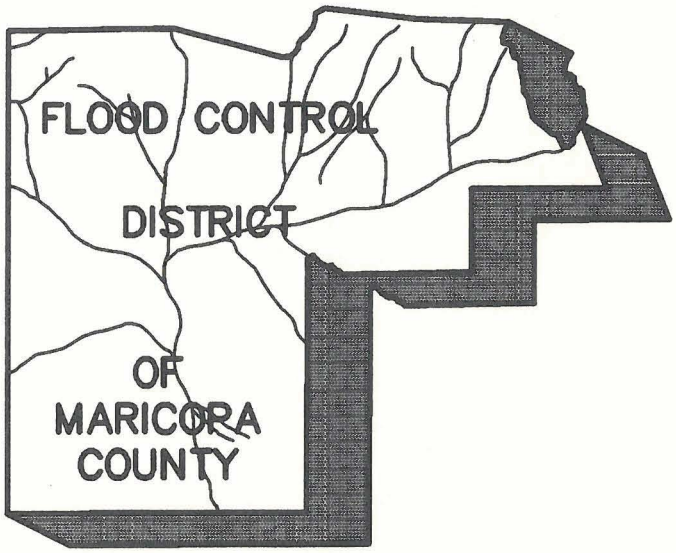
SKUNK CREEK WATERSHED

VOLUME 1.3

ARIZONA CANAL DIVERSION CHANNEL AREA DRAINAGE MASTER STUDY

ACDC/ADMS PHASE 1



HYDROLOGY REPORT

FEBRUARY 1995

KAMINSKI HUBBARD engineering, inc.
SURVEYING * CIVIL * HYDROLOGY

SKUNK CREEK WATERSHED

Volume 1.3

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

HYDROLOGY REPORT

February, 1995

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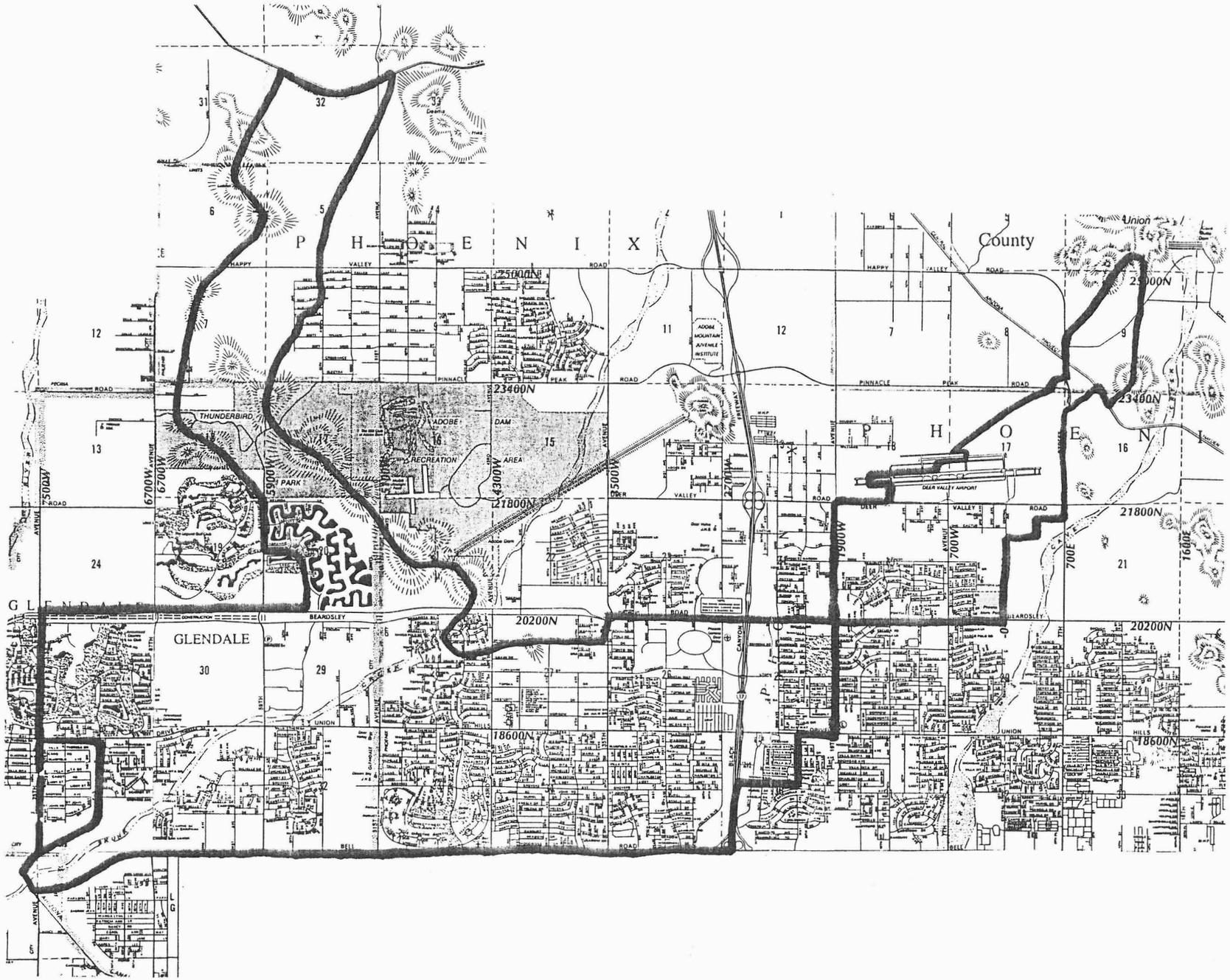
1.0 SYNOPSIS

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 Skunk Creek from Scatter Wash to the Arizona Canal Diversion Channel (ACDC) for both the existing and future conditions. Skunk Creek drains approximately 35 square miles, including 16 square miles of the Scatter Wash watershed downstream of Adobe Dam. The study area includes such drainage control structures as the Central Arizona Project (CAP) Canal, Interstate 17 (I-17), and the Outer Loop Highway (OLH) improvements as indicated in the Vicinity Map.

Within the study area, various drainage improvements associated with the construction of the OLH, Union Hills Drive and Bell Road have altered the flow paths described in previous reports. Also, minor corrections to basin delineations and flow path determinations have resulted from recent urbanization and more detailed topographic mapping. Future drainage improvements within the study area include drainage improvements for the Outer Loop Highway.

This report presents the hydrologic analysis developed for Skunk Creek from Scatter Wash to the ACDC 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 and in the vicinity of Skunk Creek. Table 2 presents the computed peak discharges for future conditions corresponding to a 24-hour duration storm.



SKUNK CREEK WATERSHED

FIGURE 1

TABLE 1

24-Hour Peak Discharge
(Existing Conditions)

Location	Drainage Area (Sq. Mi.)	2-Yr. (cfs)	10-Yr. (cfs)	100-Yr. (cfs)
Skunk Creek Downstream Of Confluence w/Scatter Wash	15.58	672	2988	4673
Skunk Creek At 55th Avenue	23.00	909	3822	6643
Skunk Creek at 67th Avenue	24.58	898	3773	6740
Skunk Creek Upstream Of ACDC	34.79	845	3986	7749

TABLE 2

24-Hour Peak Discharge
(Future Conditions)

Location	Drainage Area (Sq. Mi.)	2-Yr. (cfs)	10-Yr. (cfs)	100-Yr. (cfs)
Skunk Creek Downstream Of Confluence w/Scatter Wash	18.82	1623	4045	4916
Skunk Creek At 55th Avenue	27.53	1863	4716	6833
Skunk Creek At 67th Avenue	33.72	1889	4939	7898
Skunk Creek Upstream Of ACDC	35.90	1954	5119	8871

2.0 INTRODUCTION

A hydrologic analysis of the Skunk Creek watershed 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. The study area is bounded by the Scatter Wash watershed to the northeast, the CAP canal to the northwest and Bell Road to the south.

A previous hydrologic analysis of Scatter Wash and Skunk Creek between the ACDC and Union Hills was performed by Coe & Van Loo for the FCDMC in November, 1990 (Ref. 5). This analysis served as a basis for comparison of peak discharges for the existing conditions hydrology. However, more detailed topographic mapping, different methodologies in computations, increased urbanization and OLH construction have resulted in revisions to this hydrologic analysis.

The existing sub-basin delineations have incorporated drainage improvements constructed in association with the OLH west of I-17 as presented by DeLeuw, Cather & Company (Ref. 12), construction of the Arrowhead Ranch Development (Ref. 11), Union Hills Drive storm drain and paving improvements (Ref. 14), Bell Road paving and storm drain improvements (Ref. 20) and storm drain improvements within the study area (Ref. No.'s 1 & 23). The future sub-basin delineations for our study have incorporated hydrologic and concept drainage plans for the OLH east of I-17 as presented by DeLeuw, Cather & Company in November, 1989 (Ref. 10). Careful attention was placed on maintaining hydrologic consistency when combining the smaller sub-basins from other studies into larger sub-basins used in this study.

The purpose of this report is to present the revised hydrology for Skunk Creek based on the FCDMC hydrologic design criteria, increased urbanization, and construction improvements. This report also documents the assumptions and methodology for the hydrologic analyses of Skunk Creek.

3.0 STUDY PARAMETERS

3.1 Study Area

The Skunk Creek watershed is located in the rapidly developing area of Northwest Phoenix as outlined on Figure 1. Skunk Creek has a watershed area of approximately 35 square miles including the area upstream of the confluence with Scatter Wash located southwest of Beardsley Road and 43rd Avenue. Adobe Dam, located along the northwest limit of the Scatter Wash watershed drains an approximate 90 square miles and is released in a controlled outflow.

Significant features which affect drainage patterns within the watershed are: CAP Canal defining the northwest watershed boundary, the OLH parallel to Beardsley Road, Union Hills Drive from 27th Avenue to 57th Avenue, Bell Road from I-17 to 75th Avenue and the Arrowhead Ranch Development.

The watershed north of OLH is predominately undeveloped desert valley and recreational hillslopes with sparsely scattered single family residences on large parcels of land located below the CAP canal. The area south of the OLH is predominantly urbanized valley draining westerly and southerly to Skunk Creek.

3.2 Mapping

The available mapping utilized in this study are as follows:

1. **FCDMC Mapping:** The Scatter Wash watershed 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 delineation, 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, 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 drainage structures associated with the CAP Canal, I-17, and OLH improvements were used for flow routing purposes.

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 CAP Canal, I-17, and OLH 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. 31) and COE (Ref. 27) data, as presented in the FCDMC's Hydrologic Design Manual (Ref. 18). 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. 31). 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 for the Skunk Creek watershed was analyzed for the 2-, 10-, and 100-year storms. The 6- and 24-hour storm durations were evaluated for all three storms. The Skunk Creek 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 was 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 Skunk Creek watershed.

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 performed for the Skunk Creek watershed 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 Skunk Creek on the west and northwest. This study also included the watershed contributing to Scatter Wash east of I-17. 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.

Hydrology Report, Skunk Creek Between Arizona Canal Diversion Channel & Central Arizona Project(Ref. 6)

A recent FCDMC hydrologic study was prepared by Coe & Van Loo Consulting Engineers, Inc. for Skunk Creek between the ACDC and CAP. The results from this study were recommended for use in the hydraulic analysis portion of the Flood Insurance Study for Skunk Creek, downstream of Adobe Dam. This analysis also included the Scatter Wash area upstream of its confluence with Skunk Creek. However, future conditions associated with the construction of OLH improvements were not within the Scope of Work. The hydrologic analysis was in accordance with the methodologies presented in the FCDMC's Hydrologic Design Manual (Ref. 18).

Bell Road Project Drainage Study Volume IV (Ref. 20)

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 Scottsdale 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.

Drainage Report For Union Hills Drive, 27th Avenue To 57th Avenue (Ref. 14)

The purpose of this report was to prepare a storm drain design for removing the inverted crown roadway section in Union Hills Drive. The storm drain was designed to collect and convey the 10-year storm entering Union Hills Drive westerly to Skunk Creek. This information was used to determine flow path characteristics.

Arrowhead Ranch Development - Specific Area & Storm Drainage Plan (Ref. 11)

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 Skunk Creek at major road crossings. In-house drainage delineation was also supplemented by as-built drawings of major collector streets, freeways, and drainage structures.

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, impoundment areas and stream confluences. Concentration points were also located such that comparisons could be made to previous investigations. The sub-basin areas were limited to an average one square mile.

Future Conditions

The drainage delineation for future conditions was predominately the same as presented for the existing conditions. However, slight modifications were made due to future construction of the OLH Interceptor Drain from 7th Street to I-17. The Interceptor Drain will collect and convey stormwater runoff westerly from Central Avenue to Scatter Wash for the future conditions. Due to the number of sub-basins delineated for the OLH reports, careful attention was placed on maintaining hydrologic consistency when combining the smaller sub-basins into larger sub-basins.

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. 18) 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 7 and 8 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. 18). The point precipitation values are presented in Table 4 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. 18). This information was also included in the FCDMC's MCUHP 2 Program. The 24-hour storm reduction factors were obtained from the NOAA Technical Memorandum NWS HYDRO-40 (Ref. 31). These factors are presented in Table 6 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. 18).

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.'s 28 & 29) 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. 18).

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. 18) 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.'s 28 and 29). 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 9 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 10 and 11 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. 18):

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

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. 18). 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 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 12, 13, and 14 in Section III of the Appendix. The characteristics for future conditions are presented in Tables 16, 17 and 18 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 16 detention basins were modeled for the existing conditions and 14 detention basins were modeled for the future conditions. Two detention facilities are included in the existing conditions for the Skunk Creek watershed and the future conditions for the Scatter Wash watershed due to construction of the OLH. The existing conditions model included a detention facility upstream of the CAP canal, and a cumulative detention facility on the Deer Valley Airport property. The volume associated with the facility upstream of the CAP canal 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 III of the Appendix. The volume associated with the detention facility on the Deer Valley Airport property was determined based on topographic mapping and previous reports.

Both the existing and future conditions include detention facilities associated with I-17 and its infrastructure. Basins were modeled at the northeast corner of I-17 and Utopia Road, I-17 and Union Hills Drive and the I-17/Union Hill Drive Traffic Interchange (TI). Topographic mapping and field surveys were used to develop volume, overflow weir and low-level spillway calculations. The results are included in Section IV of the Appendix.

As part of the OLH improvements, a detention basin has been modeled in both the existing and future conditions at the northeast corner of 51st Avenue and the OLH. this basin drains into the Arrowhead golf course and lake development located in Section 20. A separate detention facility is located north of the golf course and lake development in the Thunderbird Recreation Park. Both these facilities drain into the Arrowhead golf course and lake development which has been modeled as a series of four detention basins (Ref. 11) The remaining five detention basins are associated with Arrowhead golf course and lake development located in Section 25.

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 Skunk Creek watershed, the area south of the CAP 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 carefully selected in order to reduce the number of potential flow split locations. In most cases, the effect of flow splits on the runoff characteristics were minimal because the split flow would eventually converge at the next downstream concentration point. There are eight (8) flow split locations within the model for both existing and future conditions. These locations are as follows:

1. 15th Avenue and Utopia Road.
2. 23rd Avenue and Utopia Road.
3. 35th Avenue and Union Hills Drive.
4. 43rd Avenue and Union Hills Drive
5. 35th Avenue and Bell Road.
6. 43rd Avenue and Bell Road.
7. 51st Avenue and Bell Road.
8. 59th Avenue and Bell Road.

At location 1 and location 2, a discharge-diversion relationship was developed based on results of field surveys and topographic mapping. The remaining six split flow locations were based on simplification of extensive analysis. Peak flow values were first compared with downstream street capacities at each location. Results indicated that peak flows exceeded street capacities. An overflow weir evaluation was then prepared at roadway crown locations to determine whether peak flows remain within the same general flow path or whether a diversion would occur. There was no consistency when diversions were calculated for the multi-frequency peak flows. Therefore, diversions were assumed to have 50 percent split flow to the west and 50 percent split flow to the south due to the historical southwesterly flow patterns. The flow split calculations are given in Section V of the Appendix.

4.4.2 Storm Drain Pipes

Union Hills Drive was recently improved by removal of the existing inverted crown roadway section to a normal crown roadway section. In addition, a storm drain pipe was constructed to collect and convey the majority of stormwater runoff from 35th Avenue westerly to Skunk Creek. The existing and future condition models were developed based on design capacities (Ref. 14). Other storm drains modeled have been based on design capacities shown in References 1, 3 and 23.

4.4.2 Channelization

The Arrowhead golf course and lake development drain southerly into a channel built along the 55th Avenue alignment. This channel then drains into Skunk Creek north of Union Hills Drive. The Muskingum-Cunge method was used to route these hydrographs based on cross-sections developed from topographic maps.

The Skunk Creek flow path has been modeled using the Muskingum-Cunge method. Cross-sections were developed using the topographic mapping and have been assumed to remain the same for both the existing and future conditions.

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. 18).

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 Skunk Creek from Scatter Wash to the ACDC. 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 15 and 19 for both the 6-hour and 24-hour events.

The CAP Canal embankment was found to sufficiently detain the 100-peak discharge from the upstream watershed. Outflow from the corresponding detention basin pipe culverts was routed downstream and did not significantly contribute to the downstream peak discharges.

The I-17 culverts located between Union Hills Drive and Bell Road do not have the capacity to convey the 100-year peak discharges (Ref. 24). This lack of capacity results in extensive ponding along the east side of I-17.

As indicated in Table 3, the computed 100-year 24-hour discharges along Skunk Creek downstream of Scatter Wash were slightly higher than the previous Coe & Van Loo values (Ref. 6). The difference between values are attributed to the unit-hydrograph method, method of Green-Ampt loss rate computations, more refined topographic mapping, increased urbanization, and OLH improvements. However, with all the above considerations, the peak discharges are quite comparable.

TABLE 3

Comparison Of 100-Year Peak Discharges In Skunk Creek w/Previous Studies

Location	KHE - 1995 Exst. Condition		CVL - 1990 Exst. Condition	
	DA (sq. mi.)	Q (cfs)	DA (sq. mi.)	Q (cfs)
Skunk Creek Downstream Of Confluence w/Scatter Wash	15.58	4673	15.0	5100
Skunk Creek At 55th Avenue	23.00	6643	19.9	6500
Skunk Creek At 67th Avenue	24.58	6740	21.3	6500
Skunk Creek Upstream Of ACDC	34.79	7749	23.8	6700

TABLE 4

Sub-Basin I.D. Cross Reference Nos. For Existing And Future Conditions

Existing Conditions	Future Conditions	Existing Conditions	Future Conditions	Existing Conditions	Future Conditions
328	332*	375	369	400 & 402	364
329	333*	381	370	401 & 402	365
337	333*	386	371	401 & 402	372
338	336*	392	355	401 & 402	373
340	337*	393	356	403	374
341	339*	394	357	404	375
342	338 & 340*	395	359	405	376
350	260**	396	360	---	377***
351	351	397	361		
352	352	398A	363		
353	354	399B	362		
355	366	399	350		
368	368	399	358		

*** Scatter Wash** **** Cave Creek Watershed** ***** New River Watershed**

NOTE: Watershed boundaries have been modified due to proposed changes to Outer Loop Highway, 19th Avenue and 83rd Avenue.

6.0 REFERENCES

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APPENDIX

SECTION I	Rainfall and Physical Hydrologic Parameters
SECTION II	Green-Ampt & Land Use Parameters
SECTION III	Hydrologic Sub-Basin Characteristics
SECTION IV	Hydrograph Routing Parameters
SECTION V	Divert & Onsite Retention Parameters
SECTION VI	HEC-1 Hydrology Results, 100-Year 24-Hour Storm (Existing Conditions)
SECTION VII	HEC-1 Hydrology Results, 100-Year 24-Hour Storm (Future Conditions)
SECTION VIII	Plates 1-24
SECTION IX	HEC-1 Data Files On Computer Diskette

SECTION I

Rainfall & Physical Hydrologic Parameters

TABLE 5

Point Precipitation Values For 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 6

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 7

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 8

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 9

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 10

Average Green-Ampt Parameters (Existing Conditions)

Sub-Basin	IA(in)	DTHETA	PSIF (in)	XKSAT (in/Hr.)	RTIMP(%)
328	0.150	0.360	4.120	0.268	4.330
329	0.269	0.318	4.140	0.424	26.080
337	0.152	0.271	3.980	0.381	59.530
338	0.103	0.251	3.500	0.278	74.100
340	0.249	0.327	5.050	0.229	30.180
341	0.215	0.288	6.960	0.148	40.480
342	0.155	0.281	5.980	0.197	36.920
350	0.126	0.261	3.810	0.279	40.820
351	0.337	0.145	12.400	0.012	3.750
352	0.165	0.167	8.200	0.053	34.970
353	0.109	0.255	5.050	0.233	46.090
354	0.100	0.150	8.400	0.056	74.920
355	0.100	0.150	8.280	0.079	74.440
368	0.126	0.261	3.810	0.280	47.800
375	0.100	0.150	8.280	0.081	48.640
381	0.125	0.177	7.320	0.140	40.490
386	0.213	0.255	7.320	0.129	26.970
392	0.173	0.165	10.100	0.035	39.830
393	0.140	0.171	8.280	0.082	17.620
394	0.100	0.250	4.740	0.245	46.210
395	0.350	0.300	8.050	0.093	7.840
396	0.337	0.345	3.710	0.338	7.030
397	0.336	0.341	3.550	0.302	14.790
398A	0.296	0.329	3.770	0.346	44.270
398B	0.164	0.228	3.500	0.275	33.970
399	0.277	0.321	3.550	0.303	10.850
400	0.324	0.326	3.610	0.331	9.710
401	0.224	0.298	5.360	0.230	22.900
402	0.442	0.212	7.140	0.196	6.280
403	0.169	0.167	8.050	0.106	28.300
404	0.218	0.307	4.430	0.256	15.500
405	0.334	0.344	4.180	0.523	5.800

LOSS PARAMETERS FOR SUBBASIN: 328

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
98	0.182	31.88	0.37	-0.138	0.00	0.00
52	0.106	18.55	0.16	-0.148	20.00	3.71
75	0.093	16.26	0.23	-0.104	0.00	0.00
18	0.081	14.17	0.33	-0.068	15.00	2.13
44	0.046	8.02	0.03	-0.122	0.00	0.00
50	0.032	5.64	0.26	-0.033	0.00	0.00
109	0.022	3.93	0.35	-0.018	35.00	1.38
3	0.008	1.48	0.58	-0.004	0.00	0.00
55	0.000	0.07	0.27	-0.000	0.00	0.00

TOTAL = 0.572 SQ.MI. XKSAT = 0.23 %ROCK= 7.21

DTHETA

Dry = 0.36
Normal = 0.25
Wet = 0

PSIF

= 4.12

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.572	VACANT	100.00	DRY	25.00	0.00	0.00	0.15	0.150
0.572	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.00	AVG. =	0.150
					% =	0.00		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.360

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.268

IMPERVIOUS AREA: URBAN @ 100 % effective = 0.00
ROCK OUTCROP @ 60 % effective = 4.33

% EFFECTIVE IMP. = 4.33

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
328	0.572	1.140	0.086	226.00	0.150	0.360	4.12	0.268	4.33

LOSS PARAMETERS FOR SUBBASIN: 329

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
112	0.414	66.27	0.39	-0.271	0.00	0.00
113	0.115	18.33	0.39	-0.075	0.00	0.00
109	0.053	8.43	0.35	-0.038	35.00	2.95
75	0.044	6.97	0.23	-0.044	0.00	0.00
TOTAL =	0.625 SQ.MI.		XKSAT =	0.37	%ROCK=	2.95

DTHETA

Dry =	0.35
Normal =	0.25
Wet =	0

PSIF

= 4.14

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.423	VACANT	67.59	DRY	25.00	0.00	0.00	0.35	0.237
0.203	IND	32.41	NORMAL	20.00	75.00	0.15	0.10	0.032
0.625	=TOTAL AREA	OK	AVERAGE =	23.38	TOTAL =	0.15	AVG. =	0.269
					% =	24.30		

PERCENT OF SUBBASIN DRY = 67.59 %
NORMAL = 32.41 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.318

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.424

IMPERVIOUS AREA: URBAN @ 100 % effective = 24.30
ROCK OUTCROP @ 60 % effective = 1.77

% EFFECTIVE IMP. = 26.08

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
329	0.625	1.960	0.038	78.00	0.269	0.318	4.14	0.424	26.08

LOSS PARAMETERS FOR SUBBASIN: 337

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
112	0.114	38.78	0.39	-0.159	0.00	0.00
Te	0.098	33.30	0.25	-0.200	0.00	0.00
113	0.065	22.21	0.39	-0.091	0.00	0.00
TfA	0.017	5.71	0.37	-0.025	0.00	0.00
TOTAL =	0.295 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.
0.061	VACANT	20.63	DRY	25.00	0.00	0.00	0.35	0.072
0.234	IND	79.37	NORMAL	20.00	75.00	0.18	0.10	0.079
0.295	=TOTAL AREA	OK	AVERAGE =	21.03	TOTAL =	0.18	AVG. =	0.152
					% =	59.53		

