          .
516       .          .          .<-------    374D
514       .          .      R366
          .          .          .
          .          .          .
517       .          .          .       374S
          .          .          .          .
          .          .          .          .
532       .          .          .          .-------->   OR374
[illegible]7        .          .          .      DT374
          .          .          .          .
          .          .          .          .
535    HC374.....................................
          .
          .
540       .-------->     DC2
538    374RE
          .
          .
543       .       R375
          .          V
          .          V
549       .      RM376
          .          .
          .          .
558       .          .          .<-------   376D1
556       .          .      R369
          .          .          V
          .          .          V
559       .          .      RM376
          .          .          .
          .          .          .
566       .          .          .       376S
          .          .          .          .
          .          .          .          .
[illegible]1        .          .          .          .-------->   OR376
576       .          .          .      DT376
          .          .          .          .
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584       .      HC376........................
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          .          .
          .          .
593       .          .-------> 382D1
587       .      376RE
          .          V
          .          V
596       .      RM377
          .          .
          .          .
605       .          .          .<-------    377D
603       .          .      R370
          .          .          V
          .          .          V
606       .          .      RM377
          .          .          .
          .          .          .
613       .          .          .       377S
          .          .          .          .
          .          .          .          .
628       .          .          .          .-------> OR377
623       .          .          .      DT377
          .          .          .          .
          .          .          .          .
631       .      HC377.......................
          .          .
          .          .
640       .          .-------> 383D
634       .      377RE
          .          V
          .          V
643       .      RM378
          .          .
          .          .
652       .          .          .<-------    378D
650       .          .      R371
          .          .          V
          .          .          V
653       .          .      RM378
          .          .          .
          .          .          .
660       .          .          .       378S
          .          .          .          .
          .          .          .          .
675       .          .          .          .-------> OR378
670       .          .          .      DT378
          .          .          .          .
          .          .          .          .
678       .      HC378.......................
          .          .
          .          .
687       .          .-------> 384D
681       .      378RE
          .          V
          .          V
690       .      RM379
          .          .
          .          .
699       .          .          .<-------    379D
697       .          .      R373
          .          .          V
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                .          .          V
700             .          .       RM379
                .          .          .
                .          .          .
07              .          .          .        379S
                .          .          .          .
                .          .          .          .
722             .          .          .          .-------->   OR379
717             .          .          .       DT379
                .          .          .          .
                .          .          .          .
725             .       HC379.......................
                .          .
                .          .
730             .          .-------->     DC3
728             .       379RE
                .          .
                .          .
733             .          .       380S
                .          .          .
                .          .          .
745             .          .          .-------->     DC4
743             .          .       380RE
                .          .          .
                .          .          .
748          HC380.......................
                .
                .
751             .       R381
                .          V
                .          V
757             .      RM382B
                .          .
                .          .
766             .          .          .<--------   382D1
764             .          .       R376
                .          .          V
                .          .          V
767             .          .      RM382B
                .          .          .
                .          .          .
774             .          .          .       382AS
                .          .          .          .
                .          .          .          .
789             .          .          .          .-------->  OR382A
784             .          .          .      DT382A
                .          .          .          V
                .          .          .          V
792             .          .          .      382ARR
                .          .          .          V
                .          .          .          V
798             .          .          .      RM382B
                .          .          .          .
                .          .          .          .
05              .          .          .          .       382BS
                .          .          .          .          .
                .          .          .          .          .
820             .          .          .          .          .-------->  OR382B
815             .          .          .          .      DT382B
                .          .          .          .          .
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823     HC382B...................................
826     382RE
          V
          V
835     RM383

844                 .<-------    383D
842             R377
                  V
                  V
845             RM383

852                         383S

867                             .------->   OR383
862                         DT383

870     HC383........................

879         .------->    388D
883     383RE
          V
          V
882     RM384

891                 .<-------    384D
889             R378
                  V
                  V
892             RM384

899                         384S

914                             .------->   OR384
909                         DT384

917     HC384........................

922         .------->     DC5
920     384RE

925             385S

940                 .------->   OR385
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935          .          .       DT385
             .          .          .
             .          .          .
945          .          .          .-------->     DC6
943          .          .       385RE
             .          .          .
             .          .          .
948      HC385........................
             .
             .
951          .        R386
             .          V
             .          V
957          .       RM387
             .          .
             .          .
966          .          .          .<--------   387D1
964          .          .        R382
             .          .          V
             .          .          V
967          .          .       RM387
             .          .          .
             .          .          .
974          .          .          .        387S
             .          .          .           .
             .          .          .           .
989          .          .          .           .-------->   OR387
984          .          .          .       DT387
             .          .          .           .
             .          .          .           .
992          .       HC387........................
             .          .
             .          .
1000         .          .-------->    390D
995          .       387RE
             .          V
             .          V
1003         .       RM388
             .          .
             .          .
1012         .          .          .<--------    388D
1010         .          .        R383
             .          .          V
             .          .          V
1013         .          .       RM388
             .          .          .
             .          .          .
1020         .          .          .        388S
             .          .          .           .
             .          .          .           .
1035         .          .          .           .-------->   OR388
1030         .          .          .       DT388
             .          .          .           .
             .          .          .           .
1038         .       HC388........................
             .          .
             .          .
1043         .          .-------->     DC7
1041         .       388RE
             .          .
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            .          .
1046        .          .       389S
            .          .          .
            .          .          .
1[illegible]1        .          .          .-------->   OR389
1056        .          .      DT389
            .          .          .
            .          .          .
1066        .          .          .-------->    DC8
1064        .          .      389RE
            .          .          .
            .          .          .
1069      HC389........................
            .
            .
1074        .          .<-------    390D
1072        .       R387
            .          V
            .          V
1075        .      RM390
            .          .
            .          .
1082        .          .       390S
            .          .          .
            .          .          .
1097        .          .          .-------->   OR390
1092        .          .      DT390
            .          .          .
            .          .          .
[illegible]0        .      HC390............
            .          .
            .          .
1105        .          .-------->    DC9
1103        .      390RE
            .          .
            .          .
1108        .          .       391S
            .          .          .
            .          .          .
1123        .          .          .-------->   OR391
1118        .          .      DT391
            .          .          .
            .          .          .
1128        .          .          .-------->   DC10
1126        .          .      391RE
            .          .          .
            .          .          .
1131      HC391........................
            .
            .
1134        .       406S
            .          .
            .          .
1146        .          .-------->   DC11
[illegible]4        .      406RE
            .          .
            .          .
1149      HC406............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             MAY   1991               *
*          VERSION 4.0.1E              *
*                                      *
*  RUN DATE  05/20/95  TIME  08:21:17  *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
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                    ACDC AREA DRAINAGE MASTER STUDY
                    WATERSHED BETWEEN CAVE CREEK AND SKUNK CREEK
                    FILENAME:  W100-24.DAT   KHE JOB NO. 0146
                    100-YEAR 24-HOUR DURATION STORM
                    SCS TYPE-II DISTRIBUTION

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

   IT         HYDROGRAPH TIME DATA
                   NMIN          4  MINUTES IN COMPUTATION INTERVAL
                  IDATE     10OCT92  STARTING DATE
                  ITIME        1200  STARTING TIME
                     NQ         800  NUMBER OF HYDROGRAPH ORDINATES
                 NDDATE     12OCT92  ENDING DATE
                 NDTIME        1716  ENDING TIME
                  ICENT          19  CENTURY MARK