PERCENT OF SUBBASIN DRY = 20.63 %
NORMAL = 79.37 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.271

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.381

IMPERVIOUS AREA: URBAN @ 100 % effective = 59.53
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 59.53

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
337	0.295	1.550	0.031	36.00	0.152	0.271	3.98	0.381	59.53

LOSS PARAMETERS FOR SUBBASIN: 338

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
112	0.064	51.49	0.39	-0.211	0.00	0.00
Te	0.024	19.36	0.25	-0.117	0.00	0.00
Mr	0.018	14.86	0.05	-0.193	0.00	0.00
Mp	0.017	13.47	0.25	-0.081	0.00	0.00
TfA	0.001	0.82	0.37	-0.004	0.00	0.00
TOTAL =	0.124 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.
0.001	VACANT	1.20	DRY	25.00	0.00	0.00	0.35	0.004
0.123	IND	98.80	NORMAL	20.00	75.00	0.09	0.10	0.099
0.124	=TOTAL AREA	OK	AVERAGE =	20.06	TOTAL =	0.09	AVG. =	0.103
					% =	74.10		

PERCENT OF SUBBASIN DRY = 1.20 %
NORMAL = 98.80 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.251

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.278

IMPERVIOUS AREA: URBAN @ 100 % effective = 74.10
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 74.10

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
338	0.124	0.630	0.028	30.00	0.103	0.251	3.50	0.278	74.10

LOSS PARAMETERS FOR SUBBASIN: 340

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Te	0.134	51.23	0.25	-0.308	0.00	0.00
TfA	0.052	19.84	0.37	-0.086	0.00	0.00
Mr	0.051	19.39	0.05	-0.252	0.00	0.00
Mp	0.013	4.99	0.25	-0.030	0.00	0.00
Es	0.012	4.45	0.25	-0.027	0.00	0.00
Co	0.000	0.10	0.29	-0.001	20.00	0.02
TOTAL =	0.262 SQ.MI.		XKSAT =	0.20	%ROCK=	0.02

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.
0.156	VACANT	59.54	DRY	25.00	0.00	0.00	0.35	0.208
0.002	M.D.R.	0.60	NORMAL	25.00	45.00	0.00	0.10	0.001
0.104	IND	39.86	NORMAL	20.00	75.00	0.08	0.10	0.040
0.262	=TOTAL AREA	OK	AVERAGE =	23.01	TOTAL =	0.08	AVG. =	0.249
					% =	30.17		

PERCENT OF SUBBASIN DRY = 59.54 %
NORMAL = 40.46 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.327

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.229

IMPERVIOUS AREA: URBAN @ 100 % effective = 30.17
ROCK OUTCROP @ 60 % effective = 0.01

% EFFECTIVE IMP. = 30.18

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
340	0.262	0.800	0.040	31.00	0.249	0.327	5.05	0.229	30.18

LOSS PARAMETERS FOR SUBBASIN: 341

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.122	53.06	0.25	-0.319	0.00	0.00
Mr	0.052	22.59	0.05	-0.294	0.00	0.00
Te	0.030	12.98	0.25	-0.078	0.00	0.00
Vf	0.017	7.21	0.01	-0.144	0.00	0.00
Tg	0.007	2.98	0.04	-0.042	0.00	0.00
TfA	0.003	1.18	0.37	-0.005	0.00	0.00

TOTAL = 0.229 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.
0.106	VACANT	45.99	DRY	25.00	0.00	0.00	0.35	0.161
0.000	M.D.R.	0.11	NORMAL	25.00	45.00	0.00	0.10	0.000
0.124	IND	53.90	NORMAL	20.00	75.00	0.09	0.10	0.054
0.230	=TOTAL AREA	OK	AVERAGE =	22.30	TOTAL = % =	0.09 40.48	AVG. =	0.215

PERCENT OF SUBBASIN DRY = 45.99 %
NORMAL = 54.01 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.288

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.148

IMPERVIOUS AREA: URBAN @ 100 % effective = 40.48
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 40.48

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
341	0.229	0.890	0.037	26.00	0.215	0.288	6.96	0.148	40.48

LOSS PARAMETERS FOR SUBBASIN: 342

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.111	22.65	0.25	-0.136	0.00	0.00
Te	0.097	19.83	0.25	-0.119	0.00	0.00
TfA	0.085	17.33	0.37	-0.075	0.00	0.00
Es	0.070	14.40	0.25	-0.087	0.00	0.00
Mr	0.054	11.07	0.05	-0.144	0.00	0.00
Vf	0.034	6.85	0.01	-0.137	0.00	0.00
Gr	0.030	6.06	0.23	-0.039	0.00	0.00
Tw	0.009	1.81	0.05	-0.024	0.00	0.00

TOTAL = 0.489 SQ.MI. XKSAT = 0.17 %ROCK= 0.00

DTHETA

Dry = 0.39
Normal = 0.25
Wet = 0

PSIF

= 5.98

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.107	VACANT	21.95	DRY	25.00	0.00	0.00	0.35	0.077
0.352	M.D.R.	72.05	NORMAL	25.00	45.00	0.16	0.10	0.072
0.029	IND	6.00	NORMAL	20.00	75.00	0.02	0.10	0.006
0.489	=TOTAL AREA	OK	AVERAGE =	24.70	TOTAL =	0.18	AVG. =	0.155
					% =	36.92		

PERCENT OF SUBBASIN
DRY = 21.95 %
NORMAL = 78.05 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.281

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.197

IMPERVIOUS AREA:
URBAN @ 100 % effective = 36.92
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 36.92

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
342	0.489	1.410	0.029	27.00	0.155	0.281	5.98	0.197	36.92

LOSS PARAMETERS FOR SUBBASIN: 350

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.075	62.65	0.25	-0.377	0.00	0.00
Es	0.023	19.48	0.25	-0.117	0.00	0.00
TfA	0.015	12.17	0.37	-0.053	0.00	0.00
Tw	0.007	5.70	0.05	-0.074	0.00	0.00

TOTAL = 0.119 SQ.MI. XKSAT = 0.24 %ROCK= 0.00

DTHETA

Dry = 0.36
Normal = 0.25
Wet = 0

PSIF

= 3.81

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.012	VACANT	10.40	DRY	25.00	0.00	0.00	0.35	0.036
0.106	M.D.R.	88.48	NORMAL	25.00	45.00	0.05	0.10	0.088
0.001	COMM	1.12	NORMAL	20.00	90.00	0.00	0.10	0.001
0.119	=TOTAL AREA	OK	AVERAGE =	24.94	TOTAL =	0.05	AVG. =	0.126
					% =	40.82		

PERCENT OF SUBBASIN
DRY = 10.40 %
NORMAL = 89.60 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.261

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.279

IMPERVIOUS AREA:
URBAN @ 100 % effective = 40.82
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 40.82

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
350	0.119	0.750	0.031	35.00	0.126	0.261	3.81	0.279	40.82

LOSS PARAMETERS FOR SUBBASIN: 351

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Vf	0.043	81.19	0.01	-1.624	0.00	0.00
Mr	0.009	17.78	0.05	-0.231	0.00	0.00
Es	0.000	0.67	0.25	-0.004	0.00	0.00
Mp	0.000	0.36	0.25	-0.002	0.00	0.00

TOTAL = 0.053 SQ.MI. XKSAT = 0.01 %ROCK= 0.00

DTHETA

Dry = 0.15
Normal = 0.05
Wet = 0

PSIF

= 12.4

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.050	VACANT	95.00	DRY	25.00	0.00	0.00	0.35	0.332
0.003	IND	5.00	NORMAL	20.00	75.00	0.00	0.10	0.005
0.053	=TOTAL AREA	OK	AVERAGE =	24.75	TOTAL =	0.00	AVG. =	0.337
					% =	3.75		

PERCENT OF SUBBASIN DRY = 95.00 %
NORMAL = 5.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.145

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.012

IMPERVIOUS AREA: URBAN @ 100 % effective = 3.75
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 3.75

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
351	0.053	0.450	0.058	20.00	0.337	0.145	12.40	0.012	3.75

LOSS PARAMETERS FOR SUBBASIN: 352

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Vf	0.152	46.06	0.01	-0.921	0.00	0.00
Mr	0.077	23.39	0.05	-0.304	0.00	0.00
Es	0.040	12.18	0.25	-0.073	0.00	0.00
Mp	0.025	7.65	0.25	-0.046	0.00	0.00
Tw	0.019	5.89	0.05	-0.077	0.00	0.00
LcA	0.010	3.12	0.25	-0.019	0.00	0.00
RbA	0.006	1.71	0.26	-0.010	0.00	0.00
TOTAL =	0.330 SQ.MI.		XKSAT =	0.04	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.25	=	8.2
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.
0.055	VACANT	16.54	DRY	25.00	0.00	0.00	0.35	0.058
0.012	M.F.R.	3.73	NORMAL	25.00	65.00	0.01	0.10	0.004
0.105	M.D.R.	31.78	NORMAL	25.00	45.00	0.05	0.10	0.032
0.080	IND	24.33	NORMAL	20.00	75.00	0.06	0.10	0.024
0.078	PARK	23.63	NORMAL	90.00	0.00	0.00	0.20	0.047
0.330	=TOTAL AREA	OK	AVERAGE =	39.14	TOTAL =	0.12	AVG. =	0.165
					% =	34.97		

PERCENT OF SUBBASIN DRY = 16.54 %
NORMAL = 83.46 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.167

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.053

IMPERVIOUS AREA: URBAN @ 100 % effective = 34.97
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 34.97

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
352	0.330	1.140	0.029	26.00	0.165	0.167	8.20	0.053	34.97

LOSS PARAMETERS FOR SUBBASIN: 353

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Es	0.126	50.69	0.25	-0.305	0.00	0.00
Mp	0.101	40.70	0.25	-0.245	0.00	0.00
Vf	0.011	4.40	0.01	-0.088	0.00	0.00
Mr	0.010	4.21	0.05	-0.055	0.00	0.00

TOTAL = 0.249 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.
0.009	VACANT	3.53	DRY	25.00	0.00	0.00	0.35	0.012
0.012	M.F.R.	4.93	NORMAL	25.00	65.00	0.01	0.10	0.005
0.219	M.D.R.	87.75	NORMAL	25.00	45.00	0.10	0.10	0.088
0.000	IND	0.02	NORMAL	20.00	75.00	0.00	0.10	0.000
0.009	COMM	3.76	NORMAL	20.00	90.00	0.01	0.10	0.004
0.249	=TOTAL AREA	OK	AVERAGE =	24.81	TOTAL =	0.11	AVG. =	0.109
					% =	46.09		

PERCENT OF SUBBASIN
DRY = 3.53 %
NORMAL = 96.47 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.255

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.233

IMPERVIOUS AREA:
URBAN @ 100 % effective = 46.09
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 46.09

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
353	0.249	0.890	0.027	25.00	0.109	0.255	5.05	0.233	46.09

LOSS PARAMETERS FOR SUBBASIN: 354

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Vf	0.079	48.36	0.01	-0.967	0.00	0.00
Mp	0.048	29.47	0.25	-0.177	0.00	0.00
Es	0.025	15.26	0.25	-0.092	0.00	0.00
Mr	0.011	6.91	0.05	-0.090	0.00	0.00

TOTAL = 0.164 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.
0.164	IND	99.81	NORMAL	20.00	75.00	0.12	0.10	0.100
0.164	=TOTAL AREA	OK	AVERAGE =	20.01	TOTAL =	0.12	AVG. =	0.100
					% =	74.90		

PERCENT OF SUBBASIN
DRY = 0.11 %
NORMAL = 99.89 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.056

IMPERVIOUS AREA:
URBAN @ 100 % effective = 74.90
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 74.90

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
354	0.164	0.530	0.027	25.00	0.100	0.150	8.40	0.056	74.92

LOSS PARAMETERS FOR SUBBASIN: 355

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Es	0.019	62.50	0.25	-0.376	0.00	0.00
Vf	0.011	37.50	0.01	-0.750	0.00	0.00
TOTAL =	0.030 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.
0.007	M.D.R.	23.99	NORMAL	25.00	45.00	0.00	0.10	0.024
0.009	IND	31.76	NORMAL	20.00	75.00	0.01	0.10	0.032
0.013	COMM	44.26	NORMAL	20.00	90.00	0.01	0.10	0.044
0.030	=TOTAL AREA	OK	AVERAGE =	21.20	TOTAL =	0.02	AVG. =	0.100
					% =	74.44		

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. = 0.079

IMPERVIOUS AREA:

URBAN @	100 %	effective =	74.44
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		74.44

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
355	0.030	0.200	0.032	140.00	0.100	0.150	8.28	0.079	74.44

LOSS PARAMETERS FOR SUBBASIN: 368

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.290	25.78	0.25	-0.155	0.00	0.00
Mr	0.216	19.27	0.05	-0.251	0.00	0.00
LcA	0.145	12.93	0.25	-0.078	0.00	0.00
Ve	0.097	8.60	0.25	-0.052	0.00	0.00
Es	0.056	5.00	0.25	-0.030	0.00	0.00
Bs	0.021	1.91	0.39	-0.008	0.00	0.00
Th	0.021	1.83	0.04	-0.026	0.00	0.00
Tw	0.012	1.10	0.05	-0.014	0.00	0.00
Tc	0.010	0.86	0.4	-0.003	0.00	0.00
PeA	0.006	0.52	0.37	-0.002	0.00	0.00
Vf	0.250	22.22	0.01	-0.444	0.00	0.00

TOTAL = 1.123 SQ.MI. XKSAT = 0.24 %ROCK= 0.00

DTHETA

Dry = 0.36
Normal = 0.25
Wet = 0

PSIF

= 3.81

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.109	VACANT	9.73	DRY	25.00	0.00	0.00	0.35	0.034
0.085	M.F.R.	7.52	NORMAL	25.00	65.00	0.05	0.10	0.008
0.748	M.D.R.	66.57	NORMAL	25.00	45.00	0.34	0.10	0.067
0.038	IND	3.41	NORMAL	20.00	75.00	0.03	0.10	0.003
0.130	COMM	11.55	NORMAL	20.00	90.00	0.12	0.10	0.012
0.014	PARK	1.22	NORMAL	90.00	0.00	0.00	0.20	0.002
1.123	=TOTAL AREA	OK	AVERAGE =	25.04	TOTAL =	0.54	AVG. =	0.126
					% =	47.80		

PERCENT OF SUBBASIN DRY = 9.73 %
NORMAL = 90.27 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.261

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.280

IMPERVIOUS AREA: URBAN @ 100 % effective = 47.80
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 47.80

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
368	1.123	1.830	0.024	22.00	0.126	0.261	3.81	0.280	47.80

LOSS PARAMETERS FOR SUBBASIN: 375

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.506	48.21	0.05	-0.627	0.00	0.00
LcA	0.183	17.42	0.25	-0.105	0.00	0.00
Mp	0.074	7.02	0.25	-0.042	0.00	0.00
GxA	0.021	1.97	0.23	-0.013	0.00	0.00
Te	0.020	1.94	0.25	-0.012	0.00	0.00
RbA	0.020	1.88	0.26	-0.011	0.00	0.00
Th	0.017	1.64	0.04	-0.023	0.00	0.00
Es	0.016	1.54	0.25	-0.009	0.00	0.00
Tg	0.010	0.92	0.04	-0.013	0.00	0.00
RaA	0.006	0.59	0.39	-0.002	0.00	0.00
Tw	0.048	4.57	0.05	-0.059	0.00	0.00
Vf	0.129	12.31	0.01	-0.246	0.00	0.00

TOTAL = 1.049 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.
0.090	M.F.R.	8.61	NORMAL	25.00	65.00	0.06	0.10	0.009
0.914	M.D.R.	87.12	NORMAL	25.00	45.00	0.41	0.10	0.087
0.045	COMM	4.27	NORMAL	20.00	90.00	0.04	0.10	0.004
1.049	=TOTAL AREA	OK	AVERAGE =	24.79	TOTAL =	0.51	AVG. =	0.100
					% =	48.64		

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 = 48.64
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 48.64

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
375	1.049	1.850	0.022	21.00	0.100	0.150	8.28	0.081	48.64

LOSS PARAMETERS FOR SUBBASIN: 381

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.338	32.38	0.05	-0.421	0.00	0.00
LcA	0.300	28.70	0.25	-0.173	0.00	0.00
Mp	0.170	16.28	0.25	-0.098	0.00	0.00
Tw	0.079	7.52	0.05	-0.098	0.00	0.00
Le	0.045	4.32	0.04	-0.060	0.00	0.00
GgA	0.039	3.72	0.25	-0.022	0.00	0.00
Cp	0.023	2.24	0.4	-0.009	0.00	0.00
Lb	0.011	1.03	0.4	-0.004	0.00	0.00
CrB	0.007	0.62	0.4	-0.002	0.00	0.00
PeA	0.005	0.52	0.37	-0.002	0.00	0.00
Vf	0.028	2.67	0.01	-0.053	0.00	0.00

TOTAL = 1.045 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.
0.040	VACANT	3.85	DRY	25.00	0.00	0.00	0.35	0.013
0.081	M.F.R.	7.79	NORMAL	25.00	65.00	0.05	0.10	0.008
0.693	M.D.R.	66.31	NORMAL	25.00	45.00	0.31	0.10	0.066
0.065	COMM	6.20	NORMAL	20.00	90.00	0.06	0.10	0.006
0.166	PARK	15.84	NORMAL	90.00	0.00	0.00	0.20	0.032
1.045	=TOTAL AREA	OK	AVERAGE =	34.99	TOTAL =	0.42	AVG. =	0.125
					% =	40.49		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.177

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.140

IMPERVIOUS AREA:

URBAN @	100 %	effective =	40.49
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		40.49

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
381	1.045	1.520	0.023	22.00	0.125	0.177	7.32	0.140	40.49

LOSS PARAMETERS FOR SUBBASIN: 386

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.517	48.41	0.25	-0.291	0.00	0.00
TW	0.183	17.08	0.05	-0.222	0.00	0.00
Mr	0.135	12.63	0.05	-0.164	0.00	0.00
Le	0.081	7.57	0.04	-0.106	0.00	0.00
Vf	0.066	6.18	0.01	-0.124	0.00	0.00
Mp	0.029	2.75	0.25	-0.017	0.00	0.00
Tg	0.026	2.41	0.04	-0.034	0.00	0.00
RbA	0.020	1.90	0.26	-0.011	0.00	0.00
Lb	0.011	1.07	0.4	-0.004	0.00	0.00
TOTAL =	1.069 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.
0.477	VACANT	44.63	DRY	25.00	0.00	0.00	0.35	0.156
0.007	M.F.R.	0.67	NORMAL	25.00	65.00	0.00	0.10	0.001
0.502	M.D.R.	46.97	NORMAL	25.00	45.00	0.23	0.10	0.047
0.064	COMM	6.00	NORMAL	20.00	90.00	0.06	0.10	0.006
0.018	PARK	1.72	NORMAL	90.00	0.00	0.00	0.20	0.003
1.069	=TOTAL AREA	OK	AVERAGE =	25.82	TOTAL =	0.29	AVG. =	0.213
					% =	26.97		

PERCENT OF SUBBASIN
DRY = 44.63 %
NORMAL = 55.37 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.255

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.129

IMPERVIOUS AREA:
URBAN @ 100 % effective = 26.97
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 26.97

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
386	1.069	1.580	0.031	18.00	0.213	0.255	7.32	0.129	26.97

LOSS PARAMETERS FOR SUBBASIN: 392

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.533	45.25	0.05	-0.589	0.00	0.00
Vf	0.424	35.96	0.01	-0.719	0.00	0.00
Tw	0.084	7.13	0.05	-0.093	0.00	0.00
Mp	0.056	4.78	0.25	-0.029	0.00	0.00
Ms	0.038	3.25	0.01	-0.065	0.00	0.00
Tg	0.019	1.59	0.04	-0.022	0.00	0.00
LcA	0.013	1.09	0.25	-0.007	0.00	0.00
TrA	0.012	0.98	0.11	-0.009	0.00	0.00

TOTAL = 1.179 SQ.MI. XKSAT = 0.03 %ROCK= 0.00

DTHETA

Dry = 0.25
Normal = 0.13
Wet = 0

PSIF

= 10.1

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.342	VACANT	29.03	DRY	25.00	0.00	0.00	0.35	0.102
0.035	M.F.R.	2.95	NORMAL	25.00	65.00	0.02	0.10	0.003
0.586	M.D.R.	49.71	NORMAL	25.00	45.00	0.26	0.10	0.050
0.074	IND	6.27	NORMAL	20.00	75.00	0.06	0.10	0.006
0.142	COMM	12.05	NORMAL	20.00	90.00	0.13	0.10	0.012
1.179	=TOTAL AREA	OK	AVERAGE =	24.08	TOTAL =	0.47	AVG. =	0.173
					% =	39.83		

PERCENT OF SUBBASIN DRY = 29.03 %
NORMAL = 70.97 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.165

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.035

IMPERVIOUS AREA: URBAN @ 100 % effective = 39.83
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 39.83

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
392	1.179	1.800	0.027	28.00	0.173	0.165	10.10	0.035	39.83

LOSS PARAMETERS FOR SUBBASIN: 393

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.302	41.97	0.05	-0.546	0.00	0.00
LcA	0.142	19.67	0.25	-0.118	0.00	0.00
Vf	0.078	10.83	0.01	-0.217	0.00	0.00
Es	0.076	10.56	0.25	-0.064	0.00	0.00
Tg	0.055	7.61	0.04	-0.106	0.00	0.00
Th	0.034	4.74	0.04	-0.066	0.00	0.00
RS	0.027	3.75	0.4	-0.015	65.00	2.44
RbA	0.006	0.87	0.26	-0.005	0.00	0.00

TOTAL = 0.720 SQ.MI. XKSAT = 0.07 %ROCK= 2.44

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.
0.114	VACANT/HLSLP	15.88	DRY	25.00	0.00	0.00	0.35	0.056
0.543	V.L.D.R	75.42	NORMAL	25.00	15.00	0.08	0.10	0.075
0.018	M.F.R.	2.49	NORMAL	25.00	65.00	0.01	0.10	0.002
0.038	M.D.R.	5.28	NORMAL	25.00	45.00	0.02	0.10	0.005
0.007	COMM	0.94	NORMAL	20.00	90.00	0.01	0.10	0.001
0.720	=TOTAL AREA	OK	AVERAGE =	24.95	TOTAL = % =	0.12 16.15	AVG. =	0.140

PERCENT OF SUBBASIN DRY = 15.88 %
NORMAL = 84.13 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.171

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.082

IMPERVIOUS AREA:
URBAN @ 100 % effective = 16.15
ROCK OUTCROP @ 60 % effective = 1.46
% EFFECTIVE IMP. = 17.62

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
393	0.720	1.600	0.042	23.00	0.140	0.171	8.28	0.082	17.62

LOSS PARAMETERS FOR SUBBASIN: 394

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.202	48.14	0.25	-0.290	0.00	0.00
EsS	0.067	16.02	0.25	-0.096	0.00	0.00
RbA	0.062	14.68	0.26	-0.086	0.00	0.00
Mr	0.046	11.06	0.05	-0.144	0.00	0.00
RbB	0.019	4.58	0.25	-0.028	0.00	0.00
AbA	0.015	3.68	0.38	-0.015	0.00	0.00
Mp	0.008	1.84	0.25	-0.011	0.00	0.00
TOTAL =	0.419 SQ.MI.		XKSAT =	0.21	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.37	=	4.74
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.
0.025	M.F.R.	6.06	NORMAL	25.00	65.00	0.02	0.10	0.006
0.393	M.D.R.	93.93	NORMAL	25.00	45.00	0.18	0.10	0.094
0.419	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL = % =	0.19 46.21	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. = 0.245

IMPERVIOUS AREA:

URBAN @	100 %	effective =	46.21
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		46.21

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
394	0.419	1.400	0.025	21.00	0.100	0.250	4.74	0.245	46.21

LOSS PARAMETERS FOR SUBBASIN: 395

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.296	20.11	0.4	-0.080	65.00	13.07
18	0.199	13.52	0.03	-0.206	0.00	0.00
PrB	0.126	8.56	0.28	-0.047	0.00	0.00
98	0.088	5.99	0.03	-0.091	0.00	0.00
68	0.065	4.41	0.03	-0.067	0.00	0.00
70	0.059	3.98	0.03	-0.061	0.00	0.00
AgB	0.046	3.15	0.4	-0.013	0.00	0.00
Pt	0.043	2.94	0.4	-0.012	0.00	0.00
AfA	0.039	2.65	0.38	-0.011	0.00	0.00
PeA	0.024	1.61	0.37	-0.007	0.00	0.00
110	0.199	13.55	0.03	-0.206	0.00	0.00
101	0.287	19.53	0.03	-0.297	0.00	0.00