             COMPUTATION INTERVAL    0.07 HOURS
                  TOTAL TIME BASE   53.27 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
  -----DSS---ZOPEN:  Existing File Opened,  File: CCW324.DSS
                     Unit:  71;  DSS Version: 6-FT
-----DSS--- ZREAD Unit  71; Vers.    6:  /BELL ROAD/R261/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS--- ZREAD Unit  71; Vers.    6:  /BELL ROAD/R261/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS--- ZREAD Unit  71; Vers.    6:  /BELL ROAD/R261/FLOW/11OCT1992/4MIN/CAVE CREEK/
-----DSS--- ZREAD Unit  71; Vers.    6:  /BELL ROAD/R261/FLOW/12OCT1992/4MIN/CAVE CREEK/
-----DSS--- ZREAD Unit  71; Vers.    6:  /BELL ROAD/R261/FLOW/12OCT1992/4MIN/CAVE CREEK/
```

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	356S	267.	12.13	46.	15.	7.	0.23		
DIVERSION TO	368D2	25.	12.13	8.	3.	1.	0.23		
HYDROGRAPH AT	356RE	242.	12.13	38.	12.	5.	0.23		
HYDROGRAPH AT	357S	301.	12.07	45.	15.	7.	0.22		
HYDROGRAPH AT	358S	351.	12.27	83.	26.	12.	0.42		
DIVERSION TO	OR358	8.	12.27	6.	1.	1.	0.42		
HYDROGRAPH AT	DT358	351.	12.27	83.	25.	11.	0.42		
HYDROGRAPH AT	R261	610.	12.53	245.	162.	142.	0.00		
4 COMBINED AT	HC357	1241.	12.27	411.	213.	165.	0.87		
DIVERSION TO	369D1	350.	12.27	261.	176.	148.	0.87		
HYDROGRAPH AT	357RE	891.	12.27	150.	37.	17.	0.87		
HYDROGRAPH AT	359S	77.	12.07	7.	2.	1.	0.06		
2 COMBINED AT	HC359	951.	12.20	157.	39.	18.	0.94		
ROUTED TO	359RR	0.	0.07	0.	0.	0.	0.94	27.71	24.80
DIVERSION TO	369D2	0.	0.07	0.	0.	0.	0.94		
HYDROGRAPH AT	359RE	0.	0.07	0.	0.	0.	0.94		
HYDROGRAPH AT	360S	413.	12.33	65.	19.	8.	0.43		
DIVERSION TO	OR360	312.	12.33	19.	5.	2.	0.43		
HYDROGRAPH AT	DT360	413.	12.33	51.	13.	6.	0.43		
DIVERSION TO	369D3	413.	0.07	51.	13.	6.	0.43		
HYDROGRAPH AT	360RE	0.	0.07	0.	0.	0.	0.43		
HYDROGRAPH AT	361S	166.	12.07	27.	8.	4.	0.13		
3 COMBINED AT	HC361	166.	12.07	27.	8.	4.	1.50		
DIVERSION TO	369D4	166.	0.07	27.	8.	4.	1.50		
HYDROGRAPH AT	361RE	0.	0.07	0.	0.	0.	1.50		
HYDROGRAPH AT	362S	174.	12.13	33.	10.	5.	0.15		

DIVERSION TO	OR362	174.	12.40	20.	5.	2.	0.15		
HYDROGRAPH AT	DT362	122.	12.40	17.	5.	2.	0.15		
2 COMBINED AT	HC362	122.	12.40	17.	5.	2.	1.65		
ROUTED TO	362RR	0.	0.07	0.	0.	0.	1.65	1300.08	25.73
DIVERSION TO	370D1	0.	0.07	0.	0.	0.	1.65		
HYDROGRAPH AT	362RE	0.	0.07	0.	0.	0.	1.65		
HYDROGRAPH AT	363S	179.	12.07	32.	10.	5.	0.14		
DIVERSION TO	OR363	7.	12.07	4.	1.	1.	0.14		
HYDROGRAPH AT	DT363	179.	12.07	32.	9.	4.	0.14		
DIVERSION TO	370D2	179.	0.07	32.	9.	4.	0.14		
HYDROGRAPH AT	363RE	0.	0.07	0.	0.	0.	0.14		
HYDROGRAPH AT	364S	155.	12.13	25.	8.	4.	0.14		
3 COMBINED AT	HC364	155.	12.13	25.	8.	4.	1.93		
DIVERSION TO	370D3	155.	0.07	25.	8.	4.	1.93		
HYDROGRAPH AT	364RE	0.	0.07	0.	0.	0.	1.93		
HYDROGRAPH AT	365S	116.	12.07	11.	3.	1.	0.09		
2 COMBINED AT	HC365	116.	12.07	11.	3.	1.	2.02		
ROUTED TO	365RR	0.	0.07	0.	0.	0.	2.02	81.58	24.67
DIVERSION TO	371D	0.	0.07	0.	0.	0.	2.02		
HYDROGRAPH AT	365RE	0.	0.07	0.	0.	0.	2.02		
HYDROGRAPH AT	366S	112.	12.13	22.	7.	3.	0.11		
DIVERSION TO	OR366	9.	12.13	4.	1.	1.	0.11		
HYDROGRAPH AT	DT366	112.	12.13	21.	6.	3.	0.11		
2 COMBINED AT	HC366	112.	12.13	21.	6.	3.	2.13		
ROUTED TO	366RR	0.	0.07	0.	0.	0.	2.13	41.29	26.33
DIVERSION TO	374D	0.	0.07	0.	0.	0.	2.13		
HYDROGRAPH AT	366RE	0.	0.07	0.	0.	0.	2.13		
HYDROGRAPH AT	367S	243.	12.13	42.	13.	6.	0.25		
2 COMBINED AT	HC367	243.	12.13	42.	13.	6.	2.39		
DIVERSION TO	DC1	243.	0.07	42.	13.	6.	2.39		

HYDROGRAPH AT	367RE	0.	0.07	0.	0.	0.	2.39
HYDROGRAPH AT	R368	708.	12.33	177.	75.	45.	0.00
ROUTED TO	RM369	693.	12.53	177.	75.	45.	0.00
HYDROGRAPH AT	R357	350.	11.73	261.	176.	148.	0.00
HYDROGRAPH AT	R359	0.	0.07	0.	0.	0.	0.00
HYDROGRAPH AT	R360	413.	12.33	51.	13.	6.	0.00
HYDROGRAPH AT	R361	166.	12.07	27.	8.	4.	0.00
4 COMBINED AT	HC361	875.	12.33	337.	197.	158.	0.00
HYDROGRAPH AT	369S	1004.	12.20	179.	56.	25.	1.00
DIVERSION TO	OR369	43.	12.20	22.	8.	3.	1.00
HYDROGRAPH AT	DT369	1004.	12.20	177.	49.	22.	1.00
3 COMBINED AT	HC369	2473.	12.27	688.	319.	225.	1.00
DIVERSION TO	376D1	1102.	12.27	210.	53.	24.	1.00
HYDROGRAPH AT	369RE	1372.	12.27	478.	266.	201.	1.00
ROUTED TO	RM370	1357.	12.40	478.	266.	201.	1.00
HYDROGRAPH AT	R362	0.	0.07	0.	0.	0.	0.00
HYDROGRAPH AT	R363	179.	12.07	32.	9.	4.	0.00
HYDROGRAPH AT	R364	155.	12.13	25.	8.	4.	0.00
HYDROGRAPH AT	370S	1118.	12.13	199.	62.	28.	0.96
DIVERSION TO	OR370	16.	12.13	9.	2.	1.	0.96
HYDROGRAPH AT	DT370	1118.	12.13	199.	60.	27.	0.96
5 COMBINED AT	HC370	2468.	12.27	732.	343.	235.	1.96
DIVERSION TO	377D	1036.	12.27	183.	46.	21.	1.96
HYDROGRAPH AT	370RE	1432.	12.27	549.	297.	215.	1.96
ROUTED TO	RM371	1430.	12.40	549.	297.	214.	1.96
HYDROGRAPH AT	R365	0.	0.07	0.	0.	0.	0.00
HYDROGRAPH AT	371S	1364.	12.07	190.	62.	28.	0.98
DIVERSION TO	OR371	42.	12.07	25.	8.	4.	0.98
HYDROGRAPH AT	DT371	1364.	12.07	188.	53.	24.	0.98
3 COMBINED AT	HC371	2466.	12.13	737.	350.	238.	2.94

DIVERSION TO	378D	976.	12.13	145.	36.	16.	2.94		
HYDROGRAPH AT	371RE	1490.	12.13	592.	314.	221.	2.94		
ROUTED TO	RM373	1482.	12.27	592.	314.	220.	2.94		
HYDROGRAPH AT	372S	55.	12.00	8.	3.	1.	0.03		
ROUTED TO	372RR	0.	0.07	0.	0.	0.	0.03	56.77	24.40
HYDROGRAPH AT	373S	1023.	12.20	185.	60.	27.	0.96		
DIVERSION TO	OR373	32.	12.20	21.	7.	3.	0.96		
HYDROGRAPH AT	DT373	1023.	12.20	185.	53.	24.	0.96		
3 COMBINED AT	HC373	2471.	12.20	775.	367.	244.	3.94		
DIVERSION TO	379D	954.	12.20	141.	35.	16.	3.94		
HYDROGRAPH AT	373RE	1517.	12.20	634.	332.	229.	3.94		
ROUTED TO	RM374	1512.	12.33	634.	332.	228.	3.94		
HYDROGRAPH AT	R366	0.	0.07	0.	0.	0.	0.00		
HYDROGRAPH AT	374S	774.	12.20	169.	57.	26.	0.75		
DIVERSION TO	OR374	27.	12.20	19.	6.	3.	0.75		
HYDROGRAPH AT	DT374	774.	12.20	169.	52.	23.	0.75		
4 COMBINED AT	HC374	2265.	12.27	802.	384.	251.	7.07		
DIVERSION TO	DC2	2265.	0.07	802.	384.	251.	7.07		
HYDROGRAPH AT	374RE	0.	0.07	0.	0.	0.	7.07		
HYDROGRAPH AT	R375	788.	12.20	158.	45.	20.	0.00		
ROUTED TO	RM376	785.	12.40	158.	45.	20.	0.00		
HYDROGRAPH AT	R369	1102.	12.27	210.	53.	24.	0.00		
ROUTED TO	RM376	1082.	12.47	210.	53.	24.	0.00		
HYDROGRAPH AT	376S	999.	12.20	182.	56.	25.	0.99		
DIVERSION TO	OR376	16.	12.20	12.	3.	1.	0.99		
HYDROGRAPH AT	DT376	999.	12.20	182.	53.	24.	0.99		
3 COMBINED AT	HC376	2689.	12.40	550.	151.	68.	0.99		
DIVERSION TO	382D1	1248.	12.40	208.	52.	23.	0.99		
HYDROGRAPH AT	376RE	1441.	12.40	342.	99.	44.	0.99		
ROUTED TO	RM377	1426.	12.53	342.	99.	44.	0.99		

HYDROGRAPH AT	R370	1036.	12.27	183.	46.	21.	0.00
ROUTED TO	RM377	1030.	12.40	183.	46.	21.	0.00
HYDROGRAPH AT	377S	1024.	12.20	195.	60.	27.	1.00
DIVERSION TO	OR377	23.	12.20	15.	5.	2.	1.00
HYDROGRAPH AT	DT377	1024.	12.20	195.	55.	25.	1.00
3 COMBINED AT	HC377	3244.	12.40	719.	200.	90.	1.98
DIVERSION TO	383D	1481.	12.40	258.	65.	29.	1.98
HYDROGRAPH AT	377RE	1764.	12.40	460.	135.	61.	1.98
ROUTED TO	RM378	1759.	12.53	460.	135.	61.	1.98
HYDROGRAPH AT	R371	976.	12.13	145.	36.	16.	0.00
ROUTED TO	RM378	948.	12.27	145.	36.	16.	0.00
HYDROGRAPH AT	378S	1016.	12.20	184.	59.	27.	1.00
DIVERSION TO	OR378	51.	12.20	25.	9.	4.	1.00
HYDROGRAPH AT	DT378	1016.	12.20	181.	50.	23.	1.00
3 COMBINED AT	HC378	3337.	12.40	786.	222.	100.	2.98
DIVERSION TO	384D	1482.	12.40	257.	64.	29.	2.98
HYDROGRAPH AT	378RE	1855.	12.40	529.	157.	71.	2.98
ROUTED TO	RM379	1843.	12.53	529.	157.	71.	2.98
HYDROGRAPH AT	R373	954.	12.20	141.	35.	16.	0.00
ROUTED TO	RM379	934.	12.40	141.	35.	16.	0.00
HYDROGRAPH AT	379S	1055.	12.20	183.	58.	26.	1.00
DIVERSION TO	OR379	16.	12.20	11.	3.	1.	1.00
HYDROGRAPH AT	DT379	1055.	12.20	183.	56.	25.	1.00
3 COMBINED AT	HC379	3478.	12.40	849.	248.	112.	3.97
DIVERSION TO	DC3	3478.	0.07	849.	248.	112.	3.97
HYDROGRAPH AT	379RE	0.	0.07	0.	0.	0.	3.97
HYDROGRAPH AT	380S	247.	12.27	65.	21.	10.	0.36
DIVERSION TO	DC4	247.	0.07	65.	21.	10.	0.36
HYDROGRAPH AT	380RE	0.	0.07	0.	0.	0.	0.36
3 COMBINED AT	HC380	0.	0.07	0.	0.	0.	11.40

HYDROGRAPH AT	R381	871.	12.20	169.	52.	23.	0.00		
ROUTED TO	RM382B	928.	12.27	169.	52.	23.	0.00		
HYDROGRAPH AT	R376	1248.	12.40	208.	52.	23.	0.00		
ROUTED TO	RM382B	1227.	12.53	208.	52.	23.	0.00		
HYDROGRAPH AT	382AS	328.	12.07	46.	14.	6.	0.23		
DIVERSION TO	OR382A	6.	12.07	4.	1.	1.	0.23		
HYDROGRAPH AT	DT382A	328.	12.07	46.	13.	6.	0.23		
ROUTED TO	382ARR	306.	12.13	39.	13.	6.	0.23	1269.47	12.13
ROUTED TO	RM382B	359.	12.33	39.	13.	6.	0.23		
HYDROGRAPH AT	382BS	720.	12.20	127.	39.	18.	0.73		
DIVERSION TO	OR382B	6.	12.20	1.	0.	0.	0.73		
HYDROGRAPH AT	DT382B	720.	12.20	127.	39.	18.	0.73		
4 COMBINED AT	HC382B	2881.	12.40	539.	155.	70.	0.97		
DIVERSION TO	387D1	1344.	12.40	206.	52.	23.	0.97		
HYDROGRAPH AT	382RE	1537.	12.40	333.	103.	47.	0.97		
ROUTED TO	RM383	1553.	12.47	333.	103.	47.	0.97		
HYDROGRAPH AT	R377	1481.	12.40	258.	65.	29.	0.00		
ROUTED TO	RM383	1473.	12.53	259.	65.	29.	0.00		
HYDROGRAPH AT	383S	1013.	12.20	174.	54.	24.	0.99		
DIVERSION TO	OR383	338.	12.20	33.	11.	5.	0.99		
HYDROGRAPH AT	DT383	1013.	12.20	159.	43.	19.	0.99		
3 COMBINED AT	HC383	3734.	12.47	750.	211.	96.	1.96		
DIVERSION TO	388D	1751.	12.47	295.	74.	33.	1.96		
HYDROGRAPH AT	383RE	1983.	12.47	455.	137.	62.	1.96		
ROUTED TO	RM384	1962.	12.60	455.	137.	62.	1.96		
HYDROGRAPH AT	R378	1482.	12.40	257.	64.	29.	0.00		
ROUTED TO	RM384	1467.	12.53	257.	64.	29.	0.00		
HYDROGRAPH AT	384S	926.	12.20	165.	51.	23.	0.99		
DIVERSION TO	OR384	33.	12.20	18.	6.	3.	0.99		
HYDROGRAPH AT	DT384	926.	12.20	164.	45.	20.	0.99		

3 COMBINED AT	HC384	3974.	12.53	872.	246.	112.	2.95
DIVERSION TO	DC5	3974.	0.07	872.	246.	112.	2.95
HYDROGRAPH AT	384RE	0.	0.07	0.	0.	0.	2.95
HYDROGRAPH AT	385S	504.	12.27	119.	37.	17.	0.57
DIVERSION TO	OR385	6.	12.27	1.	0.	0.	0.57
HYDROGRAPH AT	DT385	504.	12.27	119.	37.	17.	0.57
DIVERSION TO	DC6	504.	0.07	119.	37.	17.	0.57
HYDROGRAPH AT	385RE	0.	0.07	0.	0.	0.	0.57
3 COMBINED AT	HC385	0.	0.07	0.	0.	0.	14.92
HYDROGRAPH AT	R386	934.	12.27	189.	51.	23.	0.00
ROUTED TO	RM387	962.	12.47	189.	51.	23.	0.00
HYDROGRAPH AT	R382	1344.	12.40	206.	52.	23.	0.00
ROUTED TO	RM387	1334.	12.53	206.	52.	23.	0.00
HYDROGRAPH AT	387S	935.	12.27	174.	52.	24.	0.94
DIVERSION TO	OR387	185.	12.27	25.	8.	4.	0.94
HYDROGRAPH AT	DT387	935.	12.27	165.	44.	20.	0.94
3 COMBINED AT	HC387	3045.	12.47	559.	147.	66.	0.94
DIVERSION TO	390D	1462.	12.47	237.	59.	27.	0.94
HYDROGRAPH AT	387RE	1582.	12.47	322.	88.	40.	0.94
ROUTED TO	RM388	1559.	12.60	322.	88.	40.	0.94
HYDROGRAPH AT	R383	1751.	12.47	295.	74.	33.	0.00
ROUTED TO	RM388	1723.	12.60	295.	74.	33.	0.00
HYDROGRAPH AT	388S	718.	12.33	173.	54.	24.	0.99
DIVERSION TO	OR388	36.	12.33	20.	7.	3.	0.99
HYDROGRAPH AT	DT388	718.	12.33	172.	48.	21.	0.99
3 COMBINED AT	HC388	3894.	12.60	787.	209.	94.	1.94
DIVERSION TO	DC7	3894.	0.07	787.	209.	94.	1.94
HYDROGRAPH AT	388RE	0.	0.07	0.	0.	0.	1.94
HYDROGRAPH AT	389S	670.	12.27	138.	43.	19.	0.70
DIVERSION TO	OR389	19.	12.27	12.	4.	2.	0.70

HYDROGRAPH AT	DT389	670.	12.27	138.	39.	18.	0.70
DIVERSION TO	DC8	670.	0.07	138.	39.	18.	0.70
HYDROGRAPH AT	389RE	0.	0.07	0.	0.	0.	0.70
3 COMBINED AT	HC389	0.	0.07	0.	0.	0.	17.55
HYDROGRAPH AT	R387	1462.	12.47	237.	59.	27.	0.00
ROUTED TO	RM390	1414.	12.60	237.	59.	27.	0.00
HYDROGRAPH AT	390S	980.	12.20	187.	57.	26.	0.89
DIVERSION TO	OR390	16.	12.20	12.	3.	1.	0.89
HYDROGRAPH AT	DT390	980.	12.20	187.	53.	24.	0.89
2 COMBINED AT	HC390	2016.	12.60	424.	113.	51.	0.89
DIVERSION TO	DC9	2016.	0.07	424.	113.	51.	0.89
HYDROGRAPH AT	390RE	0.	0.07	0.	0.	0.	0.89
HYDROGRAPH AT	391S	980.	12.13	140.	42.	19.	0.74
DIVERSION TO	OR391	9.	12.13	5.	1.	1.	0.74
HYDROGRAPH AT	DT391	980.	12.13	140.	41.	19.	0.74
DIVERSION TO	DC10	980.	0.07	140.	41.	19.	0.74
HYDROGRAPH AT	391RE	0.	0.07	0.	0.	0.	0.74
3 COMBINED AT	HC391	0.	0.07	0.	0.	0.	19.18
HYDROGRAPH AT	406S	766.	12.40	119.	35.	16.	0.83
DIVERSION TO	DC11	766.	0.07	119.	35.	16.	0.83
HYDROGRAPH AT	406RE	0.	0.07	0.	0.	0.	0.83
2 COMBINED AT	HC406	0.	0.07	0.	0.	0.	20.01

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

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
RM369	MANE	4.00	692.53	752.00	-1.00	4.00	692.53	752.00	-1.00
RM370	MANE	4.00	1357.42	744.00	16.63	4.00	1357.42	744.00	16.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8869E+03 EXCESS=0.0000E+00 OUTFLOW=0.8831E+03 BASIN STORAGE=0.4910E+01 PERCENT ERROR= -0.1

RM371	MANE	4.00	1430.14	744.00	9.01	4.00	1430.14	744.00	9.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9453E+03 EXCESS=0.0000E+00 OUTFLOW=0.9412E+03 BASIN STORAGE=0.5193E+01 PERCENT ERROR= -0.1

RM373	MANE	4.00	1481.88	736.00	6.19	4.00	1481.88	736.00	6.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9747E+03 EXCESS=0.0000E+00 OUTFLOW=0.9707E+03 BASIN STORAGE=0.5315E+01 PERCENT ERROR= -0.1

RM374	MANE	4.00	1511.73	740.00	4.78	4.00	1511.73	740.00	4.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1007E+04 EXCESS=0.0000E+00 OUTFLOW=0.1004E+04 BASIN STORAGE=0.3636E+01 PERCENT ERROR= -0.1

RM376	MANE	4.00	785.26	744.00	-1.00	4.00	785.26	744.00	-1.00
RM376	MANE	4.00	1082.02	748.00	-1.00	4.00	1082.02	748.00	-1.00
RM377	MANE	4.00	1425.61	752.00	3.72	4.00	1425.61	752.00	3.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1956E+03 EXCESS=0.0000E+00 OUTFLOW=0.1956E+03 BASIN STORAGE=0.1172E-02 PERCENT ERROR= 0.0

RM377	MANE	3.20	1032.38	745.60	-1.00	4.00	1029.91	744.00	-1.00
RM378	MANE	4.00	1758.76	752.00	2.53	4.00	1758.76	752.00	2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2678E+03 EXCESS=0.0000E+00 OUTFLOW=0.2678E+03 BASIN STORAGE=0.8805E-03 PERCENT ERROR= 0.0

RM378	MANE	2.00	952.06	738.00	-1.00	4.00	947.83	736.00	-1.00
RM379	MANE	4.00	1843.11	752.00	1.96	4.00	1843.11	752.00	1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3119E+03 EXCESS=0.0000E+00 OUTFLOW=0.3119E+03 BASIN STORAGE=0.1112E-02 PERCENT ERROR= 0.0

RM379	MANE	2.20	937.17	741.40	-1.00	4.00	933.82	744.00	-1.00
RM382B	MANE	4.00	927.87	736.00	-1.00	4.00	927.87	736.00	-1.00
RM382B	MANE	2.40	1233.85	751.20	-1.00	4.00	1227.37	752.00	-1.00
RM382B	MANE	4.00	359.47	740.00	2.06	4.00	359.47	740.00	2.06

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2567E+02 EXCESS=0.0000E+00 OUTFLOW=0.2586E+02 BASIN STORAGE=0.5271E-02 PERCENT ERROR= -0.7

RM383	MANE	4.00	1553.20	748.00	4.01	4.00	1553.20	748.00	4.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2070E+03 EXCESS=0.0000E+00 OUTFLOW=0.2069E+03 BASIN STORAGE=0.6601E-02 PERCENT ERROR= 0.0

RM383	MANE	2.20	1474.61	752.40	-1.00	4.00	1472.97	752.00	-1.00
RM384	MANE	4.00	1961.90	756.00	2.63	4.00	1961.90	756.00	2.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2743E+03 EXCESS=0.0000E+00 OUTFLOW=0.2743E+03 BASIN STORAGE=0.7666E-02 PERCENT ERROR= 0.0

RM384	MANE	2.20	1468.96	750.20	-1.00	4.00	1466.61	752.00	-1.00
RM387	MANE	4.00	962.15	748.00	-1.00	4.00	962.15	748.00	-1.00
RM387	MANE	2.00	1337.48	750.00	-1.00	4.00	1334.41	752.00	-1.00
RM388	MANE	4.00	1558.75	756.00	3.46	4.00	1558.75	756.00	3.46

SECTION VII

HEC-1 Hydrology Results, 100-Year 24-Hour Storm (Future Conditions)

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****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              MAY   1991              *
*           VERSION 4.0.1E             *
*                                      *
*  RUN DATE  05/26/95  TIME  13:38:24  *
*                                      *
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*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*   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
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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

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

  1           ID   ACDC AREA DRAINAGE MASTER STUDY
  2           ID   WATERSHED BETWEEN CAVE CREEK AND SKUNK CREEK
  3           ID   FILENAME:  W324F.DAT   KHE JOB NO. 0146
  4           ID   100-YEAR 24-HOUR DURATION STORM - FUTURE CONDITIONS
  5           ID   SCS TYPE-II DISTRIBUTION
              *DIAGRAM
  6           IT       4 10OCT92    1200     800
  7           IO       5

  8           KK    367S
  9           KM   RUNOFF GENERATED ON SUB-BASIN 367
 10           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 11           KM    L= 0.91 mi. S= 22 ft/mi  Kb= .026 Tc = 0.404 Hr. R = 0.288
 12           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 13           BA    .233
 14           IN      30
 15           KM   RAINFALL DEPTH OF 3.80 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 16           KM   AN AREAL REDUCTION COEFFICIENT OF .920 WAS USED
 17           PB    3.50
 18           KM   THE FOLLOWING PC RECORD USED A 24-HOUR SCS TYPE II RAINFALL
 19           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
 20           PC    .063    .071    .080    .089    .098    .109    .120    .133    .147    .163
 21           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
 22           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
 23           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
 24           LG    .100    .210   6.96    .149   61.11
 25           UC    .404    .288
 26           UA       0       5      16      30      65      77      84      90      94      97
 27           UA     100

 28           KK   DT367
 29           KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 3.33 AC-FT FROM SUB-BASIN 367
 30           KM                                              (Hydrograph identified as OR367)
 31           KM                                             2) Balance of runoff continues on.
 32           KM                                              (Hydrograph identified as DT367)
 33           DT   OR367    3.33
 34           DI       0   10000
 35           DQ       0   10000

 36           KK   367RE
 37           KM   DIVERT FLOW FROM SUB-BASIN 367 ACROSS I-17 CULVERT (50"x31"ACMP) CROSSING
 38           KM           THROUGH SUB-BASIN 368
 39           KM   SOURCE:  Preliminary Design Report IR-17-1(151)
 40           KM           I-17, Deer Valley Road to Peoria Avenue
 41           DT    368D
 42           DI       0     100   10000
 43           DQ       0      25      25

 44           KK    378S
 45           KM   RUNOFF GENERATED ON SUB-BASIN 378
 46           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 47           KM    L= 0.75 mi. S= 27 ft/mi  Kb= .027 Tc = 0.354 Hr. R = 0.220
 48           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 49           BA    .220
 50           LG    .100    .170    7.32    .126   53.18
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  51          UC    .354    .220
  52          UA       0       5      16      30      65      77      84      90      94      97
  53          UA     100

  54          KK    379S
  55          KM   RUNOFF GENERATED ON SUB-BASIN 379
  56          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  57          KM    L= 1.74 mi. S= 20 ft/mi  Kb= .025 Tc = 0.600 Hr. R = 0.546
  58          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
  59          BA    .407
  60          LG    .107    .170    7.32    .132   57.43
  61          UC    .600    .546
  62          UA       0       5      16      30      65      77      84      90      94      97
  63          UA     100

  64          KK   DT379
  65          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.91 AC-FT FROM SUB-BASIN 379
  66          KM                                              (Hydrograph identified as OR379)
  67          KM                                            2) Balance of runoff continues on.
  68          KM                                              (Hydrograph identified as DT379)
  69          DT   OR379    2.91
  70          DI       0   10000
  71          DQ       0   10000

  72          KK   DT379
  73          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 5.80 AC-FT FROM SUB-BASIN 379
  74          KM                                              (Hydrograph identified as OR379)
  75          KM                                            2) Balance of runoff continues on.
  76          KM                                              (Hydrograph identified as DT379)
  77          DT   OR379    5.80
  78          DI       0   10000
  79          DQ       0   10000

  80          KK   HC378
  81          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 367, 378 & 379.
  82          HC       3

  83          KK   378RE
  84          KM   DIVERT FLOW FROM SUB-BASIN 378 ACROSS I-17 CULVERT (2-6'x3' BC) CROSSING
  85          KM           THROUGH SUB-BASIN 381
  86          KM   SOURCE:  Preliminary Design Report IR-17-1(151)
  87          KM           I-17, Deer Valley Road to Peoria Avenue
  88          DT   381D1
  89          DI       0     350   10000
  90          DQ       0     350     350

  91          KK    380S
  92          KM   RUNOFF GENERATED ON SUB-BASIN 380
  93          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  94          KM    L= 0.31 mi. S= 84 ft/mi  Kb= .030 Tc = 0.167 Hr. R = 0.094
  95          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
  96          BA    .065
  97          LG    .100    .250    3.50    .278   89.99
  98          UC    .167    .094
  99          UA       0       5      16      30      65      77      84      90      94      97
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 100          UA     100

 101          KK   HC380
 102          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 378 & 380
 103          HC       2

 104          KK   380RR
 105          KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & BELL ROAD
 106          KM            ASSUME PUMP FAILS TO OPERATE
 107          RS       1    ELEV    14.0
 108          SV       0    9.15   90.00   96.00  106.21  140.00
 109          SE    14.0    20.0   29.06    29.5    30.0    31.0
 110          SQ       0       0       0      32     447    4346

 111          KK   380RE
 112          KM   DIVERT FLOW FROM SUB-BASIN 380 CROSSING THROUGH SUB-BASIN 381
 113          DT   381D2
 114          DI       0   10000
 115          DQ       0   10000

 116          KK    386S
 117          KM   RUNOFF GENERATED ON SUB-BASIN 386
 118          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 119          KM    L= 1.12 mi. S= 25 ft/mi  Kb= .025 Tc = 0.421 Hr. R = 0.250
 120          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 121          BA    .432
 122          LG    .100    .150    7.50    .111   78.26
 123          UC    .421    .250
 124          UA       0       5      16      30      65      77      84      90      94      97
 125          UA     100

 126          KK   DT386
 127          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 10.43 AC-FT FROM SUB-BASIN 386
 128          KM                                              (Hydrograph identified as OR386)
 129          KM                                            2) Balance of runoff continues on.
 130          KM                                              (Hydrograph identified as DT386)
 131          DT   OR386   10.43
 132          DI       0   10000
 133          DQ       0   10000

 134          KK   DT386
 135          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 35.23 AC-FT FROM SUB-BASIN 386
 136          KM                                              (Hydrograph identified as OR386)
 137          KM                                            2) Balance of runoff continues on.
 138          KM                                              (Hydrograph identified as DT386)
 139          DT   OR386   35.23
 140          DI       0   10000
 141          DQ       0   10000

 142          KK   386RE
 143          KM   DIVERT FLOW FROM SUB-BASIN 386 ACROSS I-17 CULVERT (3-10'x3' BC) CROSSING
 144          KM            THROUGH SUB-BASIN 381
 145          KM   SOURCE:  Preliminary Design Report IR-17-1(151)
 146          KM            I-17, Deer Valley Road to Peoria
 147          DT   381D3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 148          DI       0     800   10000
 149          DQ       0     800     800

 150          KK    387S
 151          KM   RUNOFF GENERATED ON SUB-BASIN 387
 152          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 153          KM    L= 0.63 mi. S= 22 ft/mi  Kb= .028 Tc = 0.350 Hr. R = 0.255
 154          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 155          BA    .130
 156          LG    .100    .150    8.60    .070   52.26
 157          UC    .350    .255
 158          UA       0       5      16      30      65      77      84      90      94      97
 159          UA     100

 160          KK   DT387
 161          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 1.78 AC-FT FROM SUB-BASIN 387
 162          KM                                              (Hydrograph identified as OR387)
 163          KM                                             2) Balance of runoff continues on.
 164          KM                                              (Hydrograph identified as DT387)
 165          DT   OR387    1.78
 166          DI       0   10000
 167          DQ       0   10000

 168          KK   HC387
 169          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 380, 386 & 387
 170          HC       3

 171          KK   387RE
 172          KM   DIVERT FLOW FROM SUB-BASIN 387 ACROSS I-17 CULVERT (2-6'x3' BC) CROSSING
 173          KM           THROUGH SUB-BASIN 381
 174          KM   SOURCE:  Preliminary Design Report IR-17-1(151)
 175          KM           I-17, Deer Valley Road to Peoria Avenue
 176          DT   381D4
 177          DI       0     350   10000
 178          DQ       0     350     350

 179          KK    388S
 180          KM   RUNOFF GENERATED ON SUB-BASIN 388
 181          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 182          KM    L= 0.99 mi. S= 35 ft/mi  Kb= .028 Tc = 0.379 Hr. R = 0.365
 183          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 184          BA    .153
 185          LG    .100    .150    8.60    .069   63.79
 186          UC    .379    .365
 187          UA       0       5      16      30      65      77      84      90      94      97
 188          UA     100

 189          KK   DT388
 190          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 10.89 AC-FT FROM SUB-BASIN 388
 191          KM                                              (Hydrograph identified as OR388)
 192          KM                                             2) Balance of runoff continues on.
 193          KM                                              (Hydrograph identified as DT388)
 194          DT   OR388   10.89
 195          DI       0   10000
 196          DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 197          KK   HC388
 198          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 387 & 388
 199          HC       2

 200          KK   388RR
 201          KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & GREENWAY ROAD
 202          KM            ASSUME PUMP FAILS TO OPERATE
 203          RS       1    ELEV  1296.0
 204          SV       0    8.96   57.28   65.00   82.00   97.00  112.00
 205          SE  1296.0  1300.0  1306.0 1306.77  1308.0  1309.0  1310.0
 206          SQ       0       0       0       0     193     609    2690

 207          KK   388RE
 208          KM   DIVERT FLOW FROM SUB-BASIN 388 CROSSING THROUGH SUB-BASIN 389
 209          DT   389D1
 210          DI       0   10000
 211          DQ       0   10000

 212          KK    395S
 213          KM   RUNOFF GENERATED ON SUB-BASIN 395
 214          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 215          KM    L= 0.70 mi. S= 20 ft/mi  Kb= .028 Tc = 0.379 Hr. R = 0.290
 216          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 217          BA    .141
 218          LG    .100    .150    8.05    .092   64.87
 219          UC    .379    .290
 220          UA       0       5      16      30      65      77      84      90      94      97
 221          UA     100

 222          KK   DT395
 223          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.89 AC-FT FROM SUB-BASIN 395
 224          KM                                              (Hydrograph identified as OR395)
 225          KM                                            2) Balance of runoff continues on.
 226          KM                                              (Hydrograph identified as DT395)
 227          DT   OR395    2.89
 228          DI       0   10000
 229          DQ       0   10000

 230          KK   395RE
 231          KM   DIVERT FLOW FROM SUB-BASIN 395 ACROSS I-17 CULVERT (2-6'x3' BC) CROSSING
 232          KM            THROUGH SUB-BASIN 389
 233          KM   SOURCE:  Preliminary Design Report IR-17-1(151)
 234          KM            I-17, Deer Valley Road to Peoria Avenue
 235          DT   389D2
 236          DI       0     350   10000
 237          DQ       0     350     350

 238          KK    396S
 239          KM   RUNOFF GENERATED ON SUB-BASIN 396
 240          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 241          KM    L= 0.63 mi. S= 17 ft/mi  Kb= .028 Tc = 0.387 Hr. R = 0.279
 242          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 243          BA    .135
 244          LG    .101    .250    3.50    .291   51.66
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 245          UC    .387    .279
 246          UA       0       5      16      30      65      77      84      90      94      97
 247          UA     100

 248          KK   HC396
 249          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 388, 395 & 396
 250          HC       3

 251          KK   396RE
 252          KM   DIVERT FLOW FROM SUB-BASIN 396 ACROSS I-17 CULVERT (2-6'x3' BC) CROSSING
 253          KM            THROUGH SUB-BASIN 389
 254          KM   SOURCE:  Preliminary Design Report IR-17-1(151)
 255          KM            I-17, Deer Valley Road to Peoria Avenue
 256          DT   389D3
 257          DI       0     350   10000
 258          DQ       0     350     350

 259          KK    397S
 260          KM   RUNOFF GENERATED ON SUB-BASIN 397
 261          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 262          KM    L= 0.31 mi. S= 61 ft/mi  Kb= .029 Tc = 0.179 Hr. R = 0.084
 263          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 264          BA    .092
 265          LG    .102    .250    3.50    .282   87.12
 266          UC    .179    .084
 267          UA       0       5      16      30      65      77      84      90      94      97
 268          UA     100

 269          KK   DT397
 270          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 6.32 AC-FT FROM SUB-BASIN 397
 271          KM                                              (Hydrograph identified as OR397)
 272          KM                                            2) Balance of runoff continues on.
 273          KM                                              (Hydrograph identified as DT397)
 274          DT   OR397    6.32
 275          DI       0   10000
 276          DQ       0   10000

 277          KK   HC397
 278          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 396 & 397
 279          HC       2

 280          KK   397RR
 281          KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & THUNDERBIRD ROAD
 282          KM            ASSUME PUMP FAILS TO OPERATE
 283          RS       1    ELEV    80.0
 284          SV       0   39.50   39.67   47.00   57.00   67.00   79.00
 285          SE    80.0   89.84    90.0    90.9    92.0    93.0    94.0
 286          SQ       0       0     0.1      35     257    1179    3178

 287          KK   397RE
 288          KM   DIVERT FLOW FROM SUB-BASIN 397 CROSSING THROUGH SUB-BASIN 398
 289          DT    398D
 290          DI       0   10000
 291          DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 292          KK    406S
 293          KM   RUNOFF GENERATED ON SUB-BASIN 406
 294          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 295          KM    L= 0.78 mi. S= 24 ft/mi  Kb= .028 Tc = 0.379 Hr. R = 0.356
 296          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 297          BA    .114
 298          LG    .101    .250    3.61    .305   79.94
 299          UC    .379    .356
 300          UA       0       5      16      30      65      77      84      90      94      97
 301          UA     100

 302          KK   DT406
 303          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.54 AC-FT FROM SUB-BASIN 406
 304          KM                                              (Hydrograph identified as OR406)
 305          KM                                            2) Balance of runoff continues on.
 306          KM                                              (Hydrograph identified as DT406)
 307          DT   OR406    2.54
 308          DI       0   10000
 309          DQ       0   10000

 310          KK   DT406
 311          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 2.60 AC-FT FROM SUB-BASIN 406
 312          KM                                              (Hydrograph identified as OR406)
 313          KM                                            2) Balance of runoff continues on.
 314          KM                                              (Hydrograph identified as DT406)
 315          DT   OR406    2.60
 316          DI       0   10000
 317          DQ       0   10000

 318          KK   HC406
 319          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 397 & 406
 320          HC       2

 321          KK   406RR
 322          KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & PEORIA AVENUE
 323          KM            ASSUME PUMP FAILS TO OPERATE
 324          RS       1    ELEV    33.4
 325          SV       0    2.59   44.96   53.00   60.00   76.00
 326          SE    33.4    40.0    46.0    46.5    47.0    48.0
 327          SQ       0       0       0     286     905    3113

 328          KK   3406E
 329          KM   DIVERT FLOW FROM SUB-BASIN 406 CROSSING THROUGH SUB-BASIN 408
 330          DT    408D
 331          DI       0   10000
 332          DQ       0   10000

 333          KK    407S
 334          KM   RUNOFF GENERATED ON SUB-BASIN 407
 335          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 336          KM    L= 1.04 mi. S= 24 ft/mi  Kb= .026 Tc = 0.433 Hr. R = 0.331
 337          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 338          BA    .252
 339          LG    .140    .250    3.61    .371   45.98
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 340          UC    .433    .331
 341          UA       0       5      16      30      65      77      84      90      94      97
 342          UA     100

 343          KK   DT407
 344          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 1.98 AC-FT FROM SUB-BASIN 407
 345          KM                                             (Hydrograph identified as OR407)
 346          KM                                            2) Balance of runoff continues on.
 347          KM                                             (Hydrograph identified as DT407)
 348          DT   OR407    1.98
 349          DI       0   10000
 350          DQ       0   10000

 351          KK   HC407
 352          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 406 & 407
 353          HC       2

 354          KK   407RE
 355          KM   DIVERT FLOW FROM SUB-BASIN 407 INTO THE ACDC
 356          DT     DC1
 357          DI       0   10000
 358          DQ       0   10000

 359          KK    R368
 360          KM   RETRIEVE HYDROGRAPH FROM SPLIT FLOWING SOUTH AT 35TH AVENUE AND BELL ROAD.
 361          KM   THIS HYDROGRAPH WAS GENERATED IN THE SKUNK CREEK WATERSHED MODEL AND IS
 362          KM   STORED IN FILENAME:  CCW324F.DSS
 363          BA    0.00
 364          ZR    =Q1  A=SKUNK CREEK  B=381D5  C=FLOW  F=WEST

 365          KK   RM381
 366          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 368 THROUGH SUB-BASIN 381
 367          KM            1) Reach Length = 5240 ft.
 368          RD
 369          RC    .030    .020    .030    5240  0.0042
 370          RX     140     140     150     150     190     190     200     200
 371          RY       5     0.5     0.5       0       0     0.5     0.5       5

 372          KK    R378
 373          KM   RETRIEVE FLOWS DIVERTED THROUGH 2-6'x3' BC AT I-17 & BELL ROAD
 374          DR   381D1

 375          KK    R380
 376          KM   RETRIEVE FLOWS OVERTOPPING DEPRESSED INTERSECTION AT I-17 & BELL ROAD
 377          DR   381D2

 378          KK    R386
 379          KM   RETRIEVE FLOWS DIVERTED THROUGH 3-10'x3' BC AT I-17 & PARADISE LANE
 380          DR   381D3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 381          KK   R387
 382          KM   RETRIEVE FLOWS DIVERTED THROUGH 2-6'x3' BC AT I-17 & TIERRA BUENA DRIVE
 383          DR   381D4

 384          KK   HC387
 385          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 378, 380, 386 & 387
 386          HC       4

 387          KK   381S
 388          KM   RUNOFF GENERATED ON SUB-BASIN 381
 389          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 390          KM    L= 1.71 mi. S= 21 ft/mi  Kb= .023 Tc = 0.542 Hr. R = 0.289
 391          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 392          BA    .995
 393          LG    .105    .170    7.32    .130   54.18
 394          UC    .542    .289
 395          UA       0       5      16      30      65      77      84      90      94      97
 396          UA     100

 397          KK   DT381
 398          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 14.63 AC-FT FROM SUB-BA$IN 381
 399          KM                                              (Hydrograph identified as OR381)
 400          KM                                             2) Balance of runoff continues on.
 401          KM                                              (Hydrograph identified as DT381)
 402          DT   OR381   14.63
 403          DI       0   10000
 404          DO       0   10000

 405          KK   HC381
 406          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 387, 368 & 381
 407          HC       3

 408          KK   381RE
 409          KM   DIVERT FLOW FROM SUB-BASIN 381 THROUGH SUB-BASIN 382
 410          KM           ASSUME 50% SPLIT FLOW AT 35TH AVENUE & GREENWAY ROAD
 411          KM           STORM DRAIN CAPACITY FLOWING SOUTH IN 35TH AVENUE = 270CFS
 412          KM   SOURCE:  Northwest Storm Drain Study
 413          KM           Project ST-74206.00
 414          DT   382D1
 415          DI       0     270     540    1000    5000
 416          DO       0       0     135     365    2365

 417          KK   RM389
 418          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 381 THROUGH SUB-BASIN 389
 419          KM           1) Reach Length = 5245 ft.
 420          RD
 421          RC    .030    .020    .030    5245  0.0040
 422          RX     140     140     150     150     190     190     200     200
 423          RY       5     0.5     0.5       0       0     0.5     0.5       5
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

424         KK    R388
425         KM   RETRIEVE FLOWS OVERTOPPING DEPRESSED INTERSECTION AT I-17 & GREENWAY ROAD
426         DR   389D1

427         KK    R395
428         KM   RETRIEVE FLOWS DIVERTED THROUGH 2-6'x3' BC AT I-17 & ACOMA DRIVE
429         DR   389D2

430         KK    R396
431         KM   RETRIEVE FLOWS DIVERTED THROUGH 2-6'x3' BC AT I-17 & GELDING DRIVE
432         DR   389D3

433         KK    389S
434         KM   RUNOFF GENERATED ON SUB-BASIN 389
435         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
436         KM    L= 1.80 mi. S= 22 ft/mi  Kb= .023 Tc = 0.550 Hr. R = 0.312
437         KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
438         BA    .963
439         LG    .102    .150    8.05    .094   48.82
440         UC    .550    .312
441         UA       0       5      16      30      65      77      84      90      94      97
442         UA     100

443         KK   DT389
444         KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 1.66 AC-FT FROM SUB-BASIN 389
445         KM                                              (Hydrograph identified as OR389)
446         KM                                             2) Balance of runoff continues on.
447         KM                                              (Hydrograph identified as DT389)
448         DT   OR389    1.66
449         DI       0   10000
450         DQ       0   10000

451         KK   HC389
452         KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 388, 395, 396, 381 & 389
453         HC       5

454         KK   389RE
455         KM   DIVERT FLOW FROM SUB-BASIN 389 THROUGH SUB-BASIN 390
456         KM           ASSUME 50% SPLIT FLOW AT 35TH AVENUE & THUNDERBIRD ROAD
457         KM           STORM DRAIN CAPACITY FLOWING SOUTH IN 35TH AVENUE = 396 cfs
458         KM   SOURCE:  Northwest Storm Drain Study
459         KM           Project ST-74206.00
460         DT    390D
461         DI       0     396     500    1000    5000
462         DQ       0       0      52     302    2302

463         KK   RM398
464         KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 389 THROUGH SUB-BASIN 398
465         KM           1) Reach Length = 5260 ft.
466         RD
467         RC    .030    .020    .030    5260  0.0034
468         RX     140     140     150     150     190     190     200     200
469         RY       5     0.5     0.5       0       0     0.5     0.5       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

470           KK    R397
471           KM   RETRIEVE FLOWS OVERTOPPING DEPRESSED AT I-17 & THUNDERBIRD ROAD
472           DR    398D

473           KK    398S
474           KM   RUNOFF GENERATED ON SUB-BASIN 398
475           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
476           KM    L= 1.12 mi. S= 26 ft/mi  Kb= .023 Tc = 0.404 Hr. R = 0.150
477           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
478           BA    .980
479           LG    .101    .250    4.74    .241   59.69
480           UC    .404    .150
481           UA      0       5      16      30      65      77      84      90      94      97
482           UA     100

483           KK   DT398
484           KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 8.83 AC-FT FROM SUB-BASIN 398
485           KM                                              (Hydrograph identified as OR398)
486           KM                                             2) Balance of runoff continues on.
487           KM                                              (Hydrograph identified as DT398)
488           DT   OR398    8.83
489           DI       0   10000
490           DQ       0   10000

491           KK   HC398
492           KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 397, 389 & 398
493           HC       3

494           KK   398RE
495           KM   DIVERT FLOW FROM SUB-BASIN 398 THROUGH SUB-BASIN 399
496           KM            ASSUME 50% SPLIT FLOW AT 35TH AVENUE & CACTUS ROAD
497           KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 35TH AVENUE = 514CFS
498           KM   SOURCE:  Northwest Storm Drain Study
499           KM            Project ST-74206.00
500           DT    399D
501           DI       0     514    1028    2000    5000
502           DQ       0       0     257     743    2243

503           KK   RM403
504           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 398 THROUGH SUB-BASIN 403
505           KM            1) Reach Length = 5265 ft.
506           RD
507           RC    .030    .020    .030    5265  0.0040
508           RX     120     120     130     130     190     190     200     200
509           RY       5     0.5     0.5       0       0     0.5     0.5       5

510           KK    402S
511           KM   RUNOFF GENERATED ON SUB-BASIN 402
512           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
513           KM    L= 0.22 mi. S= 109 ft/mi  Kb= .032 Tc = 0.133 Hr. R = 0.081
514           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
515           BA    .034
516           LG    .100    .250    3.50    .279   86.28
517           UC    .133    .081
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

518           UA       0       5      16      30      65      77      84      90      94      97
519           UA     100

520           KK   402RR
521           KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & CACTUS ROAD
522           KM            ASSUME PUMP FAILS TO OPERATE
523           RS       1    ELEV    56.0
524           SV       0   78.68   83.00   88.00   97.00
525           SE    56.0    68.0    68.5    69.0    70.0
526           SQ       0       0     120     416    1612

527           KK    403S
528           KM   RUNOFF GENERATED ON SUB-BASIN 403
529           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
530           KM    L= 1.69 mi. S= 18 ft/mi  Kb= .023 Tc = 0.592 Hr. R = 0.321
531           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
532           BA    .965
533           LG    .096    .240    3.55    .298   53.05
534           UC    .592    .321
535           UA       0       5      16      30      65      77      84      90      94      97
536           UA     100

537           KK   DT403
538           KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 1.00 AC-FT FROM SUB-BASIN 403
539           KM                                              (Hydrograph identified as OR403)
540           KM                                             2) Balance of runoff continues on.
541           KM                                              (Hydrograph identified as DT403)
542           DT   OR403    1.00
543           DI       0   10000
544           DO       0   10000

545           KK   HC403
546           KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 398, 402 & 403
547           HC       3

548           KK   403RE
549           KM   DIVERT FLOW FROM SUB-BASIN 403 THROUGH SUB-BASIN 404
550           KM            ASSUME 50% SPLIT FLOW AT 35TH AVENUE & PEORIA AVENUE
551           KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 35TH AVENUE = 563CFS
552           KM   SOURCE:  Northwest Storm Drain Study
553           KM            Project ST-74206.00
554           DT    404D
555           DI       0     563    1127    2001    5001
556           DQ       0       0     282     719    2219

557           KK   RM408
558           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 403 THROUGH SUB-BASIN 408
559           KM            1) Reach Length = 3500 ft.
560           RD
561           RC    .030    .020    .030    3500  0.0037
562           RX     120     120     130     130     190     190     200     200
563           RY       5     0.5     0.5       0       0     0.5     0.5       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 564          KK    R406
 565          KM   RETRIEVE FLOWS OVERTOPPING DEPRESSED INTERSECTION AT I-17 & PEORIA AVENUE
 566          DR    408D

 567          KK    408S
 568          KM   RUNOFF GENERATED ON SUB-BASIN 408
 569          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 570          KM    L= 1.62 mi. S= 14 ft/mi  Kb= .023 Tc = 0.625 Hr. R = 0.380
 571          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 572          BA    .751
 573          LG    .100    .250    5.05    .226   77.33
 574          UC    .625    .380
 575          UA      0       5      16      30      65      77      84      90      94      97
 576          UA     100

 577          KK   HC408
 578          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 406, 403 & 408
 579          HC      4

 580          KK   408RE
 581          KM   DIVERT FLOW FROM SUB-BASIN 408 INTO THE ACDC
 582          DT    DC2
 583          DI      0   10000
 584          DO      0   10000

 585          KK    R369
 586          KM   RETRIEVE HYDROGRAPH FROM SPLIT FLOWING SOUTH AT 43RD AVENUE & BELL ROAD.
 587          KM   THIS HYDROGRAPH WAS GENERATED IN THE SKUNK CREEK WATERSHED MODEL AND IS
 588          KM   STORED IN FILENAME:  CCW324F.DSS
 589          BA    0.00
 590          ZR    =01  A=SKUNK CREEK  B=382D  C=FLOW  F=WEST

 591          KK   RM382
 592          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 369 THROUGH SUB-BASIN 382
 593          KM           1) Reach Length = 5150 ft.
 594          RD
 595          RC    .030    .020    .030    5150  0.0029
 596          RX     140     140     150     150     190     190     200     200
 597          RY       5     0.5     0.5       0       0     0.5     0.5       5

 598          KK    R381
 599          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 381 WESTERLY IN GREENWAY ROAD
 600          DR   382D1

 601          KK   RM382
 602          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 381 THROUGH SUB-BASIN 382
 603          KM           1) Reach Length = 5315 ft.
 604          RD
 605          RC    .030    .020    .030    5315  0.0034
 606          RX     140     140     150     150     190     190     200     200
 607          RY       5     0.5     0.5       0       0     0.5     0.5       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 608          KK   382S
 609          KM   RUNOFF GENERATED ON SUB-BASIN 382
 610          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 611          KM    L= 1.68 mi. S= 20 ft/mi  Kb= .026 Tc = 0.608 Hr. R = 0.325
 612          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 613          BA    .986
 614          LG    .110    .190    7.14    .147   44.80
 615          UC    .608    .325
 616          UA      0       5      16      30      65      77      84      90      94      97
 617          UA     100

 618          KK   DT382
 619          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 6.54 AC-FT FROM SUB-BASIN 382
 620          KM                                              (Hydrograph identified as OR382)
 621          KM                                            2) Balance of runoff continues on.
 622          KM                                              (Hydrograph identified as DT382)
 623          DT   OR382    6.54
 624          DI       0   10000
 625          DO       0   10000

 626          KK   DT382
 627          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 10.70 AC-FT FROM SUB-BASIN 382
 628          KM                                              (Hydrograph identified as OR382)
 629          KM                                            2) Balance of runoff continues on.
 630          KM                                              (Hydrograph identified as DT382)
 631          DT   OR382   10.70
 632          DI       0   10000
 633          DO       0   10000

 634          KK   HC382
 635          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 381, 369 & 382
 636          HC       3

 637          KK   382RE
 638          KM   DIVERT FLOW FROM SUB-BASIN 382 THROUGH SUB-BASIN 383
 639          KM            ASSUME 50% SPLIT FLOW AT 43RD AVENUE & GREENWAY ROAD
 640          KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 43RD AVENUE = 193CFS
 641          KM   SOURCE:  Northwest Storm Drain Study
 642          KM            Project ST-74206.00
 643          DT   383D1
 644          DI       0     193     501    1001    5001
 645          DO       0       0     154     404    2404

 646          KK   RM390
 647          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 382 THROUGH SUB-BASIN 390
 648          KM            1) Reach Length = 5255 ft.
 649          RD
 650          RC    .030    .020    .030    5255  0.0038
 651          RX     140     140     150     150     190     190     200     200
 652          RY     5.0     0.5     0.5     0.0     0.0     0.5     0.5     5.0
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 653          KK    R389
 654          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 389 WESTERLY IN THUNDERBIRD ROAD
 655          DR    390D

 656          KK   RM390
 657          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 389 THROUGH SUB-BASIN 390
 658          KM            1) Reach Length = 5280 ft.
 659          RD
 660          RC    .030    .020    .030    5280  0.0032
 661          RX     120     120     130     130     190     190     200     200
 662          RY       5     0.5     0.5       0       0     0.5     0.5       5

 663          KK    390S
 664          KM   RUNOFF GENERATED ON SUB-BASIN 390
 665          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 666          KM    L= 1.85 mi. S= 21 ft/mi  Kb= .027 Tc = 0.654 Hr. R = 0.379
 667          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 668          BA    .996
 669          LG    .101    .150    7.78    .106   41.14
 670          UC    .654    .379
 671          UA       0       5      16      30      65      77      84      90      94      97
 672          UA     100

 673          KK   DT390
 674          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 9.53 AC-FT FROM SUB-BASIN 390
 675          KM                                              (Hydrograph identified as OR390)
 676          KM                                            2) Balance of runoff continues on.
 677          KM                                              (Hydrograph identified as DT390)
 678          DT   OR390    9.53
 679          DI       0   10000
 680          DO       0   10000

 681          KK   HC390
 682          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 389, 382 & 390
 683          HC       3

 684          KK   390RE
 685          KM   DIVERT FLOW FROM SUB-BASIN 390 THROUGH SUB-BASIN 391
 686          KM            ASSUME 50% SPLIT FLOW AT 43RD AVENUE & THUNDERBIRD ROAD
 687          KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 43RD AVENUE = 283CFS
 688          KM   SOURCE:  Northwest Storm Drain Study
 689          KM            Project ST-74206.00
 690          DT    391D
 691          DI       0     283     567    1001    5001
 692          DO       0       0     142     359    2359

 693          KK   RM399
 694          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 390 THROUGH SUB-BASIN 399
 695          KM            1) Reach Length = 5260 ft.
 696          RD
 697          RC    .030    .020    .030    5260  0.0029
 698          RX     120     120     130     130     190     190     200     200
 699          RY       5     0.5     0.5       0       0     0.5     0.5       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 700          KK    R398
 701          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 398 WESTERLY IN CACTUS ROAD
 702          DR    399D

 703          KK   RM399
 704          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 398 THROUGH SUB-BASIN 399
 705          KM            1) Reach Length = 5290 ft.
 706          RD
 707          RC    .030    .020    .030    5290  0.0028
 708          RX     140     140     150     150     190     190     200     200
 709          RY       5     0.5     0.5       0       0     0.5     0.5       5

 710          KK    399S
 711          KM   RUNOFF GENERATED ON SUB-BASIN 399
 712          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 713          KM    L= 1.77 mi. S= 19 ft/mi  Kb= .023 Tc = 0.579 Hr. R = 0.319
 714          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 715          BA    .996
 716          LG    .102    .150    8.28    .082   51.96
 717          UC    .579    .319
 718          UA       0       5      16      30      65      77      84      90      94      97
 719          UA     100

 720          KK   DT399
 721          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 17.02 AC-FT FROM SUB-BASIN 399
 722          KM                                              (Hydrograph identified as OR399)
 723          KM                                            2) Balance of runoff continues on.
 724          KM                                              (Hydrograph identified as DT399)
 725          DT   OR399   17.02
 726          DI       0   10000
 727          DQ       0   10000

 728          KK   DT399
 729          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 7.90 AC-FT FROM SUB-BASIN 399
 730          KM                                              (Hydrograph identified as OR399)
 731          KM                                            2) Balance of runoff continues on.
 732          KM                                              (Hydrograph identified as DT399)
 733          DT   OR399    7.90
 734          DI       0   10000
 735          DQ       0   10000

 736          KK   HC399
 737          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 398, 390 & 399
 738          HC       3

 739          KK   399RE
 740          KM   DIVERT FLOW FROM SUB-BASIN 399 THROUGH SUB-BASIN 400
 741          KM            ASSUME 50% SPLIT FLOW AT 43RD AVENUE & CACTUS ROAD
 742          KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 43RD AVENUE = 373CFS
 743          KM   SOURCE:  Northwest Storm Drain Study
 744          KM            Project ST-74206.00
 745          DT    400D
 746          DI       0     373     747    1001    5001
 747          DQ       0       0     187     314    2314
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 748          KK  RM404
 749          KM  MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 399 THROUGH SUB-BASIN 404
 750          KM           1) Reach Length = 5105 ft.
 751          RD
 752          RC   .030    .020    .030    5105  0.0027
 753          RX    130     130     140     140     190     190     200     200
 754          RY      5     0.5     0.5       0       0     0.5     0.5       5

 755          KK   R403
 756          KM  RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 403 WESTERLY IN PEORIA AVENUE
 757          DR   404D

 758          KK  RM404
 759          KM  MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 403 THROUGH SUB-BASIN 404
 760          KM           1) Reach Length = 5365 ft.
 761          RD
 762          RC   .030    .020    .030    5365  0.0032
 763          RX    140     140     150     150     190     190     200     200
 764          RY      5     0.5     0.5       0       0     0.5     0.5       5

 765          KK   404S
 766          KM  RUNOFF GENERATED ON SUB-BASIN 404
 767          KM   THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 768          KM   L= 1.57 mi. S= 30 ft/mi  Kb= .023 Tc = 0.458 Hr. R = 0.224
 769          KM   CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 770          BA   .995
 771          LG   .100    .250    6.29    .186   49.23
 772          UC   .458    .224
 773          UA      0       5      16      30      65      77      84      90      94      97
 774          UA    100

 775          KK  DT404
 776          KM  THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 5.44 AC-FT FROM SUB-BASIN 404
 777          KM                                             (Hydrograph identified as OR404)
 778          KM                                           2) Balance of runoff continues on.
 779          KM                                             (Hydrograph identified as DT404)
 780          DT  OR404    5.44
 781          DI      0   10000
 782          DQ      0   10000

 783          KK  DT404
 784          KM  THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 1.11 AC-FT FROM SUB-BASIN 404
 785          KM                                             (Hydrograph identified as OR404)
 786          KM                                           2) Balance of runoff continues on.
 787          KM                                             (Hydrograph identified as DT404)
 788          DT  OR404    1.11
 789          DI      0   10000
 790          DQ      0   10000
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

791         KK   HC404
792         KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 403, 399 & 404
793         HC       3

794         KK   404RE
795         KM   DIVERT FLOW FROM SUB-BASIN 404 INTO THE ACDC
796         DT     DC3
797         DI       0   10000
798         DQ       0   10000

799         KK    409S
800         KM   RUNOFF GENERATED ON SUB-BASIN 409
801         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
802         KM    L= 1.54 mi. S= 12 ft/mi  Kb= .025 Tc = 0.729 Hr. R = 0.662
803         KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
804         BA    .357
805         LG    .100    .250    3.98    .393   49.90
806         UC    .729    .662
807         UA       0       5      16      30      65      77      84      90      94      97
808         UA     100

809         KK   DT409
810         KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.10 AC-FT FROM SUB-BASIN 409
811         KM                                              (Hydrograph identified as OR409)
812         KM                                            2) Balance of runoff continues on.
813         KM                                              (Hydrograph identified as DT409)
814         DT   OR409    0.10
815         DI       0   10000
816         DQ       0   10000

817         KK   409RE
818         KM   DIVERT FLOW FROM SUB-BASIN 409 INTO THE ACDC
819         DT     DC4
820         DI       0   10000
821         DQ       0   10000

822         KK   HC409
823         KM   COMBINE EXCESS RUNOFF WHICH IS NOT DIVERTED TO ACDC
824         HC       3

825         KK    R370
826         KM   RETRIEVE HYDROGRAPH FROM SPLIT FLOWING SOUTH AT 51ST AVENUE & BELL ROAD.
827         KM   THIS HYDROGRAPH WAS GENERATED IN THE SKUNK CREEK WATERSHED MODEL AND IS
828         KM   STORED IN FILENAME:  CCW324F.DSS
829         BA    0.00
830         ZR    =OI  A=SKUNK CREEK  B=383D  C=FLOW  F=WEST

831         KK   RM383
832         KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 370 THROUGH SUB-BASIN 383
833         KM           1) Reach Length = 5055 ft.
834         RD
835         RC    .030    .020    .030    5055  0.0036
836         RX     140     140     150     150     190     190     200     200
837         RY       5     0.5     0.5       0       0     0.5     0.5       5
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

838         KK   R382
839         KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 382 WESTERLY IN GREENWAY ROAD
840         DR   383D1

841         KK   RM383
842         KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 382 THROUGH SUB-BASIN 383
843         KM            1) Reach Length = 5275 ft.
844         RD
845         RC    .030    .020    .030    5275  0.0047
846         RX     150     150     160     160     190     190     200     200
847         RY       5     0.5     0.5       0       0     0.5     0.5       5

848         KK   344S
849         KM   RUNOFF GENERATED ON SUB-BASIN 344
850         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
851         KM    L= 0.72 mi. S= 29 ft/mi  Kb= .026 Tc = 0.333 Hr. R = 0.192
852         KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
853         BA    .235
854         LG    .107    .150    7.50    .121   46.59
855         UC    .333    .192
856         UA       0       5      16      30      65      77      84      90      94      97
857         UA     100

858         KK   DT344
859         KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.62 AC-FT FROM SUB-BASIN 344
860         KM                                              (Hydrograph identified as OR344)
861         KM                                            2) Balance of runoff continues on.
862         KM                                              (Hydrograph identified as DT344)
863         DT   OR344    2.62
864         DI       0   10000
865         DQ       0   10000

866         KK   344RR
867         KM   ROUTE FLOW THROUGH DETENTION BASIN LOCATED AT NE COR. 47TH AVE & PARADISE LN
868         RS       1    ELEV    1266
869         SV       0   1.300   2.846   4.000   4.800   9.365  21.155
870         SE    1266    1267    1268 1268.88    1269    1270    1272
871         SQ       0     2.3     4.7     6.0     8.8   644.1  8348.7

872         KK   RM383
873         KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 344 THROUGH SUB-BASIN 383
874         KM            1) Reach Length = 5210 ft.
875         RD
876         RC    .030    .020    .030    5210  0.0038
877         RX     150     150     160     160     190     190     200     200
878         RY       5     0.5     0.5       0       0     0.5     0.5       5

879         KK   383S
880         KM   RUNOFF GENERATED ON SUB-BASIN 383
881         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
882         KM    L= 1.41 mi. S= 22 ft/mi  Kb= .033 Tc = 0.625 Hr. R = 0.345
883         KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
884         BA    .732
885         LG    .100    .230    6.78    .163   38.05
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 886          UC    .625    .345
 887          UA       0       5      16      30      65      77      84      90      94      97
 888          UA     100

 889          KK   DT383
 890          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.39 AC-FT FROM SUB-BASIN 383
 891          KM                                             (Hydrograph identified as OR383)
 892          KM                                           2) Balance of runoff continues on.
 893          KM                                             (Hydrograph identified as DT383)
 894          DT   OR383    0.39
 895          DI       0   10000
 896          DQ       0   10000

 897          KK   HC383
 898          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 382, 370, 344 & 383
 899          HC       4

 900          KK   383RE
 901          KM   DIVERT FLOW FROM SUB-BASIN 383 THROUGH SUB-BASIN 384
 902          KM            ASSUME 50% SPLIT FLOW AT 51ST AVENUE & GREENWAY ROAD
 903          KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 51ST AVENUE = 193CFS
 904          KM   SOURCE:  Northwest Storm Drain Study
 905          KM            Project ST-74206.00
 906          DT   384D1
 907          DI       0     193     501    1001    5001
 908          DQ       0       0     154     404    2404

 909          KK   RM391
 910          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 383 THROUGH SUB-BASIN 384
 911          KM            1) Reach Length = 5245 ft.
 912          RD
 913          RC    .030    .020    .030    5245  0.0029
 914          RX     140     140     150     150     190     190     200     200
 915          RY       5     0.5     0.5       0       0     0.5     0.5       5

 916          KK    R390
 917          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 390 WESTERLY IN THUNDERBIRD ROAD
 918          DR    391D

 919          KK   RM391
 920          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 390 THROUGH SUB-BASIN 391
 921          KM            1) Reach Length = 5300 ft.
 922          RD
 923          RC    .030    .020    .030    5300  0.0038
 924          RX     110     110     120     120     190     190     200     200
 925          RY       5     0.5     0.5       0       0     0.5     0.5       5

 926          KK    391S
 927          KM   RUNOFF GENERATED ON SUB-BASIN 391
 928          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 929          KM    L= 1.47 mi. S= 20 ft/mi  Kb= .032 Tc = 0.650 Hr. R = 0.314
 930          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 931          BA    .990
 932          LG    .100    .190    7.14    .140   38.69
 933          UC    .650    .314
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LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

934       UA       0       5      16      30      65      77      84      90      94      97
935       UA     100

936       KK   DT391
937       KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 21.07 AC-FT FROM SUB-BASIN 391
938       KM                                              (Hydrograph identified as OR391)
939       KM                                            2) Balance of runoff continues on.
940       KM                                              (Hydrograph identified as DT391)
941       DT   OR391   21.07
942       DI       0   10000
943       DO       0   10000

944       KK   DT391
945       KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 2.58 AC-FT FROM SUB-BASIN 391
946       KM                                              (Hydrograph identified as OR391)
947       KM                                            2) Balance of runoff continues on.
948       KM                                              (Hydrograph identified as DT391)
949       DT   OR391    2.58
950       DI       0   10000
951       DO       0   10000

952       KK   HC391
953       KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 390, 344 & 391
954       HC       3

955       KK   391RE
956       KM   DIVERT FLOW FROM SUB-BASIN 391 THROUGH SUB-BASIN 392 & 401
957       KM            ASSUME 50% SPLIT FLOW AT 51ST AVENUE & THUNDERBIRD ROAD
958       KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 51ST AVENUE = 232CFS
959       KM   SOURCE:  Northwest Storm Drain Study
960       KM            Project ST-74206.00
961       DT    392D
962       DI       0     232     500    1000    5000
963       DO       0       0     134     384    2384

964       KK   RM400
965       KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 391 THROUGH SUB-BASIN 400
966       KM            1) Reach Length = 5405 ft.
967       RD
968       RC    .030    .020    .030    5405  0.0026
969       RX     140     140     150     150     190     190     200     200
970       RY       5     0.5     0.5       0       0     0.5     0.5       5

971       KK    R399
972       KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 399 WESTERLY IN CACTUS ROAD
973       DR    400D

974       KK   RM400
975       KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 399 THROUGH SUB-BASIN 400
976       KM            1) Reach Length = 5275 ft.
977       RD
978       RC    .030    .020    .030    5275  0.0034
979       RX     140     140     150     150     190     190     200     200
980       RY       5     0.5     0.5       0       0     0.5     0.5       5
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 981        KK   400S
 982        KM   RUNOFF GENERATED ON SUB-BASIN 400
 983        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 984        KM    L= 1.48 mi. S= 15 ft/mi  Kb= .023 Tc = 0.579 Hr. R = 0.278
 985        KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 986        BA    .991
 987        LG    .100    .210    6.96    .151   46.93
 988        UC    .579    .278
 989        UA      0       5      16      30      65      77      84      90      94      97
 990        UA     100

 991        KK   DT400
 992        KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 12.40 AC-FT FROM SUB-BASIN 400
 993        KM                                              (Hydrograph identified as OR400)
 994        KM                                            2) Balance of runoff continues on.
 995        KM                                              (Hydrograph identified as DT400)
 996        DT   OR400   12.40
 997        DI       0   10000
 998        DQ       0   10000

 999        KK   DT400
1000        KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 0.67 AC-FT FROM SUB-BASIN 400
1001        KM                                              (Hydrograph identified as OR400)
1002        KM                                            2) Balance of runoff continues on.
1003        KM                                              (Hydrograph identified as DT400)
1004        DT   OR400    0.67
1005        DI       0   10000
1006        DQ       0   10000

1007        KK   HC400
1008        KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 399, 391 & 400
1009        HC       3

1010        KK   400RE
1011        KM   DIVERT FLOW FROM SUB-BASIN 400 INTO THE ACDC
1012        DT     DC5
1013        DI       0   10000
1014        DQ       0   10000

1015        KK   405S
1016        KM   RUNOFF GENERATED ON SUB-BASIN 405
1017        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1018        KM    L= 1.63 mi. S= 11 ft/mi  Kb= .024 Tc = 0.721 Hr. R = 0.525
1019        KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
1020        BA    .568
1021        LG    .100    .150    8.28    .081   50.09
1022        UC    .721    .525
1023        UA      0       5      16      30      65      77      84      90      94      97
1024        UA     100
```