TOTAL = 1.470 SQ.MI. XKSAT = 0.08 %ROCK= 13.07

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.
1.470	VACANT/HLSLP	100.00	DRY	25.00	0.00	0.00	0.35	0.350
1.470	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.00	AVG. =	0.350
					% =	0.00		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.300

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.093

IMPERVIOUS AREA: URBAN @ 100 % effective = 0.00
ROCK OUTCROP @ 60 % effective = 7.84

% EFFECTIVE IMP. = 7.84

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
395	1.470	1.880	0.039	65.00	0.350	0.300	8.05	0.093	7.84

LOSS PARAMETERS FOR SUBBASIN: 396

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
AFA	0.035	4.61	0.38	-0.019	0.00	0.00
CO	0.161	21.31	0.29	-0.115	20.00	4.26
LCA	0.299	39.60	0.25	-0.238	0.00	0.00
LCB	0.043	5.73	0.25	-0.035	0.00	0.00
PEA	0.075	9.86	0.37	-0.043	0.00	0.00
PT	0.013	1.68	0.4	-0.007	0.00	0.00
RBA	0.059	7.83	0.26	-0.046	0.00	0.00
RS	0.071	9.38	0.4	-0.037	65.00	6.10

TOTAL = 0.756 SQ.MI. XKSAT = 0.29 %ROCK= 10.36

DTHETA		PSIF	
Dry =	0.35	=	3.71
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.
0.715	VACANT/HLSLP	94.60	DRY	25.00	0.00	0.00	0.35	0.331
0.041	V.L.D.R	5.40	NORMAL	25.00	15.00	0.01	0.10	0.005
0.756	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.01	AVG. =	0.337
					% =	0.81		

PERCENT OF SUBBASIN DRY = 94.60 %
NORMAL = 5.40 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.345

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.338

IMPERVIOUS AREA: URBAN @ 100 % effective = 0.81
ROCK OUTCROP @ 60 % effective = 6.22
% EFFECTIVE IMP. = 7.03

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
396	0.756	1.040	0.043	56.00	0.337	0.345	3.71	0.338	7.03

LOSS PARAMETERS FOR SUBBASIN: 397

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
CO	0.214	26.99	0.29	-0.145	20.00	5.40
EbD	0.156	19.68	0.1	-0.197	0.00	0.00
LcA	0.072	9.12	0.25	-0.055	0.00	0.00
Ae	0.036	4.59	0.39	-0.019	0.00	0.00
AfA	0.026	3.26	0.38	-0.014	0.00	0.00
LcB	0.023	2.93	0.25	-0.018	0.00	0.00
GxB	0.019	2.44	0.24	-0.015	0.00	0.00
Ge	0.008	1.01	0.26	-0.006	0.00	0.00
GgA	0.006	0.76	0.25	-0.005	0.00	0.00
AbA	0.006	0.70	0.38	-0.003	0.00	0.00
RS	0.226	28.52	0.4	-0.114	65.00	18.54

TOTAL = 0.791 SQ.MI. XKSAT = 0.26 %ROCK= 23.94

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.
0.754	VACANT/HLSLP	95.32	DRY	25.00	0.00	0.00	0.35	0.334
0.023	V.L.D.R	2.86	NORMAL	25.00	15.00	0.00	0.10	0.003
0.014	LAKE	1.82	WET	0.00	0.00	0.00	0.00	0.000

0.791 =TOTAL AREA OK AVERAGE = 24.55 TOTAL = 0.00 AVG. = 0.336
% = 0.43

PERCENT OF SUBBASIN DRY = 95.32 %
NORMAL = 2.86 %
WET = 1.82 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.341

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.302

IMPERVIOUS AREA: URBAN @ 100 % effective = 0.43
ROCK OUTCROP @ 60 % effective = 14.36

% EFFECTIVE IMP. = 14.79

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
397	0.791	1.800	0.043	214.00	0.336	0.341	3.55	0.302	14.79

LOSS PARAMETERS FOR SUBBASIN: 398A

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.193	64.00	0.4	-0.255	65.00	41.60
LcA	0.078	25.84	0.25	-0.156	0.00	0.00
Mp	0.017	5.68	0.25	-0.034	0.00	0.00
Vf	0.010	3.35	0.01	-0.067	0.00	0.00
TU	0.003	1.13	0.25	-0.007	0.00	0.00

TOTAL = 0.301 SQ.MI. XKSAT = 0.30 %ROCK= 41.60

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.77

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.237	VACANT/HLSLP	78.55	DRY	25.00	0.00	0.00	0.35	0.275
0.065	ROW	21.45	NORMAL	20.00	90.00	0.06	0.10	0.021
0.301	=TOTAL AREA	OK	AVERAGE =	23.93	TOTAL =	0.06	AVG. =	0.296
					% =	19.31		

PERCENT OF SUBBASIN DRY = 78.55 %
NORMAL = 21.45 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.329

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.346

IMPERVIOUS AREA: URBAN @ 100 % effective = 19.31
ROCK OUTCROP @ 60 % effective = 24.96

% EFFECTIVE IMP. = 44.27

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
398A	0.301	0.630	0.044	110.00	0.296	0.329	3.77	0.346	44.27

LOSS PARAMETERS FOR SUBBASIN: 398B

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.294	33.47	0.4	-0.133	65.00	21.75
LcA	0.180	20.43	0.25	-0.123	0.00	0.00
GgA	0.128	14.51	0.25	-0.087	0.00	0.00
Ge	0.052	5.90	0.26	-0.035	0.00	0.00
Cp	0.048	5.41	0.4	-0.022	0.00	0.00
Es	0.048	5.40	0.25	-0.033	0.00	0.00
Mr	0.023	2.64	0.05	-0.034	0.00	0.00
CrB	0.021	2.40	0.4	-0.010	0.00	0.00
Mp	0.007	0.75	0.25	-0.005	0.00	0.00
AbA	0.006	0.72	0.38	-0.003	0.00	0.00
Tu	0.035	3.99	0.25	-0.024	0.00	0.00
Vf	0.039	4.38	0.01	-0.088	0.00	0.00

TOTAL = 0.879 SQ.MI. XKSAT = 0.25 %ROCK= 21.75

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.
0.304	VACANT\HLSLP	34.60	DRY	25.00	0.00	0.00	0.35	0.121
0.345	M.D.R.	39.23	NORMAL	25.00	45.00	0.16	0.10	0.039
0.032	R.O.W.	3.63	NORMAL	20.00	90.00	0.03	0.10	0.004
0.198	LAKE	22.55	WET	0.00	0.00	0.00	0.00	0.000
0.879	=TOTAL AREA	OK	AVERAGE =	19.18	TOTAL =	0.18	AVG. =	0.164
					% =	20.92		

PERCENT OF SUBBASIN DRY = 34.60 %
NORMAL = 42.86 %
WET = 22.55 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.228

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.275

IMPERVIOUS AREA: URBAN @ 100 % effective = 20.92
ROCK OUTCROP @ 60 % effective = 13.05

% EFFECTIVE IMP. = 33.97

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
398B	0.879	1.890	0.034	26.00	0.164	0.228	3.50	0.275	33.97

LOSS PARAMETERS FOR SUBBASIN: 399

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.180	19.95	0.25	-0.120	0.00	0.00
Mp	0.109	12.02	0.25	-0.072	0.00	0.00
Ae	0.093	10.26	0.39	-0.042	0.00	0.00
GgA	0.088	9.70	0.25	-0.058	0.00	0.00
Ge	0.087	9.60	0.26	-0.056	0.00	0.00
TD	0.064	7.13	1.2	0.006	0.00	0.00
AbA	0.048	5.28	0.38	-0.022	0.00	0.00
Lb	0.029	3.21	0.4	-0.013	0.00	0.00
Cb	0.023	2.51	0.4	-0.010	0.00	0.00
Bs	0.020	2.26	0.39	-0.009	0.00	0.00
Ma	0.018	1.94	0.4	-0.008	0.00	0.00
RbA	0.011	1.22	0.26	-0.007	0.00	0.00
Bt	0.011	1.20	0.25	-0.007	0.00	0.00
Mr	0.011	1.17	0.05	-0.015	0.00	0.00
PeB	0.009	1.04	0.38	-0.004	0.00	0.00
Pa	0.007	0.79	0.4	-0.003	0.00	0.00
RbB	0.007	0.76	0.25	-0.005	0.00	0.00
Te	0.015	1.61	0.25	-0.010	0.00	0.00
TfA	0.008	0.92	0.37	-0.004	0.00	0.00
Th	0.012	1.37	0.04	-0.019	0.00	0.00
Vf	0.043	4.75	0.01	-0.095	0.00	0.00
Vh	0.012	1.29	0.27	-0.007	0.00	0.00

TOTAL = 0.903 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.
0.638	VACANT	70.71	DRY	25.00	0.00	0.00	0.35	0.247
0.102	V.L.D.R	11.24	NORMAL	25.00	15.00	0.02	0.10	0.011
0.047	M.F.R.	5.23	NORMAL	25.00	65.00	0.03	0.10	0.005
0.116	M.D.R.	12.82	NORMAL	25.00	45.00	0.05	0.10	0.013
0.903	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.10	AVG. =	0.277
					% =	10.85		

PERCENT OF SUBBASIN DRY = 70.71 %
NORMAL = 29.29 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.321

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.303

IMPERVIOUS AREA: URBAN @ 100 % effective = 10.85
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 10.85

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
399	0.903	1.820	0.039	32.00	0.277	0.321	3.55	0.303	10.85

LOSS PARAMETERS FOR SUBBASIN: 400

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.064	15.78	0.25	-0.095	0.00	0.00
GgA	0.051	12.61	0.25	-0.076	0.00	0.00
Aa	0.047	11.65	0.26	-0.068	0.00	0.00
Ge	0.039	9.58	0.26	-0.056	0.00	0.00
Vh	0.038	9.36	0.27	-0.053	0.00	0.00
Cp	0.028	6.94	0.4	-0.028	0.00	0.00
Te	0.026	6.45	0.25	-0.039	0.00	0.00
Bs	0.022	5.32	0.39	-0.022	0.00	0.00
CrB	0.019	4.68	0.4	-0.019	0.00	0.00
Tc	0.013	3.15	0.4	-0.013	0.00	0.00
Cb	0.012	3.00	0.4	-0.012	0.00	0.00
Vf	0.010	2.56	0.01	-0.051	0.00	0.00
Bt	0.010	2.51	0.25	-0.015	0.00	0.00
TD	0.010	2.46	1.2	0.002	0.00	0.00
Mp	0.008	2.04	0.25	-0.012	0.00	0.00
Ma	0.008	1.90	0.4	-0.008	0.00	0.00

TOTAL = 0.406 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.
0.309	VACANT	76.16	DRY	25.00	0.00	0.00	0.35	0.267
0.053	IND	12.95	NORMAL	20.00	75.00	0.04	0.10	0.013
0.013	PARK	3.23	NORMAL	90.00	0.00	0.00	0.20	0.006
0.031	ROW CROP	7.66	NORMAL	80.00	0.00	0.00	0.50	0.038
0.406	=TOTAL AREA	OK	AVERAGE =	30.66	TOTAL =	0.04	AVG. =	0.324
					% =	9.71		

PERCENT OF SUBBASIN DRY = 76.16 %
NORMAL = 23.84 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.326

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.331

IMPERVIOUS AREA: URBAN @ 100 % effective = 9.71
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 9.71

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
400	0.406	1.480	0.043	28.00	0.324	0.326	3.61	0.331	9.71

LOSS PARAMETERS FOR SUBBASIN: 401

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.476	40.64	0.25	-0.245	0.00	0.00
GgA	0.194	16.57	0.25	-0.100	0.00	0.00
Mr	0.064	5.48	0.05	-0.071	0.00	0.00
Aa	0.061	5.24	0.26	-0.031	0.00	0.00
Mp	0.050	4.24	0.25	-0.026	0.00	0.00
RbA	0.041	3.49	0.26	-0.020	0.00	0.00
TD	0.030	2.58	1.2	0.002	0.00	0.00
Te	0.026	2.19	0.25	-0.013	0.00	0.00
Cb	0.020	1.72	0.4	-0.007	0.00	0.00
Tg	0.015	1.27	0.04	-0.018	0.00	0.00
LcB	0.013	1.07	0.25	-0.006	0.00	0.00
Tc	0.013	1.07	0.4	-0.004	0.00	0.00
Tu	0.009	0.80	0.25	-0.005	0.00	0.00
GxA	0.009	0.79	0.23	-0.005	0.00	0.00
TrB	0.009	0.73	0.13	-0.007	0.00	0.00
Cp	0.007	0.63	0.4	-0.003	0.00	0.00
PeB	0.007	0.59	0.38	-0.002	0.00	0.00
Tw	0.112	9.58	0.05	-0.125	0.00	0.00
Vf	0.016	1.33	0.01	-0.027	0.00	0.00
TOTAL =	1.172 SQ.MI.		XKSAT =	0.19	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.38	=	5.36
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.
0.434	VACANT	37.00	DRY	25.00	0.00	0.00	0.35	0.130
0.194	V.L.D.R	16.57	NORMAL	25.00	15.00	0.03	0.10	0.017
0.128	L.D.R.	10.89	NORMAL	25.00	25.00	0.03	0.10	0.011
0.018	M.F.R.	1.54	NORMAL	25.00	65.00	0.01	0.10	0.002
0.156	M.D.R.	13.30	NORMAL	25.00	45.00	0.07	0.10	0.013
0.139	COMM	11.90	NORMAL	20.00	90.00	0.13	0.10	0.012
0.014	PARK	1.17	NORMAL	90.00	0.00	0.00	0.20	0.002
0.090	ROW CROP	7.64	NORMAL	80.00	0.00	0.00	0.50	0.038
1.172	=TOTAL AREA	OK	AVERAGE =	29.37	TOTAL =	0.27	AVG. =	0.224
					% =	22.90		

PERCENT OF SUBBASIN DRY = 37.00 %
NORMAL = 63.00 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.298

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.230

IMPERVIOUS AREA: URBAN @ 100 % effective = 22.90
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 22.90

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
401	1.172	1.400	0.035	28.00	0.224	0.298	5.36	0.230	22.90

LOSS PARAMETERS FOR SUBBASIN: 402

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.271	36.31	0.25	-0.219	0.00	0.00
Mr	0.131	17.51	0.05	-0.228	0.00	0.00
Le	0.080	10.65	0.04	-0.149	0.00	0.00
Te	0.043	5.71	0.25	-0.034	0.00	0.00
GxA	0.034	4.54	0.23	-0.029	0.00	0.00
RbA	0.026	3.45	0.26	-0.020	0.00	0.00
PeA	0.013	1.67	0.37	-0.007	0.00	0.00
Cp	0.010	1.30	0.4	-0.005	0.00	0.00
Es	0.008	1.03	0.25	-0.006	0.00	0.00
CrB	0.007	0.88	0.4	-0.004	0.00	0.00
Tg	0.012	1.55	0.04	-0.022	0.00	0.00
TrA	0.007	0.88	0.11	-0.008	0.00	0.00
TrB	0.016	2.09	0.13	-0.018	0.00	0.00
Tw	0.067	8.91	0.05	-0.116	0.00	0.00
Vf	0.026	3.51	0.01	-0.070	0.00	0.00

TOTAL = 0.747 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.
0.092	VACANT	12.26	DRY	25.00	0.00	0.00	0.35	0.043
0.027	V.L.D.R	3.55	NORMAL	25.00	15.00	0.00	0.10	0.004
0.048	COMM	6.38	NORMAL	20.00	90.00	0.04	0.10	0.006
0.581	ROW CROP	77.81	NORMAL	80.00	0.00	0.00	0.50	0.389
0.747	=TOTAL AREA	OK	AVERAGE =	67.48	TOTAL = % =	0.05 6.28	AVG. =	0.442

PERCENT OF SUBBASIN DRY = 12.26 %
NORMAL = 87.74 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.212

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.196

IMPERVIOUS AREA: URBAN @ 100 % effective = 6.28
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 6.28

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
402	0.747	1.500	0.042	29.00	0.442	0.212	7.14	0.196	6.28

LOSS PARAMETERS FOR SUBBASIN: 403

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.576	57.57	0.05	-0.749	0.00	0.00
LcA	0.120	12.02	0.25	-0.072	0.00	0.00
Mp	0.080	8.01	0.25	-0.048	0.00	0.00
Tu	0.053	5.32	0.25	-0.032	0.00	0.00
Vf	0.053	5.25	0.01	-0.105	0.00	0.00
GxA	0.048	4.81	0.23	-0.031	0.00	0.00
Tw	0.031	3.13	0.05	-0.041	0.00	0.00
Cp	0.020	2.01	0.4	-0.008	0.00	0.00
PeA	0.012	1.15	0.37	-0.005	0.00	0.00
Le	0.007	0.74	0.04	-0.010	0.00	0.00

TOTAL = 1.001 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.
0.114	VACANT	11.35	DRY	25.00	0.00	0.00	0.35	0.040
0.008	M.F.R.	0.78	NORMAL	25.00	65.00	0.01	0.10	0.001
0.565	M.D.R.	56.44	NORMAL	25.00	45.00	0.25	0.10	0.056
0.027	COMM	2.66	NORMAL	20.00	90.00	0.02	0.10	0.003
0.182	PARK	18.20	NORMAL	90.00	0.00	0.00	0.20	0.036
0.041	LAKE	4.06	WET	0.00	0.00	0.00	0.00	0.000
0.065	ROW CROP	6.51	NORMAL	80.00	0.00	0.00	0.50	0.033
1.001	=TOTAL AREA	OK	AVERAGE =	39.26	TOTAL =	0.28	AVG. =	0.169
					% =	28.30		

PERCENT OF SUBBASIN DRY = 11.35 %
NORMAL = 88.65 %
WET = 4.06 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.167

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.106

IMPERVIOUS AREA: URBAN @ 100 % effective = 28.30
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 28.30

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
403	1.001	1.230	0.027	20.00	0.169	0.167	8.05	0.106	28.30

LOSS PARAMETERS FOR SUBBASIN: 404

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.170	32.73	0.25	-0.197	0.00	0.00
GgA	0.098	18.96	0.25	-0.114	0.00	0.00
PeA	0.086	16.61	0.37	-0.072	0.00	0.00
Mr	0.065	12.50	0.05	-0.163	0.00	0.00
TD	0.031	5.92	1.2	0.005	0.00	0.00
Th	0.028	5.34	0.04	-0.075	0.00	0.00
Cb	0.018	3.53	0.4	-0.014	0.00	0.00
Es	0.010	1.99	0.25	-0.012	0.00	0.00
GxA	0.007	1.37	0.23	-0.009	0.00	0.00
Mp	0.006	1.06	0.25	-0.006	0.00	0.00

TOTAL = 0.519 SQ.MI. XKSAT = 0.22 %ROCK= 0.00

DTHETA

Dry = 0.37
Normal = 0.25
Wet = 0

PSIF

= 4.43

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.246	VACANT	47.37	DRY	25.00	0.00	0.00	0.35	0.166
0.254	L.D.R.	49.03	NORMAL	25.00	25.00	0.06	0.10	0.049
0.019	COMM	3.61	NORMAL	20.00	90.00	0.02	0.10	0.004
0.519	=TOTAL AREA	OK	AVERAGE =	24.82	TOTAL =	0.08	AVG. =	0.218
					% =	15.50		

PERCENT OF SUBBASIN
DRY = 47.37 %
NORMAL = 52.63 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.307

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.256

IMPERVIOUS AREA:
URBAN @ 100 % effective = 15.50
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 15.50

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
404	0.519	1.430	0.045	24.00	0.218	0.307	4.43	0.256	15.50

LOSS PARAMETERS FOR SUBBASIN: 405

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
TD	0.038	31.89	1.2	0.025	0.00	0.00
Aa	0.034	28.41	0.26	-0.166	0.00	0.00
AbA	0.024	20.70	0.38	-0.087	0.00	0.00
GgA	0.022	19.00	0.25	-0.114	0.00	0.00

TOTAL = 0.118 SQ.MI. XKSAT = 0.45 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 4.18

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.110	VACANT	93.55	DRY	25.00	0.00	0.00	0.35	0.327
0.008	R.O.W.	6.45	NORMAL	20.00	90.00	0.01	0.10	0.006
0.118	=TOTAL AREA	OK	AVERAGE =	24.68	TOTAL =	0.01	AVG. =	0.334
					% =	5.80		

PERCENT OF SUBBASIN DRY = 93.55 %
NORMAL = 6.45 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.344

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.523

IMPERVIOUS AREA: URBAN @ 100 % effective = 5.80
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 5.80

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
405	0.118	0.610	0.053	21.00	0.334	0.344	4.18	0.523	5.80

Green-Ampt Parameters
(Future Condition)

TABLE 11

Average Green-Ampt Parameters (Future Conditions)

Sub-Basin	IA(in)	DTHETA	PSIF(in)	XKSAT(in/hr)	RTIMP(%)
350	0.131	0.260	3.820	0.375	46.040
351	0.100	0.100	9.400	0.022	83.920
352	0.126	0.130	10.100	0.040	49.090
353	0.100	0.250	5.050	0.232	49.060
354	0.100	0.150	8.400	0.056	76.650
355	0.100	0.150	8.600	0.068	66.400
356	0.107	0.158	7.500	0.120	27.200
357	0.100	0.250	4.740	0.244	47.130
358	0.139	0.266	4.120	0.273	31.650
359	0.116	0.198	8.050	0.093	18.040
360	0.116	0.281	3.710	0.336	27.760
361	0.143	0.311	3.550	0.325	17.770
362	0.094	0.230	4.120	0.254	37.280
363	0.138	0.313	3.980	0.392	54.570
364	0.120	0.254	4.740	0.251	65.740
365	0.104	0.232	6.780	0.156	88.730
366	0.100	0.150	8.280	0.078	88.480
368	0.102	0.250	3.810	0.280	55.880
369	0.098	0.150	8.280	0.082	47.750
370	0.117	0.190	7.140	0.153	42.260
371	0.114	0.170	7.320	0.129	57.460
372	0.100	0.170	7.320	0.122	90.000
373	0.109	0.253	4.430	0.255	41.130
374	0.098	0.150	8.050	0.103	40.180
375	0.120	0.258	4.430	0.259	33.830
376	0.135	0.263	3.820	0.351	76.150
377	0.100	0.250	5.050	0.230	40.790

LOSS PARAMETERS FOR SUBBASIN: 350F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.094	24.05	0.25	-0.145	0.00	0.00
Ae	0.092	23.59	0.39	-0.096	0.00	0.00
LcA	0.049	12.60	0.25	-0.076	0.00	0.00
AbA	0.047	12.14	0.38	-0.051	0.00	0.00
TD	0.027	6.84	1.2	0.005	0.00	0.00
GgA	0.019	4.89	0.25	-0.029	0.00	0.00
Ge	0.016	4.10	0.26	-0.024	0.00	0.00
RbA	0.011	2.79	0.26	-0.016	0.00	0.00
Cb	0.010	2.59	0.4	-0.010	0.00	0.00
RbB	0.007	1.77	0.25	-0.011	0.00	0.00
Vf	0.007	1.66	0.01	-0.033	0.00	0.00
Th	0.004	1.13	0.04	-0.016	0.00	0.00
Ma	0.002	0.54	0.4	-0.002	0.00	0.00
Bs	0.002	0.54	0.39	-0.002	0.00	0.00
Lb	0.002	0.49	0.4	-0.002	0.00	0.00
Tu	0.001	0.31	0.25	-0.002	0.00	0.00

TOTAL = 0.391 SQ.MI. XKSAT = 0.31 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.35	=	3.82
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.
0.039	DRAINAGEWAY	9.93	DRY	25.00	0.00	0.00	0.35	0.035
0.127	M.F.R.	32.62	NORMAL	25.00	65.00	0.08	0.10	0.033
0.183	M.D.R.	46.90	NORMAL	25.00	45.00	0.08	0.10	0.047
0.014	COMM	3.58	NORMAL	20.00	90.00	0.01	0.10	0.004
0.002	ROW	0.56	NORMAL	20.00	90.00	0.00	0.10	0.001
0.025	SCHOOL	6.40	NORMAL	90.00	0.00	0.00	0.20	0.013
0.391	=TOTAL AREA	OK	AVERAGE =	28.95	TOTAL =	0.18	AVG. =	0.131
					% =	46.04		

PERCENT OF SUBBASIN DRY = 9.93 %
NORMAL = 90.07 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.260

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.375

```
IMPERVIOUS AREA:                URBAN @      100 % effective =  46.04
                          ROCK OUTCROP @      60 % effective =   0.00
                                             --------------------------
                                              % EFFECTIVE IMP. =  46.04
```

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
350F	0.391	0.920	0.051	37.00	0.131	0.260	3.82	0.375	46.04