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

1025          KK   DT405
1026          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.51 AC-FT FROM SUB-BASIN 405
1027          KM                                             (Hydrograph identified as OR405)
1028          KM                                           2) Balance of runoff continues on.
1029          KM                                             (Hydrograph identified as DT405)
1030          DT   OR405    0.51
1031          DI       0   10000
1032          DQ       0   10000

1033          KK   405RE
1034          KM   DIVERT FLOW FROM SUB-BASIN 405 INTO THE ACDC
1035          DT     DC6
1036          DI       0   10000
1037          DQ       0   10000

1038          KK   HC405
1039          KM   COMBINE EXCESS RUNOFF WHICH IS NOT DIVERTED TO ACDC
1040          HC       3

1041          KK    R371
1042          KM   RETRIEVE HYDROGRAPH FROM SPLIT FLOWING SOUTH AT 59TH AVENUE & BELL ROAD.
1043          KM   THIS HYDROGRAPH WAS GENERATED IN THE SKUNK CREEK WATERSHED MODEL AND IS
1044          KM   STORED IN FILENAME:  CCW324F.DSS
1045          BA    0.00
1046          ZR    =01  A=SKUNK CREEK  B=384D  C=FLOW  F=WEST

1047          KK   RM384
1048          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 371 THROUGH SUB-BASIN 384
1049          KM            1) Reach Length = 4975 ft.
1050          RD
1051          RC   .030    .020    .030    4975  0.0038
1052          RX    130     130     140     140     190     190     200     200
1053          RY      5     0.5     0.5       0       0     0.5     0.5       5

1054          KK    R383
1055          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 383 WESTERLY IN GREENWAY ROAD
1056          DR   384D1

1057          KK   RM384
1058          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 383 THROUGH SUB-BASIN 384
1059          KM            1) Reach Length = 5295 ft.
1060          RD
1061          RC   .030    .020    .030    5295  0.0032
1062          RX    150     150     160     160     190     190     200     200
1063          RY      5     0.5     0.5       0       0     0.5     0.5       5

1064          KK    384S
1065          KM   RUNOFF GENERATED ON SUB-BASIN 384
1066          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1067          KM    L= 1.63 mi. S= 20 ft/mi  Kb= .028 Tc = 0.621 Hr. R = 0.333
1068          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
1069          BA    .945
1070          LG    .102    .150    7.78    .104   48.96
1071          UC    .621    .333
```

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

1072        UA       0       5      16      30      65      77      84      90      94      97
1073        UA     100

1074        KK   DT384
1075        KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 16.11 AC-FT FROM SUB-BASIN 384
1076        KM                                             (Hydrograph identified as OR384)
1077        KM                                           2) Balance of runoff continues on.
1078        KM                                             (Hydrograph identified as DT384)
1079        DT   OR384   16.11
1080        DI       0   10000
1081        DQ       0   10000

1082        KK   DT384
1083        KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 20.73 AC-FT FROM SUB-BASIN 384
1084        KM                                             (Hydrograph identified as OR384)
1085        KM                                           2) Balance of runoff continues on.
1086        KM                                             (Hydrograph identified as DT384)
1087        DT   OR384   20.73
1088        DI       0   10000
1089        DQ       0   10000

1090        KK   HC384
1091        KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 383, 371 & 384
1092        HC       3

1093        KK   384RE
1094        KM   DIVERT FLOW FROM SUB-BASIN 384 THROUGH SUB-BASIN 385
1095        KM           ASSUME 50% SPLIT FLOW AT 59TH AVENUE & GREENWAY ROAD
1096        KM           STORM DRAIN CAPACITY FLOWING SOUTH IN 59TH AVENUE = 120CFS
1097        KM   SOURCE:  Glendale - Peoria Area Drainage Master Plan
1098        DT    385D
1099        DI       0     120     500    1000    5000
1100        DQ       0       0     190     440    2440

1101        KK   RM392
1102        KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 384 THROUGH SUB-BASIN 392
1103        KM           1) Reach Length = 5250 ft.
1104        RD
1105        RC    .030    .020    .030    5250  0.0027
1106        RX     140     140     150     150     190     190     200     200
1107        RY       5     0.5     0.5       0       0     0.5     0.5       5

1108        KK    R391
1109        KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 391 WESTERLY IN THUNDERBIRD ROAD
1110        DR    392D

1111        KK   RM392
1112        KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 391 THROUGH SUB-BASIN 392
1113        KM           1) Reach Length = 5300 ft.
1114        RD
1115        RC    .030    .020    .030    5300  0.0030
1116        RX     130     130     140     140     190     190     200     200
1117        RY       5     0.5     0.5       0       0     0.5     0.5       5
```

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

1118        KK   392S
1119        KM   RUNOFF GENERATED ON SUB-BASIN 392
1120        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1121        KM    L= 2.11 mi. S= 14 ft/mi  Kb= .023 Tc = 0.771 Hr. R = 0.506
1122        KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
1123        BA    .993
1124        LG    .102    .230    6.78    .164   54.38
1125        UC    .771    .506
1126        UA      0       5      16      30      65      77      84      90      94      97
1127        UA    100

1128        KK   DT392
1129        KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 13.30 AC-FT FROM SUB-BASIN 392
1130        KM                                              (Hydrograph identified as OR392)
1131        KM                                            2) Balance of runoff continues on.
1132        KM                                              (Hydrograph identified as DT392)
1133        DT   OR392   13.30
1134        DI       0   10000
1135        DQ       0   10000

1136        KK   DT392
1137        KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 19.46 AC-FT FROM SUB-BASIN 392
1138        KM                                              (Hydrograph identified as OR392)
1139        KM                                            2) Balance of runoff continues on.
1140        KM                                              (Hydrograph identified as DT392)
1141        DT   OR392   19.46
1142        DI       0   10000
1143        DQ       0   10000

1144        KK   HC392
1145        KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 391 ,384 & 392
1146        HC       3

1147        KK   392RE
1148        KM   DIVERT FLOW FROM SUB-BASIN 392 INTO THE ACDC
1149        DT     DC7
1150        DI       0   10000
1151        DQ       0   10000