LOSS PARAMETERS FOR SUBBASIN: 351F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Vf	0.044	71.85	0.01	-1.437	0.00	0.00
Mr	0.014	23.08	0.05	-0.300	0.00	0.00
Mp	0.003	5.07	0.25	-0.031	0.00	0.00
TOTAL =	0.061 SQ.MI.		XKSAT =	0.02	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.2	=	9.4
Normal =	0.1		
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.
0.025	IND	40.45	NORMAL	20.00	75.00	0.02	0.10	0.040
0.037	ROW	59.53	NORMAL	20.00	90.00	0.03	0.10	0.060
0.061	=TOTAL AREA	OK	AVERAGE =	20.00	TOTAL =	0.05	AVG. =	0.100
					% =	83.92		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.100

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.022

IMPERVIOUS AREA:
URBAN @ 100 % effective = 83.92
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 83.92

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
351F	0.061	0.450	0.030	20.00	0.100	0.100	9.40	0.022	83.92

LOSS PARAMETERS FOR SUBBASIN: 352F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Vf	0.152	46.97	0.01	-0.939	0.00	0.00
Mr	0.077	23.86	0.05	-0.310	0.00	0.00
Es	0.038	11.62	0.25	-0.070	0.00	0.00
Mp	0.023	7.20	0.25	-0.043	0.00	0.00
Tw	0.018	5.41	0.05	-0.070	0.00	0.00
LcA	0.010	3.18	0.25	-0.019	0.00	0.00
RbA	0.006	1.76	0.26	-0.010	0.00	0.00

TOTAL = 0.324 SQ.MI. XKSAT = 0.03 %ROCK= 0.00

DTHETA

Dry = 0.25
Normal = 0.13
Wet = 0

PSIF

= 10.1

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	M.F.R.	2.93	NORMAL	25.00	65.00	0.01	0.10	0.003
0.095	M.D.R.	29.25	NORMAL	25.00	45.00	0.04	0.10	0.029
0.081	IND	24.93	NORMAL	20.00	75.00	0.06	0.10	0.025
0.055	COMM/ROW	17.02	NORMAL	20.00	90.00	0.05	0.10	0.017
0.084	PARK	25.86	NORMAL	90.00	0.00	0.00	0.20	0.052
0.324	=TOTAL AREA	OK	AVERAGE =	39.71	TOTAL =	0.16	AVG. =	0.126
					% =	49.09		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.130

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.040

IMPERVIOUS AREA:
URBAN @ 100 % effective = 49.09
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 49.09

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
352F	0.324	1.250	0.026	22.00	0.126	0.130	10.10	0.040	49.09

LOSS PARAMETERS FOR SUBBASIN: 353F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Es	0.122	50.35	0.25	-0.303	0.00	0.00
Mp	0.099	40.79	0.25	-0.246	0.00	0.00
Vf	0.011	4.53	0.01	-0.091	0.00	0.00
Mr	0.011	4.33	0.05	-0.056	0.00	0.00
TOTAL =	0.243 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.
0.012	M.F.R.	4.99	NORMAL	25.00	65.00	0.01	0.10	0.005
0.214	M.D.R.	88.21	NORMAL	25.00	45.00	0.10	0.10	0.088
0.017	COMM/ROW	6.80	NORMAL	20.00	90.00	0.01	0.10	0.007
0.243	=TOTAL AREA	OK	AVERAGE =	24.66	TOTAL =	0.12	AVG. =	0.100
					% =	49.06		

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. = 0.232

IMPERVIOUS AREA: URBAN @ 100 % effective = 49.06
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 49.06

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
353F	0.243	0.850	0.026	26.00	0.100	0.250	5.05	0.232	49.06

LOSS PARAMETERS FOR SUBBASIN: 354F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Vf	0.079	48.38	0.01	-0.968	0.00	0.00
Mp	0.048	29.47	0.25	-0.177	0.00	0.00
Es	0.025	15.25	0.25	-0.092	0.00	0.00
Mr	0.011	6.89	0.05	-0.090	0.00	0.00

TOTAL = 0.164 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.
0.146	IND	88.96	NORMAL	20.00	75.00	0.11	0.10	0.089
0.018	ROW	11.03	NORMAL	20.00	90.00	0.02	0.10	0.011
0.164	=TOTAL AREA	OK	AVERAGE =	20.00	TOTAL =	0.13	AVG. =	0.100
					% =	76.65		

PERCENT OF SUBBASIN
DRY = 0.01 %
NORMAL = 99.99 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.056

IMPERVIOUS AREA:
URBAN @ 100 % effective = 76.65
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 76.65

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
354F	0.164	0.530	0.027	25.00	0.100	0.150	8.40	0.056	76.65

LOSS PARAMETERS FOR SUBBASIN: 355F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.537	45.27	0.25	-0.273	0.00	0.00
Vf	0.424	35.75	0.01	-0.715	0.00	0.00
Tw	0.084	7.08	0.05	-0.092	0.00	0.00
Mp	0.060	5.05	0.25	-0.030	0.00	0.00
Ms	0.038	3.23	0.01	-0.065	0.00	0.00
Tg	0.019	1.58	0.04	-0.022	0.00	0.00
LcA	0.013	1.08	0.25	-0.006	0.00	0.00
TrA	0.012	0.97	0.11	-0.009	0.00	0.00

TOTAL = 1.187 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.
0.239	M.F.R.	20.14	NORMAL	25.00	65.00	0.16	0.10	0.020
0.432	M.D.R.	36.42	NORMAL	25.00	45.00	0.19	0.10	0.036
0.172	IND	14.46	NORMAL	20.00	75.00	0.13	0.10	0.014
0.344	COMM	28.97	NORMAL	20.00	90.00	0.31	0.10	0.029
1.187	=TOTAL AREA	OK	AVERAGE =	22.83	TOTAL =	0.79	AVG. =	0.100
					% =	66.40		

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. = 0.068

IMPERVIOUS AREA: URBAN @ 100 % effective = 66.40
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 66.40

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
355F	1.187	1.830	0.022	24.00	0.100	0.150	8.60	0.068	66.40

LOSS PARAMETERS FOR SUBBASIN: 356F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.302	41.97	0.05	-0.546	0.00	0.00
LcA	0.142	19.67	0.25	-0.118	0.00	0.00
Vf	0.078	10.83	0.25	-0.065	0.00	0.00
Es	0.076	10.56	0.25	-0.064	0.00	0.00
Tg	0.055	7.61	0.04	-0.106	0.00	0.00
Th	0.034	4.74	0.04	-0.066	0.00	0.00
RS	0.027	3.75	0.4	-0.015	65.00	2.44
RbA	0.006	0.87	0.26	-0.005	0.00	0.00

TOTAL = 0.720 SQ.MI. XKSAT = 0.10 %ROCK= 2.44

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.
0.029	HILLSLOPE	4.03	DRY	25.00	0.00	0.00	0.15	0.006
0.457	V.L.D.R	63.47	NORMAL	25.00	15.00	0.07	0.10	0.063
0.061	M.F.R.	8.50	NORMAL	25.00	65.00	0.04	0.10	0.008
0.108	M.D.R.	15.00	NORMAL	25.00	45.00	0.05	0.10	0.015
0.032	COMM	4.39	NORMAL	20.00	90.00	0.03	0.10	0.004
0.033	PARK/SCHOOL	4.61	NORMAL	90.00	0.00	0.00	0.20	0.009
0.720	=TOTAL AREA	OK	AVERAGE =	27.78	TOTAL =	0.19	AVG. =	0.107
					% =	25.74		

PERCENT OF SUBBASIN
DRY = 4.04 %
NORMAL = 95.96 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.158

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.120

IMPERVIOUS AREA:
URBAN @ 100 % effective = 25.74
ROCK OUTCROP @ 60 % effective = 1.46

% EFFECTIVE IMP. = 27.20

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
356F	0.720	1.700	0.035	21.00	0.107	0.158	7.50	0.120	27.20

LOSS PARAMETERS FOR SUBBASIN: 357F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.200	47.90	0.25	-0.288	0.00	0.00
Es	0.067	16.01	0.25	-0.096	0.00	0.00
RbA	0.062	14.81	0.26	-0.087	0.00	0.00
Mr	0.046	11.12	0.05	-0.145	0.00	0.00
RbB	0.019	4.61	0.25	-0.028	0.00	0.00
AbA	0.015	3.70	0.38	-0.016	0.00	0.00
Mp	0.008	1.85	0.25	-0.011	0.00	0.00

TOTAL = 0.417 SQ.MI. XKSAT = 0.21 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.37	=	4.74
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.
0.010	M.F.R.	2.30	NORMAL	25.00	65.00	0.01	0.10	0.002
0.392	M.D.R.	93.98	NORMAL	25.00	45.00	0.18	0.10	0.094
0.016	COMM	3.72	NORMAL	20.00	90.00	0.01	0.10	0.004
0.417	=TOTAL AREA	OK	AVERAGE =	24.81	TOTAL = % =	0.20 47.13	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. = 0.244

IMPERVIOUS AREA:
URBAN @ 100 % effective = 47.13
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 47.13

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
357F	0.417	1.400	0.025	21.00	0.100	0.250	4.74	0.244	47.13

LOSS PARAMETERS FOR SUBBASIN: 358F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.132	25.65	0.25	-0.154	0.00	0.00
Ge	0.070	13.61	0.26	-0.080	0.00	0.00
GgA	0.068	13.19	0.25	-0.079	0.00	0.00
TD	0.033	6.42	1.2	0.005	0.00	0.00
Lb	0.028	5.49	0.4	-0.022	0.00	0.00
Bs	0.019	3.76	0.39	-0.015	0.00	0.00
Ma	0.018	3.47	0.4	-0.014	0.00	0.00
Te	0.014	2.79	0.25	-0.017	0.00	0.00
Mp	0.014	2.71	0.25	-0.016	0.00	0.00
Cb	0.013	2.42	0.4	-0.010	0.00	0.00
Bt	0.011	2.07	0.25	-0.012	0.00	0.00
Mr	0.011	2.06	0.05	-0.027	0.00	0.00
PeB	0.009	1.82	0.38	-0.008	0.00	0.00
TfA	0.008	1.61	0.37	-0.007	0.00	0.00
Th	0.008	1.53	0.04	-0.021	0.00	0.00
Pa	0.007	1.40	0.4	-0.006	0.00	0.00
AdB	0.004	0.74	0.4	-0.003	0.00	0.00
Vf	0.036	7.02	0.01	-0.140	0.00	0.00
Vh	0.012	2.23	0.27	-0.013	0.00	0.00

TOTAL = 0.516 SQ.MI. XKSAT = 0.23 %ROCK= 0.00

DTHETA

Dry =	0.36
Normal =	0.25
Wet =	0

PSIF

= 4.12

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.075	DRAINAGEWAY	14.57	DRY	25.00	0.00	0.00	0.35	0.051
0.101	V.L.D.R	19.61	NORMAL	25.00	15.00	0.02	0.10	0.020
0.321	M.D.R.	62.16	NORMAL	25.00	45.00	0.14	0.10	0.062
0.004	ROW	0.81	NORMAL	20.00	90.00	0.00	0.10	0.001
0.015	SCHOOL/PARK	2.85	NORMAL	90.00	0.00	0.00	0.20	0.006
0.516	=TOTAL AREA	OK	AVERAGE =	26.81	TOTAL =	0.16	AVG. =	0.139
					% =	31.65		

PERCENT OF SUBBASIN

DRY =	14.57 %
NORMAL =	85.43 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.266

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.273

IMPERVIOUS AREA:

URBAN @	100 % effective =	31.65
ROCK OUTCROP @	60 % effective =	0.00
	% EFFECTIVE IMP. =	31.65

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
358F	0.516	1.470	0.031	29.00	0.139	0.266	4.12	0.273	31.65

LOSS PARAMETERS FOR SUBBASIN: 359F

Soil Survey Used CENTRAL & AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.296	20.11	0.4	-0.080	65.00	13.07
18	0.199	13.52	0.03	-0.206	0.00	0.00
PrB	0.126	8.56	0.28	-0.047	0.00	0.00
98	0.088	5.99	0.03	-0.091	0.00	0.00
68	0.065	4.41	0.03	-0.067	0.00	0.00
70	0.059	3.98	0.03	-0.061	0.00	0.00
AgB	0.046	3.15	0.4	-0.013	0.00	0.00
PT	0.043	2.94	0.4	-0.012	0.00	0.00
AfA	0.039	2.65	0.38	-0.011	0.00	0.00
PeA	0.024	1.61	0.37	-0.007	0.00	0.00
110	0.199	13.55	0.03	-0.206	0.00	0.00
101	0.287	19.53	0.03	-0.297	0.00	0.00

TOTAL = 1.470 SQ.MI. XKSAT = 0.08 %ROCK= 13.07

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.
0.473	HILLSLOPE	32.17	DRY	25.00	0.00	0.00	0.15	0.048
0.997	V.L.D.R	67.80	NORMAL	25.00	15.00	0.15	0.10	0.068
0.001	COMM	0.03	NORMAL	20.00	90.00	0.00	0.10	0.000
1.470	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.15	AVG. =	0.116
					% =	10.20		

PERCENT OF SUBBASIN DRY = 32.17 %
NORMAL = 67.83 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.198

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.093

IMPERVIOUS AREA: URBAN @ 100 % effective = 10.20
ROCK OUTCROP @ 60 % effective = 7.84

% EFFECTIVE IMP. = 18.04

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
359F	1.470	1.880	0.021	65.00	0.116	0.198	8.05	0.093	18.04

LOSS PARAMETERS FOR SUBBASIN: 360F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.299	39.60	0.25	-0.238	0.00	0.00
CO	0.161	21.31	0.29	-0.115	20.00	4.26
PeA	0.075	9.86	0.37	-0.043	0.00	0.00
RS	0.071	9.38	0.4	-0.037	65.00	6.10
RbA	0.059	7.83	0.26	-0.046	0.00	0.00
LcB	0.043	5.73	0.25	-0.035	0.00	0.00
AfA	0.035	4.61	0.38	-0.019	0.00	0.00
PT	0.013	1.68	0.4	-0.007	0.00	0.00

TOTAL = 0.756 SQ.MI. XKSAT = 0.29 %ROCK= 10.36

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.71

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.237	HILLSLOPE	31.38	DRY	25.00	0.00	0.00	0.15	0.047
0.387	V.L.D.R	51.27	NORMAL	25.00	15.00	0.06	0.10	0.051
0.053	M.F.R.	7.07	NORMAL	25.00	65.00	0.03	0.10	0.007
0.078	COMM	10.28	NORMAL	20.00	90.00	0.07	0.10	0.010
0.756	=TOTAL AREA	OK	AVERAGE =	24.49	TOTAL =	0.16	AVG. =	0.116
					% =	21.54		

PERCENT OF SUBBASIN

DRY = 31.38 %
NORMAL = 68.62 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.281

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.336

IMPERVIOUS AREA:

URBAN @ 100 % effective = 21.54
ROCK OUTCROP @ 60 % effective = 6.22

% EFFECTIVE IMP. = 27.76

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
360F	0.756	1.040	0.040	56.00	0.116	0.281	3.71	0.336	27.76

LOSS PARAMETERS FOR SUBBASIN: 361F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
CO	0.214	26.99	0.29	-0.145	20.00	5.40
EbD	0.156	19.68	0.1	-0.197	0.00	0.00
LcA	0.072	9.12	0.25	-0.055	0.00	0.00
Ae	0.036	4.59	0.39	-0.019	0.00	0.00
AfA	0.026	3.26	0.38	-0.014	0.00	0.00
LcB	0.023	2.93	0.25	-0.018	0.00	0.00
GxB	0.019	2.44	0.24	-0.015	0.00	0.00
Ge	0.008	1.01	0.26	-0.006	0.00	0.00
GgA	0.006	0.76	0.25	-0.005	0.00	0.00
AbA	0.006	0.70	0.38	-0.003	0.00	0.00
RS	0.226	28.52	0.4	-0.114	65.00	18.54
TOTAL =	0.791 SQ.MI.		XKSAT =	0.26	%ROCK=	23.94

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.
0.516	HILLSLOPE	65.25	DRY	25.00	0.00	0.00	0.15	0.098
0.156	V.L.D.R	19.66	NORMAL	25.00	15.00	0.02	0.10	0.020
0.002	M.F.R.	0.28	NORMAL	25.00	65.00	0.00	0.10	0.000
0.005	M.D.R.	0.61	NORMAL	25.00	45.00	0.00	0.10	0.001
0.098	PARK	12.40	NORMAL	90.00	0.00	0.00	0.20	0.025
0.014	LAKE	1.81	WET	0.00	0.00	0.00	0.00	0.000
0.791	=TOTAL AREA	OK	AVERAGE =	32.61	TOTAL =	0.03	AVG. =	0.143
					% =	3.40		

PERCENT OF SUBBASIN
DRY = 65.25 %
NORMAL = 32.95 %
WET = 1.81 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.311

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.325

IMPERVIOUS AREA:
URBAN @ 100 % effective = 3.40
ROCK OUTCROP @ 60 % effective = 14.36

% EFFECTIVE IMP. = 17.77

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
361F	0.791	1.800	0.040	214.00	0.143	0.311	3.55	0.325	17.77

LOSS PARAMETERS FOR SUBBASIN: 362F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.185	20.08	0.25	-0.121	0.00	0.00
GgA	0.127	13.79	0.25	-0.083	0.00	0.00
Ge	0.052	5.64	0.26	-0.033	0.00	0.00
Cp	0.047	5.12	0.4	-0.020	0.00	0.00
Es	0.047	5.10	0.25	-0.031	0.00	0.00
Mr	0.030	3.26	0.05	-0.042	0.00	0.00
CrB	0.021	2.28	0.4	-0.009	0.00	0.00
Mp	0.007	0.76	0.25	-0.005	0.00	0.00
AbA	0.006	0.65	0.38	-0.003	0.00	0.00
RbA	0.005	0.54	0.26	-0.003	0.00	0.00
RS	0.292	31.70	0.4	-0.126	65.00	20.60
Tu	0.035	3.80	0.25	-0.023	0.00	0.00
Vf	0.067	7.27	0.01	-0.145	0.00	0.00

TOTAL = 0.921 SQ.MI. XKSAT = 0.23 %ROCK= 20.60

DTHETA

Dry = 0.36
Normal = 0.25
Wet = 0

PSIF

= 4.12

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.286	HILLSLOPE	31.05	DRY	25.00	0.00	0.00	0.15	0.047
0.027	M.F.R.	2.93	NORMAL	25.00	65.00	0.02	0.10	0.003
0.345	M.D.R.	37.46	NORMAL	25.00	45.00	0.16	0.10	0.037
0.063	ROW	6.84	NORMAL	20.00	90.00	0.06	0.10	0.007
0.002	PARK	0.22	NORMAL	90.00	0.00	0.00	0.20	0.000
0.198	LAKE	21.50	WET	0.00	0.00	0.00	0.00	0.000
0.921	=TOTAL AREA	OK	AVERAGE =	19.42	TOTAL = % =	0.23 24.92	AVG. =	0.094

PERCENT OF SUBBASIN DRY = 31.05 %
NORMAL = 47.45 %
WET = 21.50 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.230

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.254

IMPERVIOUS AREA: URBAN @ 100 % effective = 24.92
ROCK OUTCROP @ 60 % effective = 12.36

% EFFECTIVE IMP. = 37.28

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
362F	0.921	1.890	0.033	26.00	0.094	0.230	4.12	0.254	37.28

LOSS PARAMETERS FOR SUBBASIN: 363F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.193	64.00	0.4	-0.255	65.00	41.60
LcA	0.078	25.84	0.25	-0.156	0.00	0.00
Mp	0.017	5.68	0.25	-0.034	0.00	0.00
Vf	0.010	3.35	0.25	-0.020	0.00	0.00
Tu	0.003	1.13	0.25	-0.007	0.00	0.00
TOTAL =	0.301 SQ.MI.		XKSAT =	0.34	%ROCK=	41.60

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.
0.011	BASIN	3.49	DRY	25.00	0.00	0.00	0.35	0.012
0.178	HILLSLOPE	59.22	DRY	25.00	0.00	0.00	0.15	0.089
0.048	M.F.R.	15.84	NORMAL	25.00	65.00	0.03	0.10	0.016
0.065	ROW	21.45	NORMAL	20.00	90.00	0.06	0.10	0.021
0.301	=TOTAL AREA	OK	AVERAGE =	23.93	TOTAL =	0.09	AVG. =	0.138
					% =	29.61		

PERCENT OF SUBBASIN DRY = 62.70 %
NORMAL = 37.30 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.313

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.392

IMPERVIOUS AREA:

URBAN @	100 %	effective =	29.61
ROCK OUTCROP @	60 %	effective =	24.96
	% EFFECTIVE IMP. =		54.57

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
363F	0.301	0.630	0.040	110.00	0.138	0.313	3.98	0.392	54.57

LOSS PARAMETERS FOR SUBBASIN: 364F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.125	30.05	0.25	-0.181	0.00	0.00
Ge	0.038	9.18	0.26	-0.054	0.00	0.00
Cp	0.037	8.79	0.4	-0.035	0.00	0.00
GgA	0.026	6.20	0.25	-0.037	0.00	0.00
Bs	0.020	4.73	0.39	-0.019	0.00	0.00
Aa	0.019	4.44	0.26	-0.026	0.00	0.00
TrB	0.016	3.72	0.13	-0.033	0.00	0.00
Te	0.015	3.68	0.25	-0.022	0.00	0.00
Le	0.012	2.86	0.04	-0.040	0.00	0.00
Bt	0.010	2.43	0.25	-0.015	0.00	0.00
Mp	0.009	2.07	0.25	-0.012	0.00	0.00
TD	0.008	1.99	1.2	0.002	0.00	0.00
CrB	0.007	1.66	0.4	-0.007	0.00	0.00
Ma	0.005	1.23	0.4	-0.005	0.00	0.00
Tw	0.003	0.70	0.05	-0.009	0.00	0.00
RbA	0.002	0.50	0.26	-0.003	0.00	0.00
Lb	0.002	0.46	0.4	-0.002	0.00	0.00
Vf	0.029	6.87	0.01	-0.137	0.00	0.00
Vh	0.035	8.46	0.27	-0.048	0.00	0.00

TOTAL = 0.416 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.
0.015	DRAINAGEWAY	3.68	DRY	25.00	0.00	0.00	0.35	0.013
0.001	M.D.R.	0.12	NORMAL	25.00	45.00	0.00	0.10	0.000
0.313	IND	75.26	NORMAL	20.00	75.00	0.23	0.10	0.075
0.043	COMM/ROW	10.27	NORMAL	20.00	90.00	0.04	0.10	0.010
0.044	PARK	10.68	NORMAL	90.00	0.00	0.00	0.20	0.021
0.416	=TOTAL AREA	OK	AVERAGE =	27.66	TOTAL =	0.27	AVG. =	0.120
					% =	65.74		

PERCENT OF SUBBASIN DRY = 3.68 %
NORMAL = 96.32 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.254

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.251

IMPERVIOUS AREA:

URBAN @	100 % effective =	65.74
ROCK OUTCROP @	60 % effective =	0.00
	% EFFECTIVE IMP. =	65.74

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
364F	0.416	0.890	0.026	31.00	0.120	0.254	4.74	0.251	65.74

LOSS PARAMETERS FOR SUBBASIN: 365F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.199	31.19	0.25	-0.188	0.00	0.00
Mr	0.072	11.27	0.05	-0.147	0.00	0.00
Le	0.070	10.97	0.04	-0.153	0.00	0.00
Te	0.054	8.45	0.25	-0.051	0.00	0.00
Tw	0.054	8.41	0.05	-0.109	0.00	0.00
Aa	0.028	4.38	0.26	-0.026	0.00	0.00
GgA	0.025	3.87	0.25	-0.023	0.00	0.00
RbA	0.024	3.71	0.26	-0.022	0.00	0.00
GxA	0.021	3.28	0.23	-0.021	0.00	0.00
CrB	0.018	2.88	0.4	-0.011	0.00	0.00
Tc	0.013	2.04	0.4	-0.008	0.00	0.00
Cb	0.012	1.89	0.4	-0.008	0.00	0.00
Tg	0.012	1.81	0.04	-0.025	0.00	0.00
Vf	0.008	1.29	0.01	-0.026	0.00	0.00
TrA	0.007	1.04	0.11	-0.010	0.00	0.00
TD	0.006	0.88	1.2	0.001	0.00	0.00
PeA	0.006	0.86	0.37	-0.004	0.00	0.00
Cp	0.005	0.71	0.4	-0.003	0.00	0.00
Th	0.004	0.68	0.04	-0.009	0.00	0.00
Vh	0.002	0.33	0.27	-0.002	0.00	0.00
Bs	0.001	0.08	0.39	-0.000	0.00	0.00

TOTAL = 0.636 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.
0.009	DRAINAGEWAY	1.41	DRY	25.00	0.00	0.00	0.35	0.005
0.627	COMM/ROW	98.59	NORMAL	20.00	90.00	0.56	0.10	0.099
0.636	=TOTAL AREA	OK	AVERAGE =	20.07	TOTAL =	0.56	AVG. =	0.104
					% =	88.73		

PERCENT OF SUBBASIN DRY = 1.41 %
NORMAL = 98.59 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.232

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.156

IMPERVIOUS AREA:	URBAN @	100 % effective =	88.73
	ROCK OUTCROP @	60 % effective =	0.00
		% EFFECTIVE IMP. =	88.73

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
365F	0.636	1.350	0.024	18.00	0.104	0.232	6.78	0.156	88.73

LOSS PARAMETERS FOR SUBBASIN: 366F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Es	0.019	62.50	0.25	-0.376	0.00	0.00
Vf	0.011	37.50	0.01	-0.750	0.00	0.00
TOTAL =	0.030 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.
0.003	IND	10.14	NORMAL	20.00	75.00	0.00	0.10	0.010
0.027	COMM	89.86	NORMAL	20.00	90.00	0.02	0.10	0.090
0.030	=TOTAL AREA	OK	AVERAGE =	20.00	TOTAL =	0.03	AVG. =	0.100
					% =	88.48		

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. = 0.078

IMPERVIOUS AREA:
URBAN @ 100 % effective = 88.48
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 88.48

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
366F	0.030	0.200	0.032	140.00	0.100	0.150	8.28	0.078	88.48

LOSS PARAMETERS FOR SUBBASIN: 368F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.290	25.78	0.25	-0.155	0.00	0.00
Mr	0.216	19.27	0.05	-0.251	0.00	0.00
LcA	0.145	12.93	0.25	-0.078	0.00	0.00
Ve	0.097	8.60	0.25	-0.052	0.00	0.00
Es	0.056	5.00	0.25	-0.030	0.00	0.00
Bs	0.021	1.91	0.39	-0.008	0.00	0.00
Th	0.021	1.83	0.04	-0.026	0.00	0.00
Tw	0.012	1.10	0.05	-0.014	0.00	0.00
Tc	0.010	0.86	0.4	-0.003	0.00	0.00
PeA	0.006	0.52	0.37	-0.002	0.00	0.00
Vf	0.250	22.22	0.01	-0.444	0.00	0.00

TOTAL = 1.123 SQ.MI. XKSAT = 0.24 %ROCK= 0.00

DTHETA

Dry = 0.36
Normal = 0.25
Wet = 0

PSIF

= 3.81

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.083	M.F.R.	7.34	NORMAL	25.00	65.00	0.05	0.10	0.007
0.741	M.D.R.	65.92	NORMAL	25.00	45.00	0.33	0.10	0.066
0.050	IND	4.42	NORMAL	20.00	75.00	0.04	0.10	0.004
0.226	COMM/ROW	20.14	NORMAL	20.00	90.00	0.20	0.10	0.020
0.024	PARK/SCHOOL	2.17	NORMAL	90.00	0.00	0.00	0.20	0.004
1.123	=TOTAL AREA	OK	AVERAGE =	25.18	TOTAL =	0.63	AVG. =	0.102
					% =	55.88		

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. = 0.280

IMPERVIOUS AREA: URBAN @ 100 % effective = 55.88
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 55.88

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
368F	1.123	1.830	0.022	22.00	0.102	0.250	3.81	0.280	55.88

LOSS PARAMETERS FOR SUBBASIN: 369F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.506	48.21	0.05	-0.627	0.00	0.00
LcA	0.183	17.42	0.25	-0.105	0.00	0.00
Mp	0.074	7.02	0.25	-0.042	0.00	0.00
GxA	0.021	1.97	0.23	-0.013	0.00	0.00
Te	0.020	1.94	0.25	-0.012	0.00	0.00
RbA	0.020	1.88	0.26	-0.011	0.00	0.00
Th	0.017	1.64	0.04	-0.023	0.00	0.00
Es	0.016	1.54	0.25	-0.009	0.00	0.00
Tg	0.010	0.92	0.04	-0.013	0.00	0.00
RaA	0.006	0.59	0.39	-0.002	0.00	0.00
Tw	0.048	4.57	0.05	-0.059	0.00	0.00
Vf	0.129	12.31	0.01	-0.246	0.00	0.00
TOTAL =	1.049 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.
0.094	M.F.R.	8.96	NORMAL	25.00	65.00	0.06	0.10	0.009
0.886	M.D.R.	84.47	NORMAL	25.00	45.00	0.40	0.10	0.084
0.046	COMM	4.35	NORMAL	20.00	90.00	0.04	0.10	0.004
0.023	SCHOOL	2.22	NORMAL	90.00	0.00	0.00	0.20	0.000
1.049	=TOTAL AREA	OK	AVERAGE =	26.23	TOTAL =	0.50	AVG. =	0.098
					% =	47.75		

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 = 47.75
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 47.75

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
369F	1.049	1.850	0.022	21.00	0.098	0.150	8.28	0.082	47.75

LOSS PARAMETERS FOR SUBBASIN: 370F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.328	31.48	0.05	-0.410	0.00	0.00
LcA	0.296	28.40	0.25	-0.171	0.00	0.00
Mp	0.165	15.86	0.25	-0.095	0.00	0.00
Tw	0.076	7.30	0.05	-0.095	0.00	0.00
Le	0.044	4.21	0.04	-0.059	0.00	0.00
GgA	0.038	3.63	0.25	-0.022	0.00	0.00
Cp	0.023	2.19	0.4	-0.009	0.00	0.00
Lb	0.010	1.00	0.4	-0.004	0.00	0.00
CrB	0.006	0.60	0.4	-0.002	0.00	0.00
PeA	0.005	0.51	0.37	-0.002	0.00	0.00
Vf	0.027	2.60	0.01	-0.052	0.00	0.00
GxA	0.003	0.30	0.23	-0.002	0.00	0.00
GxB	0.005	0.46	0.24	-0.003	0.00	0.00
Ms	0.004	0.41	0.01	-0.008	0.00	0.00
PeB	0.002	0.22	0.38	-0.001	0.00	0.00
RbA	0.002	0.21	0.26	-0.001	0.00	0.00
Tg	0.003	0.28	0.04	-0.004	0.00	0.00
Th	0.003	0.32	0.04	-0.004	0.00	0.00
Tu	0.000	0.04	0.25	-0.000	0.00	0.00

TOTAL = 1.043 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.
0.016	SCHOOL	1.52	NORMAL	40.00	45.00	0.01	0.20	0.003
0.080	M.F.R.	7.62	NORMAL	25.00	65.00	0.05	0.10	0.008
0.714	M.D.R.	68.49	NORMAL	25.00	45.00	0.32	0.10	0.068
0.003	IND	0.33	NORMAL	20.00	75.00	0.00	0.10	0.000
0.055	COMM	5.25	NORMAL	20.00	90.00	0.05	0.10	0.005
0.010	CHURCH	0.91	NORMAL	20.00	90.00	0.01	0.10	0.001
0.166	PARK/GC	15.87	NORMAL	90.00	0.00	0.00	0.20	0.032

1.043 =TOTAL AREA OK AVERAGE = 35.22 TOTAL = 0.44 AVG. = 0.117
% = 42.26

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. = 0.153

IMPERVIOUS AREA:	URBAN @	100 % effective =	42.26
	ROCK OUTCROP @	60 % effective =	0.00
		% EFFECTIVE IMP. =	42.26

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
370F	1.043	1.520	0.022	22.00	0.117	0.190	7.14	0.153	42.26

LOSS PARAMETERS FOR SUBBASIN: 371F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.517	48.34	0.25	-0.291	0.00	0.00
Tw	0.183	17.07	0.05	-0.222	0.00	0.00
Mr	0.136	12.71	0.05	-0.165	0.00	0.00
Le	0.081	7.56	0.04	-0.106	0.00	0.00
Vf	0.066	6.17	0.01	-0.123	0.00	0.00
Mp	0.030	2.77	0.25	-0.017	0.00	0.00
Tg	0.026	2.42	0.04	-0.034	0.00	0.00
RbA	0.020	1.90	0.26	-0.011	0.00	0.00
Lb	0.011	1.07	0.4	-0.004	0.00	0.00

TOTAL = 1.070 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.
0.015	M.F.R.	1.44	NORMAL	25.00	65.00	0.01	0.10	0.001
0.491	M.D.R.	45.85	NORMAL	25.00	45.00	0.22	0.10	0.046
0.315	IND	29.46	NORMAL	20.00	75.00	0.24	0.10	0.029
0.098	COMM	9.14	NORMAL	20.00	90.00	0.09	0.10	0.009
0.133	SCHOOL	12.40	NORMAL	40.00	45.00	0.06	0.20	0.025
0.018	PARK	1.72	NORMAL	90.00	0.00	0.00	0.20	0.003
1.070	=TOTAL AREA	OK	AVERAGE =	26.05	TOTAL =	0.62	AVG. =	0.114
					% =	57.46		

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. = 0.129

IMPERVIOUS AREA:

URBAN @	100 %	effective =	57.46
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		57.46

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
371F	1.070	1.580	0.022	18.00	0.114	0.170	7.32	0.129	57.46

LOSS PARAMETERS FOR SUBBASIN: 372F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.081	31.52	0.05	-0.410	0.00	0.00
LcA	0.064	24.80	0.25	-0.149	0.00	0.00
Tw	0.060	23.52	0.05	-0.306	0.00	0.00
GxA	0.016	6.09	0.23	-0.039	0.00	0.00
PeA	0.012	4.61	0.37	-0.020	0.00	0.00
Es	0.008	3.01	0.25	-0.018	0.00	0.00
Le	0.003	1.21	0.04	-0.017	0.00	0.00
Mp	0.003	1.02	0.25	-0.006	0.00	0.00
Cp	0.002	0.63	0.4	-0.002	0.00	0.00
Tc	0.001	0.27	0.4	-0.001	0.00	0.00
Vf	0.009	3.32	0.01	-0.066	0.00	0.00

TOTAL = 0.256 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.
0.256	COMM/ROW	100.00	NORMAL	20.00	90.00	0.23	0.10	0.100
0.256	=TOTAL AREA	OK	AVERAGE =	20.00	TOTAL = % =	0.23 90.00	AVG. =	0.100

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. = 0.122

IMPERVIOUS AREA: URBAN @ 100 % effective = 90.00
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 90.00

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
372F	0.256	1.320	0.026	9.00	0.100	0.170	7.32	0.122	90.00

LOSS PARAMETERS FOR SUBBASIN: 373F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.410	40.41	0.25	-0.243	0.00	0.00
GgA	0.190	18.69	0.25	-0.113	0.00	0.00
Aa	0.060	5.92	0.26	-0.035	0.00	0.00
Mp	0.046	4.53	0.25	-0.027	0.00	0.00
Mr	0.040	3.98	0.05	-0.052	0.00	0.00
RbA	0.040	3.94	0.26	-0.023	0.00	0.00
TD	0.030	2.92	1.2	0.002	0.00	0.00
Te	0.024	2.37	0.25	-0.014	0.00	0.00
Cb	0.020	1.94	0.4	-0.008	0.00	0.00
Tg	0.015	1.44	0.04	-0.020	0.00	0.00
LcB	0.012	1.20	0.25	-0.007	0.00	0.00
Tc	0.011	1.09	0.4	-0.004	0.00	0.00
PeB	0.007	0.66	0.38	-0.003	0.00	0.00
GxA	0.006	0.62	0.23	-0.004	0.00	0.00
Bs	0.004	0.36	0.39	-0.001	0.00	0.00
Bt	0.003	0.32	0.25	-0.002	0.00	0.00
Ma	0.003	0.30	0.4	-0.001	0.00	0.00
PeA	0.003	0.26	0.37	-0.001	0.00	0.00
Ta	0.002	0.23	0.25	-0.001	0.00	0.00
Th	0.002	0.20	0.04	-0.003	0.00	0.00
Cp	0.002	0.19	0.4	-0.001	0.00	0.00
TrB	0.008	0.83	0.13	-0.007	0.00	0.00
Tu	0.009	0.91	0.25	-0.005	0.00	0.00
Tw	0.059	5.84	0.05	-0.076	0.00	0.00
Vf	0.006	0.60	0.01	-0.012	0.00	0.00
Vk	0.003	0.27	0.26	-0.002	0.00	0.00
TOTAL =	1.015 SQ.MI.		XKSAT =	0.22	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.37	=	4.43
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.
0.026	DRAINAGEWAY	2.54	DRY	25.00	0.00	0.00	0.35	0.009
0.182	V.L.D.R	17.97	NORMAL	15.00	15.00	0.03	0.10	0.018
0.188	L.D.R.	18.49	NORMAL	25.00	25.00	0.05	0.10	0.018
0.050	M.F.R.	4.97	NORMAL	25.00	65.00	0.03	0.10	0.005
0.385	M.D.R.	37.89	NORMAL	25.00	45.00	0.17	0.10	0.038
0.003	IND	0.29	NORMAL	20.00	75.00	0.00	0.10	0.000
0.145	COMM	14.30	NORMAL	20.00	90.00	0.13	0.10	0.014
0.005	CHURCH	0.50	NORMAL	20.00	90.00	0.00	0.10	0.001
0.031	PARK	3.05	NORMAL	90.00	0.00	0.00	0.20	0.006
1.015	=TOTAL AREA	OK	AVERAGE =	24.43	TOTAL =	0.42	AVG. =	0.109
					% =	41.13		

PERCENT OF SUBBASIN DRY = 2.54 %
NORMAL = 97.46 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.253

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.255

IMPERVIOUS AREA: URBAN @ 100 % effective = 41.13
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 41.13

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
373F	1.015	1.620	0.030	25.00	0.109	0.253	4.43	0.255	41.13

LOSS PARAMETERS FOR SUBBASIN: 374F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.576	57.57	0.05	-0.749	0.00	0.00
LcA	0.120	12.02	0.25	-0.072	0.00	0.00
Mp	0.080	8.01	0.25	-0.048	0.00	0.00
Tu	0.053	5.32	0.25	-0.032	0.00	0.00
Vf	0.053	5.25	0.01	-0.105	0.00	0.00
GxA	0.048	4.81	0.23	-0.031	0.00	0.00
Tw	0.031	3.13	0.05	-0.041	0.00	0.00
Cp	0.020	2.01	0.4	-0.008	0.00	0.00
PeA	0.012	1.15	0.37	-0.005	0.00	0.00
Le	0.007	0.74	0.04	-0.010	0.00	0.00

TOTAL = 1.001 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.
0.137	M.F.R.	13.64	NORMAL	25.00	65.00	0.09	0.10	0.014
0.567	M.D.R.	56.67	NORMAL	25.00	45.00	0.26	0.10	0.057
0.055	COMM/ROW	5.51	NORMAL	20.00	90.00	0.05	0.10	0.006
0.182	GC	18.19	NORMAL	90.00	0.00	0.00	0.10	0.018
0.019	SCHOOL	1.89	NORMAL	40.00	45.00	0.01	0.20	0.004
0.041	LAKE	4.06	WET	0.00	0.00	0.00	0.00	0.000
1.001	=TOTAL AREA	OK	AVERAGE =	35.82	TOTAL =	0.40	AVG. =	0.098
					% =	40.18		

PERCENT OF SUBBASIN DRY = 0.04 %
NORMAL = 99.96 %
WET = 4.06 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.103

IMPERVIOUS AREA: URBAN @ 100 % effective = 40.18
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 40.18

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
374F	1.001	1.230	0.023	20.00	0.098	0.150	8.05	0.103	40.18

LOSS PARAMETERS FOR SUBBASIN: 375F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.170	32.73	0.25	-0.197	0.00	0.00
GgA	0.098	18.96	0.25	-0.114	0.00	0.00
PeA	0.086	16.61	0.37	-0.072	0.00	0.00
Mr	0.065	12.50	0.05	-0.163	0.00	0.00
TD	0.031	5.92	1.2	0.005	0.00	0.00
Th	0.028	5.34	0.04	-0.075	0.00	0.00
Cb	0.018	3.53	0.4	-0.014	0.00	0.00
Es	0.010	1.99	0.25	-0.012	0.00	0.00
GxA	0.007	1.37	0.23	-0.009	0.00	0.00
Mp	0.006	1.06	0.25	-0.006	0.00	0.00

TOTAL = 0.519 SQ.MI. XKSAT = 0.22 %ROCK= 0.00

DTHETA

Dry = 0.37
Normal = 0.25
Wet = 0

PSIF

= 4.43

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.036	DRAINAGEWAY	6.86	DRY	25.00	0.00	0.00	0.35	0.024
0.367	L.D.R.	70.79	NORMAL	25.00	25.00	0.09	0.10	0.071
0.024	M.F.R.	4.55	NORMAL	25.00	65.00	0.02	0.10	0.005
0.004	IND	0.79	NORMAL	20.00	75.00	0.00	0.10	0.001
0.073	COMM	13.98	NORMAL	20.00	90.00	0.07	0.10	0.014
0.016	PARK	3.03	NORMAL	90.00	0.00	0.00	0.20	0.006
0.519	=TOTAL AREA	OK	AVERAGE =	26.23	TOTAL =	0.18	AVG. =	0.120
					% =	33.83		

PERCENT OF SUBBASIN DRY = 6.86 %
NORMAL = 93.14 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.258

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.259

IMPERVIOUS AREA: URBAN @ 100 % effective = 33.83
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 33.83

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
375F	0.519	1.430	0.041	24.00	0.120	0.258	4.43	0.259	33.83

LOSS PARAMETERS FOR SUBBASIN: 376F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.075	41.31	0.25	-0.249	0.00	0.00
Aa	0.041	22.55	0.26	-0.132	0.00	0.00
GgA	0.036	20.02	0.25	-0.121	0.00	0.00
TD	0.024	13.09	1.2	0.010	0.00	0.00
RbA	0.002	1.32	0.26	-0.008	0.00	0.00
Ma	0.002	0.94	0.4	-0.004	0.00	0.00
Cb	0.001	0.77	0.4	-0.003	0.00	0.00

TOTAL = 0.182 SQ.MI. XKSAT = 0.31 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.82

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	DRAINAGEWAY	13.19	DRY	25.00	0.00	0.00	0.35	0.046
0.001	M.D.R.	0.44	NORMAL	25.00	45.00	0.00	0.10	0.000
0.154	COMM	84.40	NORMAL	20.00	90.00	0.14	0.10	0.084
0.004	PARK	1.98	NORMAL	90.00	0.00	0.00	0.20	0.004
0.182	=TOTAL AREA	OK	AVERAGE =	22.07	TOTAL = % =	0.14 76.15	AVG. =	0.135

PERCENT OF SUBBASIN
DRY = 13.19 %
NORMAL = 86.81 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.263

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.351

IMPERVIOUS AREA:
URBAN @ 100 % effective = 76.15
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 76.15

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
376F	0.182	1.240	0.030	39.00	0.135	0.263	3.82	0.351	76.15

LOSS PARAMETERS FOR SUBBASIN: 377F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.156	32.52	0.25	-0.196	0.00	0.00
RbA	0.116	24.18	0.26	-0.141	0.00	0.00
GgA	0.070	14.68	0.25	-0.088	0.00	0.00
Mr	0.068	14.13	0.05	-0.184	0.00	0.00
Cp	0.014	3.00	0.4	-0.012	0.00	0.00
Tu	0.012	2.58	0.25	-0.016	0.00	0.00
Th	0.011	2.38	0.04	-0.033	0.00	0.00
PeA	0.009	1.92	0.37	-0.008	0.00	0.00
Aa	0.006	1.27	0.26	-0.007	0.00	0.00
Cb	0.004	0.77	0.4	-0.003	0.00	0.00
Tw	0.012	2.56	0.05	-0.033	0.00	0.00

TOTAL = 0.480 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.
0.347	L.D.R.	72.31	NORMAL	25.00	25.00	0.09	0.10	0.072
0.071	IND	14.70	NORMAL	20.00	75.00	0.05	0.10	0.015
0.062	COMM	12.99	NORMAL	20.00	90.00	0.06	0.10	0.013
0.480	=TOTAL AREA	OK	AVERAGE =	23.62	TOTAL =	0.20	AVG. =	0.100
					% =	40.79		

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. = 0.230

IMPERVIOUS AREA: URBAN @ 100 % effective = 40.79
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 40.79

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
377F	0.480	1.210	0.040	13.00	0.100	0.250	5.05	0.230	40.79

TABLE 11

Average Green-Ampt Parameters (Future Conditions)

Sub-Basin	IA(in)	DTHETA	PSIF(in)	XKSAT(in/hr)	RTIMP(%)
350	0.131	0.260	3.820	0.375	46.040
351	0.100	0.100	9.400	0.022	83.920
352	0.126	0.130	10.100	0.040	49.090
353	0.100	0.250	5.050	0.232	49.060
354	0.100	0.150	8.400	0.056	76.650
355	0.100	0.150	8.600	0.068	66.400
356	0.107	0.158	7.500	0.120	27.200
357	0.100	0.250	4.740	0.244	47.130
358	0.139	0.266	4.120	0.273	31.650
359	0.116	0.198	8.050	0.093	18.040
360	0.116	0.281	3.710	0.336	27.760
361	0.143	0.311	3.550	0.325	17.770
362	0.094	0.230	4.120	0.254	37.280
363	0.138	0.313	3.980	0.392	54.570
364	0.120	0.254	4.740	0.251	65.740
365	0.104	0.232	6.780	0.156	88.730
366	0.100	0.150	8.280	0.078	88.480
368	0.102	0.250	3.810	0.280	55.880
369	0.098	0.150	8.280	0.082	47.750
370	0.117	0.190	7.140	0.153	42.260
371	0.114	0.170	7.320	0.129	57.460
372	0.100	0.170	7.320	0.122	90.000
373	0.109	0.253	4.430	0.255	41.130
374	0.098	0.150	8.050	0.103	40.180
375	0.120	0.258	4.430	0.259	33.830
376	0.135	0.263	3.820	0.351	76.150
377	0.100	0.250	5.050	0.230	40.790

LOSS PARAMETERS FOR SUBBASIN: 350F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.094	24.05	0.25	-0.145	0.00	0.00
Ae	0.092	23.59	0.39	-0.096	0.00	0.00
LcA	0.049	12.60	0.25	-0.076	0.00	0.00
AbA	0.047	12.14	0.38	-0.051	0.00	0.00
TD	0.027	6.84	1.2	0.005	0.00	0.00
GgA	0.019	4.89	0.25	-0.029	0.00	0.00
Ge	0.016	4.10	0.26	-0.024	0.00	0.00
RbA	0.011	2.79	0.26	-0.016	0.00	0.00
Cb	0.010	2.59	0.4	-0.010	0.00	0.00
RbB	0.007	1.77	0.25	-0.011	0.00	0.00
Vf	0.007	1.66	0.01	-0.033	0.00	0.00
Th	0.004	1.13	0.04	-0.016	0.00	0.00
Ma	0.002	0.54	0.4	-0.002	0.00	0.00
Bs	0.002	0.54	0.39	-0.002	0.00	0.00
Lb	0.002	0.49	0.4	-0.002	0.00	0.00
Tu	0.001	0.31	0.25	-0.002	0.00	0.00

TOTAL = 0.391 SQ.MI. XKSAT = 0.31 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.82

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.039	DRAINAGEWAY	9.93	DRY	25.00	0.00	0.00	0.35	0.035
0.127	M.F.R.	32.62	NORMAL	25.00	65.00	0.08	0.10	0.033
0.183	M.D.R.	46.90	NORMAL	25.00	45.00	0.08	0.10	0.047
0.014	COMM	3.58	NORMAL	20.00	90.00	0.01	0.10	0.004
0.002	ROW	0.56	NORMAL	20.00	90.00	0.00	0.10	0.001
0.025	SCHOOL	6.40	NORMAL	90.00	0.00	0.00	0.20	0.013

0.391 =TOTAL AREA OK AVERAGE = 28.95 TOTAL = 0.18 AVG. = 0.131
% = 46.04

PERCENT OF SUBBASIN DRY = 9.93 %
NORMAL = 90.07 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.260

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.375

IMPERVIOUS AREA:	URBAN @	100 % effective =	46.04
	ROCK OUTCROP @	60 % effective =	0.00
		% EFFECTIVE IMP. =	46.04

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
350F	0.391	0.920	0.051	37.00	0.131	0.260	3.82	0.375	46.04

LOSS PARAMETERS FOR SUBBASIN: 351F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Vf	0.044	71.85	0.01	-1.437	0.00	0.00
Mr	0.014	23.08	0.05	-0.300	0.00	0.00
Mp	0.003	5.07	0.25	-0.031	0.00	0.00

TOTAL = 0.061 SQ.MI. XKSAT = 0.02 %ROCK= 0.00

DTHETA

Dry = 0.2
Normal = 0.1
Wet = 0

PSIF

= 9.4

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.025	IND	40.45	NORMAL	20.00	75.00	0.02	0.10	0.040
0.037	ROW	59.53	NORMAL	20.00	90.00	0.03	0.10	0.060
0.061	=TOTAL AREA	OK	AVERAGE =	20.00	TOTAL =	0.05	AVG. =	0.100
					% =	83.92		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.100

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.022

IMPERVIOUS AREA:
URBAN @ 100 % effective = 83.92
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 83.92