1152        KK   401S
1153        KM   RUNOFF GENERATED ON SUB-BASIN 401
1154        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1155        KM    L= 1.37 mi. S= 11 ft/mi  Kb= .023 Tc = 0.613 Hr. R = 0.339
1156        KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
1157        BA    .697
1158        LG    .102    .150    8.60    .070   60.45
1159        UC    .613    .339
1160        UA      0       5      16      30      65      77      84      90      94      97
1161        UA    100
```

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

1162          KK   DT401
1163          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 7.79 AC-FT FROM SUB-BASIN 401
1164          KM                                             (Hydrograph identified as OR401)
1165          KM                                            2) Balance of runoff continues on.
1166          KM                                             (Hydrograph identified as DT401)
1167          DT   OR401    7.79
1168          DI       0   10000
1169          DQ       0   10000

1170          KK   DT401
1171          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 17.45 AC-FT FROM SUB-BASIN 401
1172          KM                                             (Hydrograph identified as OR401)
1173          KM                                            2) Balance of runoff continues on.
1174          KM                                             (Hydrograph identified as DT401)
1175          DT   OR401   17.45
1176          DI       0   10000
1177          DQ       0   10000

1178          KK   401RE
1179          KM   DIVERT FLOW FROM SUB-BASIN 401 INTO THE ACDC
1180          DT     DC8
1181          DI       0   10000
1182          DQ       0   10000

1183          KK   HC401
1184          KM   COMBINE EXCESS RUNOFF WHICH IS NOT DIVERTED TO ACDC
1185          HC       3

1186          KK    R384
1187          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 384 WESTERLY IN GREENWAY ROAD
1188          DR    385D

1189          KK   RM385
1190          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 384 THROUGH SUB-BASIN 385
1191          KM            1) Reach Length = 5110 ft.
1192          RD
1193          RC    .030    .020    .030    5110  0.0027
1194          RX     140     140     150     150     190     190     200     200
1195          RY       5     0.5     0.5       0       0     0.5     0.5       5

1196          KK    385S
1197          KM   RUNOFF GENERATED ON SUB-BASIN 385
1198          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1199          KM    L= 1.61 mi. S= 17 ft/mi  Kb= .025 Tc = 0.604 Hr. R = 0.331
1200          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
1201          BA    .891
1202          LG    .100    .150    8.40    .058   52.45
1203          UC    .604    .331
1204          UA       0       5      16      30      65      77      84      90      94      97
1205          UA     100
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1206          KK   DT385
1207          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 6.35 AC-FT FROM SUB-BASIN 385
1208          KM                                            (Hydrograph identified as OR385)
1209          KM                                           2) Balance of runoff continues on.
1210          KM                                            (Hydrograph identified as DT385)
1211          DT   OR385    6.35
1212          DI       0   10000
1213          DQ       0   10000

1214          KK   DT385
1215          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 12.87 AC-FT FROM SUB-BASIN 385
1216          KM                                            (Hydrograph identified as OR385)
1217          KM                                           2) Balance of runoff continues on.
1218          KM                                            (Hydrograph identified as DT385)
1219          DT   OR385   12.87
1220          DI       0   10000
1221          DQ       0   10000

1222          KK   HC385
1223          KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 384 & 385
1224          HC       2

1225          KK   385RE
1226          KM   DIVERT FLOW FROM SUB-BASIN 385 INTO THE ACDC
1227          DT     DC9
1228          DI       0   10000
1229          DQ       0   10000

1230          KK    393S
1231          KM   RUNOFF GENERATED ON SUB-BASIN 393
1232          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1233          KM    L= 1.05 mi. S= 19 ft/mi  Kb= .023 Tc = 0.425 Hr. R = 0.177
1234          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
1235          BA    .738
1236          LG    .100    .150    8.60    .069   55.60
1237          UC    .425    .177
1238          UA       0       5      16      30      65      77      84      90      94      97
1239          UA     100

1240          KK   DT393
1241          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.61 AC-FT FROM SUB-BASIN 393
1242          KM                                            (Hydrograph identified as OR393)
1243          KM                                           2) Balance of runoff continues on.
1244          KM                                            (Hydrograph identified as DT393)
1245          DT   OR393    2.61
1246          DI       0   10000
1247          DQ       0   10000

1248          KK   DT393
1249          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 18.69 AC-FT FROM SUB-BASIN 393
1250          KM                                            (Hydrograph identified as OR393)
1251          KM                                           2) Balance of runoff continues on.
1252          KM                                            (Hydrograph identified as DT393)
1253          DT   OR393   18.69
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1254        DI       0   10000
1255        DQ       0   10000

1256        KK   393RE
1257        KM   DIVERT FLOW FROM SUB-BASIN 393 INTO THE ACDC
1258        DT    DC10
1259        DI       0   10000
1260        DQ       0   10000

1261        KK   HC393
1262        KM   COMBINE EXCESS RUNOFF WHICH IS NOT DIVERTED TO ACDC
1263        HC       3

1264        KK    394S
1265        KM   RUNOFF GENERATED ON SUB-BASIN 394
1266        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1267        KM    L= 1.32 mi. S= 19 ft/mi  Kb= .024 Tc = 0.496 Hr. R = 0.242
1268        KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
1269        BA    .793
1270        LG    .104    .250    6.60    .177   51.90
1271        UC    .496    .242
1272        UA       0       5      16      30      65      77      84      90      94      97
1273        UA     100

1274        KK   DT394
1275        KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.38 AC-FT FROM SUB-BASIN 394
1276        KM                                              (Hydrograph identified as OR394)
1277        KM                                            2) Balance of runoff continues on.
1278        KM                                              (Hydrograph identified as DT394)
1279        DT   OR394    0.38
1280        DI       0   10000
1281        DQ       0   10000

1282        KK   DT394
1283        KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 25.77 AC-FT FROM SUB-BASIN 394
1284        KM                                              (Hydrograph identified as OR394)
1285        KM                                            2) Balance of runoff continues on.
1286        KM                                              (Hydrograph identified as DT394)
1287        DT   OR394   25.77
1288        DI       0   10000
1289        DQ       0   10000

1290        KK   394RE
1291        KM   DIVERT FLOW FROM SUB-BASIN 394 INTO THE ACDC
1292        DT    DC11
1293        DI       0   10000
1294        DQ       0   10000

1295        KK   HC394
1296        KM   COMBINE EXCESS RUNOFF WHICH IS NOT DIVERTED TO ACDC
1297        HC       2
1298        ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

  8       367S
             .
             .
 33          .------->   OR367
 28      DT367
             .
             .
 41          .------->    368D
 36      367RE
             .
             .
 44          .        378S
             .           .
             .           .
 54          .           .        379S
             .           .           .
             .           .           .
 69          .           .           .------->   OR379
 64          .           .      DT379
             .           .           .
             .           .           .
 77          .           .           .------->   OR379
 72          .           .      DT379
             .           .           .
             .           .           .
 80      HC378.......................
             .
             .
 88          .------->   381D1
 83      378RE
             .
             .
 91          .        380S
             .           .
             .           .
101      HC380............
            V
            V
104      380RR
             .
             .
113          .------->   381D2
111      380RE
             .
             .
116          .        386S
             .           .
             .           .
121          .           .------->   OR386
126          .       DT386
             .           .
             .           .
139          .           .------->   OR386
```

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134          .       DT386
             .           .
             .           .
147          .           .-------->   381D3
142          .       386RE
             .           .
             .           .
150          .           .        387S
             .           .           .
             .           .           .
165          .           .           .-------->   OR387
160          .           .       DT387
             .           .           .
             .           .           .
168      HC387.......................
             .
             .
176          .-------->   381D4
171      387RE
             .
             .
179          .        388S
             .           .
             .           .
194          .           .-------->   OR388
189          .       DT388
             .           .
             .           .
197      HC388............
             V
             V
200      388RR
             .
             .
209          .-------->   389D1
207      388RE
             .
             .
212          .        395S
             .           .
             .           .
227          .           .-------->   OR395
222          .       DT395
             .           .
             .           .
235          .           .-------->   389D2
230          .       395RE
             .           .
             .           .
238          .           .        396S
             .           .           .
             .           .           .
248      HC396.......................
             .
             .
256          .-------->   389D3
251      396RE
             .
             .
259          .        397S
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          .           .
          .           .
274       .           .-------->   OR397
269       .       DT397
          .           .
          .           .
277     HC397............
          V
          V
280     397RR
          .
          .
289       .-------->    398D
287     397RE
          .
          .
292       .        406S
          .           .
          .           .
307       .           .-------->   OR406
302       .       DT406
          .           .
          .           .
315       .           .-------->   OR406
310       .       DT406
          .           .
          .           .
318     HC406............
          V
          V
321     406RR
          .
          .
330       .-------->    408D
328     3406E
          .
          .
333       .        407S
          .           .
          .           .
348       .           .-------->   OR407
343       .       DT407
          .           .
          .           .
351     HC407............
          .
          .
356       .-------->     DC1
354     407RE
          .
          .
359       .        R368
          .           V
          .           V
365       .       RM381
          .           .
          .           .
374       .           .           .<--------   381D1
372       .           .       R378
          .           .           .
```

```
377          .<-------   381D2
375       R380
380                      .<-------   381D3
378                 R386
383                                   .<-------   381D4
381                            R387
384       HC387.................................
387       381S
402                      .------->   OR381
397       DT381
405    HC381......................
414       .------->   382D1
408    381RE
          V
          V
417    RM389
426          .<-------   389D1
424       R388
429          .<-------   389D2
427       R395
432                      .<-------   389D3
430                 R396
433                            389S
448                                   .------->   OR389
443                            DT389
451    HC389.........................................
          .------->   390D
454    389RE
          V
          V
463    RM398
```

```
        .         .
        .         .
472     .         .          .<-------    398D
470     .         .      R397
        .         .          .
        .         .          .
473     .         .          .       398S
        .         .          .          .
        .         .          .          .
488     .         .          .          .------->   OR398
483     .         .          .      DT398
        .         .          .          .
        .         .          .          .
491     .      HC398.......................
        .         .
        .         .
500     .         .------->    399D
494     .      398RE
        .         V
        .         V
503     .      RM403
        .         .
        .         .
510     .         .      402S
        .         .         V
        .         .         V
520     .         .     402RR
        .         .          .
        .         .          .
527     .         .          .       403S
        .         .          .          .
        .         .          .          .
542     .         .          .          .------->   OR403
537     .         .          .      DT403
        .         .          .          .
        .         .          .          .
545     .      HC403.......................
        .         .
        .         .
554     .         .------->    404D
548     .      403RE
        .         V
        .         V
557     .      RM408
        .         .
        .         .
566     .         .          .<-------    408D
564     .         .      R406
        .         .          .
        .         .          .
567     .         .          .       408S
        .         .          .          .
        .         .          .          .
577  HC408.................................
        .
        .
582     .------->     DC2
580  408RE
        .
        .
```

```
585   .      R369
      .        V
      .        V
591   .     RM382
      .        .
      .        .
600   .        .          .<-------   382D1
598   .        .       R381
      .        .          V
      .        .          V
601   .        .      RM382
      .        .          .
      .        .          .
608   .        .          .       382S
      .        .          .          .
      .        .          .          .
623   .        .          .          .------->   OR382
618   .        .          .      DT382
      .        .          .          .
      .        .          .          .
631   .        .          .          .------->   OR382
626   .        .          .      DT382
      .        .          .          .
      .        .          .          .
634   .     HC382.......................
      .        .
      .        .
643   .        .------->   383D1
637   .     382RE
      .        V
      .        V
646   .     RM390
      .        .
      .        .
655   .        .          .<-------    390D
653   .        .       R389
      .        .          V
      .        .          V
656   .        .      RM390
      .        .          .
      .        .          .
663   .        .          .       390S
      .        .          .          .
      .        .          .          .
678   .        .          .          .------->   OR390
673   .        .          .      DT390
      .        .          .          .
      .        .          .          .
681   .     HC390.......................
      .        .
      .        .
690   .        .------->    391D
684   .     390RE
      .        V
      .        V
      .     RM399
      .        .
      .        .
702   .        .          .<-------    399D
700   .        .       R398
```

```
        .         .         V
        .         .         V
703     .         .      RM399
        .         .         .
        .         .         .
710     .         .         .       399S
        .         .         .          .
        .         .         .          .
725     .         .         .          .-------->   OR399
720     .         .         .      DT399
        .         .         .          .
        .         .         .          .
733     .         .         .          .-------->   OR399
728     .         .         .      DT399
        .         .         .          .
        .         .         .          .
736     .      HC399.......................
        .         .
        .         .
745     .         .-------->    400D
739     .      399RE
        .         V
        .         V
748     .      RM404
        .         .
        .         .
757     .         .         .<-------    404D
755     .         .      R403
        .         .         V
        .         .         V
758     .         .      RM404
        .         .         .
        .         .         .
765     .         .         .       404S
        .         .         .          .
        .         .         .          .
780     .         .         .          .-------->   OR404
775     .         .         .      DT404
        .         .         .          .
        .         .         .          .
788     .         .         .          .-------->   OR404
783     .         .         .      DT404
        .         .         .          .
        .         .         .          .
791     .      HC404.......................
        .         .
        .         .
796     .         .-------->     DC3
794     .      404RE
        .         .
        .         .
799     .         .      409S
        .         .         .
        .         .         .
[illegible]4     .         .         .-------->   OR409
[illegible]09    .         .      DT409
        .         .         .
        .         .         .
819     .         .         .-------->     DC4
817     .         .      409RE
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          .          .          .
          .          .          .
822     HC409.......................
          .
          .
825       .       R370
          .          V
          .          V
831       .      RM383
          .          .
          .          .
840       .          .          .<-------   383D1
838       .          .       R382
          .          .          V
          .          .          V
841       .          .      RM383
          .          .          .
          .          .          .
848       .          .          .       344S
          .          .          .          .
          .          .          .          .
863       .          .          .          .-------->   OR344
858       .          .          .      DT344
          .          .          .          V
          .          .          .          V
866       .          .          .      344RR
          .          .          .          V
          .          .          .          V
872       .          .          .      RM383
          .          .          .          .
          .          .          .          .
879       .          .          .          .       383S
          .          .          .          .          .
          .          .          .          .          .
894       .          .          .          .          .-------->   OR383
889       .          .          .          .      DT383
          .          .          .          .          .
          .          .          .          .          .
897       .      HC383.................................
          .          .
          .          .
906       ..         .-------->   384D1
900       .      383RE
          .          V
          .          V
909       .      RM391
          .          .
          .          .
918       .          .          .<-------    391D
916       .          .       R390
          .          .          V
          .          .          V
919       .          .      RM391
          .          .          .
          .          .          .
926       .          .          .       391S
          .          .          .          .
          .          .          .          .
941       .          .          .          .-------->   OR391
936       .          .          .      DT391
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          .          .          .          .
          .          .          .          .
949       .          .          .          .-------> OR391
944       .          .          .     DT391
          .          .          .          .
          .          .          .          .
952       .     HC391.......................
          .          .
          .          .
961       .          .-------> 392D
955       .     391RE
          .          V
          .          V
964       .     RM400
          .          .
          .          .
973       .          .          .<-------  400D
971       .          .       R399
          .          .          V
          .          .          V
974       .          .      RM400
          .          .          .
          .          .          .
981       .          .          .      400S
          .          .          .          .
          .          .          .          .
996       .          .          .          .-------> OR400
991       .          .          .     DT400
          .          .          .          .
          .          .          .          .
1004      .          .          .          .-------> OR400
999       .          .          .     DT400
          .          .          .          .
          .          .          .          .
1007      .     HC400.......................
          .          .
          .          .
1012      .          .-------> DC5
1010      .     400RE
          .          .
          .          .
1015      .          .       405S
          .          .          .
          .          .          .
1030      .          .          .-------> OR405
1025      .          .      DT405
          .          .          .
          .          .          .
1035      .          .          .-------> DC6
1033      .          .      405RE
          .          .          .
          .          .          .
1038   HC405.......................
          .
          .
1041      .     R371
          .          V
          .          V
1047      .     RM384
          .          .
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.          .
1056       .          .<-------   384D1
1054       .          .      R383
           .          .         V
           .          .         V
1057       .          .     RM384
           .          .         .
           .          .         .
1064       .          .         .       384S
           .          .         .          .
           .          .         .          .
1079       .          .         .          .------->   OR384
1074       .          .         .     DT384
           .          .         .          .
           .          .         .          .
1087       .          .         .          .------->   OR384
1082       .          .         .     DT384
           .          .         .          .
           .          .         .          .
1090       .      HC384.......................
           .          .
           .          .
1098       .          .------->    385D
1093       .      384RE
           .          V
           .          V
1101       .      RM392
           .          .
           .          .
           .          .         .<-------    392D
1108       .          .      R391
           .          .         V
           .          .         V
1111       .          .     RM392
           .          .         .
           .          .         .
1118       .          .         .       392S
           .          .         .          .
           .          .         .          .
1133       .          .         .          .------->   OR392
1128       .          .         .     DT392
           .          .         .          .
           .          .         .          .
1141       .          .         .          .------->   OR392
1136       .          .         .     DT392
           .          .         .          .
           .          .         .          .
1144       .      HC392.......................
           .          .
           .          .
1149       .          .------->     DC7
1147       .      392RE
           .          .
           .          .
           .          .      401S
           .          .         .
           .          .         .
1167       .          .         .------->   OR401
1162       .          .     DT401
           .          .         .
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          .          .          .
1175      .          .          .-------->  OR401
1170      .          .      DT401
          .          .          .
          .          .          .
1180      .          .          .-------->   DC8
1178      .          .      401RE
          .          .          .
          .          .          .
1183   HC401......................
          .
          .
1188      .          .<-------   385D
1186      .       R384
          .          V
          .          V
1189      .      RM385
          .          .
          .          .
1196      .          .       385S
          .          .          .
          .          .          .
1211      .          .          .-------->  OR385
1206      .          .      DT385
          .          .          .
          .          .          .
1219      .          .          .-------->  OR385
1214      .          .      DT385
          .          .          .
          .          .          .
1222      .      HC385............
          .          .
          .          .
1227      .          .-------->   DC9
1225      .      385RE
          .          .
          .          .
1230      .          .       393S
          .          .          .
          .          .          .
1245      .          .          .-------->  OR393
1240      .          .      DT393
          .          .          .
          .          .          .
1253      .          .          .-------->  OR393
1248      .          .      DT393
          .          .          .
          .          .          .
1258      .          .          .-------->   DC10
1256      .          .      393RE
          .          .          .
          .          .          .
1261   HC393......................
          .
          .
1264      .       394S
          .          .
          .          .
1279      .          .-------->  OR394
1274      .      DT394
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                .           .
                .           .
1287            .           .-------->   OR394
1282            .       DT394
                .           .
                .           .
1292            .           .-------->   DC11
1290            .       394RE
                .           .
                .           .
1295        HC394............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              MAY   1991              *
*           VERSION 4.0.1E             *
*                                      *
*  RUN DATE  05/26/95  TIME  13:38:24  *
*                                      *
****************************************
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****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
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                    ACDC AREA DRAINAGE MASTER STUDY
                    WATERSHED BETWEEN CAVE CREEK AND SKUNK CREEK
                    FILENAME:  W324F.DAT   KHE JOB NO. 0146
                    100-YEAR 24-HOUR DURATION STORM - FUTURE CONDITIONS
                    SCS TYPE-II DISTRIBUTION

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

    IT        HYDROGRAPH TIME DATA
                     NMIN          4  MINUTES IN COMPUTATION INTERVAL
                    IDATE     10OCT92  STARTING DATE
                    ITIME        1200  STARTING TIME
                       NQ         800  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE     12OCT92  ENDING DATE
                   NDTIME        1716  ENDING TIME
                    ICENT          19  CENTURY MARK