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
351F	0.061	0.450	0.030	20.00	0.100	0.100	9.40	0.022	83.92

LOSS PARAMETERS FOR SUBBASIN: 352F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Vf	0.152	46.97	0.01	-0.939	0.00	0.00
Mr	0.077	23.86	0.05	-0.310	0.00	0.00
Es	0.038	11.62	0.25	-0.070	0.00	0.00
Mp	0.023	7.20	0.25	-0.043	0.00	0.00
Tw	0.018	5.41	0.05	-0.070	0.00	0.00
LcA	0.010	3.18	0.25	-0.019	0.00	0.00
RbA	0.006	1.76	0.26	-0.010	0.00	0.00

TOTAL = 0.324 SQ.MI. XKSAT = 0.03 %ROCK= 0.00

DTHETA

Dry = 0.25
Normal = 0.13
Wet = 0

PSIF

= 10.1

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	M.F.R.	2.93	NORMAL	25.00	65.00	0.01	0.10	0.003
0.095	M.D.R.	29.25	NORMAL	25.00	45.00	0.04	0.10	0.029
0.081	IND	24.93	NORMAL	20.00	75.00	0.06	0.10	0.025
0.055	COMM/ROW	17.02	NORMAL	20.00	90.00	0.05	0.10	0.017
0.084	PARK	25.86	NORMAL	90.00	0.00	0.00	0.20	0.052
0.324	=TOTAL AREA	OK	AVERAGE =	39.71	TOTAL =	0.16	AVG. =	0.126
					% =	49.09		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.130

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.040

IMPERVIOUS AREA: URBAN @ 100 % effective = 49.09
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 49.09

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
352F	0.324	1.250	0.026	22.00	0.126	0.130	10.10	0.040	49.09

LOSS PARAMETERS FOR SUBBASIN: 353F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Es	0.122	50.35	0.25	-0.303	0.00	0.00
Mp	0.099	40.79	0.25	-0.246	0.00	0.00
Vf	0.011	4.53	0.01	-0.091	0.00	0.00
Mr	0.011	4.33	0.05	-0.056	0.00	0.00
TOTAL =	0.243 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.
0.012	M.F.R.	4.99	NORMAL	25.00	65.00	0.01	0.10	0.005
0.214	M.D.R.	88.21	NORMAL	25.00	45.00	0.10	0.10	0.088
0.017	COMM/ROW	6.80	NORMAL	20.00	90.00	0.01	0.10	0.007
0.243	=TOTAL AREA	OK	AVERAGE =	24.66	TOTAL =	0.12	AVG. =	0.100
					% =	49.06		

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. = 0.232

IMPERVIOUS AREA: URBAN @ 100 % effective = 49.06
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 49.06

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
353F	0.243	0.850	0.026	26.00	0.100	0.250	5.05	0.232	49.06

LOSS PARAMETERS FOR SUBBASIN: 354F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Vf	0.079	48.38	0.01	-0.968	0.00	0.00
Mp	0.048	29.47	0.25	-0.177	0.00	0.00
Es	0.025	15.25	0.25	-0.092	0.00	0.00
Mr	0.011	6.89	0.05	-0.090	0.00	0.00
TOTAL =	0.164 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.
0.146	IND	88.96	NORMAL	20.00	75.00	0.11	0.10	0.089
0.018	ROW	11.03	NORMAL	20.00	90.00	0.02	0.10	0.011
0.164	=TOTAL AREA	OK	AVERAGE =	20.00	TOTAL =	0.13	AVG. =	0.100
					% =	76.65		

PERCENT OF SUBBASIN
DRY = 0.01 %
NORMAL = 99.99 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.056

IMPERVIOUS AREA:
URBAN @ 100 % effective = 76.65
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 76.65

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
354F	0.164	0.530	0.027	25.00	0.100	0.150	8.40	0.056	76.65

LOSS PARAMETERS FOR SUBBASIN: 355F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.537	45.27	0.25	-0.273	0.00	0.00
Vf	0.424	35.75	0.01	-0.715	0.00	0.00
Tw	0.084	7.08	0.05	-0.092	0.00	0.00
Mp	0.060	5.05	0.25	-0.030	0.00	0.00
Ms	0.038	3.23	0.01	-0.065	0.00	0.00
Tg	0.019	1.58	0.04	-0.022	0.00	0.00
LcA	0.013	1.08	0.25	-0.006	0.00	0.00
TrA	0.012	0.97	0.11	-0.009	0.00	0.00

TOTAL = 1.187 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.
0.239	M.F.R.	20.14	NORMAL	25.00	65.00	0.16	0.10	0.020
0.432	M.D.R.	36.42	NORMAL	25.00	45.00	0.19	0.10	0.036
0.172	IND	14.46	NORMAL	20.00	75.00	0.13	0.10	0.014
0.344	COMM	28.97	NORMAL	20.00	90.00	0.31	0.10	0.029
1.187	=TOTAL AREA	OK	AVERAGE =	22.83	TOTAL =	0.79	AVG. =	0.100
					% =	66.40		

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. = 0.068

IMPERVIOUS AREA: URBAN @ 100 % effective = 66.40
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 66.40

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
355F	1.187	1.830	0.022	24.00	0.100	0.150	8.60	0.068	66.40

LOSS PARAMETERS FOR SUBBASIN: 356F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.302	41.97	0.05	-0.546	0.00	0.00
LcA	0.142	19.67	0.25	-0.118	0.00	0.00
Vf	0.078	10.83	0.25	-0.065	0.00	0.00
Es	0.076	10.56	0.25	-0.064	0.00	0.00
Tg	0.055	7.61	0.04	-0.106	0.00	0.00
Th	0.034	4.74	0.04	-0.066	0.00	0.00
RS	0.027	3.75	0.4	-0.015	65.00	2.44
RbA	0.006	0.87	0.26	-0.005	0.00	0.00

TOTAL = 0.720 SQ.MI. XKSAT = 0.10 %ROCK= 2.44

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.
0.029	HILLSLOPE	4.03	DRY	25.00	0.00	0.00	0.15	0.006
0.457	V.L.D.R	63.47	NORMAL	25.00	15.00	0.07	0.10	0.063
0.061	M.F.R.	8.50	NORMAL	25.00	65.00	0.04	0.10	0.008
0.108	M.D.R.	15.00	NORMAL	25.00	45.00	0.05	0.10	0.015
0.032	COMM	4.39	NORMAL	20.00	90.00	0.03	0.10	0.004
0.033	PARK/SCHOOL	4.61	NORMAL	90.00	0.00	0.00	0.20	0.009
0.720	=TOTAL AREA	OK	AVERAGE =	27.78	TOTAL =	0.19	AVG. =	0.107
					% =	25.74		

PERCENT OF SUBBASIN
DRY = 4.04 %
NORMAL = 95.96 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.158

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.120

IMPERVIOUS AREA:
URBAN @ 100 % effective = 25.74
ROCK OUTCROP @ 60 % effective = 1.46

% EFFECTIVE IMP. = 27.20

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
356F	0.720	1.700	0.035	21.00	0.107	0.158	7.50	0.120	27.20

LOSS PARAMETERS FOR SUBBASIN: 357F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.200	47.90	0.25	-0.288	0.00	0.00
Es	0.067	16.01	0.25	-0.096	0.00	0.00
RbA	0.062	14.81	0.26	-0.087	0.00	0.00
Mr	0.046	11.12	0.05	-0.145	0.00	0.00
RbB	0.019	4.61	0.25	-0.028	0.00	0.00
AbA	0.015	3.70	0.38	-0.016	0.00	0.00
Mp	0.008	1.85	0.25	-0.011	0.00	0.00
TOTAL =	0.417 SQ.MI.		XKSAT =	0.21	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.37	=	4.74
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.
0.010	M.F.R.	2.30	NORMAL	25.00	65.00	0.01	0.10	0.002
0.392	M.D.R.	93.98	NORMAL	25.00	45.00	0.18	0.10	0.094
0.016	COMM	3.72	NORMAL	20.00	90.00	0.01	0.10	0.004
0.417	=TOTAL AREA	OK	AVERAGE =	24.81	TOTAL =	0.20	AVG. =	0.100
					% =	47.13		

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. = 0.244

IMPERVIOUS AREA:

URBAN @	100 %	effective =	47.13
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		47.13

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
357F	0.417	1.400	0.025	21.00	0.100	0.250	4.74	0.244	47.13

LOSS PARAMETERS FOR SUBBASIN: 358F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.132	25.65	0.25	-0.154	0.00	0.00
Ge	0.070	13.61	0.26	-0.080	0.00	0.00
GgA	0.068	13.19	0.25	-0.079	0.00	0.00
TD	0.033	6.42	1.2	0.005	0.00	0.00
Lb	0.028	5.49	0.4	-0.022	0.00	0.00
Bs	0.019	3.76	0.39	-0.015	0.00	0.00
Ma	0.018	3.47	0.4	-0.014	0.00	0.00
Te	0.014	2.79	0.25	-0.017	0.00	0.00
Mp	0.014	2.71	0.25	-0.016	0.00	0.00
Cb	0.013	2.42	0.4	-0.010	0.00	0.00
Bt	0.011	2.07	0.25	-0.012	0.00	0.00
Mr	0.011	2.06	0.05	-0.027	0.00	0.00
PeB	0.009	1.82	0.38	-0.008	0.00	0.00
TfA	0.008	1.61	0.37	-0.007	0.00	0.00
Th	0.008	1.53	0.04	-0.021	0.00	0.00
Pa	0.007	1.40	0.4	-0.006	0.00	0.00
AdB	0.004	0.74	0.4	-0.003	0.00	0.00
Vf	0.036	7.02	0.01	-0.140	0.00	0.00
Vh	0.012	2.23	0.27	-0.013	0.00	0.00
TOTAL =	0.516 SQ.MI.		XKSAT =	0.23	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.36	=	4.12
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.
0.075	DRAINAGEWAY	14.57	DRY	25.00	0.00	0.00	0.35	0.051
0.101	V.L.D.R	19.61	NORMAL	25.00	15.00	0.02	0.10	0.020
0.321	M.D.R.	62.16	NORMAL	25.00	45.00	0.14	0.10	0.062
0.004	ROW	0.81	NORMAL	20.00	90.00	0.00	0.10	0.001
0.015	SCHOOL/PARK	2.85	NORMAL	90.00	0.00	0.00	0.20	0.006
0.516	=TOTAL AREA	OK	AVERAGE =	26.81	TOTAL =	0.16	AVG. =	0.139
					% =	31.65		

PERCENT OF SUBBASIN DRY = 14.57 %
NORMAL = 85.43 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.266

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.273

IMPERVIOUS AREA:	URBAN @	100 % effective =	31.65
	ROCK OUTCROP @	60 % effective =	0.00
		% EFFECTIVE IMP. =	31.65

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
358F	0.516	1.470	0.031	29.00	0.139	0.266	4.12	0.273	31.65

LOSS PARAMETERS FOR SUBBASIN: 359F

Soil Survey Used CENTRAL & AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.296	20.11	0.4	-0.080	65.00	13.07
18	0.199	13.52	0.03	-0.206	0.00	0.00
PrB	0.126	8.56	0.28	-0.047	0.00	0.00
98	0.088	5.99	0.03	-0.091	0.00	0.00
68	0.065	4.41	0.03	-0.067	0.00	0.00
70	0.059	3.98	0.03	-0.061	0.00	0.00
AgB	0.046	3.15	0.4	-0.013	0.00	0.00
PT	0.043	2.94	0.4	-0.012	0.00	0.00
AfA	0.039	2.65	0.38	-0.011	0.00	0.00
PeA	0.024	1.61	0.37	-0.007	0.00	0.00
110	0.199	13.55	0.03	-0.206	0.00	0.00
101	0.287	19.53	0.03	-0.297	0.00	0.00

TOTAL = 1.470 SQ.MI. XKSAT = 0.08 %ROCK= 13.07

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.
0.473	HILLSLOPE	32.17	DRY	25.00	0.00	0.00	0.15	0.048
0.997	V.L.D.R	67.80	NORMAL	25.00	15.00	0.15	0.10	0.068
0.001	COMM	0.03	NORMAL	20.00	90.00	0.00	0.10	0.000
1.470	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.15	AVG. =	0.116
					% =	10.20		

PERCENT OF SUBBASIN DRY = 32.17 %
NORMAL = 67.83 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.198

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.093

IMPERVIOUS AREA: URBAN @ 100 % effective = 10.20
ROCK OUTCROP @ 60 % effective = 7.84

% EFFECTIVE IMP. = 18.04

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
359F	1.470	1.880	0.021	65.00	0.116	0.198	8.05	0.093	18.04

LOSS PARAMETERS FOR SUBBASIN: 360F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.299	39.60	0.25	-0.238	0.00	0.00
CO	0.161	21.31	0.29	-0.115	20.00	4.26
PeA	0.075	9.86	0.37	-0.043	0.00	0.00
RS	0.071	9.38	0.4	-0.037	65.00	6.10
RbA	0.059	7.83	0.26	-0.046	0.00	0.00
LcB	0.043	5.73	0.25	-0.035	0.00	0.00
AfA	0.035	4.61	0.38	-0.019	0.00	0.00
PT	0.013	1.68	0.4	-0.007	0.00	0.00

TOTAL = 0.756 SQ.MI. XKSAT = 0.29 %ROCK= 10.36

DTHETA		PSIF	
Dry =	0.35	=	3.71
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.
0.237	HILLSLOPE	31.38	DRY	25.00	0.00	0.00	0.15	0.047
0.387	V.L.D.R	51.27	NORMAL	25.00	15.00	0.06	0.10	0.051
0.053	M.F.R.	7.07	NORMAL	25.00	65.00	0.03	0.10	0.007
0.078	COMM	10.28	NORMAL	20.00	90.00	0.07	0.10	0.010
0.756	=TOTAL AREA	OK	AVERAGE =	24.49	TOTAL =	0.16	AVG. =	0.116
					% =	21.54		

PERCENT OF SUBBASIN DRY = 31.38 %
NORMAL = 68.62 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.281

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.336

IMPERVIOUS AREA: URBAN @ 100 % effective = 21.54
ROCK OUTCROP @ 60 % effective = 6.22
% EFFECTIVE IMP. = 27.76

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
360F	0.756	1.040	0.040	56.00	0.116	0.281	3.71	0.336	27.76

LOSS PARAMETERS FOR SUBBASIN: 361F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
CO	0.214	26.99	0.29	-0.145	20.00	5.40
EbD	0.156	19.68	0.1	-0.197	0.00	0.00
LcA	0.072	9.12	0.25	-0.055	0.00	0.00
Ae	0.036	4.59	0.39	-0.019	0.00	0.00
AfA	0.026	3.26	0.38	-0.014	0.00	0.00
LcB	0.023	2.93	0.25	-0.018	0.00	0.00
GxB	0.019	2.44	0.24	-0.015	0.00	0.00
Ge	0.008	1.01	0.26	-0.006	0.00	0.00
GgA	0.006	0.76	0.25	-0.005	0.00	0.00
AbA	0.006	0.70	0.38	-0.003	0.00	0.00
RS	0.226	28.52	0.4	-0.114	65.00	18.54
TOTAL =	0.791 SQ.MI.		XKSAT =	0.26	%ROCK=	23.94

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.
0.516	HILLSLOPE	65.25	DRY	25.00	0.00	0.00	0.15	0.098
0.156	V.L.D.R	19.66	NORMAL	25.00	15.00	0.02	0.10	0.020
0.002	M.F.R.	0.28	NORMAL	25.00	65.00	0.00	0.10	0.000
0.005	M.D.R.	0.61	NORMAL	25.00	45.00	0.00	0.10	0.001
0.098	PARK	12.40	NORMAL	90.00	0.00	0.00	0.20	0.025
0.014	LAKE	1.81	WET	0.00	0.00	0.00	0.00	0.000
0.791	=TOTAL AREA	OK	AVERAGE =	32.61	TOTAL =	0.03	AVG. =	0.143
					% =	3.40		

PERCENT OF SUBBASIN DRY = 65.25 %
NORMAL = 32.95 %
WET = 1.81 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.311

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.325

IMPERVIOUS AREA: URBAN @ 100 % effective = 3.40
ROCK OUTCROP @ 60 % effective = 14.36

% EFFECTIVE IMP. = 17.77

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
361F	0.791	1.800	0.040	214.00	0.143	0.311	3.55	0.325	17.77

LOSS PARAMETERS FOR SUBBASIN: 362F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.185	20.08	0.25	-0.121	0.00	0.00
GgA	0.127	13.79	0.25	-0.083	0.00	0.00
Ge	0.052	5.64	0.26	-0.033	0.00	0.00
Cp	0.047	5.12	0.4	-0.020	0.00	0.00
Es	0.047	5.10	0.25	-0.031	0.00	0.00
Mr	0.030	3.26	0.05	-0.042	0.00	0.00
CrB	0.021	2.28	0.4	-0.009	0.00	0.00
Mp	0.007	0.76	0.25	-0.005	0.00	0.00
AbA	0.006	0.65	0.38	-0.003	0.00	0.00
RbA	0.005	0.54	0.26	-0.003	0.00	0.00
RS	0.292	31.70	0.4	-0.126	65.00	20.60
Tu	0.035	3.80	0.25	-0.023	0.00	0.00
Vf	0.067	7.27	0.01	-0.145	0.00	0.00

TOTAL = 0.921 SQ.MI. XKSAT = 0.23 %ROCK= 20.60

DTHETA

Dry = 0.36
Normal = 0.25
Wet = 0

PSIF

= 4.12

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.286	HILLSLOPE	31.05	DRY	25.00	0.00	0.00	0.15	0.047
0.027	M.F.R.	2.93	NORMAL	25.00	65.00	0.02	0.10	0.003
0.345	M.D.R.	37.46	NORMAL	25.00	45.00	0.16	0.10	0.037
0.063	ROW	6.84	NORMAL	20.00	90.00	0.06	0.10	0.007
0.002	PARK	0.22	NORMAL	90.00	0.00	0.00	0.20	0.000
0.198	LAKE	21.50	WET	0.00	0.00	0.00	0.00	0.000
0.921	=TOTAL AREA	OK	AVERAGE =	19.42	TOTAL =	0.23	AVG. =	0.094
					% =	24.92		

PERCENT OF SUBBASIN
DRY = 31.05 %
NORMAL = 47.45 %
WET = 21.50 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.230

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.254

IMPERVIOUS AREA:
URBAN @ 100 % effective = 24.92
ROCK OUTCROP @ 60 % effective = 12.36

% EFFECTIVE IMP. = 37.28

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
362F	0.921	1.890	0.033	26.00	0.094	0.230	4.12	0.254	37.28

LOSS PARAMETERS FOR SUBBASIN: 363F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.193	64.00	0.4	-0.255	65.00	41.60
LcA	0.078	25.84	0.25	-0.156	0.00	0.00
Mp	0.017	5.68	0.25	-0.034	0.00	0.00
Vf	0.010	3.35	0.25	-0.020	0.00	0.00
Tu	0.003	1.13	0.25	-0.007	0.00	0.00
TOTAL =	0.301 SQ.MI.		XKSAT =	0.34	%ROCK=	41.60

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.
0.011	BASIN	3.49	DRY	25.00	0.00	0.00	0.35	0.012
0.178	HILLSLOPE	59.22	DRY	25.00	0.00	0.00	0.15	0.089
0.048	M.F.R.	15.84	NORMAL	25.00	65.00	0.03	0.10	0.016
0.065	ROW	21.45	NORMAL	20.00	90.00	0.06	0.10	0.021
0.301	=TOTAL AREA	OK	AVERAGE =	23.93	TOTAL =	0.09	AVG. =	0.138
					% =	29.61		

PERCENT OF SUBBASIN DRY = 62.70 %
NORMAL = 37.30 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.313

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.392

IMPERVIOUS AREA: URBAN @ 100 % effective = 29.61
ROCK OUTCROP @ 60 % effective = 24.96
% EFFECTIVE IMP. = 54.57

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
363F	0.301	0.630	0.040	110.00	0.138	0.313	3.98	0.392	54.57

LOSS PARAMETERS FOR SUBBASIN: 364F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.125	30.05	0.25	-0.181	0.00	0.00
Ge	0.038	9.18	0.26	-0.054	0.00	0.00
Cp	0.037	8.79	0.4	-0.035	0.00	0.00
GgA	0.026	6.20	0.25	-0.037	0.00	0.00
Bs	0.020	4.73	0.39	-0.019	0.00	0.00
Aa	0.019	4.44	0.26	-0.026	0.00	0.00
TrB	0.016	3.72	0.13	-0.033	0.00	0.00
Te	0.015	3.68	0.25	-0.022	0.00	0.00
Le	0.012	2.86	0.04	-0.040	0.00	0.00
Bt	0.010	2.43	0.25	-0.015	0.00	0.00
Mp	0.009	2.07	0.25	-0.012	0.00	0.00
TD	0.008	1.99	1.2	0.002	0.00	0.00
CrB	0.007	1.66	0.4	-0.007	0.00	0.00
Ma	0.005	1.23	0.4	-0.005	0.00	0.00
Tw	0.003	0.70	0.05	-0.009	0.00	0.00
RbA	0.002	0.50	0.26	-0.003	0.00	0.00
Lb	0.002	0.46	0.4	-0.002	0.00	0.00
Vf	0.029	6.87	0.01	-0.137	0.00	0.00
Vh	0.035	8.46	0.27	-0.048	0.00	0.00

TOTAL = 0.416 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.
0.015	DRAINAGEWAY	3.68	DRY	25.00	0.00	0.00	0.35	0.013
0.001	M.D.R.	0.12	NORMAL	25.00	45.00	0.00	0.10	0.000
0.313	IND	75.26	NORMAL	20.00	75.00	0.23	0.10	0.075
0.043	COMM/ROW	10.27	NORMAL	20.00	90.00	0.04	0.10	0.010
0.044	PARK	10.68	NORMAL	90.00	0.00	0.00	0.20	0.021
0.416	=TOTAL AREA	OK	AVERAGE =	27.66	TOTAL =	0.27	AVG. =	0.120
					% =	65.74		

PERCENT OF SUBBASIN DRY = 3.68 %
NORMAL = 96.32 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.254

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.251

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IMPERVIOUS AREA:                    URBAN @      100 % effective =  65.74
                          ROCK OUTCROP @       60 % effective =   0.00
                                              --------------------------
                                               % EFFECTIVE IMP. =  65.74
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INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
364F	0.416	0.890	0.026	31.00	0.120	0.254	4.74	0.251	65.74

LOSS PARAMETERS FOR SUBBASIN: 365F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.199	31.19	0.25	-0.188	0.00	0.00
Mr	0.072	11.27	0.05	-0.147	0.00	0.00
Le	0.070	10.97	0.04	-0.153	0.00	0.00
Te	0.054	8.45	0.25	-0.051	0.00	0.00
Tw	0.054	8.41	0.05	-0.109	0.00	0.00
Aa	0.028	4.38	0.26	-0.026	0.00	0.00
GgA	0.025	3.87	0.25	-0.023	0.00	0.00
RbA	0.024	3.71	0.26	-0.022	0.00	0.00
GxA	0.021	3.28	0.23	-0.021	0.00	0.00
CrB	0.018	2.88	0.4	-0.011	0.00	0.00
Tc	0.013	2.04	0.4	-0.008	0.00	0.00
Cb	0.012	1.89	0.4	-0.008	0.00	0.00
Tg	0.012	1.81	0.04	-0.025	0.00	0.00
Vf	0.008	1.29	0.01	-0.026	0.00	0.00
TrA	0.007	1.04	0.11	-0.010	0.00	0.00
TD	0.006	0.88	1.2	0.001	0.00	0.00
PeA	0.006	0.86	0.37	-0.004	0.00	0.00
Cp	0.005	0.71	0.4	-0.003	0.00	0.00
Th	0.004	0.68	0.04	-0.009	0.00	0.00
Vh	0.002	0.33	0.27	-0.002	0.00	0.00
Bs	0.001	0.08	0.39	-0.000	0.00	0.00
TOTAL =	0.636 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.
0.009	DRAINAGEWAY	1.41	DRY	25.00	0.00	0.00	0.35	0.005
0.627	COMM/ROW	98.59	NORMAL	20.00	90.00	0.56	0.10	0.099
0.636	=TOTAL AREA	OK	AVERAGE =	20.07	TOTAL =	0.56	AVG. =	0.104
					% =	88.73		

PERCENT OF SUBBASIN

DRY =	1.41	%
NORMAL =	98.59	%
WET =	0.00	%

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.232

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.156

IMPERVIOUS AREA:	URBAN @	100 % effective =	88.73
	ROCK OUTCROP @	60 % effective =	0.00
		% EFFECTIVE IMP. =	88.73

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
365F	0.636	1.350	0.024	18.00	0.104	0.232	6.78	0.156	88.73

LOSS PARAMETERS FOR SUBBASIN: 366F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Es	0.019	62.50	0.25	-0.376	0.00	0.00
Vf	0.011	37.50	0.01	-0.750	0.00	0.00
TOTAL =	0.030 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.
0.003	IND	10.14	NORMAL	20.00	75.00	0.00	0.10	0.010
0.027	COMM	89.86	NORMAL	20.00	90.00	0.02	0.10	0.090
0.030	=TOTAL AREA	OK	AVERAGE =	20.00	TOTAL =	0.03	AVG. =	0.100
					% =	88.48		

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. = 0.078

IMPERVIOUS AREA:

URBAN @	100 %	effective =	88.48
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		88.48

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
366F	0.030	0.200	0.032	140.00	0.100	0.150	8.28	0.078	88.48

LOSS PARAMETERS FOR SUBBASIN: 368F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.290	25.78	0.25	-0.155	0.00	0.00
Mr	0.216	19.27	0.05	-0.251	0.00	0.00
LcA	0.145	12.93	0.25	-0.078	0.00	0.00
Ve	0.097	8.60	0.25	-0.052	0.00	0.00
Es	0.056	5.00	0.25	-0.030	0.00	0.00
Bs	0.021	1.91	0.39	-0.008	0.00	0.00
Th	0.021	1.83	0.04	-0.026	0.00	0.00
Tw	0.012	1.10	0.05	-0.014	0.00	0.00
Tc	0.010	0.86	0.4	-0.003	0.00	0.00
PeA	0.006	0.52	0.37	-0.002	0.00	0.00
Vf	0.250	22.22	0.01	-0.444	0.00	0.00

TOTAL = 1.123 SQ.MI. XKSAT = 0.24 %ROCK= 0.00

DTHETA

Dry = 0.36
Normal = 0.25
Wet = 0

PSIF

= 3.81

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.083	M.F.R.	7.34	NORMAL	25.00	65.00	0.05	0.10	0.007
0.741	M.D.R.	65.92	NORMAL	25.00	45.00	0.33	0.10	0.066
0.050	IND	4.42	NORMAL	20.00	75.00	0.04	0.10	0.004
0.226	COMM/ROW	20.14	NORMAL	20.00	90.00	0.20	0.10	0.020
0.024	PARK/SCHOOL	2.17	NORMAL	90.00	0.00	0.00	0.20	0.004
1.123	=TOTAL AREA	OK	AVERAGE =	25.18	TOTAL =	0.63	AVG. =	0.102
					% =	55.88		

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. = 0.280

IMPERVIOUS AREA: URBAN @ 100 % effective = 55.88
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 55.88

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
368F	1.123	1.830	0.022	22.00	0.102	0.250	3.81	0.280	55.88

LOSS PARAMETERS FOR SUBBASIN: 369F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.506	48.21	0.05	-0.627	0.00	0.00
LcA	0.183	17.42	0.25	-0.105	0.00	0.00
Mp	0.074	7.02	0.25	-0.042	0.00	0.00
GxA	0.021	1.97	0.23	-0.013	0.00	0.00
Te	0.020	1.94	0.25	-0.012	0.00	0.00
RbA	0.020	1.88	0.26	-0.011	0.00	0.00
Th	0.017	1.64	0.04	-0.023	0.00	0.00
Es	0.016	1.54	0.25	-0.009	0.00	0.00
Tg	0.010	0.92	0.04	-0.013	0.00	0.00
RaA	0.006	0.59	0.39	-0.002	0.00	0.00
Tw	0.048	4.57	0.05	-0.059	0.00	0.00
Vf	0.129	12.31	0.01	-0.246	0.00	0.00

TOTAL = 1.049 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.
0.094	M.F.R.	8.96	NORMAL	25.00	65.00	0.06	0.10	0.009
0.886	M.D.R.	84.47	NORMAL	25.00	45.00	0.40	0.10	0.084
0.046	COMM	4.35	NORMAL	20.00	90.00	0.04	0.10	0.004
0.023	SCHOOL	2.22	NORMAL	90.00	0.00	0.00	0.20	0.000
1.049	=TOTAL AREA	OK	AVERAGE =	26.23	TOTAL = % =	0.50 47.75	AVG. =	0.098

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 = 47.75
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 47.75

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
369F	1.049	1.850	0.022	21.00	0.098	0.150	8.28	0.082	47.75

LOSS PARAMETERS FOR SUBBASIN: 370F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.328	31.48	0.05	-0.410	0.00	0.00
LcA	0.296	28.40	0.25	-0.171	0.00	0.00
Mp	0.165	15.86	0.25	-0.095	0.00	0.00
Tw	0.076	7.30	0.05	-0.095	0.00	0.00
Le	0.044	4.21	0.04	-0.059	0.00	0.00
GgA	0.038	3.63	0.25	-0.022	0.00	0.00
Cp	0.023	2.19	0.4	-0.009	0.00	0.00
Lb	0.010	1.00	0.4	-0.004	0.00	0.00
CrB	0.006	0.60	0.4	-0.002	0.00	0.00
PeA	0.005	0.51	0.37	-0.002	0.00	0.00
Vf	0.027	2.60	0.01	-0.052	0.00	0.00
GxA	0.003	0.30	0.23	-0.002	0.00	0.00
GxB	0.005	0.46	0.24	-0.003	0.00	0.00
Ms	0.004	0.41	0.01	-0.008	0.00	0.00
PeB	0.002	0.22	0.38	-0.001	0.00	0.00
RbA	0.002	0.21	0.26	-0.001	0.00	0.00
Tg	0.003	0.28	0.04	-0.004	0.00	0.00
Th	0.003	0.32	0.04	-0.004	0.00	0.00
Tu	0.000	0.04	0.25	-0.000	0.00	0.00

TOTAL = 1.043 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.
0.016	SCHOOL	1.52	NORMAL	40.00	45.00	0.01	0.20	0.003
0.080	M.F.R.	7.62	NORMAL	25.00	65.00	0.05	0.10	0.008
0.714	M.D.R.	68.49	NORMAL	25.00	45.00	0.32	0.10	0.068
0.003	IND	0.33	NORMAL	20.00	75.00	0.00	0.10	0.000
0.055	COMM	5.25	NORMAL	20.00	90.00	0.05	0.10	0.005
0.010	CHURCH	0.91	NORMAL	20.00	90.00	0.01	0.10	0.001
0.166	PARK/GC	15.87	NORMAL	90.00	0.00	0.00	0.20	0.032
1.043	=TOTAL AREA	OK	AVERAGE =	35.22	TOTAL =	0.44	AVG. =	0.117
					% =	42.26		

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. = 0.153

IMPERVIOUS AREA:

URBAN @	100 % effective =	42.26
ROCK OUTCROP @	60 % effective =	0.00
	% EFFECTIVE IMP. =	42.26

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
370F	1.043	1.520	0.022	22.00	0.117	0.190	7.14	0.153	42.26

LOSS PARAMETERS FOR SUBBASIN: 371F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.517	48.34	0.25	-0.291	0.00	0.00
Tw	0.183	17.07	0.05	-0.222	0.00	0.00
Mr	0.136	12.71	0.05	-0.165	0.00	0.00
Le	0.081	7.56	0.04	-0.106	0.00	0.00
Vf	0.066	6.17	0.01	-0.123	0.00	0.00
Mp	0.030	2.77	0.25	-0.017	0.00	0.00
Tg	0.026	2.42	0.04	-0.034	0.00	0.00
RbA	0.020	1.90	0.26	-0.011	0.00	0.00
Lb	0.011	1.07	0.4	-0.004	0.00	0.00

TOTAL = 1.070 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.
0.015	M.F.R.	1.44	NORMAL	25.00	65.00	0.01	0.10	0.001
0.491	M.D.R.	45.85	NORMAL	25.00	45.00	0.22	0.10	0.046
0.315	IND	29.46	NORMAL	20.00	75.00	0.24	0.10	0.029
0.098	COMM	9.14	NORMAL	20.00	90.00	0.09	0.10	0.009
0.133	SCHOOL	12.40	NORMAL	40.00	45.00	0.06	0.20	0.025
0.018	PARK	1.72	NORMAL	90.00	0.00	0.00	0.20	0.003
1.070	=TOTAL AREA	OK	AVERAGE =	26.05	TOTAL = % =	0.62 57.46	AVG. =	0.114

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. = 0.129

IMPERVIOUS AREA: URBAN @ 100 % effective = 57.46
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 57.46

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
371F	1.070	1.580	0.022	18.00	0.114	0.170	7.32	0.129	57.46

LOSS PARAMETERS FOR SUBBASIN: 372F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.081	31.52	0.05	-0.410	0.00	0.00
LcA	0.064	24.80	0.25	-0.149	0.00	0.00
Tw	0.060	23.52	0.05	-0.306	0.00	0.00
GxA	0.016	6.09	0.23	-0.039	0.00	0.00
PeA	0.012	4.61	0.37	-0.020	0.00	0.00
Es	0.008	3.01	0.25	-0.018	0.00	0.00
Le	0.003	1.21	0.04	-0.017	0.00	0.00
Mp	0.003	1.02	0.25	-0.006	0.00	0.00
Cp	0.002	0.63	0.4	-0.002	0.00	0.00
Tc	0.001	0.27	0.4	-0.001	0.00	0.00
Vf	0.009	3.32	0.01	-0.066	0.00	0.00

TOTAL = 0.256 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.
0.256	COMM/ROW	100.00	NORMAL	20.00	90.00	0.23	0.10	0.100
0.256	=TOTAL AREA	OK	AVERAGE =	20.00	TOTAL = % =	0.23 90.00	AVG. =	0.100

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. = 0.122

IMPERVIOUS AREA:

URBAN @ 100 % effective = 90.00
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 90.00

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
372F	0.256	1.320	0.026	9.00	0.100	0.170	7.32	0.122	90.00

LOSS PARAMETERS FOR SUBBASIN: 373F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.410	40.41	0.25	-0.243	0.00	0.00
GgA	0.190	18.69	0.25	-0.113	0.00	0.00
Aa	0.060	5.92	0.26	-0.035	0.00	0.00
Mp	0.046	4.53	0.25	-0.027	0.00	0.00
Mr	0.040	3.98	0.05	-0.052	0.00	0.00
RbA	0.040	3.94	0.26	-0.023	0.00	0.00
TD	0.030	2.92	1.2	0.002	0.00	0.00
Te	0.024	2.37	0.25	-0.014	0.00	0.00
Cb	0.020	1.94	0.4	-0.008	0.00	0.00
Tg	0.015	1.44	0.04	-0.020	0.00	0.00
LcB	0.012	1.20	0.25	-0.007	0.00	0.00
Tc	0.011	1.09	0.4	-0.004	0.00	0.00
PeB	0.007	0.66	0.38	-0.003	0.00	0.00
GxA	0.006	0.62	0.23	-0.004	0.00	0.00
Bs	0.004	0.36	0.39	-0.001	0.00	0.00
Bt	0.003	0.32	0.25	-0.002	0.00	0.00
Ma	0.003	0.30	0.4	-0.001	0.00	0.00
PeA	0.003	0.26	0.37	-0.001	0.00	0.00
Ta	0.002	0.23	0.25	-0.001	0.00	0.00
Th	0.002	0.20	0.04	-0.003	0.00	0.00
Cp	0.002	0.19	0.4	-0.001	0.00	0.00
TrB	0.008	0.83	0.13	-0.007	0.00	0.00
Tu	0.009	0.91	0.25	-0.005	0.00	0.00
Tw	0.059	5.84	0.05	-0.076	0.00	0.00
Vf	0.006	0.60	0.01	-0.012	0.00	0.00
Vk	0.003	0.27	0.26	-0.002	0.00	0.00
TOTAL =	1.015 SQ.MI.		XKSAT =	0.22	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.37	=	4.43
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.
0.026	DRAINAGEWAY	2.54	DRY	25.00	0.00	0.00	0.35	0.009
0.182	V.L.D.R	17.97	NORMAL	15.00	15.00	0.03	0.10	0.018
0.188	L.D.R.	18.49	NORMAL	25.00	25.00	0.05	0.10	0.018
0.050	M.F.R.	4.97	NORMAL	25.00	65.00	0.03	0.10	0.005
0.385	M.D.R.	37.89	NORMAL	25.00	45.00	0.17	0.10	0.038
0.003	IND	0.29	NORMAL	20.00	75.00	0.00	0.10	0.000
0.145	COMM	14.30	NORMAL	20.00	90.00	0.13	0.10	0.014
0.005	CHURCH	0.50	NORMAL	20.00	90.00	0.00	0.10	0.001
0.031	PARK	3.05	NORMAL	90.00	0.00	0.00	0.20	0.006
1.015	=TOTAL AREA	OK	AVERAGE =	24.43	TOTAL =	0.42	AVG. =	0.109
					% =	41.13		

PERCENT OF SUBBASIN DRY = 2.54 %
NORMAL = 97.46 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.253

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.255

IMPERVIOUS AREA: URBAN @ 100 % effective = 41.13
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 41.13

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
373F	1.015	1.620	0.030	25.00	0.109	0.253	4.43	0.255	41.13

LOSS PARAMETERS FOR SUBBASIN: 374F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mr	0.576	57.57	0.05	-0.749	0.00	0.00
LcA	0.120	12.02	0.25	-0.072	0.00	0.00
Mp	0.080	8.01	0.25	-0.048	0.00	0.00
Tu	0.053	5.32	0.25	-0.032	0.00	0.00
Vf	0.053	5.25	0.01	-0.105	0.00	0.00
GxA	0.048	4.81	0.23	-0.031	0.00	0.00
Tw	0.031	3.13	0.05	-0.041	0.00	0.00
Cp	0.020	2.01	0.4	-0.008	0.00	0.00
PeA	0.012	1.15	0.37	-0.005	0.00	0.00
Le	0.007	0.74	0.04	-0.010	0.00	0.00

TOTAL = 1.001 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.
0.137	M.F.R.	13.64	NORMAL	25.00	65.00	0.09	0.10	0.014
0.567	M.D.R.	56.67	NORMAL	25.00	45.00	0.26	0.10	0.057
0.055	COMM/ROW	5.51	NORMAL	20.00	90.00	0.05	0.10	0.006
0.182	GC	18.19	NORMAL	90.00	0.00	0.00	0.10	0.018
0.019	SCHOOL	1.89	NORMAL	40.00	45.00	0.01	0.20	0.004
0.041	LAKE	4.06	WET	0.00	0.00	0.00	0.00	0.000

1.001 =TOTAL AREA OK AVERAGE = 35.82 TOTAL = 0.40 AVG. = 0.098
% = 40.18

PERCENT OF SUBBASIN DRY = 0.04 %
NORMAL = 99.96 %
WET = 4.06 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.150

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.103

IMPERVIOUS AREA: URBAN @ 100 % effective = 40.18
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 40.18

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
374F	1.001	1.230	0.023	20.00	0.098	0.150	8.05	0.103	40.18

LOSS PARAMETERS FOR SUBBASIN: 375F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.170	32.73	0.25	-0.197	0.00	0.00
GgA	0.098	18.96	0.25	-0.114	0.00	0.00
PeA	0.086	16.61	0.37	-0.072	0.00	0.00
Mr	0.065	12.50	0.05	-0.163	0.00	0.00
TD	0.031	5.92	1.2	0.005	0.00	0.00
Th	0.028	5.34	0.04	-0.075	0.00	0.00
Cb	0.018	3.53	0.4	-0.014	0.00	0.00
Es	0.010	1.99	0.25	-0.012	0.00	0.00
GxA	0.007	1.37	0.23	-0.009	0.00	0.00
Mp	0.006	1.06	0.25	-0.006	0.00	0.00

TOTAL = 0.519 SQ.MI. XKSAT = 0.22 %ROCK= 0.00

DTHETA

Dry = 0.37
Normal = 0.25
Wet = 0

PSIF

= 4.43

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.036	DRAINAGEWAY	6.86	DRY	25.00	0.00	0.00	0.35	0.024
0.367	L.D.R.	70.79	NORMAL	25.00	25.00	0.09	0.10	0.071
0.024	M.F.R.	4.55	NORMAL	25.00	65.00	0.02	0.10	0.005
0.004	IND	0.79	NORMAL	20.00	75.00	0.00	0.10	0.001
0.073	COMM	13.98	NORMAL	20.00	90.00	0.07	0.10	0.014
0.016	PARK	3.03	NORMAL	90.00	0.00	0.00	0.20	0.006
0.519	=TOTAL AREA	OK	AVERAGE =	26.23	TOTAL = % =	0.18 33.83	AVG. =	0.120

PERCENT OF SUBBASIN DRY = 6.86 %
NORMAL = 93.14 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.258

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.259

IMPERVIOUS AREA: URBAN @ 100 % effective = 33.83
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 33.83

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
375F	0.519	1.430	0.041	24.00	0.120	0.258	4.43	0.259	33.83

LOSS PARAMETERS FOR SUBBASIN: 376F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.075	41.31	0.25	-0.249	0.00	0.00
Aa	0.041	22.55	0.26	-0.132	0.00	0.00
GgA	0.036	20.02	0.25	-0.121	0.00	0.00
TD	0.024	13.09	1.2	0.010	0.00	0.00
RbA	0.002	1.32	0.26	-0.008	0.00	0.00
Ma	0.002	0.94	0.4	-0.004	0.00	0.00
Cb	0.001	0.77	0.4	-0.003	0.00	0.00

TOTAL = 0.182 SQ.MI. XKSAT = 0.31 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.35	=	3.82
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.
0.024	DRAINAGEWAY	13.19	DRY	25.00	0.00	0.00	0.35	0.046
0.001	M.D.R.	0.44	NORMAL	25.00	45.00	0.00	0.10	0.000
0.154	COMM	84.40	NORMAL	20.00	90.00	0.14	0.10	0.084
0.004	PARK	1.98	NORMAL	90.00	0.00	0.00	0.20	0.004
0.182	=TOTAL AREA	OK	AVERAGE =	22.07	TOTAL =	0.14	AVG. =	0.135
					% =	76.15		

PERCENT OF SUBBASIN DRY = 13.19 %
NORMAL = 86.81 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.263

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.351

IMPERVIOUS AREA: URBAN @ 100 % effective = 76.15
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 76.15

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
376F	0.182	1.240	0.030	39.00	0.135	0.263	3.82	0.351	76.15

LOSS PARAMETERS FOR SUBBASIN: 377F

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.156	32.52	0.25	-0.196	0.00	0.00
RbA	0.116	24.18	0.26	-0.141	0.00	0.00
GgA	0.070	14.68	0.25	-0.088	0.00	0.00
Mr	0.068	14.13	0.05	-0.184	0.00	0.00
Cp	0.014	3.00	0.4	-0.012	0.00	0.00
Tu	0.012	2.58	0.25	-0.016	0.00	0.00
Th	0.011	2.38	0.04	-0.033	0.00	0.00
PeA	0.009	1.92	0.37	-0.008	0.00	0.00
Aa	0.006	1.27	0.26	-0.007	0.00	0.00
Cb	0.004	0.77	0.4	-0.003	0.00	0.00
Tw	0.012	2.56	0.05	-0.033	0.00	0.00

TOTAL = 0.480 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.
0.347	L.D.R.	72.31	NORMAL	25.00	25.00	0.09	0.10	0.072
0.071	IND	14.70	NORMAL	20.00	75.00	0.05	0.10	0.015
0.062	COMM	12.99	NORMAL	20.00	90.00	0.06	0.10	0.013
0.480	=TOTAL AREA	OK	AVERAGE =	23.62	TOTAL =	0.20	AVG. =	0.100
					% =	40.79		

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. = 0.230

IMPERVIOUS AREA: URBAN @ 100 % effective = 40.79
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 40.79

INPUT VALUES FOR MCUHP1 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Kb	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
377F	0.480	1.210	0.040	13.00	0.100	0.250	5.05	0.230	40.79

SECTION III

Hydrologic Sub-Basin Characteristics

Hydrologic Sub-Basin Characteristics
(Existing Condition)

TABLE 12

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 Concentration (Hours)
328	0.572	1.14	226	0.086	1.083	1.129
329	0.625	1.96	78	0.038	1.317	1.204
337	0.295	1.55	36	0.031	0.879	0.938
338	0.124	0.63	30	0.028	0.433	0.454
340	0.239	0.80	31	0.040	0.867	0.913
341	0.109	0.89	26	0.037	0.842	0.883
342	0.446	1.41	27	0.029	0.979	1.046
350	0.119	0.75	35	0.031	0.563	0.587
351	0.053	0.45	20	0.058	0.754	0.721
352	0.330	1.14	26	0.029	0.742	0.750
353	0.249	0.89	25	0.027	0.650	0.679
354	0.164	0.53	25	0.027	0.387	0.417
355	0.030	0.20	140	0.032	0.138	0.162
356	0.233	0.91	22	0.030	0.729	0.754
368	0.872	1.83	22	0.024	1.138	1.117
375	0.958	1.85	21	0.022	0.958	0.946
381	0.262	1.52	22	0.023	0.950	0.900
386	0.865	1.58	18	0.031	1.500	1.475
392	1.179	1.80	28	0.027	0.967	0.942
393	0.720	1.60	23	0.042	1.500	1.500
394	0.419	1.40	21	0.025	0.913	0.967
395	1.470	1.88	65	0.039	1.500	1.354
396	0.756	1.04	56	0.043	1.500	1.237
397	0.791	1.80	214	0.043	0.983	0.875
398A	0.301	0.63	110	0.044	0.429	0.446
398B	0.879	1.89	26	0.034	1.500	1.500
399	0.899	1.82	32	0.039	1.500	1.500
400	0.331	1.48	28	0.043	1.500	1.500
401	1.035	1.40	20	0.035	1.500	1.500
402	0.721	1.50	29	0.042	1.500	1.500
403	1.001	1.23	20	0.027	1.546	0.929
404	0.493	1.43	24	0.045	1.500	1.500
405	0.118	0.61	21	0.053	1.500	1.500

TABLE 13

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)
328	0.572	1.14	226	0.086	0.583	0.617
329	0.625	1.96	78	0.038	0.758	0.850
337	0.295	1.55	36	0.031	0.629	0.696
338	0.124	0.63	30	0.028	0.325	0.379
340	0.262	0.80	31	0.040	0.550	0.600
341	0.229	0.89	26	0.037	0.567	0.617
342	0.489	1.41	27	0.029	0.663	0.721
350	0.119	0.75	35	0.031	0.387	0.438
351	0.053	0.45	20	0.058	0.504	0.538
352	0.330	1.14	26	0.029	0.521	0.563
353	0.249	0.89	25	0.027	0.450	0.492
354	0.164	0.53	25	0.027	0.300	0.354
355	0.030	0.20	140	0.032	0.112	0.142
356	0.233	0.91	22	0.030	0.508	0.550
368	1.123	1.83	22	0.024	0.779	0.808
375	1.049	1.85	21	0.022	0.692	0.721
381	1.045	1.52	22	0.023	0.642	0.663
386	1.069	1.58	18	0.031	0.958	1.000
392	1.179	1.80	28	0.027	0.696	0.717
393	0.720	1.60	23	0.042	0.996	1.079
394	0.419	1.40	21	0.025	0.637	0.696
395	1.470	1.88	65	0.039	0.817	0.796
396	0.756	1.04	56	0.043	0.692	0.717
397	0.791	1.80	214	0.043	0.517	0.521
398A	0.301	0.63	110	0.044	0.279	0.350
398B	0.879	1.89	26	0.034	0.967	1.033
399	0.903	1.82	32	0.039	1.204	1.208
400	0.406	1.48	28	0.043	1.129	1.263
401	1.172	1.40	20	0.035	1.033	1.042
402	0.747	1.50	29	0.042	1.167	1.529
403	1.001	1.23	20	0.027	0.646	0.671
404	0.519	1.43	24	0.045	1.129	1.225
405	0.118	0.61	21	0.053	0.921	1.212

TABLE 14

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 (Hours)
328	0.572	1.14	226	0.086	0.404	0.438
329	0.625	1.96	78	0.038	0.533	0.546
337	0.295	1.55	36	0.031	0.483	0.512
338	0.124	0.63	30	0.028	0.262	0.317
340	0.262	0.80	31	0.040	0.404	0.446
341	0.229	0.89	26	0.037	0.433	0.467
342	0.489	1.41	27	0.029	0.492	0.521
350	0.119	0.75	35	0.031	0.304	0.358
351	0.053	0.45	20	0.058	0.404	0.442
352	0.330	1.14	26	0.029	0.421	0.454
353	0.249	0.89	25	0.027	0.354	0.400
354	0.164	0.53	25	0.027	0.246	0.300
355	0.030	0.20	140	0.032	0.096	0.117
356	0.233	0.91	22	0.030	0.400	0.442
368	1.123	1.83	22	0.024	0.600	0.596
375	1.049	1.85	21	0.022	0.554	0.554
381	1.045	1.52	22	0.023	0.504	0.496
386	1.069	1.58	18	0.031	0.704	0.717
392	1.179	1.80	28	0.027	0.558	0.554
393	0.720	1.60	23	0.042	0.754	0.792
394	0.419	1.40	21	0.025	0.483	0.512
395	1.470	1.88	65	0.039	0.579	0.542
396	0.756	1.04	56	0.043	0.450	0.458
397	0.791	1.80	214	0.043	0.363	0.387
398A	0.301	0.63	110	0.044	0.255	0.279
398B	0.879	1.89	26	0.034	0.721	0.746
399	0.903	1.82	32	0.039	0.775	0.796
400	0.406	1.48	28	0.043	0.750	0.796
401	1.172	1.40	20	0.035	0.712	0.608
402	0.747	1.50	29	0.042	0.733	0.750
403	1.001	1.23	20	0.027	0.508	0.500
404	0.519	1.43	24	0.045	0.771	0.829
405	0.118	0.61	21	0.053	0.587	0.617