              COMPUTATION INTERVAL    0.07 HOURS
                   TOTAL TIME BASE   53.27 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
  -----DSS---ZOPEN:  Existing File Opened,  File: CCW324F.DSS
                     Unit:  71;  DSS Version: 6-FT
-----DSS--- ZREAD Unit  71; Vers.    4:  /SKUNK CREEK/381D5/FLOW/10OCT1992/4MIN/WEST/
-----DSS--- ZREAD Unit  71; Vers.    4:  /SKUNK CREEK/381D5/FLOW/10OCT1992/4MIN/WEST/
-----DSS--- ZREAD Unit  71; Vers.    4:  /SKUNK CREEK/381D5/FLOW/11OCT1992/4MIN/WEST/
-----DSS--- ZREAD Unit  71; Vers.    4:  /SKUNK CREEK/381D5/FLOW/12OCT1992/4MIN/WEST/
-----DSS--- ZREAD Unit  71; Vers.    4:  /SKUNK CREEK/381D5/FLOW/12OCT1992/4MIN/WEST/
```

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	367S	286.	12.13	50.	16.	7.	0.23		
DIVERSION TO	OR367	8.	12.13	5.	2.	1.	0.23		
HYDROGRAPH AT	DT367	286.	12.13	50.	15.	7.	0.23		
DIVERSION TO	368D	25.	12.13	8.	3.	1.	0.23		
HYDROGRAPH AT	367RE	261.	12.13	41.	12.	5.	0.23		
HYDROGRAPH AT	378S	301.	12.07	45.	15.	7.	0.22		
HYDROGRAPH AT	379S	362.	12.20	86.	28.	13.	0.41		
DIVERSION TO	OR379	8.	12.20	6.	1.	1.	0.41		
HYDROGRAPH AT	DT379	362.	12.20	86.	26.	12.	0.41		
DIVERSION TO	OR379	27.	12.20	12.	3.	1.	0.41		
HYDROGRAPH AT	DT379	362.	12.20	84.	23.	11.	0.41		
3 COMBINED AT	HC378	893.	12.13	169.	50.	23.	0.86		
DIVERSION TO	381D1	350.	12.13	121.	38.	17.	0.86		
HYDROGRAPH AT	378RE	543.	12.13	47.	12.	5.	0.86		
HYDROGRAPH AT	380S	108.	12.00	16.	6.	3.	0.06		
2 COMBINED AT	HC380	617.	12.07	63.	17.	8.	0.92		
ROUTED TO	380RR	0.	0.07	0.	0.	0.	0.92	22.85	24.53
DIVERSION TO	381D2	0.	0.07	0.	0.	0.	0.92		
HYDROGRAPH AT	380RE	0.	0.07	0.	0.	0.	0.92		
HYDROGRAPH AT	386S	578.	12.13	104.	35.	16.	0.43		
DIVERSION TO	OR386	26.	12.13	16.	5.	2.	0.43		
HYDROGRAPH AT	DT386	578.	12.13	103.	30.	13.	0.43		
DIVERSION TO	OR386	578.	12.53	71.	18.	8.	0.43		
HYDROGRAPH AT	DT386	253.	12.53	39.	12.	5.	0.43		
DIVERSION TO	381D3	253.	0.07	39.	12.	5.	0.43		
HYDROGRAPH AT	386RE	0.	0.07	0.	0.	0.	0.43		

HYDROGRAPH AT	387S	175.	12.07	28.	9.	4.	0.13		
DIVERSION TO	OR387	4.	12.07	3.	1.	0.	0.13		
HYDROGRAPH AT	DT387	175.	12.07	28.	8.	4.	0.13		
3 COMBINED AT	HC387	175.	12.07	28.	8.	4.	1.49		
DIVERSION TO	381D4	175.	0.07	28.	8.	4.	1.49		
HYDROGRAPH AT	387RE	0.	0.07	0.	0.	0.	1.49		
HYDROGRAPH AT	388S	180.	12.13	35.	11.	5.	0.15		
DIVERSION TO	OR388	180.	12.27	19.	5.	2.	0.15		
HYDROGRAPH AT	DT388	154.	12.27	21.	6.	3.	0.15		
2 COMBINED AT	HC388	154.	12.27	21.	6.	3.	1.64		
ROUTED TO	388RR	0.	0.07	0.	0.	0.	1.64	1300.36	25.67
DIVERSION TO	389D1	0.	0.07	0.	0.	0.	1.64		
HYDROGRAPH AT	388RE	0.	0.07	0.	0.	0.	1.64		
HYDROGRAPH AT	395S	179.	12.07	32.	10.	5.	0.14		
DIVERSION TO	OR395	7.	12.07	4.	1.	1.	0.14		
HYDROGRAPH AT	DT395	179.	12.07	32.	9.	4.	0.14		
DIVERSION TO	389D2	179.	0.07	32.	9.	4.	0.14		
HYDROGRAPH AT	395RE	0.	0.07	0.	0.	0.	0.14		
HYDROGRAPH AT	396S	160.	12.07	26.	8.	4.	0.14		
3 COMBINED AT	HC396	160.	12.07	26.	8.	4.	1.92		
DIVERSION TO	389D3	160.	0.07	26.	8.	4.	1.92		
HYDROGRAPH AT	396RE	0.	0.07	0.	0.	0.	1.92		
HYDROGRAPH AT	397S	153.	12.00	23.	8.	4.	0.09		
DIVERSION TO	OR397	130.	12.00	10.	3.	1.	0.09		
HYDROGRAPH AT	DT397	153.	12.00	16.	5.	2.	0.09		
2 COMBINED AT	HC397	153.	12.00	16.	5.	2.	2.01		
ROUTED TO	397RR	0.	0.07	0.	0.	0.	2.01	82.31	24.53
DIVERSION TO	398D	0.	0.07	0.	0.	0.	2.01		
HYDROGRAPH AT	397RE	0.	0.07	0.	0.	0.	2.01		
HYDROGRAPH AT	406S	133.	12.13	27.	9.	4.	0.11		

DIVERSION TO	OR406	6.	12.13	4.	1.	1.	0.11		
HYDROGRAPH AT	DT406	133.	12.13	27.	8.	4.	0.11		
DIVERSION TO	OR406	63.	12.13	5.	1.	1.	0.11		
HYDROGRAPH AT	DT406	133.	12.13	23.	7.	3.	0.11		
2 COMBINED AT	HC406	133.	12.13	23.	7.	3.	2.12		
ROUTED TO	406RR	0.	0.07	0.	0.	0.	2.12	41.48	26.07
DIVERSION TO	408D	0.	0.07	0.	0.	0.	2.12		
HYDROGRAPH AT	3406E	0.	0.07	0.	0.	0.	2.12		
HYDROGRAPH AT	407S	264.	12.13	45.	14.	6.	0.25		
DIVERSION TO	OR407	5.	12.13	4.	1.	0.	0.25		
HYDROGRAPH AT	DT407	264.	12.13	45.	13.	6.	0.25		
2 COMBINED AT	HC407	264.	12.13	45.	13.	6.	2.37		
DIVERSION TO	DC1	264.	0.07	45.	13.	6.	2.37		
HYDROGRAPH AT	407RE	0.	0.07	0.	0.	0.	2.37		
HYDROGRAPH AT	R368	634.	12.33	84.	21.	9.	0.00		
ROUTED TO	RM381	598.	12.53	84.	21.	9.	0.00		
HYDROGRAPH AT	R378	350.	11.80	121.	38.	17.	0.00		
HYDROGRAPH AT	R380	0.	0.07	0.	0.	0.	0.00		
HYDROGRAPH AT	R386	253.	12.53	39.	12.	5.	0.00		
HYDROGRAPH AT	R387	175.	12.07	28.	8.	4.	0.00		
4 COMBINED AT	HC387	672.	12.53	184.	58.	26.	0.00		
HYDROGRAPH AT	381S	1183.	12.13	206.	66.	30.	1.00		
DIVERSION TO	OR381	36.	12.13	23.	7.	3.	1.00		
HYDROGRAPH AT	DT381	1183.	12.13	206.	59.	27.	1.00		
3 COMBINED AT	HC381	2098.	12.20	471.	138.	62.	1.00		
DIVERSION TO	382D1	914.	12.20	148.	37.	17.	1.00		
HYDROGRAPH AT	381RE	1184.	12.20	323.	101.	46.	1.00		
ROUTED TO	RM389	1188.	12.33	323.	101.	46.	1.00		
HYDROGRAPH AT	R388	0.	0.07	0.	0.	0.	0.00		
HYDROGRAPH AT	R395	179.	12.07	32.	9.	4.	0.00		

HYDROGRAPH AT	R396	160.	12.07	26.	8.	4.	0.00		
HYDROGRAPH AT	389S	1120.	12.13	201.	63.	28.	0.96		
DIVERSION TO	OR389	12.	12.13	3.	1.	0.	0.96		
HYDROGRAPH AT	DT389	1120.	12.13	201.	62.	28.	0.96		
5 COMBINED AT	HC389	2454.	12.27	580.	181.	82.	1.96		
DIVERSION TO	390D	1029.	12.27	159.	40.	18.	1.96		
HYDROGRAPH AT	389RE	1425.	12.27	421.	141.	64.	1.96		
ROUTED TO	RM398	1420.	12.33	421.	141.	64.	1.96		
HYDROGRAPH AT	R397	0.	0.07	0.	0.	0.	0.00		
HYDROGRAPH AT	398S	1405.	12.07	201.	66.	30.	0.98		
DIVERSION TO	OR398	24.	12.07	18.	4.	2.	0.98		
HYDROGRAPH AT	DT398	1405.	12.07	201.	62.	28.	0.98		
3 COMBINED AT	HC398	2518.	12.13	619.	203.	92.	2.94		
DIVERSION TO	399D	1002.	12.13	137.	34.	15.	2.94		
HYDROGRAPH AT	398RE	1516.	12.13	483.	169.	76.	2.94		
ROUTED TO	RM403	1506.	12.27	483.	169.	76.	2.94		
HYDROGRAPH AT	402S	57.	12.00	8.	3.	1.	0.03		
ROUTED TO	402RR	0.	0.07	0.	0.	0.	0.03	56.87	24.47
HYDROGRAPH AT	403S	1030.	12.20	187.	61.	27.	0.96		
DIVERSION TO	OR403	12.	12.20	2.	1.	0.	0.96		
HYDROGRAPH AT	DT403	1030.	12.20	187.	60.	27.	0.96		
3 COMBINED AT	HC403	2493.	12.20	668.	229.	103.	3.94		
DIVERSION TO	404D	965.	12.20	134.	34.	15.	3.94		
HYDROGRAPH AT	403RE	1528.	12.20	533.	195.	88.	3.94		
ROUTED TO	RM408	1525.	12.33	533.	195.	88.	3.94		
HYDROGRAPH AT	R406	0.	0.07	0.	0.	0.	0.00		
HYDROGRAPH AT	408S	802.	12.20	174.	59.	27.	0.75		
4 COMBINED AT	HC408	2294.	12.27	705.	254.	115.	7.06		
DIVERSION TO	DC2	2294.	0.07	705.	254.	115.	7.06		
HYDROGRAPH AT	408RE	0.	0.07	0.	0.	0.	7.06		

HYDROGRAPH AT	R369	807.	12.53	161.	45.	20.	0.00
ROUTED TO	RM382	799.	12.40	161.	45.	20.	0.00
HYDROGRAPH AT	R381	914.	12.20	148.	37.	17.	0.00
ROUTED TO	RM382	900.	12.33	149.	37.	17.	0.00
HYDROGRAPH AT	382S	1070.	12.20	189.	59.	27.	0.99
DIVERSION TO	OR382	18.	12.20	13.	3.	1.	0.99
HYDROGRAPH AT	DT382	1070.	12.20	189.	56.	25.	0.99
DIVERSION TO	OR382	55.	12.20	22.	5.	2.	0.99
HYDROGRAPH AT	DT382	1070.	12.20	185.	51.	23.	0.99
3 COMBINED AT	HC382	2592.	12.33	493.	133.	60.	0.99
DIVERSION TO	383D1	1199.	12.33	190.	48.	21.	0.99
HYDROGRAPH AT	382RE	1392.	12.33	303.	86.	39.	0.99
ROUTED TO	RM390	1385.	12.47	303.	86.	39.	0.99
HYDROGRAPH AT	R389	1029.	12.27	159.	40.	18.	0.00
ROUTED TO	RM390	1020.	12.40	159.	40.	18.	0.00
HYDROGRAPH AT	390S	1031.	12.20	197.	60.	27.	1.00
DIVERSION TO	OR390	23.	12.20	15.	5.	2.	1.00
HYDROGRAPH AT	DT390	1031.	12.20	197.	56.	25.	1.00
3 COMBINED AT	HC390	3247.	12.40	655.	181.	82.	1.98
DIVERSION TO	391D	1482.	12.40	240.	60.	27.	1.98
HYDROGRAPH AT	390RE	1765.	12.40	415.	121.	55.	1.98
ROUTED TO	RM399	1756.	12.53	415.	121.	55.	1.98
HYDROGRAPH AT	R398	1002.	12.13	137.	34.	15.	0.00
ROUTED TO	RM399	967.	12.27	136.	34.	15.	0.00
HYDROGRAPH AT	399S	1152.	12.20	214.	68.	31.	1.00
DIVERSION TO	OR399	44.	12.20	25.	9.	4.	1.00
HYDROGRAPH AT	DT399	1152.	12.20	212.	59.	27.	1.00
DIVERSION TO	OR399	150.	12.20	16.	4.	2.	1.00
HYDROGRAPH AT	DT399	1152.	12.20	202.	55.	25.	1.00
3 COMBINED AT	HC399	3478.	12.40	753.	211.	95.	2.98

DIVERSION TO	400D	1552.	12.40	257.	64.	29.	2.98		
HYDROGRAPH AT	399RE	1925.	12.40	496.	146.	66.	2.98		
ROUTED TO	RM404	1906.	12.53	496.	146.	66.	2.98		
HYDROGRAPH AT	R403	965.	12.20	134.	34.	15.	0.00		
ROUTED TO	RM404	947.	12.40	135.	34.	15.	0.00		
HYDROGRAPH AT	404S	1256.	12.13	190.	61.	28.	1.00		
DIVERSION TO	OR404	17.	12.13	11.	3.	1.	1.00		
HYDROGRAPH AT	DT404	1256.	12.13	190.	58.	26.	1.00		
DIVERSION TO	OR404	19.	12.13	2.	1.	0.	1.00		
HYDROGRAPH AT	DT404	1256.	12.13	190.	58.	26.	1.00		
3 COMBINED AT	HC404	3423.	12.40	813.	238.	107.	3.97		
DIVERSION TO	DC3	3423.	0.07	813.	238.	107.	3.97		
HYDROGRAPH AT	404RE	0.	0.07	0.	0.	0.	3.97		
HYDROGRAPH AT	409S	247.	12.27	65.	21.	10.	0.36		
DIVERSION TO	OR409	3.	12.27	0.	0.	0.	0.36		
HYDROGRAPH AT	DT409	247.	12.27	65.	21.	10.	0.36		
DIVERSION TO	DC4	247.	0.07	65.	21.	10.	0.36		
HYDROGRAPH AT	409RE	0.	0.07	0.	0.	0.	0.36		
3 COMBINED AT	HC409	0.	0.07	0.	0.	0.	11.39		
HYDROGRAPH AT	R370	842.	12.20	139.	35.	16.	0.00		
ROUTED TO	RM383	833.	12.33	139.	35.	16.	0.00		
HYDROGRAPH AT	R382	1199.	12.33	190.	48.	21.	0.00		
ROUTED TO	RM383	1183.	12.47	190.	48.	21.	0.00		
HYDROGRAPH AT	344S	335.	12.07	47.	15.	7.	0.23		
DIVERSION TO	OR344	6.	12.07	4.	1.	1.	0.23		
HYDROGRAPH AT	DT344	335.	12.07	47.	14.	6.	0.23		
ROUTED TO	344RR	314.	12.13	41.	13.	6.	0.23	1269.48	12.13
ROUTED TO	RM383	337.	12.27	41.	13.	6.	0.23		
HYDROGRAPH AT	383S	748.	12.20	131.	40.	18.	0.73		
DIVERSION TO	OR383	7.	12.20	1.	0.	0.	0.73		

HYDROGRAPH AT	DT383	748.	12.20	131.	40.	18.	0.73
4 COMBINED AT	HC383	2898.	12.33	499.	135.	61.	0.97
DIVERSION TO	384D1	1352.	12.33	196.	49.	22.	0.97
HYDROGRAPH AT	383RE	1545.	12.33	303.	86.	39.	0.97
ROUTED TO	RM391	1564.	12.47	302.	86.	39.	0.97
HYDROGRAPH AT	R390	1482.	12.40	240.	60.	27.	0.00
ROUTED TO	RM391	1472.	12.53	240.	60.	27.	0.00
HYDROGRAPH AT	391S	1071.	12.20	183.	56.	25.	0.99
DIVERSION TO	OR391	249.	12.20	33.	11.	5.	0.99
HYDROGRAPH AT	DT391	1071.	12.20	169.	46.	21.	0.99
DIVERSION TO	OR391	338.	12.20	5.	1.	1.	0.99
HYDROGRAPH AT	DT391	1071.	12.20	164.	44.	20.	0.99
3 COMBINED AT	HC391	3793.	12.47	706.	190.	86.	1.96
DIVERSION TO	392D	1781.	12.47	283.	71.	32.	1.96
HYDROGRAPH AT	391RE	2013.	12.47	423.	119.	55.	1.96
ROUTED TO	RM400	1988.	12.60	423.	120.	55.	1.96
HYDROGRAPH AT	R399	1552.	12.40	257.	64.	29.	0.00
ROUTED TO	RM400	1527.	12.53	257.	64.	29.	0.00
HYDROGRAPH AT	400S	1140.	12.13	192.	61.	27.	0.99
DIVERSION TO	OR400	30.	12.13	19.	6.	3.	0.99
HYDROGRAPH AT	DT400	1140.	12.13	192.	54.	25.	0.99
DIVERSION TO	OR400	32.	12.13	1.	0.	0.	0.99
HYDROGRAPH AT	DT400	1140.	12.13	192.	54.	24.	0.99
3 COMBINED AT	HC400	4078.	12.53	866.	238.	108.	2.95
DIVERSION TO	DC5	4078.	0.07	866.	238.	108.	2.95
HYDROGRAPH AT	400RE	0.	0.07	0.	0.	0.	2.95
HYDROGRAPH AT	405S	510.	12.27	121.	38.	17.	0.57
DIVERSION TO	OR405	6.	12.27	1.	0.	0.	0.57
HYDROGRAPH AT	DT405	510.	12.27	121.	38.	17.	0.57
DIVERSION TO	DC6	510.	0.07	121.	38.	17.	0.57

HYDROGRAPH AT	405RE	0.	0.07	0.	0.	0.	0.57
3 COMBINED AT	HC405	0.	0.07	0.	0.	0.	14.91
HYDROGRAPH AT	R371	888.	12.27	118.	29.	13.	0.00
ROUTED TO	RM384	845.	12.47	117.	29.	13.	0.00
HYDROGRAPH AT	R383	1352.	12.33	196.	49.	22.	0.00
ROUTED TO	RM384	1334.	12.47	196.	49.	22.	0.00
HYDROGRAPH AT	384S	1053.	12.20	195.	61.	28.	0.94
DIVERSION TO	OR384	44.	12.20	24.	8.	4.	0.94
HYDROGRAPH AT	DI384	1053.	12.20	193.	53.	24.	0.94
DIVERSION TO	OR384	704.	12.20	42.	10.	5.	0.94
HYDROGRAPH AT	DI384	1053.	12.20	156.	43.	19.	0.94
3 COMBINED AT	HC384	2942.	12.47	469.	121.	55.	0.94
DIVERSION TO	385C	1411.	12.47	202.	50.	23.	0.94
HYDROGRAPH AT	384RE	1531.	12.47	267.	71.	32.	0.94
ROUTED TO	RM392	1497.	12.60	267.	71.	32.	0.94
HYDROGRAPH AT	R391	1781.	12.47	283.	71.	32.	0.00
ROUTED TO	RM392	1748.	12.60	283.	71.	32.	0.00
HYDROGRAPH AT	392S	852.	12.27	200.	65.	29.	0.99
DIVERSION TO	OR392	32.	12.27	21.	7.	3.	0.99
HYDROGRAPH AT	DI392	852.	12.27	200.	58.	26.	0.99
DIVERSION TO	OR392	461.	12.27	39.	10.	4.	0.99
HYDROGRAPH AT	DI392	852.	12.27	174.	48.	22.	0.99
3 COMBINED AT	HC392	3917.	12.60	723.	190.	86.	1.94
DIVERSION TO	DC7	3917.	0.07	723.	190.	86.	1.94
HYDROGRAPH AT	392RE	0.	0.07	0.	0.	0.	1.94
HYDROGRAPH AT	401S	795.	12.20	157.	51.	23.	0.70
DIVERSION TO	OR401	19.	12.20	14.	4.	2.	0.70
HYDROGRAPH AT	DI401	795.	12.20	157.	47.	21.	0.70
DIVERSION TO	OR401	325.	12.20	35.	9.	4.	0.70
HYDROGRAPH AT	DI401	795.	12.20	138.	38.	17.	0.70

DIVERSION TO	DC8	795.	0.07	138.	38.	17.	0.70
HYDROGRAPH AT	401RE	0.	0.07	0.	0.	0.	0.70
3 COMBINED AT	HC401	0.	0.07	0.	0.	0.	17.54
HYDROGRAPH AT	R384	1411.	12.47	202.	50.	23.	0.00
ROUTED TO	RM385	1376.	12.60	202.	50.	23.	0.00
HYDROGRAPH AT	385S	1028.	12.20	199.	62.	28.	0.89
DIVERSION TO	OR385	18.	12.20	13.	3.	1.	0.89
HYDROGRAPH AT	DT385	1028.	12.20	199.	59.	27.	0.89
DIVERSION TO	OR385	75.	12.20	26.	6.	3.	0.89
HYDROGRAPH AT	DT385	1028.	12.20	193.	53.	24.	0.89
2 COMBINED AT	HC385	2007.	12.53	395.	103.	47.	0.89
DIVERSION TO	DC9	2007.	0.07	395.	103.	47.	0.89
HYDROGRAPH AT	385RE	0.	0.07	0.	0.	0.	0.89
HYDROGRAPH AT	393S	1074.	12.07	164.	52.	24.	0.74
DIVERSION TO	OR393	13.	12.07	5.	1.	1.	0.74
HYDROGRAPH AT	DT393	1074.	12.07	164.	51.	23.	0.74
DIVERSION TO	OR393	163.	12.07	32.	9.	4.	0.74
HYDROGRAPH AT	DT393	1074.	12.07	151.	41.	19.	0.74
DIVERSION TO	DC10	1074.	0.07	151.	41.	19.	0.74
HYDROGRAPH AT	393RE	0.	0.07	0.	0.	0.	0.74
3 COMBINED AT	HC392	0.	0.07	0.	0.	0.	19.17
HYDROGRAPH AT	394S	980.	12.13	155.	50.	23.	0.79
DIVERSION TO	OR394	10.	12.13	1.	0.	0.	0.79
HYDROGRAPH AT	DT394	980.	12.13	155.	50.	22.	0.79
DIVERSION TO	OR394	492.	12.13	42.	13.	6.	0.79
HYDROGRAPH AT	DT394	980.	12.13	134.	37.	17.	0.79
DIVERSION TO	DC11	980.	0.07	134.	37.	17.	0.79
HYDROGRAPH AT	394RE	0.	0.07	0.	0.	0.	0.79
2 COMBINED AT	HC394	0.	0.07	0.	0.	0.	19.96

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

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
RM381	MANE	2.60	601.88	751.40	-1.00	4.00	598.43	752.00	-1.00
RM389	MANE	4.00	1187.80	740.00	3.79	4.00	1187.80	740.00	3.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2010E+03 EXCESS=0.0000E+00 OUTFLOW=0.2011E+03 BASIN STORAGE=0.9215E-03 PERCENT ERROR= 0.0

RM398	MANE	4.00	1419.79	740.00	2.69	4.00	1419.79	740.00	2.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2807E+03 EXCESS=0.0000E+00 OUTFLOW=0.2807E+03 BASIN STORAGE=0.7082E-03 PERCENT ERROR= 0.0

RM403	MANE	4.00	1505.84	736.00	2.14	4.00	1505.84	736.00	2.14

INUITY SUMMARY (AC-FT) - INFLOW=0.3355E+03 EXCESS=0.0000E+00 OUTFLOW=0.3355E+03 BASIN STORAGE=0.7993E-03 PERCENT ERROR= 0.0

RM408	MANE	4.00	1524.55	740.00	1.85	4.00	1524.55	740.00	1.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3885E+03 EXCESS=0.0000E+00 OUTFLOW=0.3885E+03 BASIN STORAGE=0.5028E-03 PERCENT ERROR= 0.0

RM382	MANE	4.00	798.51	744.00	-1.00	4.00	798.51	744.00	-1.00
RM382	MANE	2.00	900.18	740.00	-1.00	4.00	900.18	740.00	-1.00
RM390	MANE	4.00	1385.20	748.00	3.24	4.00	1385.20	748.00	3.24

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1702E+03 EXCESS=0.0000E+00 OUTFLOW=0.1703E+03 BASIN STORAGE=0.9497E-03 PERCENT ERROR= 0.0

RM390	MANE	2.00	1020.49	744.00	-1.00	4.00	1020.49	744.00	-1.00
RM399	MANE	4.00	1756.21	752.00	2.28	4.00	1756.21	752.00	2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2405E+03 EXCESS=0.0000E+00 OUTFLOW=0.2405E+03 BASIN STORAGE=0.1285E-02 PERCENT ERROR= 0.0

RM399	MANE	1.60	970.88	737.60	-1.00	4.00	966.82	736.00	-1.00
RM404	MANE	4.00	1905.69	752.00	1.83	4.00	1905.69	752.00	1.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2902E+03 EXCESS=0.0000E+00 OUTFLOW=0.2903E+03 BASIN STORAGE=0.8231E-03 PERCENT ERROR= 0.0

RM404	MANE	1.60	950.89	742.40	-1.00	4.00	946.95	744.00	-1.00
RM383	MANE	1.80	832.75	739.80	-1.00	4.00	832.61	740.00	-1.00
RM383	MANE	2.20	1183.49	748.00	-1.00	4.00	1183.49	748.00	-1.00
RM383	MANE	4.00	336.85	736.00	2.15	4.00	336.85	736.00	2.15

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2673E+02 EXCESS=0.0000E+00 OUTFLOW=0.2699E+02 BASIN STORAGE=0.5495E-02 PERCENT ERROR= -1.0

RM391	MANE	4.00	1563.77	748.00	3.35	4.00	1563.77	748.00	3.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1728E+03 EXCESS=0.0000E+00 OUTFLOW=0.1728E+03 BASIN STORAGE=0.6882E-02 PERCENT ERROR= 0.0

RM391	MANE	2.20	1476.20	750.20	-1.00	4.00	1471.58	752.00	-1.00
RM400	MANE	4.00	1988.27	756.00	2.30	4.00	1988.27	756.00	2.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2399E+03 EXCESS=0.0000E+00 OUTFLOW=0.2401E+03 BASIN STORAGE=0.7992E-02 PERCENT ERROR= 0.0

RM400	MANE	2.20	1535.41	750.20	-1.00	4.00	1527.45	752.00	-1.00
RM384	MANE	1.00	857.50	746.00	-1.00	4.00	844.79	748.00	-1.00
RM384	MANE	1.80	1337.47	748.80	-1.00	4.00	1334.01	748.00	-1.00
RM392	MANE	1.80	1498.23	754.20	2.79	4.00	1496.50	756.00	2.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1404E+03 EXCESS=0.0000E+00 OUTFLOW=0.1404E+03 BASIN STORAGE=0.1223E-02 PERCENT ERROR= 0.0

RM392	MANE	2.00	1748.15	756.00	-1.00	4.00	1748.15	756.00	-1.00
RM385	MANE	1.60	1381.12	755.20	-1.00	4.00	1375.93	756.00	-1.00

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

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          Number of Records:     19
          File Size:     50.3  Kbytes
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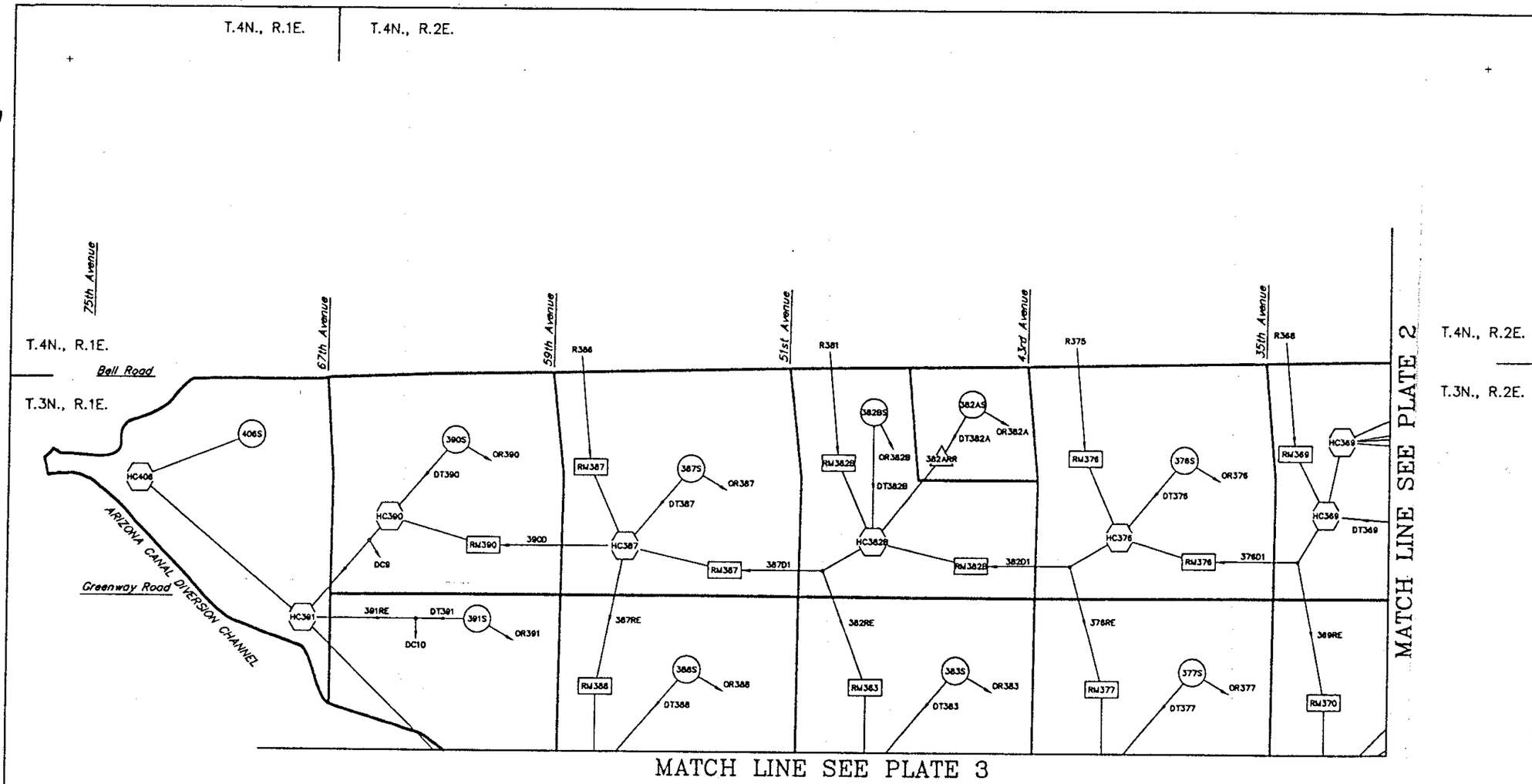
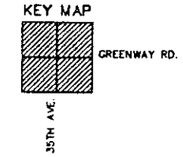
SECTION VIII
Plates 1-24



KEY MAP



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BEARDSLEY RD.												
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29		
BELL RD.	35	36	31	32	33	34	35	36	31	32		
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5		
THUNDERBIRD RD.	11	12	7	8	9	10	11	12	7	8		
CACTUS RD.	14	13	18	17	16	15	14	13	18	17		
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20		
OLIVE AVE.	26	25	30	29	28	27	26	25	30	29	DUNLAP AVE.	
NORTHERN AVE.	35	36	31	32	33	34	35	36	31	32		
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (A) Compute Runoff from Sub-Basin A
- (B) Compute Runoff from Sub-Basin B
- (C) Combine Hydrographs
- (D) Route Hydrograph
- (E) Route Hydrograph through Retention Basin E
- (G/F) Divide Hydrograph into F and G

DRAINAGE AREA MAP & HEC-1 SCHEMATIC

EXISTING CONDITIONS

PLATE 1
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

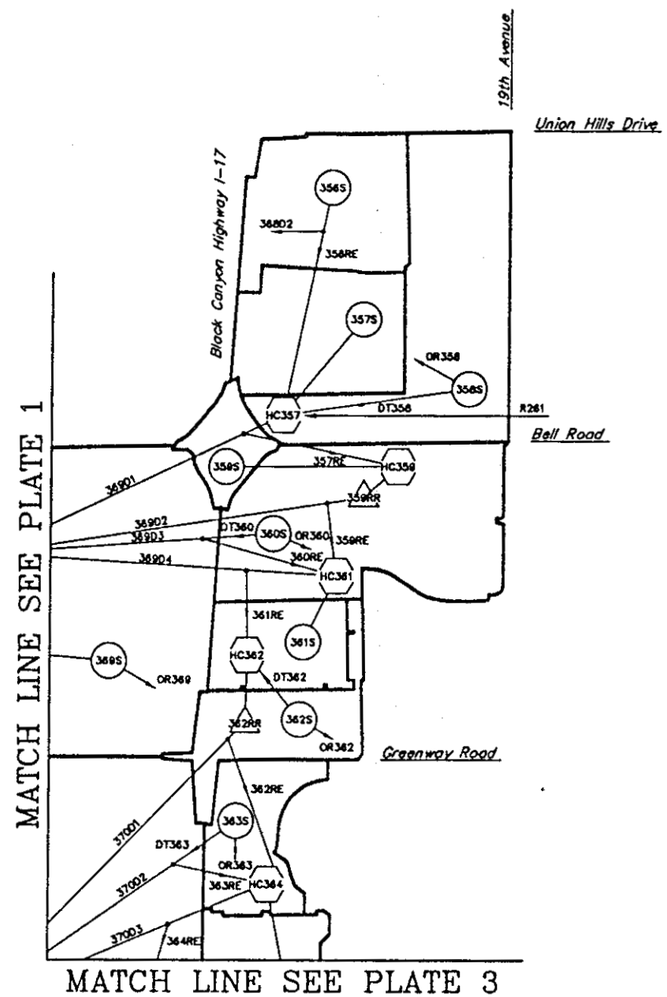
T.4N., R.2E. | T.4N., R.3E.

T.4N., R.2E.

T.3N., R.2E.

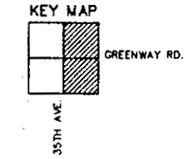
T.4N., R.3E.

T.3N., R.3E.



T.3N., R.2E. | T.3N., R.3E.

KEY MAP



INDEX

	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	
BEARDSLEY RD.												
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29		
BELL RD.	35	36	31	32	33	34	35	36	31	32		
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5		
THUNDERBIRD RD.	11	12	7	8	9	10	11	12	7	8		
CACTUS RD.	14	13	18	17	18	15	14	13	18	17		
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20		
OLIVE AVE.	26	25	30	29	28	27	26	25	30	29		DUNLAP AVE.
NORTHERN AVE.	35	36	31	32	33	34	35	36	31	32		

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

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- (C) Combine Hydrographs
- [D] Route Hydrograph
- (E) Route Hydrograph through Retention Basin E
- G/F Divide Hydrograph into F and G

DRAINAGE AREA MAP & HEC-1 SCHEMATIC

EXISTING CONDITIONS

PLATE 2
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE

1200 600 0 1200 2400

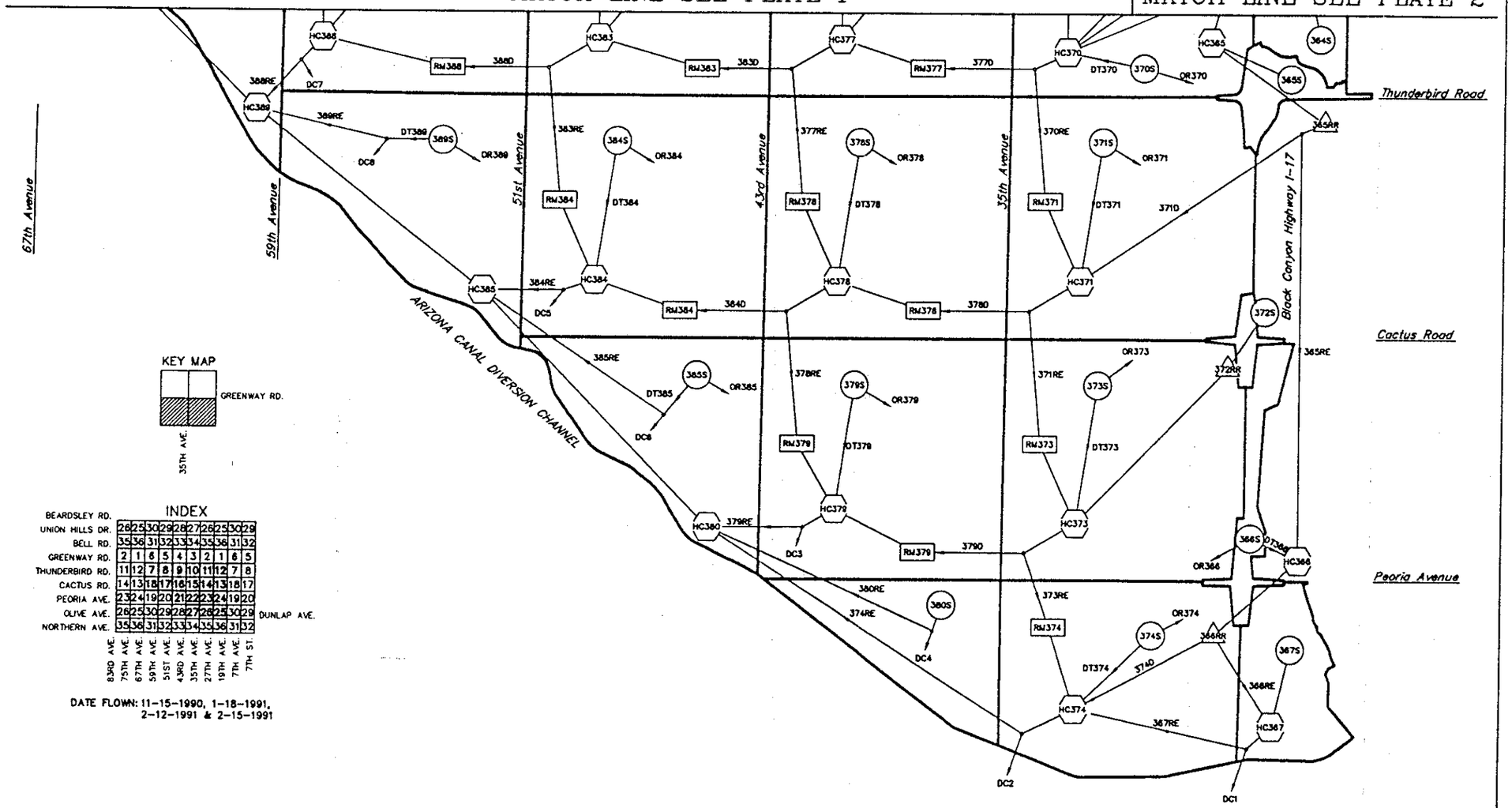
FEET

T.3N., R.1E. | T.3N., R.2E.

T.3N., R.2E.

MATCH LINE SEE PLATE 1

MATCH LINE SEE PLATE 2



INDEX

BEARDSLEY RD.											
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29	
BELL RD.	35	36	31	32	33	34	35	36	31	32	
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	
THUNDERBIRD RD.	11	12	7	8	9	10	11	12	7	8	
CACTUS RD.	14	13	18	17	16	15	14	13	18	17	
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20	
OLIVE AVE.	26	25	30	29	28	27	26	25	30	29	DUNLAP AVE.
NORTHERN AVE.	35	36	31	32	33	34	35	36	31	32	
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.1E. | T.3N., R.2E.

T.3N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (A) Compute Runoff from Sub-Basin A
- (B) Compute Runoff from Sub-Basin B
- (C) Combine Hydrographs
- [D] Route Hydrograph
- (E) Route Hydrograph through Retention Basin E
- G/F Divide Hydrograph into F and G

DRAINAGE AREA MAP & HEC-1 SCHEMATIC

EXISTING CONDITIONS

PLATE 3

SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.

SURVEYING • CIVIL • HYDROLOGY

4550 N. BLACK CANYON HWY., SUITE C

PHOENIX, ARIZONA 85017

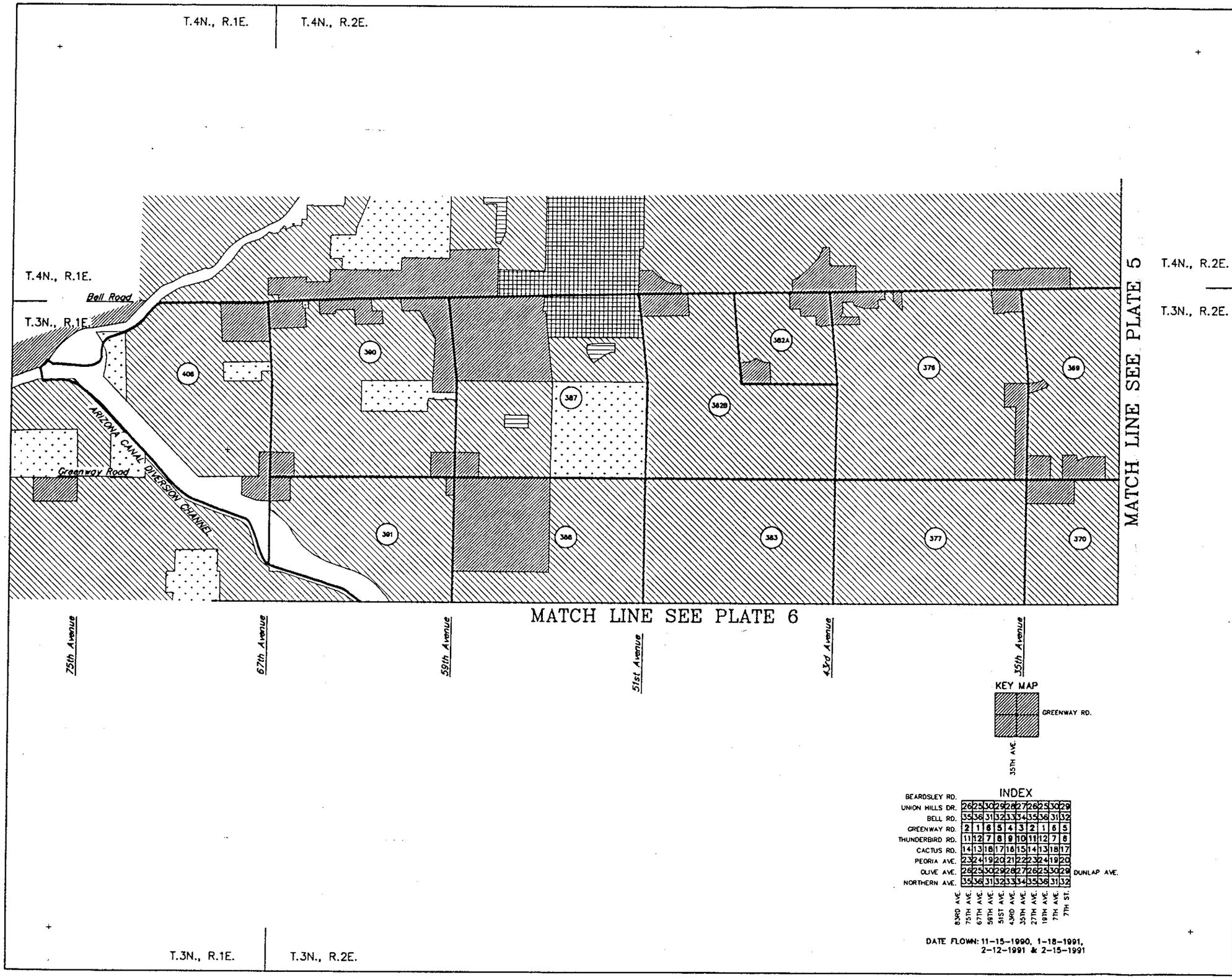
(602) 242-5588

N

SCALE

1200 600 0 1200 2400

FEET



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Industrial Land Use
- Agriculture
- Vacant Land Use
- (140) Drainage Sub-Basin Number

LAND USE MAP
EXISTING CONDITIONS

PLATE 4
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

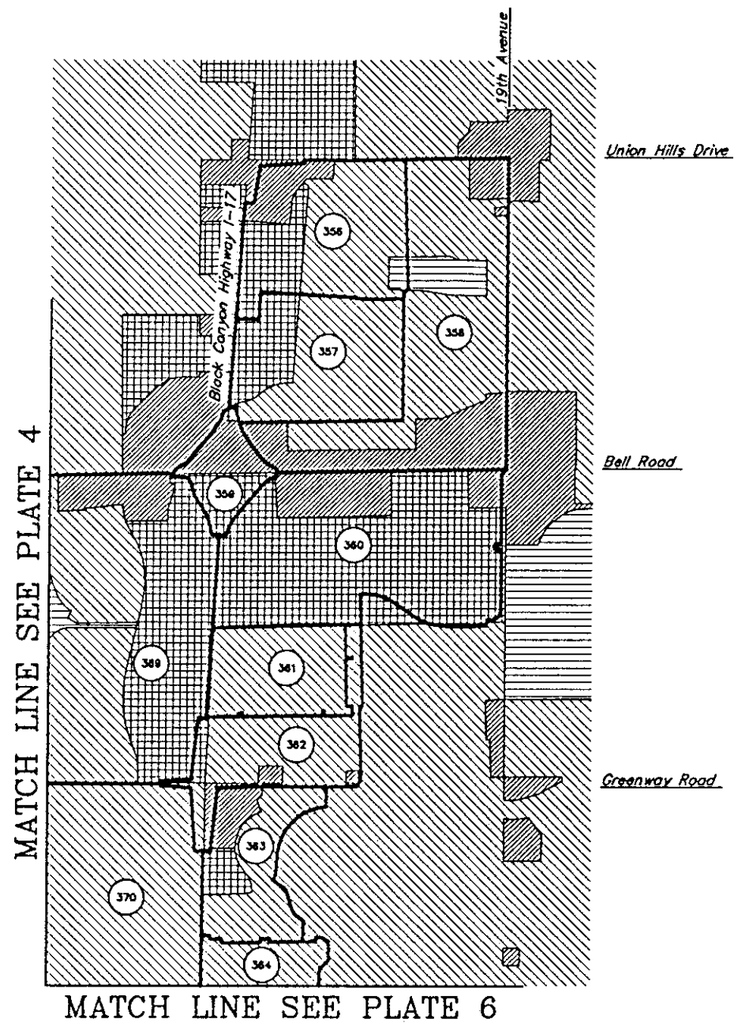
N

SCALE
1200 600 0 1200 2400
FEET

T.4N., R.2E. | T.4N., R.3E.

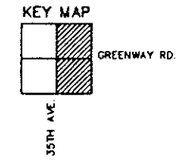
T.4N., R.2E. | T.4N., R.3E.

T.3N., R.2E. | T.3N., R.3E.



T.3N., R.2E. | T.3N., R.3E.

KEY MAP



INDEX

BEARDSLEY RD.	26	25	30	29	28	27	26	25	30	29			
UNION HILLS DR.	35	36	31	32	33	34	35	36	31	32			
BELL RD.	2	1	6	5	4	3	2	1	6	5			
GREENWAY RD.	11	12	7	8	9	10	11	12	7	8			
THUNDERBIRD RD.	14	13	18	17	16	15	14	13	18	17			
CACTUS RD.	23	24	19	20	21	22	23	24	19	20			
PEORIA AVE.	26	25	30	29	28	27	26	25	30	29	DUNLAP AVE.		
OLIVE AVE.	35	36	31	32	33	34	35	36	31	32			
NORTHERN AVE.													
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.		

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Utility Land Use
- Industrial Land Use
- Vacant Land Use
- (140) Drainage Sub-Basin Number

LAND USE MAP
EXISTING CONDITIONS

PLATE 5
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

T.3N., R.1E. | T.3N., R.2E.

T.3N., R.2E.

MATCH LINE SEE PLATE 4

MATCH LINE SEE PLATE 5

Thunderbird Road

67th Avenue

59th Avenue

51st Avenue

43rd Avenue

35th Avenue

Black Canyon Highway I-17

19th Avenue

Cactus Road

ARIZONA CANAL DIVERSION CHANNEL

Peoria Avenue

Dunlap Avenue

391 386 383 377 370 364 365 389 384 378 371 372 366 385 379 373 380 374 367

KEY MAP

GREENWAY RD.

35TH AVE.

INDEX

	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	
BEARDSLEY RD.												
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29		
BELL RD.	35	36	31	32	33	34	35	36	31	32		
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5		
THUNDERBIRD RD.	11	12	7	8	9	10	11	12	7	8		
CACTUS RD.	14	13	18	17	16	15	14	13	18	17		
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20		
OLIVE AVE.	26	25	30	29	28	27	26	25	30	29		DUNLAP AVE.
NORTHERN AVE.	35	36	31	32	33	34	35	36	31	32		

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.1E. | T.3N., R.2E.

T.3N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Utility Land Use
- Industrial Land Use
- Agriculture
- Vacant Land Use
- (140) Drainage Sub-Basin Number

LAND USE MAP
EXISTING CONDITIONS

PLATE 6
SEPTEMBER 30, 1994

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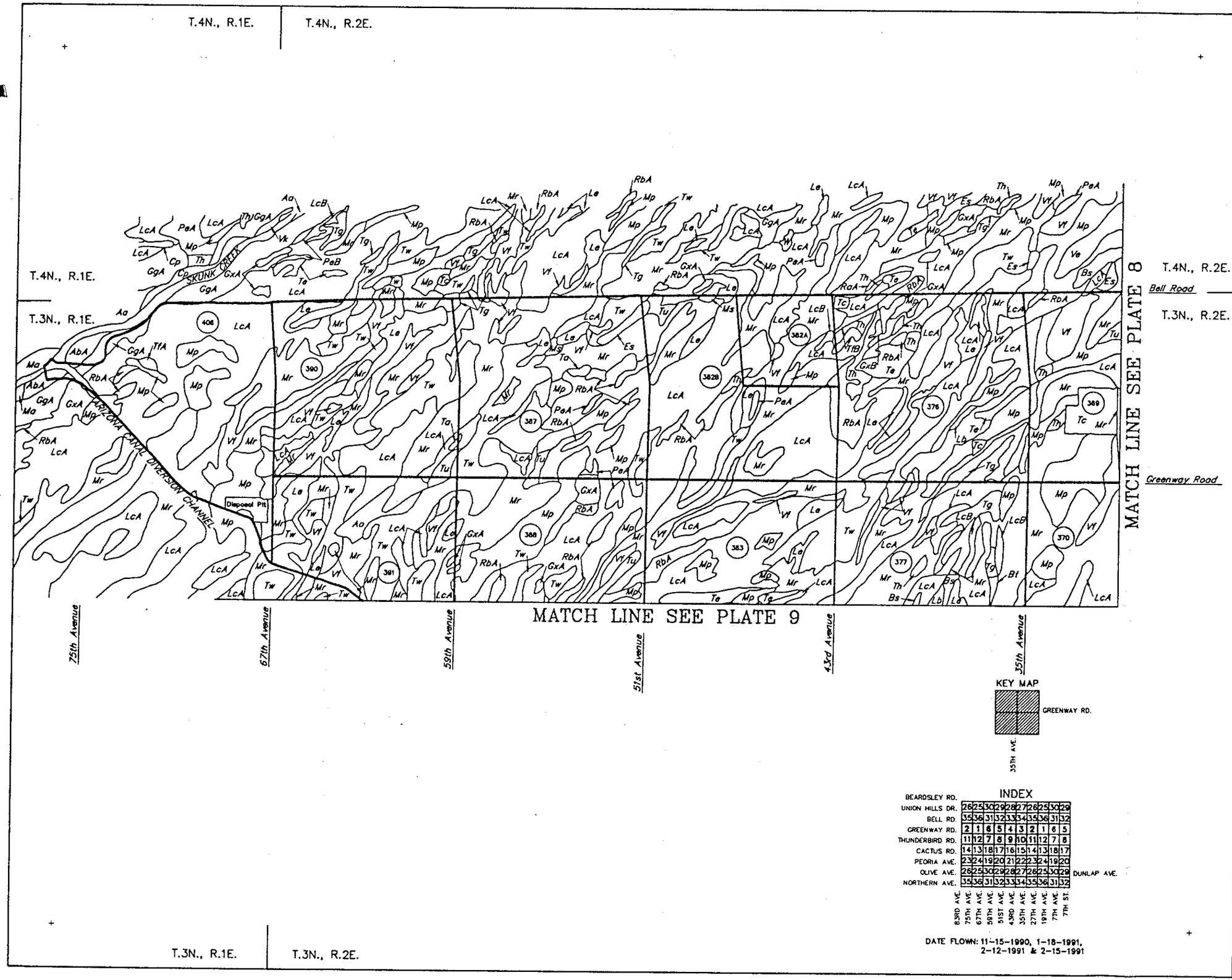
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1
CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- CrB Soil Unit Boundary
- CO Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Maricopa County, Arizona Central Part
- 109 Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Aguila-Carefree Area Parts of Maricopa and Pinal Counties, Arizona

SOILS MAP
EXISTING CONDITIONS

PLATE 7
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
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4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

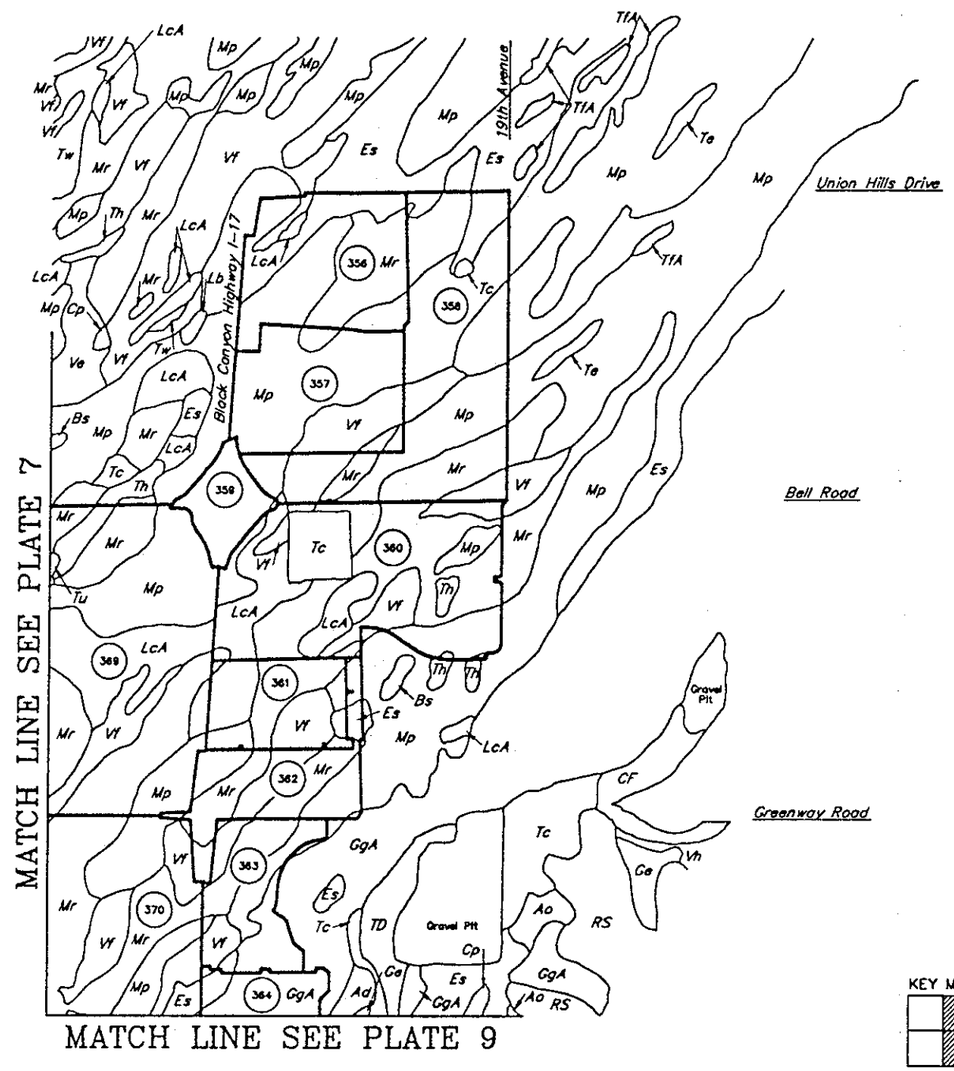
N

SCALE
1200 600 0 1200 2400

T.4N., R.2E. | T.4N., R.3E.

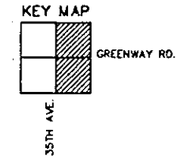
T.4N., R.2E. | T.4N., R.3E.

T.3N., R.2E. | T.3N., R.3E.



T.3N., R.2E. | T.3N., R.3E.

KEY MAP



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BEARDSLEY RD.													
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29			
BELL RD.	35	36	31	32	33	34	35	36	31	32			
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5			
THUNDERBIRD RD.	11	12	7	8	9	10	11	12	7	8			
CACTUS RD.	14	13	18	17	16	15	14	13	18	17			
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20			
OLIVE AVE.	26	25	30	29	28	27	26	25	30	29	DUNLAP AVE.		
NORTHERN AVE.	35	36	31	32	33	34	35	36	31	32			
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.		

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- CrB Soil Unit Boundary
- CO Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Maricopa County, Arizona Central Part
- 109 Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Aguila-Carefree Area Parts of Maricopa and Pinal Counties, Arizona

SOILS MAP
EXISTING CONDITIONS

PLATE 8
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
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4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

Drainage Basin Boundary

(140) Drainage Sub-Basin Number

CrB Soil Unit Boundary

CO Soil Unit Identification
Reference: USDA, Soil Conservation Service, Soil Survey of Maricopa County, Arizona Central Part

109 Soil Unit Identification
Reference: USDA, Soil Conservation Service, Soil Survey of Aguila-Carefree Area Parts of Maricopa and Pinal Counties, Arizona

SOILS MAP
EXISTING CONDITIONS

PLATE 9
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
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4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
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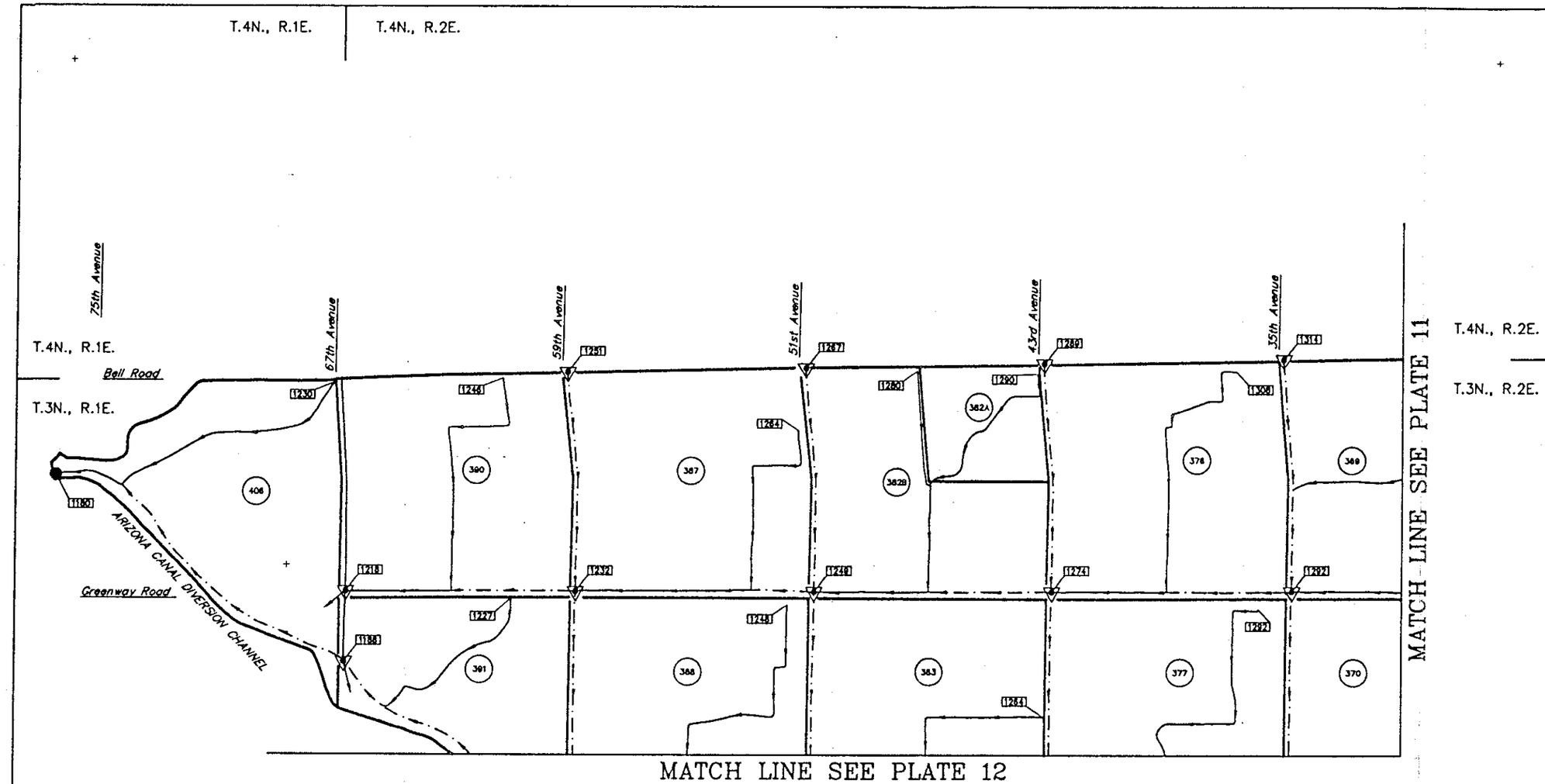


FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

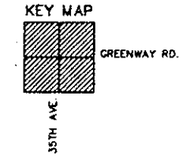
- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- Major Drainage Basin Concentration Point
- Drainage Sub-Basin Concentration Point
- Flow Diversion Point
- Routing Flow Path
- Length of Longest Watercourse
- [1314] Elevation Along Flow Path

FLOW ROUTING MAP
EXISTING CONDITIONS

PLATE 10
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

KEY MAP



INDEX

	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	
BEARDSLEY RD.												
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29		
BELL RD.	35	36	31	32	33	34	35	36	31	32		
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5		
THUNDERBIRD RD.	11	12	7	8	9	10	11	12	7	8		
CACTUS RD.	14	13	18	17	16	15	14	13	18	17		
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20		
OLIVE AVE.	26	25	30	29	28	27	26	25	30	29		DUNLAP AVE.
NORTHERN AVE.	35	36	31	32	33	34	35	36	31	32		

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

N

SCALE
1200 600 0 1200 2400
FEET

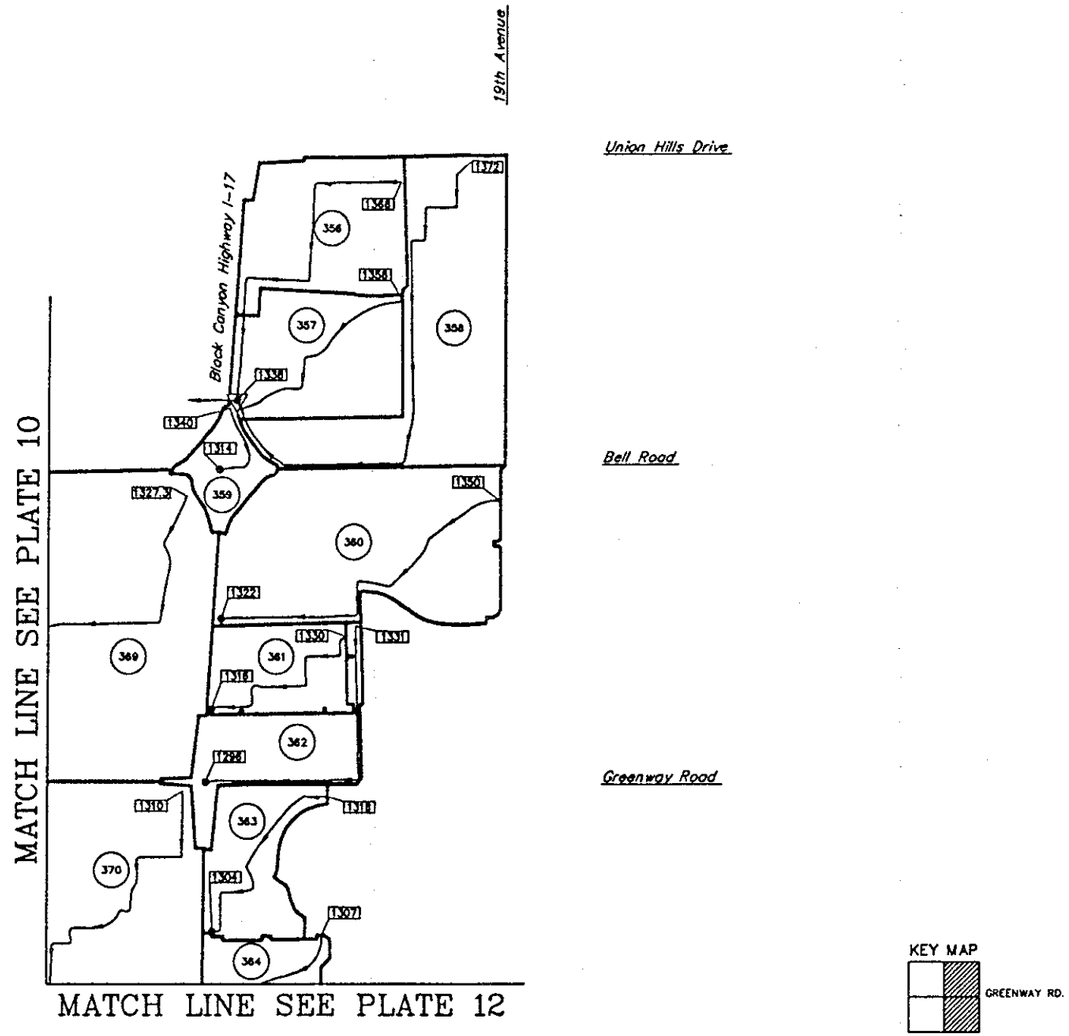
CONTOUR INTERVAL 10 FEET

T.4N., R.2E. | T.4N., R.3E.

T.4N., R.2E. | T.4N., R.3E.

T.3N., R.2E. | T.3N., R.3E.

T.3N., R.2E. | T.3N., R.3E.



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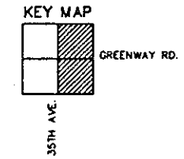

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	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST	
BEARDSLEY RD.	26	25	30	29	28	27	26	25	30	29		
UNION HILLS DR.	35	36	31	32	33	34	35	36	31	32		
BELL RD.	2	1	6	5	4	3	2	1	6	5		
GREENWAY RD.	11	12	7	8	9	10	11	12	7	8		
THUNDERBIRD RD.	14	13	18	17	16	15	14	13	18	17		
CACTUS RD.	23	24	19	20	21	22	23	24	19	20		
PEORIA AVE.	26	25	30	29	28	27	26	25	30	29	DUNLAP AVE.	
OLIVE AVE.	35	36	31	32	33	34	35	36	31	32		
NORTHERN AVE.												

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- Major Drainage Basin Concentration Point
- Drainage Sub-Basin Concentration Point
- Flow Diversion Point
- Routing Flow Path
- Length of Longest Watercourse
- [1514] Elevation Along Flow Path

FLOW ROUTING MAP
EXISTING CONDITIONS

PLATE 11
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

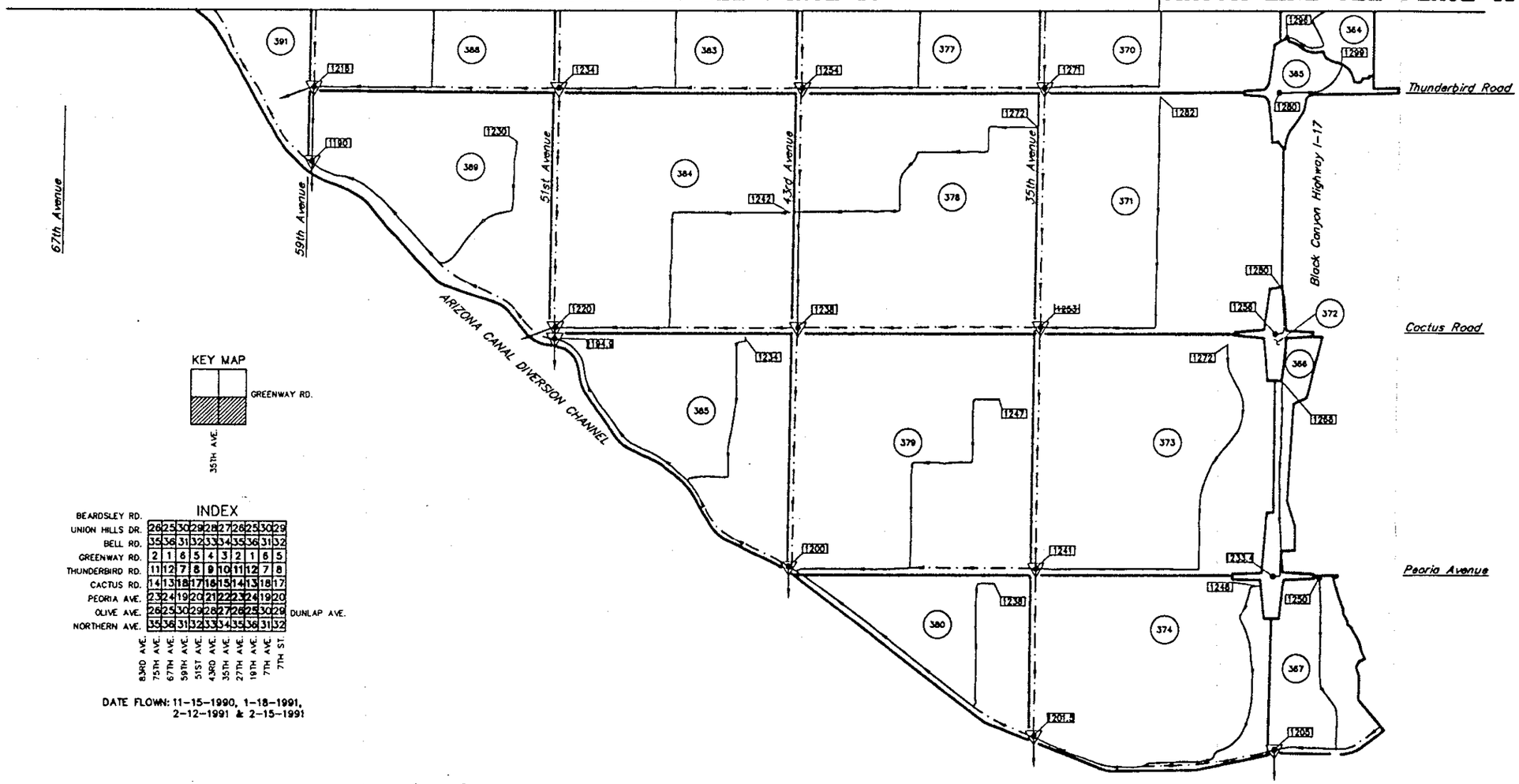
CONTOUR INTERVAL 10 FEET

T.3N., R.1E. | T.3N., R.2E.

T.3N., R.2E.

MATCH LINE SEE PLATE 10

MATCH LINE SEE PLATE 11



KEY MAP

INDEX

	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	
BEARDSLEY RD.												
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29		
BELL RD.	35	36	31	32	33	34	35	36	31	32		
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5		
THUNDERBIRD RD.	11	12	7	8	9	10	11	12	7	8		
CACTUS RD.	14	13	18	17	16	15	14	13	18	17		
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20		
OLIVE AVE.	26	25	30	29	28	27	26	25	30	29		DUNLAP AVE.
NORTHERN AVE.	35	36	31	32	33	34	35	36	31	32		

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.1E. | T.3N., R.2E.

T.3N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- Major Drainage Basin Concentration Point
- Drainage Sub-Basin Concentration Point
- Flow Diversion Point
- Routing Flow Path
- Length of Longest Watercourse
- (1514) Elevation Along Flow Path

FLOW ROUTING MAP
EXISTING CONDITIONS

PLATE 12
SEPTEMBER 30, 1994

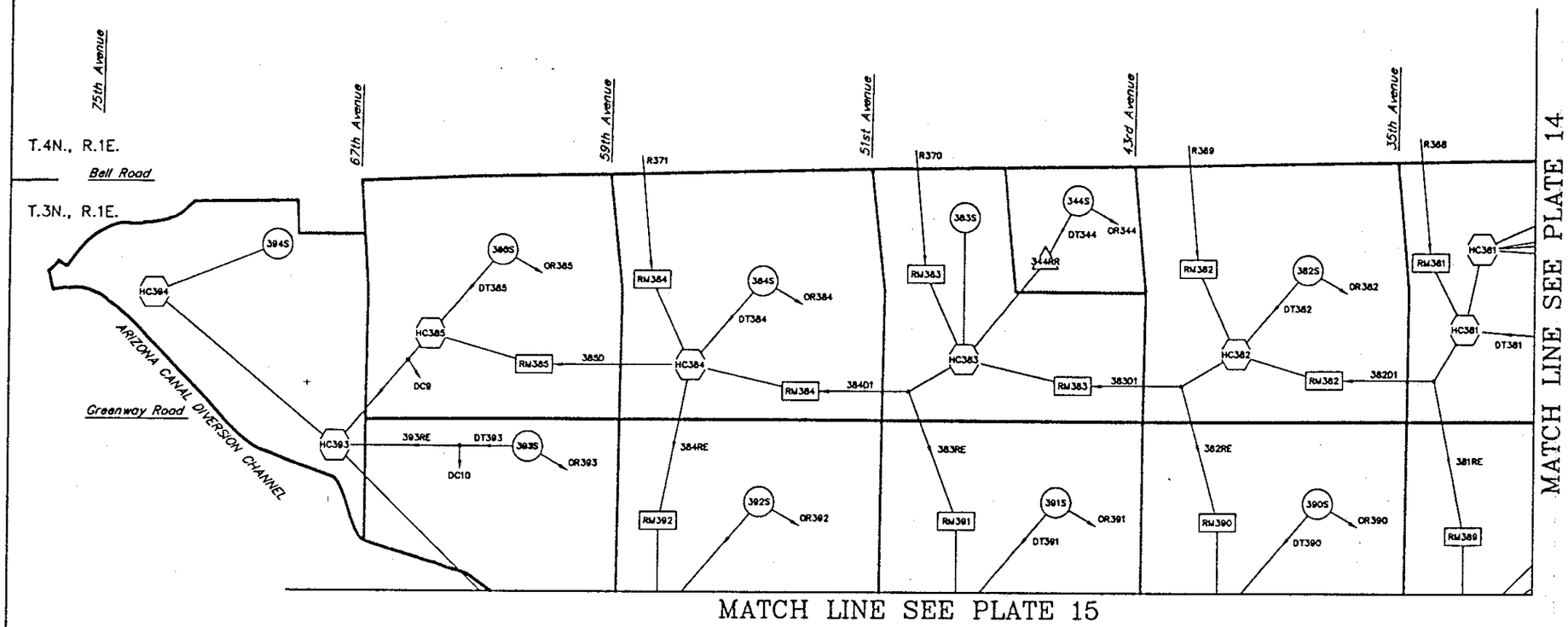
KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

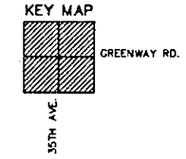
CONTOUR INTERVAL 10 FEET

T.4N., R.1E. | T.4N., R.2E.



T.3N., R.1E. | T.3N., R.2E.

KEY MAP



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BEARDSLEY RD.	26	25	30	29	28	27	26	25	30	29		
UNION HILLS DR.	35	36	31	32	33	34	35	36	31	32		
BELL RD.	2	1	6	5	4	3	2	1	6	5		
GREENWAY RD.	11	12	7	8	9	10	11	12	7	8		
THUNDERBIRD RD.	14	13	18	17	16	15	14	13	18	17		
CACTUS RD.	23	24	19	20	21	22	23	24	19	20		
PEORIA AVE.	26	25	30	29	28	27	26	25	30	29	DUNLAP AVE.	
OLIVE AVE.	35	36	31	32	33	34	35	36	31	32		
NORTHERN AVE.	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.1E. | T.3N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (A) Compute Runoff from Sub-Basin A
- (B) Compute Runoff from Sub-Basin B
- (C) Combine Hydrographs
- (D) Route Hydrograph
- (E) Route Hydrograph through Retention Basin E
- (G/F) Divide Hydrograph into F and G

DRAINAGE AREA MAP & HEC-1 SCHEMATIC

FUTURE CONDITIONS

PLATE 13
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE

1200 600 0 1200 2400

FEET

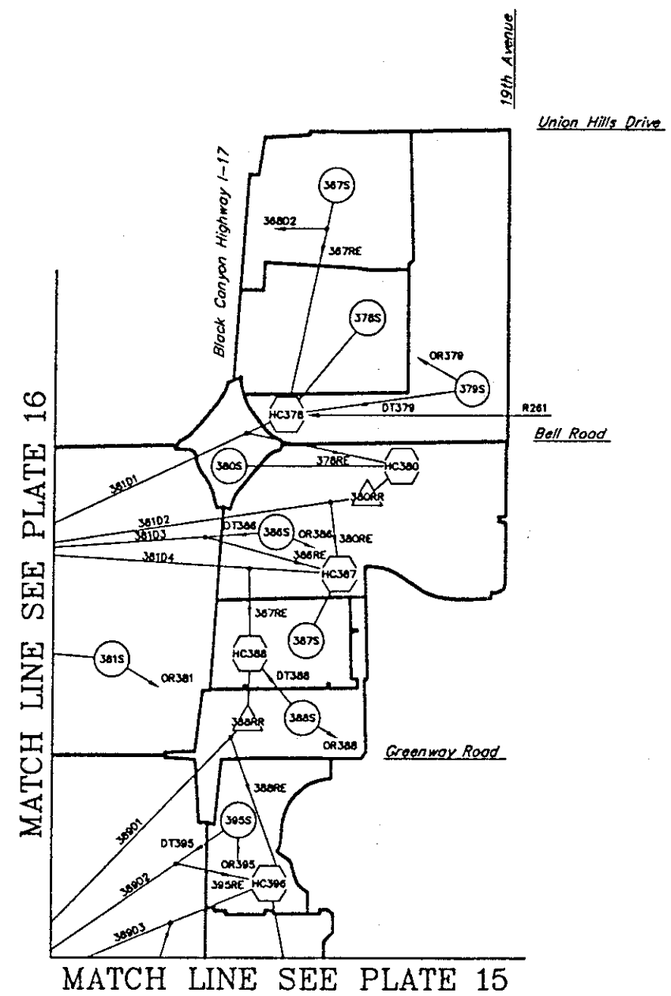
T.4N., R.2E. | T.4N., R.3E.

T.4N., R.2E.

T.3N., R.2E.

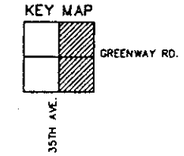
T.4N., R.3E.

T.3N., R.3E.



T.3N., R.2E. | T.3N., R.3E.

KEY MAP



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BEARDSLEY RD.													
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29			
BELL RD.	35	36	31	32	33	34	35	36	31	32			
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5			
THUNDERBIRD RD.	11	12	7	8	9	10	11	12	7	8			
CACTUS RD.	14	13	18	17	16	15	14	13	18	17			
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20			
OLIVE AVE.	26	25	30	29	28	27	26	25	30	29	DUNLAP AVE.		
NORTHERN AVE.	35	36	31	32	33	34	35	36	31	32			
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.		

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (A) Compute Runoff from Sub-Basin A
- (B) Compute Runoff from Sub-Basin B
- (C) Combine Hydrographs
- [D] Route Hydrograph
- (E) Route Hydrograph through Retention Basin E
- G/F Divide Hydrograph into F and G

DRAINAGE AREA MAP & HEC-1 SCHEMATIC

FUTURE CONDITIONS

PLATE 14
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE

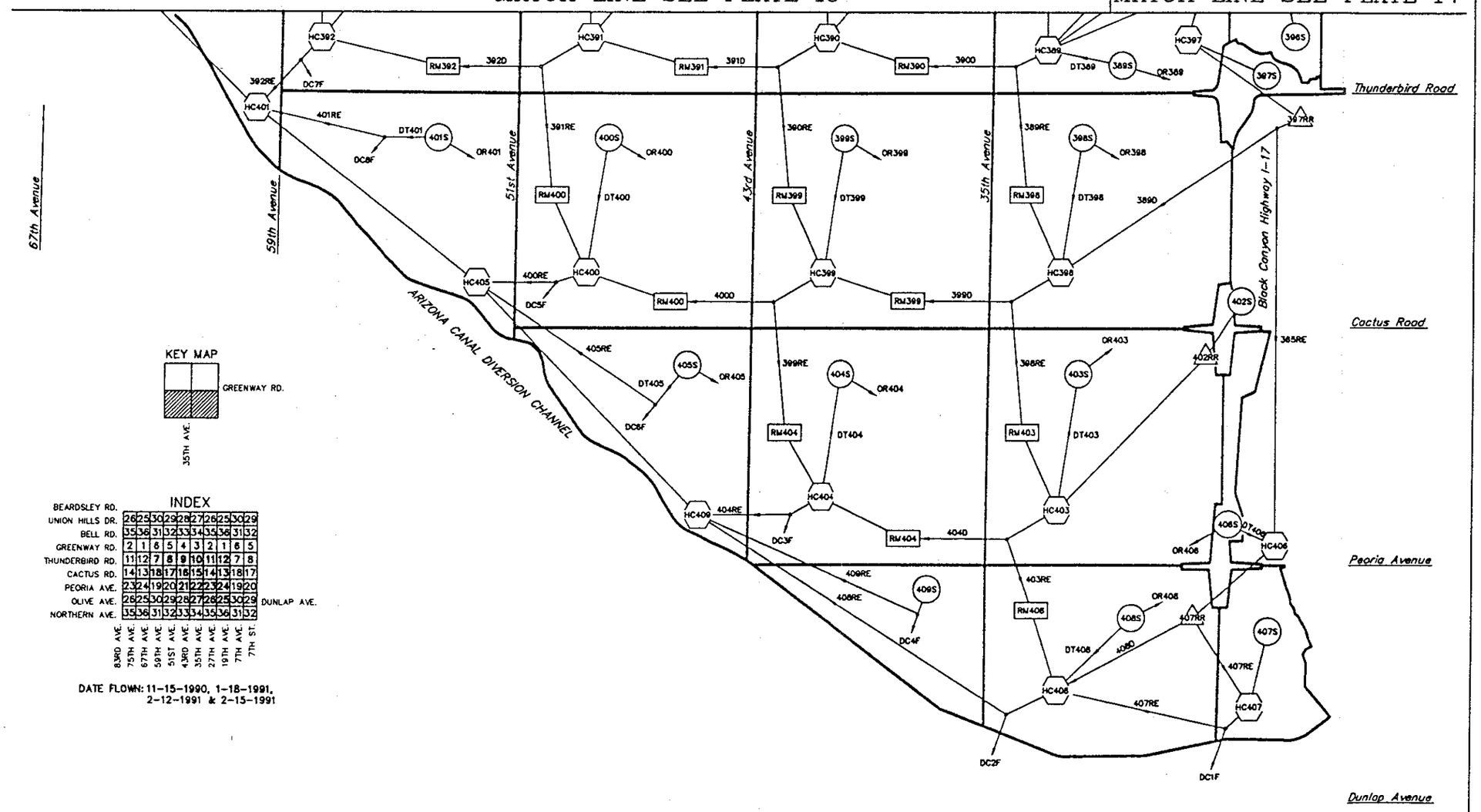
1200 600 0 1200 2400

FEET

T.3N., R.1E. | T.3N., R.2E. | T.3N., R.2E.

MATCH LINE SEE PLATE 13

MATCH LINE SEE PLATE 14



KEY MAP

INDEX

	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	
BEARDSLEY RD.	26	25	30	29	28	27	26	25	30	29		
UNION HILLS DR.	35	36	31	32	33	34	35	36	31	32		
BELL RD.	2	1	6	5	4	3	2	1	6	5		
GREENWAY RD.	11	12	7	8	9	10	11	12	7	8		
THUNDERBIRD RD.	14	13	18	17	16	15	14	13	18	17		
CACTUS RD.	23	24	19	20	21	22	23	24	19	20		
PEORIA AVE.	26	25	30	29	28	27	26	25	30	29	DUNLAP AVE.	
OLIVE AVE.	35	36	31	32	33	34	35	36	31	32		
NORTHERN AVE.												

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.1E. | T.3N., R.2E. | T.3N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (A) Compute Runoff from Sub-Basin A
- (B) Compute Runoff from Sub-Basin B
- (C) Combine Hydrographs
- [D] Route Hydrograph
- (E) Route Hydrograph through Retention Basin E
- G/F Divide Hydrograph into F and G

DRAINAGE AREA MAP & HEC-1 SCHEMATIC

FUTURE CONDITIONS

PLATE 15

SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
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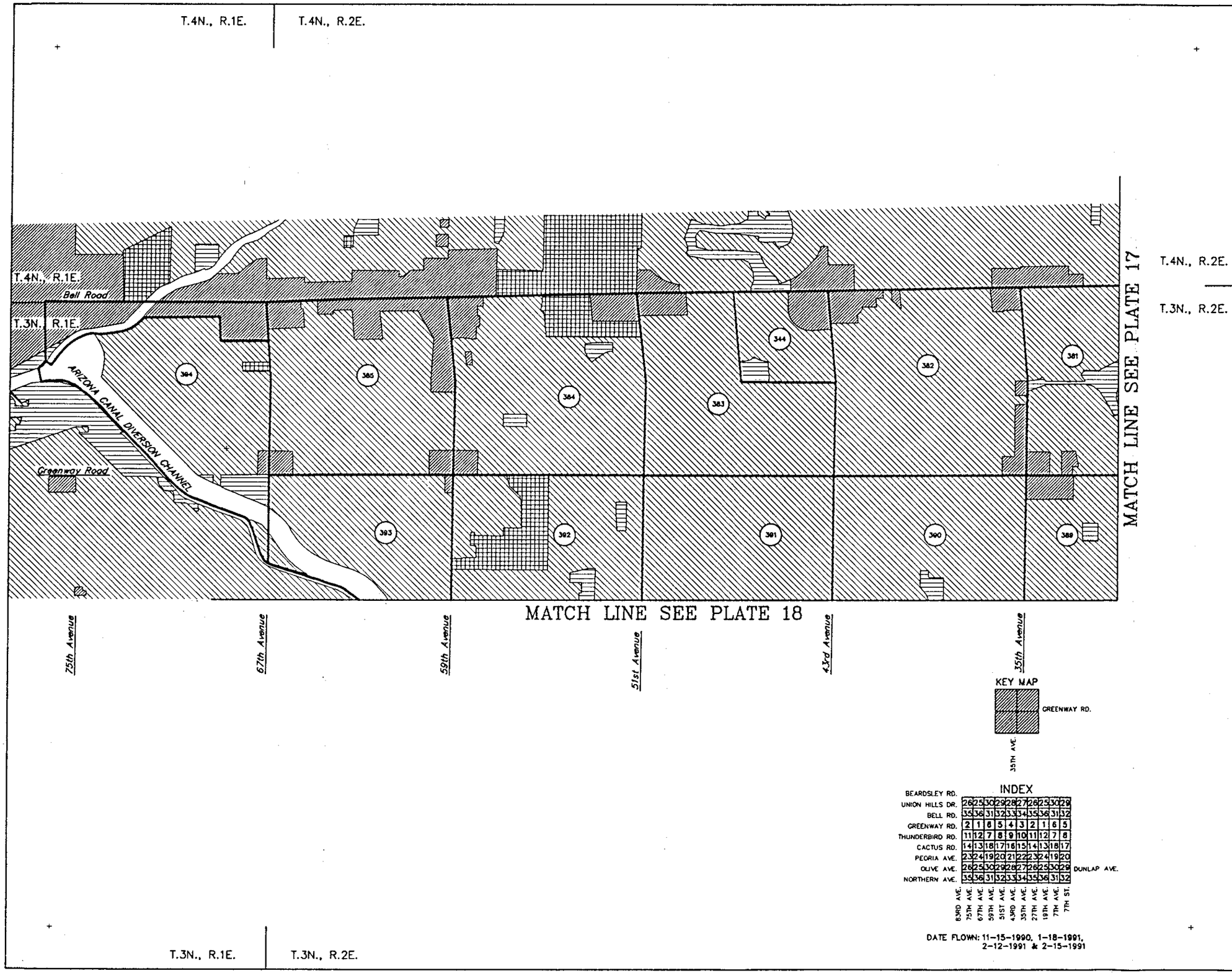
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE

1200 600 0 1200 2400

FEET



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Industrial Land Use
- Vacant Land Use
- (140) Drainage Sub-Basin Number

LAND USE MAP
FUTURE CONDITIONS

PLATE 16
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
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4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

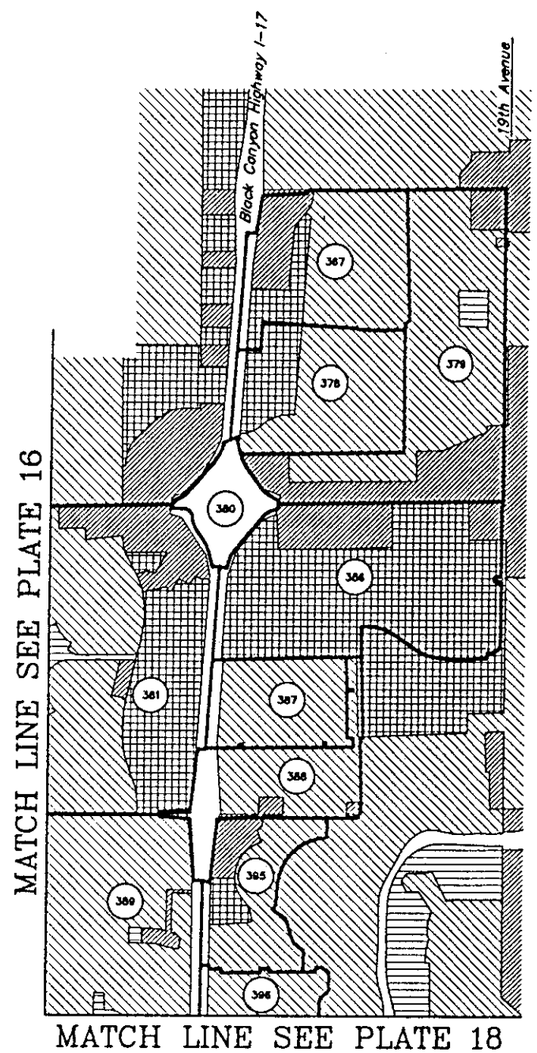
T.4N., R.2E. | T.4N., R.3E.

T.4N., R.2E.

T.3N., R.2E.

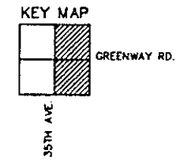
T.4N., R.3E.

T.3N., R.3E.



T.3N., R.2E. | T.3N., R.3E.

KEY MAP



INDEX

	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	
BEARDSLEY RD.	26	25	30	29	28	27	26	25	30	29		
UNION HILLS DR.	35	36	31	32	33	34	35	36	31	32		
BELL RD.	2	1	6	5	4	3	2	1	6	5		
GREENWAY RD.	11	12	7	8	9	10	11	12	7	8		
THUNDERBIRD RD.	14	13	18	17	16	15	14	13	18	17		
CACTUS RD.	23	24	19	20	21	22	23	24	19	20		
PEORIA AVE.	26	25	30	29	28	27	26	25	30	29		DUNLAP AVE.
OLIVE AVE.	35	36	31	32	33	34	35	36	31	32		
NORTHERN AVE.												

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Utility Land Use
- Industrial Land Use
- Vacant Land Use
- (140) Drainage Sub-Basin Number

LAND USE MAP
FUTURE CONDITIONS

PLATE 17
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

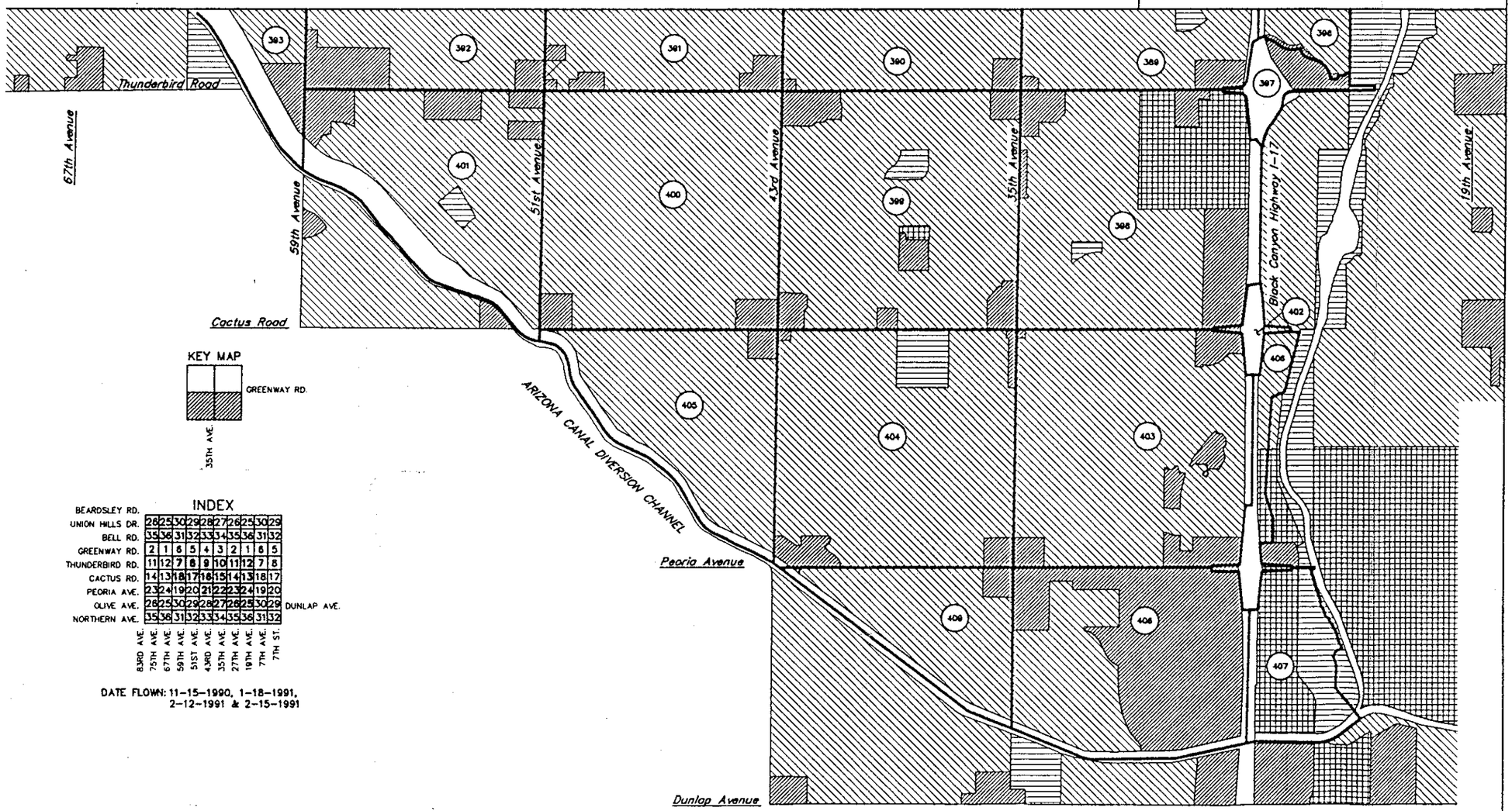
N

SCALE
1200 600 0 1200 2400
FEET

T.3N., R.1E. | T.3N., R.2E. | T.3N., R.2E.

MATCH LINE SEE PLATE 16

MATCH LINE SEE PLATE 17



KEY MAP

INDEX

	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	
BEARDSLEY RD.												
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29		
BELL RD.	35	36	31	32	33	34	35	36	31	32		
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5		
THUNDERBIRD RD.	11	12	7	8	9	10	11	12	7	8		
CACTUS RD.	14	13	18	17	16	15	14	13	18	17		
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20		
OLIVE AVE.	26	25	30	29	28	27	26	25	30	29		DUNLAP AVE.
NORTHERN AVE.	35	36	31	32	33	34	35	36	31	32		

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.1E. | T.3N., R.2E. | T.3N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Utility Land Use
- Industrial Land Use
- Agriculture
- Vacant Land Use
- (140) Drainage Sub-Basin Number

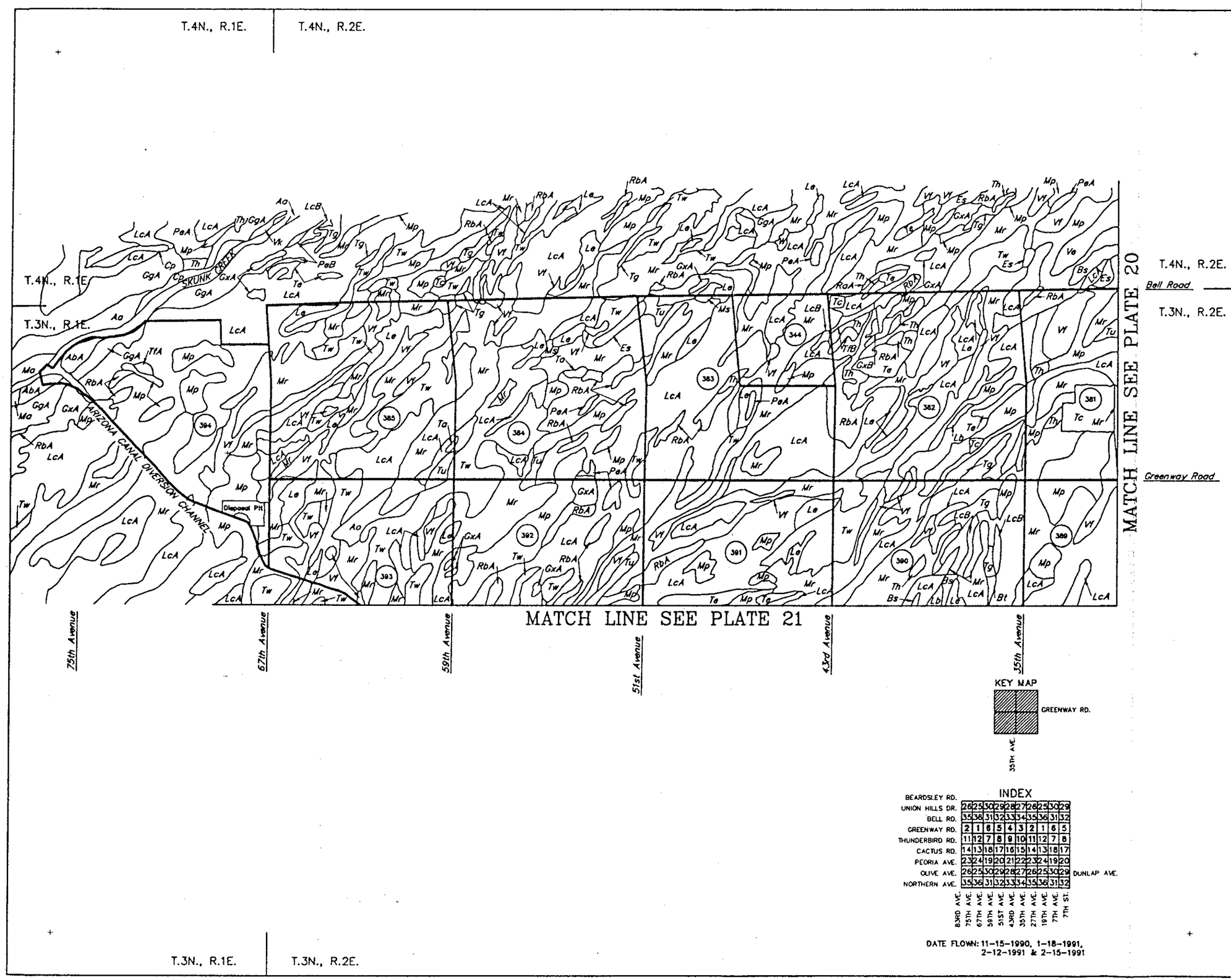
LAND USE MAP
FUTURE CONDITIONS

PLATE 18
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

Drainage Basin Boundary

(140) Drainage Sub-Basin Number

CrB Soil Unit Boundary

CO Soil Unit Identification
Reference: USDA, Soil Conservation Service, Soil Survey of Maricopa County, Arizona Central Part

109 Soil Unit Identification
Reference: USDA, Soil Conservation Service, Soil Survey of Aguila-Carefree Area Parts of Maricopa and Pinal Counties, Arizona

SOILS MAP
FUTURE CONDITIONS

PLATE 19
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

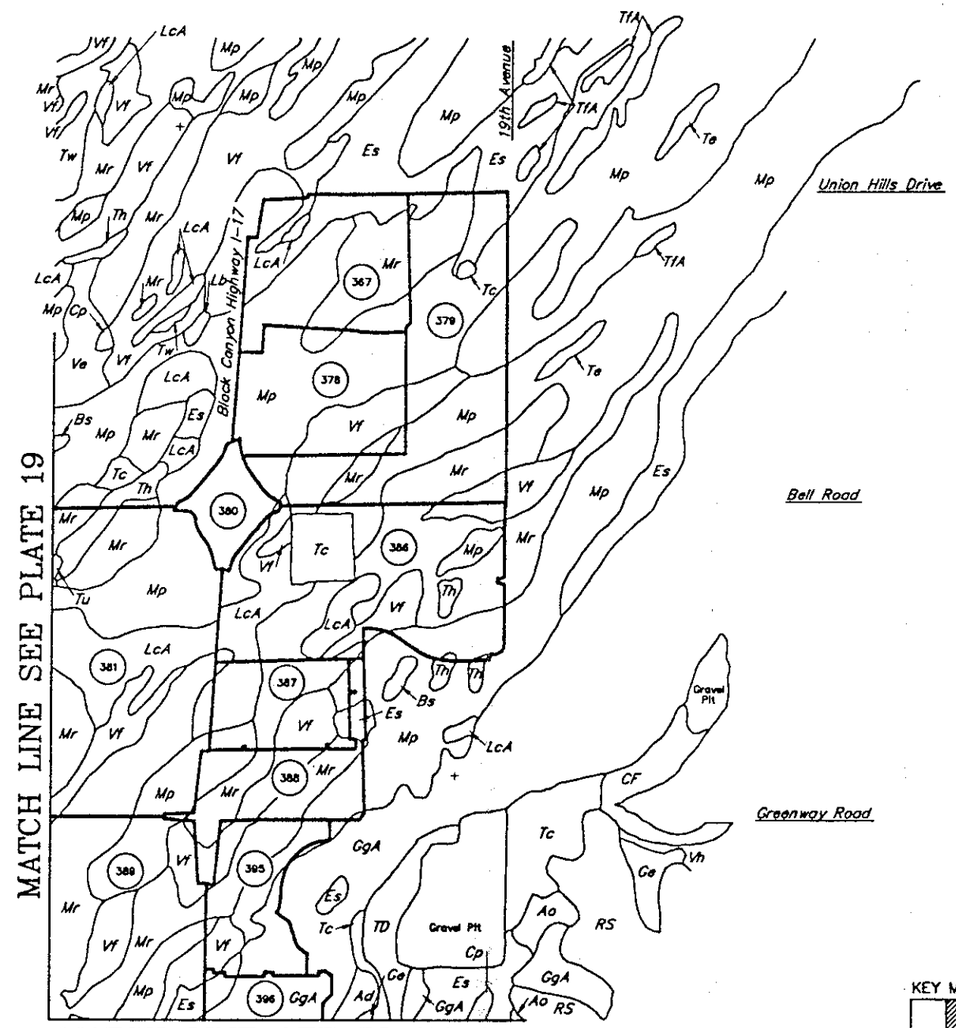
N

SCALE
1200 600 0 1200 2400

T.4N., R.2E. | T.4N., R.3E.

T.4N., R.2E.

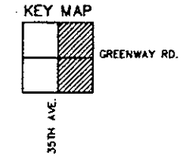
T.3N., R.2E.



T.4N., R.3E.

T.3N., R.3E.

KEY MAP



INDEX

BEARDSLEY RD.	26	25	30	29	28	27	26	25	30	29		
UNION HILLS DR.	35	36	31	32	33	34	35	36	31	32		
BELL RD.	2	1	6	5	4	3	2	1	6	5		
GREENWAY RD.	11	12	7	8	9	10	11	12	7	8		
THUNDERBIRD RD.	14	13	18	17	16	15	14	13	18	17		
CACTUS RD.	23	24	19	20	21	22	23	24	19	20		
PEORIA AVE.	26	25	30	29	28	27	26	25	30	29	DUNLAP AVE.	
OLIVE AVE.	35	36	31	32	33	34	35	36	31	32		
NORTHERN AVE.												
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- CrB Soil Unit Boundary
- CO Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Maricopa County, Arizona Central Part
- 109 Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Aguila-Carefree Area Parts of Maricopa and Pinal Counties, Arizona

SOILS MAP
FUTURE CONDITIONS

PLATE 20
SEPTEMBER 30, 1994

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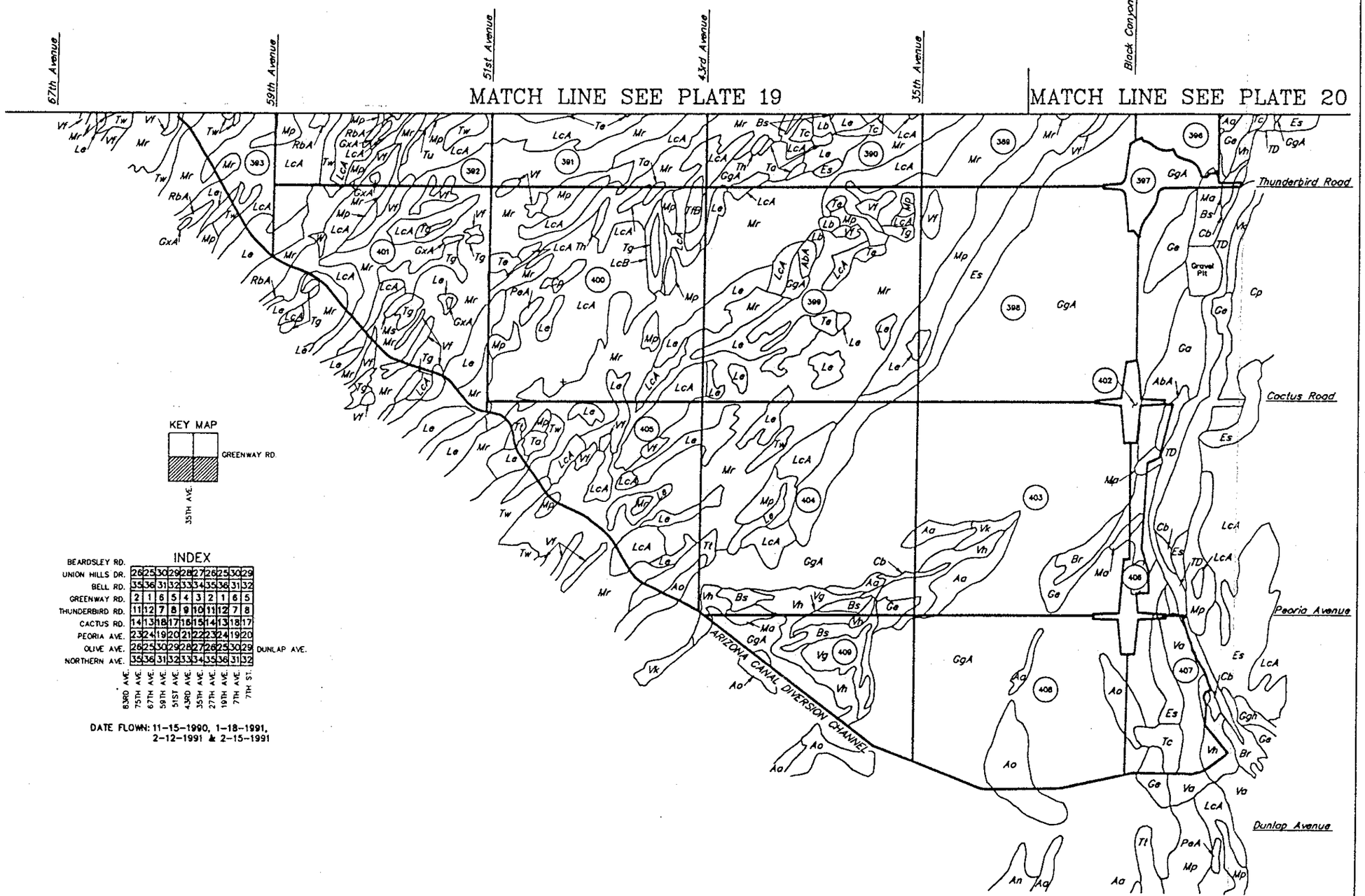
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

Drainage Basin Boundary

(140) Drainage Sub-Basin Number

CrB Soil Unit Boundary

CO Soil Unit Identification
Reference: USDA, Soil Conservation Service, Soil Survey of Maricopa County, Arizona Central Part

109 Soil Unit Identification
Reference: USDA, Soil Conservation Service, Soil Survey of Aguila-Carefree Area Parts of Maricopa and Pinal Counties, Arizona

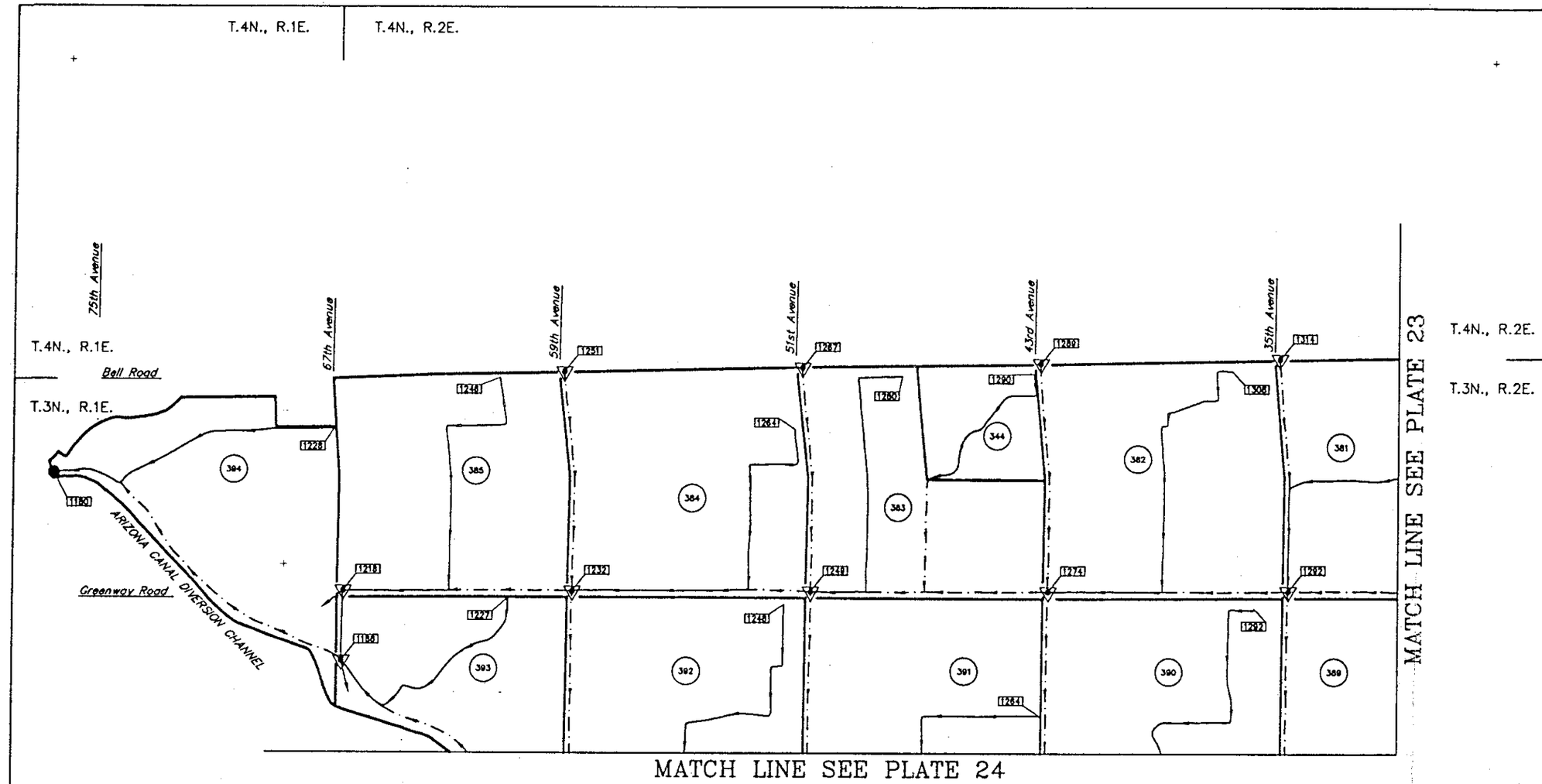
SOILS MAP
FUTURE CONDITIONS

PLATE 21
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

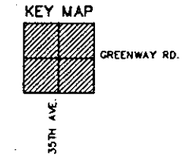
N

SCALE
1200 600 0 1200 2400



T.3N., R.1E. | T.3N., R.2E.

KEY MAP



INDEX

	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	
BEARDSLEY RD.												
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29		
BELL RD.	35	36	31	32	33	34	35	36	31	32		
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5		
THUNDERBIRD RD.	11	12	7	8	9	10	11	12	7	8		
CACTUS RD.	14	13	18	17	16	15	14	13	18	17		
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20		
OLIVE AVE.	26	25	30	29	28	27	26	25	30	29		DUNLAP AVE.
NORTHERN AVE.	35	36	31	32	33	34	35	36	31	32		

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- Major Drainage Basin Concentration Point
- Drainage Sub-Basin Concentration Point
- Flow Diversion Point
- Routing Flow Path
- Length of Longest Watercourse
- [1514] Elevation Along Flow Path

FLOW ROUTING MAP
FUTURE CONDITIONS

PLATE 22
SEPTEMBER 30, 1994

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4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

CONTOUR INTERVAL 10 FEET

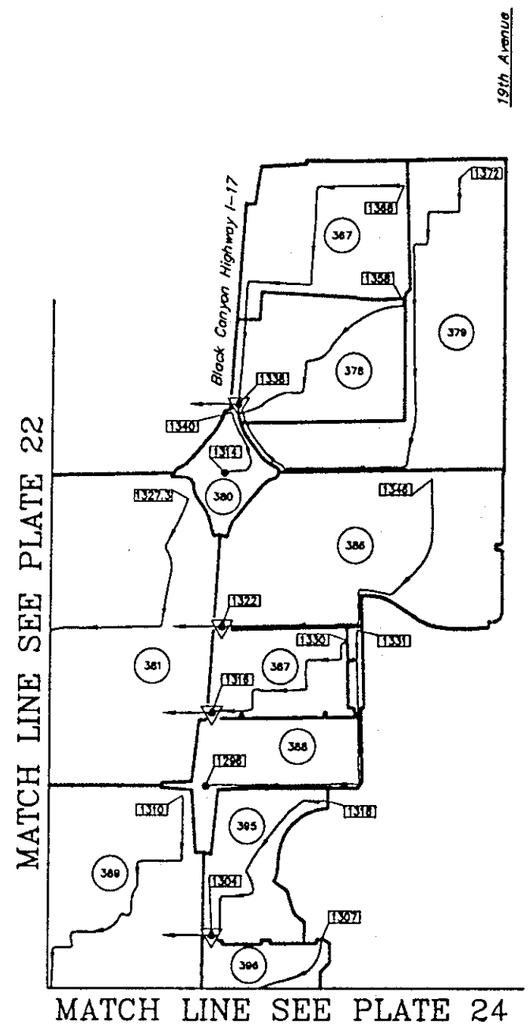
T.4N., R.2E. | T.4N., R.3E.

T.4N., R.2E.

T.3N., R.2E.

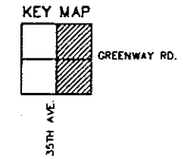
T.4N., R.3E.

T.3N., R.3E.



T.3N., R.2E. | T.3N., R.3E.

KEY MAP



INDEX

BEARDSLEY RD.												
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29		
BELL RD.	35	36	31	32	33	34	35	36	31	32		
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5		
THUNDERBIRD RD.	11	12	7	8	9	10	11	12	7	8		
CACTUS RD.	14	13	18	17	16	15	14	13	18	17		
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20		
OLIVE AVE.	26	25	30	29	28	27	26	25	30	29	DUNLAP AVE.	
NORTHERN AVE.	35	36	31	32	33	34	35	36	31	32		
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- Major Drainage Basin Concentration Point
- Drainage Sub-Basin Concentration Point
- Flow Diversion Point
- Routing Flow Path
- Length of Longest Watercourse
- [1314] Elevation Along Flow Path

FLOW ROUTING MAP
FUTURE CONDITIONS

PLATE 23
SEPTEMBER 30, 1994

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4550 N BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

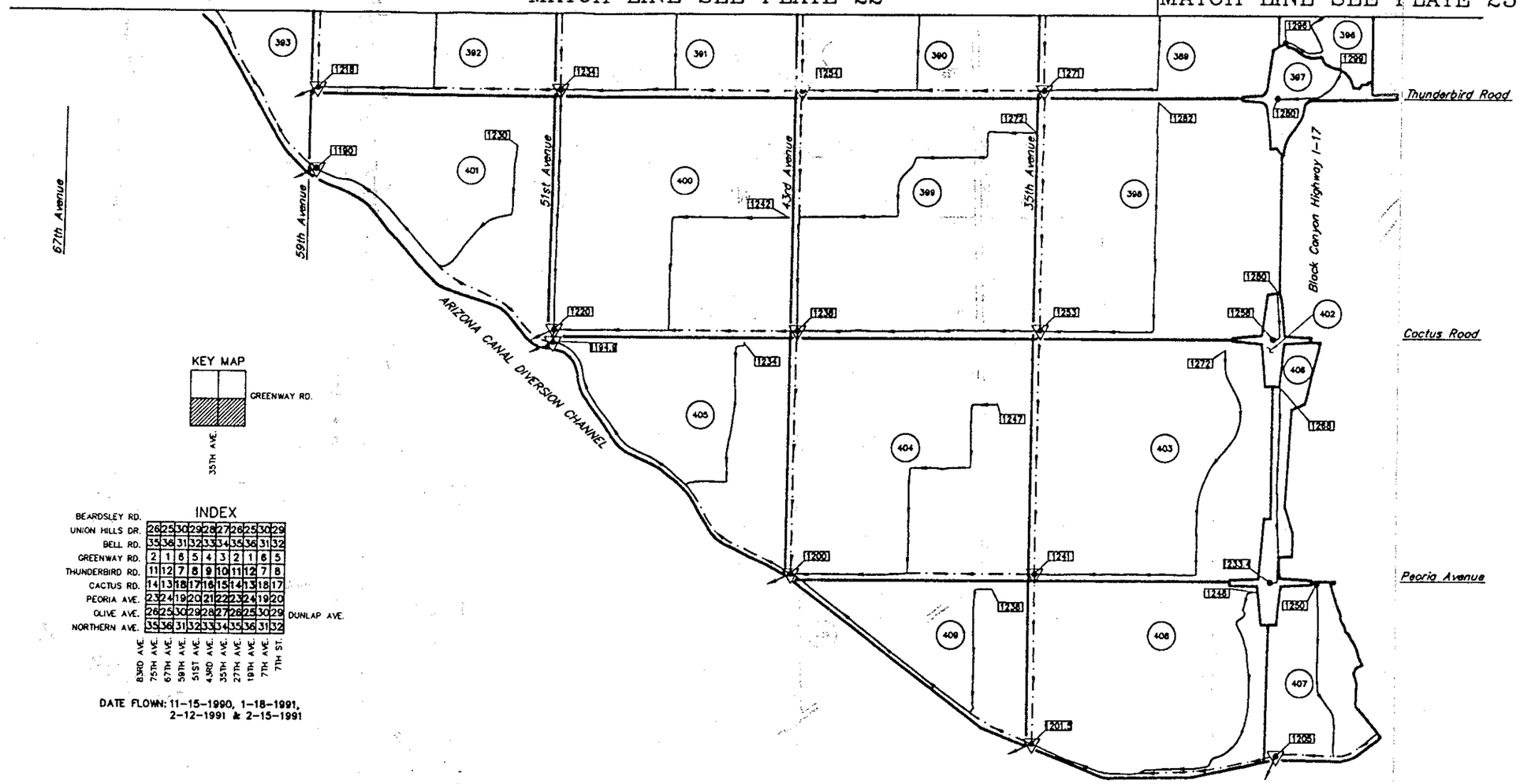
CONTOUR INTERVAL 10 FEET

T.3N., R.1E. | T.3N., R.2E.

T.3N., R.2E.

MATCH LINE SEE PLATE 22

MATCH LINE SEE PLATE 23



T.3N., R.1E. | T.3N., R.2E.

T.3N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK TO SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- Major Drainage Basin Concentration Point
- Drainage Sub-Basin Concentration Point
- Flow Diversion Point
- Routing Flow Path
- Length of Longest Watercourse
- 1514 Elevation Along Flow Path

FLOW ROUTING MAP
FUTURE CONDITIONS

PLATE 24
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

CONTOUR INTERVAL 10 FEET