TABLE 15

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.
328	156	9	73	178	302	567
329	35	39	77	119	241	456
337	42	42	86	104	173	249
338	31	42	63	85	107	163
340	21	24	63	104	163	270
341	12	14	73	99	153	236
342	42	48	135	185	302	468
350	14	19	39	57	81	125
351	8	11	23	28	41	56
352	59	79	149	189	261	381
353	35	46	91	132	180	281
354	53	75	100	139	159	244
355	11	17	20	29	30	49
368	134	156	386	508	756	1160
375	177	230	464	576	813	1190
381	35	55	419	585	793	1268
386	55	79	284	374	654	974
392	234	303	552	690	951	1406
393	55	79	214	239	444	585
394	50	59	131	171	270	404
395	28	67	338	551	917	1583
396	13	17	49	174	347	728
397	28	38	110	254	421	793
398A	50	69	133	171	221	389
398B	64	80	210	267	480	688
399	22	23	79	162	351	605
400	6	6	23	49	127	220
401	60	68	216	364	634	1168
402	10	11	65	101	318	543
403	92	204	409	579	776	1259
404	16	18	62	100	214	333
405	1	1	3	4	17	56

Kb Estimation For Skunk Creek Watershed
(Existing)

Sub-Basin	Type D Max. Roughness %	Type C Mod. High Roughness %	Type B Mod. Low Roughness %	Type A Min. Roughness %	Weighted m %	Weighted b%	Area Acres	Kb
328	0.0%	100.0%	0.0%	0.0%	-0.02500	0.15000	366.08	0.0859
329	0.0%	0.0%	67.6%	32.4%	-0.01132	0.06704	400.00	0.0376
337	0.0%	0.0%	20.6%	79.4%	-0.00780	0.04824	188.80	0.0305
338	0.0%	0.0%	1.2%	98.8%	-0.00634	0.04048	79.36	0.0284
340	0.0%	0.0%	59.5%	40.5%	-0.01071	0.06380	167.68	0.0400
341	0.0%	0.0%	46.0%	54.0%	-0.00970	0.05840	146.56	0.0374
342	0.0%	0.0%	21.9%	78.1%	-0.00789	0.04876	312.96	0.0291
350	0.0%	0.0%	10.4%	89.6%	-0.00703	0.04416	76.16	0.0309
351	0.0%	0.0%	95.0%	5.0%	-0.01338	0.07800	33.92	0.0575
352	0.0%	0.0%	16.5%	83.5%	-0.00749	0.04660	211.20	0.0292
353	0.0%	0.0%	3.5%	96.5%	-0.00651	0.04140	159.36	0.0271
354	0.0%	0.0%	0.1%	99.9%	-0.00626	0.04004	104.96	0.0274
355	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	19.20	0.0320
368	0.0%	0.0%	9.7%	90.3%	-0.00698	0.04388	718.72	0.0239
375	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	671.36	0.0223
381	0.0%	0.0%	3.9%	96.1%	-0.00654	0.04156	668.80	0.0231
386	0.0%	0.0%	44.6%	55.4%	-0.00960	0.05784	684.16	0.0306
392	0.0%	0.0%	29.0%	71.0%	-0.00843	0.05160	754.56	0.0274
393	0.0%	0.0%	91.3%	8.7%	-0.01310	0.07652	460.80	0.0416
394	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	268.16	0.0248
395	0.0%	0.0%	100.0%	0.0%	-0.01375	0.08000	940.80	0.0391
396	0.0%	0.0%	100.0%	0.0%	-0.01375	0.08000	483.84	0.0431
397	0.0%	0.0%	100.0%	0.0%	-0.01375	0.08000	506.24	0.0428
398A	0.0%	0.0%	78.5%	21.5%	-0.01214	0.07140	192.64	0.0437
398B	0.0%	0.0%	57.2%	42.8%	-0.01054	0.06288	562.56	0.0339
399	0.0%	0.0%	82.0%	18.0%	-0.01240	0.07280	577.92	0.0386
400	0.0%	0.0%	83.8%	16.2%	-0.01254	0.07352	259.84	0.0433
401	0.0%	0.0%	72.1%	27.9%	-0.01166	0.06884	750.08	0.0353
402	0.0%	0.0%	93.6%	6.4%	-0.01327	0.07744	478.08	0.0419
403	0.0%	0.0%	21.9%	78.1%	-0.00789	0.04876	640.64	0.0266
404	0.0%	0.0%	96.4%	3.6%	-0.01348	0.07856	332.16	0.0446
405	0.0%	0.0%	93.6%	6.4%	-0.01327	0.07744	75.52	0.0525

Hydrologic Sub-Basin Characteristics
(Future Condition)

TABLE 16

Future 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 Concentration (Hours)
350	0.376	0.92	37	0.051	0.929	1.000
351	0.036	0.45	20	0.030	0.404	0.429
352	0.313	1.25	22	0.026	0.738	0.758
353	0.243	0.85	26	0.026	0.592	0.613
354	0.164	0.53	25	0.027	0.387	0.417
355	0.432	1.83	24	0.022	0.858	0.846
356	0.627	1.70	21	0.035	1.462	1.421
357	0.417	1.40	21	0.025	0.908	0.962
358	0.512	1.47	29	0.031	1.071	1.142
359	1.470	1.88	65	0.021	0.704	0.608
360	0.625	1.04	56	0.040	0.842	0.846
361	0.691	1.80	214	0.040	0.775	0.754
362	0.891	1.89	26	0.033	1.425	1.396
363	0.253	0.63	110	0.040	0.367	0.404
364	0.077	0.89	31	0.026	0.529	0.546
365	0.027	1.35	18	0.024	0.783	0.808
366	0.030	0.20	140	0.032	0.138	0.162
368	0.872	1.83	22	0.022	1.004	0.992
369	0.954	1.85	21	0.022	0.962	0.950
370	0.259	1.52	22	0.022	0.925	0.879
371	0.509	1.58	18	0.022	0.938	0.917
372	0.022	1.32	9	0.026	1.067	1.138
373	0.876	1.62	25	0.030	1.204	1.183
374	1.001	1.23	20	0.023	0.800	0.767
375	0.489	1.43	24	0.041	1.400	1.479
376	0.035	1.24	39	0.030	0.650	0.679
377	0.347	1.21	13	0.040	1.500	1.500

TABLE 17

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)
350	0.376	0.92	37	0.051	0.646	1.000
351	0.036	0.45	20	0.030	0.313	0.367
352	0.313	1.25	22	0.026	0.542	0.592
353	0.243	0.85	26	0.026	0.417	0.463
354	0.164	0.53	25	0.027	0.300	0.354
355	0.432	1.83	24	0.022	0.642	0.663
356	0.627	1.70	21	0.035	0.942	1.029
357	0.417	1.40	21	0.025	0.633	0.696
358	0.516	1.47	29	0.031	0.712	0.775
359	1.470	1.88	65	0.021	0.471	0.454
360	0.625	1.04	56	0.040	0.538	0.554
361	0.691	1.80	214	0.040	0.458	0.475
362	0.891	1.89	26	0.033	0.933	0.996
363	0.253	0.63	110	0.040	0.258	0.325
364	0.152	0.89	31	0.026	0.387	0.438
365	0.027	1.35	18	0.024	0.596	0.637
366	0.030	0.20	140	0.032	0.112	0.138
368	1.123	1.83	22	0.022	0.712	0.738
369	1.045	1.85	21	0.022	0.692	0.721
370	1.040	1.52	22	0.022	0.625	0.642
371	0.713	1.58	18	0.022	0.671	0.696
372	0.048	1.32	9	0.026	0.808	0.904
373	1.013	1.62	25	0.030	0.800	0.837
374	1.001	1.23	20	0.023	0.563	0.575
375	0.515	1.43	24	0.041	0.929	1.021
376	0.035	1.24	39	0.030	0.479	0.521
377	0.347	1.21	13	0.040	1.025	1.142

TABLE 18

Future 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 (Hours)
350	0.391	0.92	37	0.051	0.483	0.512
351	0.061	0.45	20	0.030	0.258	0.313
352	0.324	1.25	22	0.026	0.438	0.471
353	0.243	0.85	26	0.026	0.329	0.379
354	0.164	0.53	25	0.027	0.246	0.300
355	1.187	1.83	24	0.022	0.521	0.512
356	0.720	1.70	21	0.035	0.717	0.758
357	0.417	1.40	21	0.025	0.483	0.512
358	0.516	1.47	29	0.031	0.521	0.554
359	1.470	1.88	65	0.021	0.379	0.375
360	0.756	1.04	56	0.040	0.400	0.425
361	0.791	1.80	214	0.040	0.342	0.371
362	0.921	1.89	26	0.033	0.704	0.729
363	0.301	0.63	110	0.040	0.213	0.262
364	0.416	0.89	31	0.026	0.313	0.363
365	0.636	1.35	18	0.024	0.479	0.500
366	0.030	0.20	140	0.032	0.096	0.117
368	1.123	1.83	22	0.022	0.558	0.550
369	1.049	1.85	21	0.022	0.554	0.554
370	1.043	1.52	22	0.022	0.492	0.483
371	1.070	1.58	18	0.022	0.538	0.529
372	0.256	1.32	9	0.026	0.654	0.708
373	1.015	1.62	25	0.030	0.608	0.613
374	1.001	1.23	20	0.023	0.454	0.458
375	0.519	1.43	24	0.041	0.683	0.738
376	0.182	1.24	39	0.030	0.383	0.429
377	0.480	1.21	13	0.040	0.767	0.833

TABLE 19

Summary Of Existing Sub-Basin 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.
350	53	53	126	121	286	406
351	13	15	24	27	64	82
352	74	81	163	176	288	363
353	42	52	110	139	211	288
354	61	76	115	139	182	244
355	115	131	241	275	1112	1490
356	58	73	207	212	488	585
357	55	59	151	171	305	402
358	43	45	144	174	337	460
359	211	366	727	981	1356	1393
360	60	70	198	295	574	880
361	39	45	171	275	541	838
362	80	114	267	294	592	755
363	60	74	121	165	276	410
364	20	24	85	105	406	564
365	8	9	15	17	605	786
366	13	17	23	29	35	49
368	172	191	492	575	915	1249
369	194	226	511	572	907	1188
370	39	54	470	584	894	1272
371	106	129	358	415	951	1297
372	5	4	21	19	189	204
373	100	116	348	414	733	1010
374	212	286	541	674	951	1332
375	38	39	132	145	309	388
376	8	8	16	17	144	178
377	32	35	98	102	295	353

Kb Estimation For Skunk Creek Watershed
(Future)

Sub-Basin	Type D Max. Roughness %	Type C Mod. High Roughness %	Type B Mod. High Roughness %	Type A Min. Roughness %	Weighted m%	Weighted b %	Area Acres	Kb
350	0.0%	9.9%	90.1%	0.0%	-0.01486	0.08693	250.24	0.0513
351	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	39.04	0.0301
352	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	207.36	0.0255
353	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	155.52	0.0263
354	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	104.96	0.0274
355	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	759.68	0.0220
356	0.0%	0.0%	67.5%	22.5%	-0.01069	0.06300	460.80	0.0345
357	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	266.88	0.0248
358	0.0%	0.0%	34.2%	64.8%	-0.00875	0.05328	330.24	0.0312
359	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	940.80	0.0214
360	0.0%	0.0%	82.7%	17.3%	-0.01245	0.07308	483.84	0.0396
361	0.0%	0.0%	86.7%	13.3%	-0.01275	0.07468	506.24	0.0402
362	0.0%	0.0%	52.5%	47.5%	-0.01019	0.06100	589.44	0.0328
363	0.0%	0.0%	62.7%	36.3%	-0.01089	0.06468	192.64	0.0398
364	0.0%	0.0%	3.7%	96.3%	-0.00653	0.04148	266.24	0.0256
365	0.0%	0.0%	1.4%	98.6%	-0.00636	0.04056	407.04	0.0240
366	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	19.20	0.0320
368	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	718.72	0.0221
369	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	671.36	0.0223
370	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	667.52	0.0223
371	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	684.80	0.0223
372	0.0%	0.0%	0.0%	100.0%	-0.00625	0.04000	163.84	0.0262
373	0.0%	0.0%	39.0%	61.0%	-0.00918	0.05560	649.60	0.0298
374	0.0%	0.0%	4.1%	95.9%	-0.00656	0.04164	640.64	0.0232
375	0.0%	0.0%	77.7%	22.3%	-0.01208	0.07108	332.16	0.0406
376	0.0%	0.0%	13.2%	86.8%	-0.00724	0.04528	116.48	0.0303
377	0.0%	0.0%	72.3%	27.7%	-0.01167	0.06892	307.20	0.0399

SECTION IV

Hydrograph Routing Parameters

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 & UNION HILLS DRIVE INTERSECTION
STAGE - STORAGE - DISCHARGE RELATIONSHIP

SE	SV			SQ
Stage (msl)	Storage Volume (AC-FT)	Pump* Discharge (cfs)	Weir Discharge (cfs)	Total Discharge (cfs)
40.0	0	0	0	0
50.0	26.35	0	0	0
54.0	65.43	0	0	0
54.5	70.00	0	150	150
55.0	77.50	0	455	455
56.0	87.50	0	1458	1458

*Assume Pump Fails to Operate

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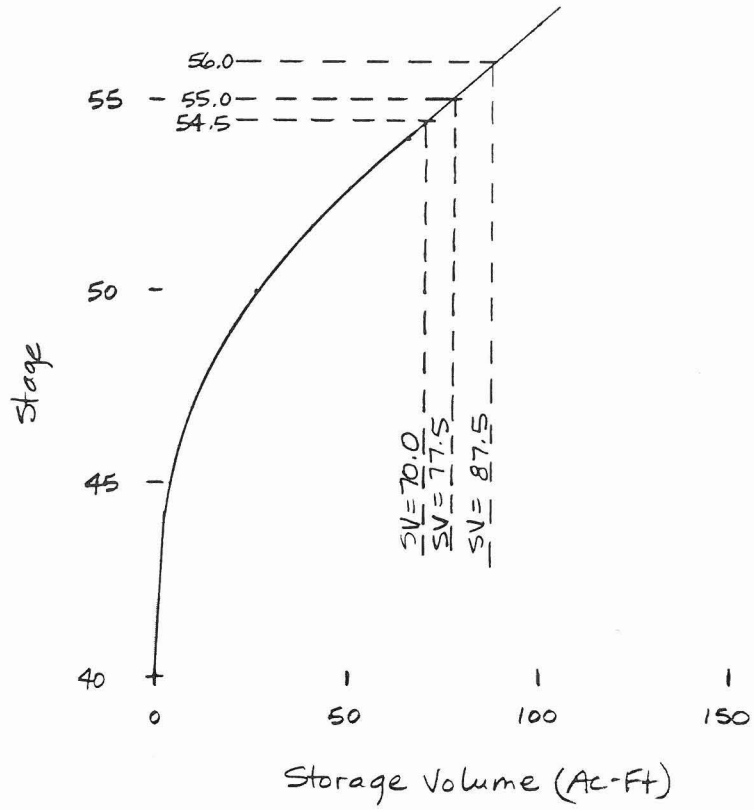
	For ACDC ADMS		

STAGE - STORAGE RELATIONSHIP FOR I-17 & UNION HILLS DRIVE

stage (msl)	Interval (Ft)	Area (Ac)	Volume (Ac-Ft)	Storage Volume (Ac-Ft)
40.0		0.83		0
	10.0		26.35	
50.0		4.44		26.35
	4.0		39.08	
54.0		15.10		65.43
	0.5			
54.5				70.00 *
	0.5			
55.0				77.50 *
	1.0			
56.0				87.50 *

* VALUE TAKEN FROM CURVE BELOW



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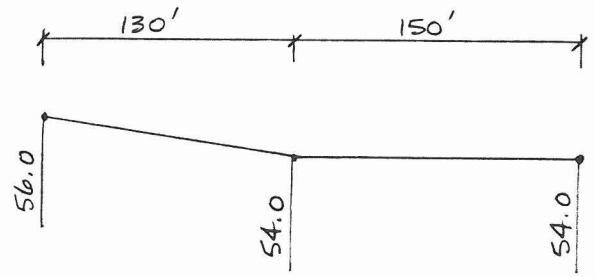
	Checked by	Date	Sheet No.
	For ACDC ADMS		

WEIR FLOW CALCULATIONS FOR I-17 & UNION HILLS INTERSECTION

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



WSE = 54.0

$Q = 0$

WSE = 54.5

$Q = 2.63\left(32.5 \times \frac{0.5}{2}^{1.5} + 150 \times 0.5^{1.5}\right) = \underline{150\text{cfs}}$

WSE = 55.0

$Q = 2.63\left(65 \times \frac{1.0}{5}^{1.5} + 150 \times 1.0^{1.5}\right) = \underline{455\text{cfs}}$

WSE = 56.0

$Q = 2.63\left(130 \times \frac{2.0}{2}^{1.5} + 150 \times 2.0^{1.5}\right) = \underline{1458\text{cfs}}$

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 10-30-91	Job No. 0146
	Checked by	Date	Sheet No.
	For		

STAGE - STORAGE VALUES FOR C.A.P. STRUCTURE NO. 6

Stage (Ft.)	Interval (Ft.)	Area (Ac.)	Volume (Ac.-Ft.)	Storage Volume (Ac.-Ft.)
1515		0		0
	1		0.15	
1516		0.30		0.15
	2		10.47	
1518		10.17		10.62
	2		32.85	
1520		22.68		43.47
	2		59.28	
1522		36.60		102.75

LOW LEVEL OUTLET

Diameter = 29 in.
Area = 4.59 ft^2
Coefficient of Discharge = 0.6
Centerline Elevation = 16.43
Exponent of Head = 0.5

SPILLWAY

Crest Elevation = 20.40
Length = 115 ft.
Weir Coefficient = 3.0
Exponent of Head = 1.5

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 11/92	Job No. 0A6
	Checked by	Date	Sheet No.
	For NE COR. I-17 & UNION HILLS RD. DETENTION BASIN		

STAGE - STORAGE - DISCHARGE RELATIONSHIP

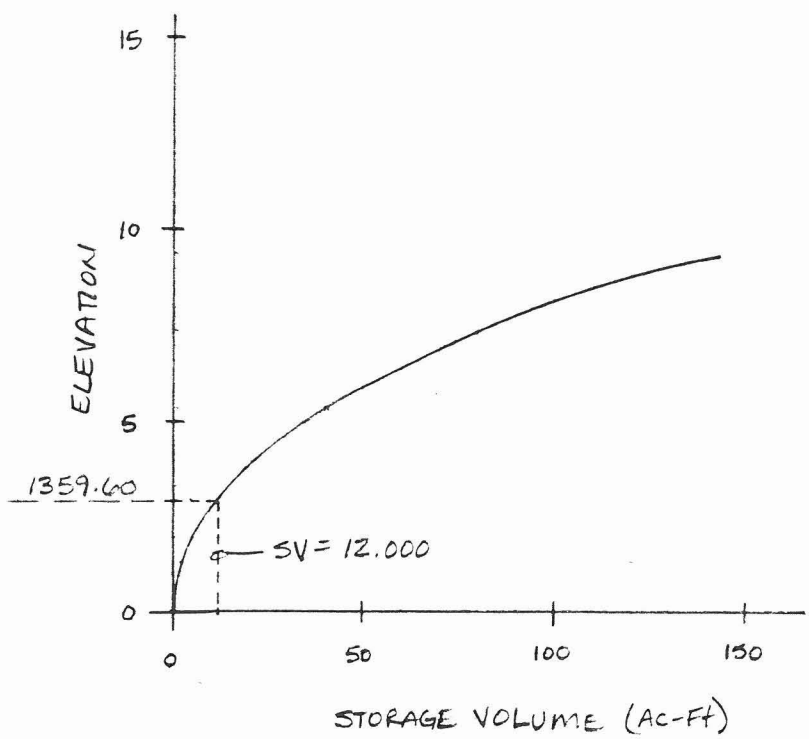
SE	SV			SQ
Stage (Ft.)	Storage Volume (Ac·Ft)	Culvert Discharge (cfs)	Weir Discharge (cfs)	Total Discharge (cfs)
1356.70	0	0	0	0
1358.00	2.252	0	0	0
1359.60	12.000	0	0	0
1360.00	16.870	21	0	21
1362.00	40.616	330	0	330
1364.00	79.661	510	11831	12341
1366.00	142.306	840	14483	15323

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 11/92	Job No. 0146
	Checked by	Date	Sheet No.
	For NE Cor. I-17 & Union Hills Dr. Detention Basin		

STAGE - STORAGE RELATIONSHIP FOR NE COR. I-17 & UNION HILLS DR.

STAGE	INTERVAL (Ft)	AREA (Ac)	VOLUME (Ac-Ft)	STORAGE VOLUME (Ac-Ft)
1356.70		0		0
	1.30		2.252	
1358.00		5.197		2.252
	1.60			
1359.60				12.000 *
	0.40		14.618	
1360.00		9.421		16.870
	2.00		23.746	
1362.00		14.325		40.616
	2.00		39.045	
1364.00		24.720		79.661
	2.00		62.645	
1366.00		37.925		142.306

* VALUE TAKEN FROM CURVE BELOW



PROJECT: ACDC ADMS
NECor. I-17 & Union Hills Dr. Detention Outlet

DESIGNER: LMT

DATE: 11/92

HYDROLOGIC AND CHANNEL INFORMATION

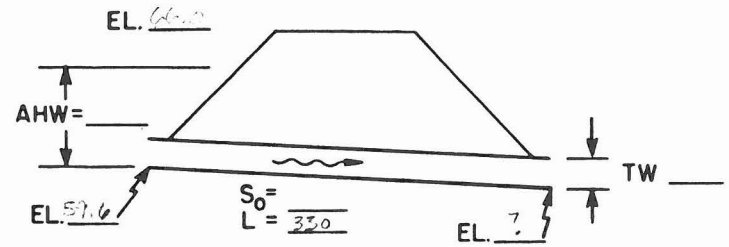
(1) 30° to 75° Wingwall Flare (Inlet)

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 = _____

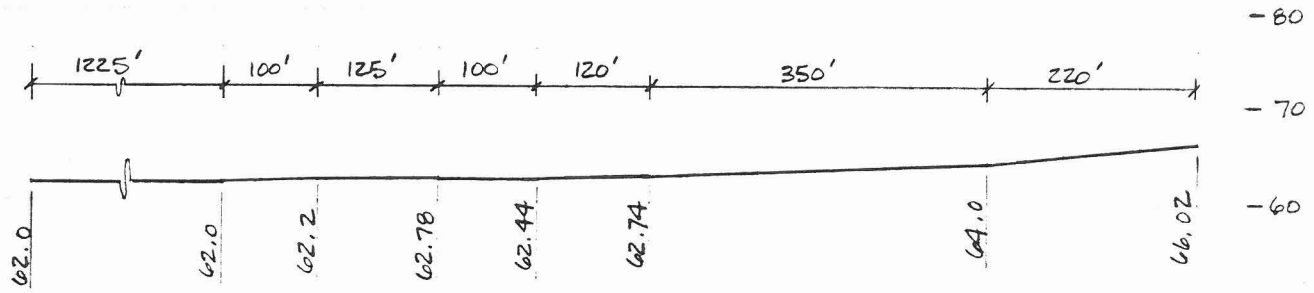
CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE	HEADWATER COMPUTATION: INLET CONT. $\frac{HW}{D}$	HW	OUTLET CONTROL HW=H + h_o − LS_o: K_e	H	d_c	$\frac{d_c+D}{2}$	TW	h_o	LS_o	HW	CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS
3-10'x3' RBC	0		-		0.5											WSE = 59.60
	7x30 =21		0.133	0.40	"					2'		0.40				WSE 60.00
	11x30 =330		0.800	2.40	"					"		2.40				WSE 62.00
	17x30 =510		1.100	4.40	0.5	1.40				3'		4.40			Q=3x180 540	WSE = 64.00
	32x30 =960		2.133	6.40	0.5	3.40				3'		6.40			Q=3x280 840	WSE = 66.00

SUMMARY & RECOMMENDATIONS:

Figure 7

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 11/92	Job No. 0146
	Checked by	Date	Sheet No.
	For ACDC ADMS		

WEIR FLOW CALCULATIONS FOR NE COR. I-17 & UNION HILLS DR.



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

WSE = 62.00

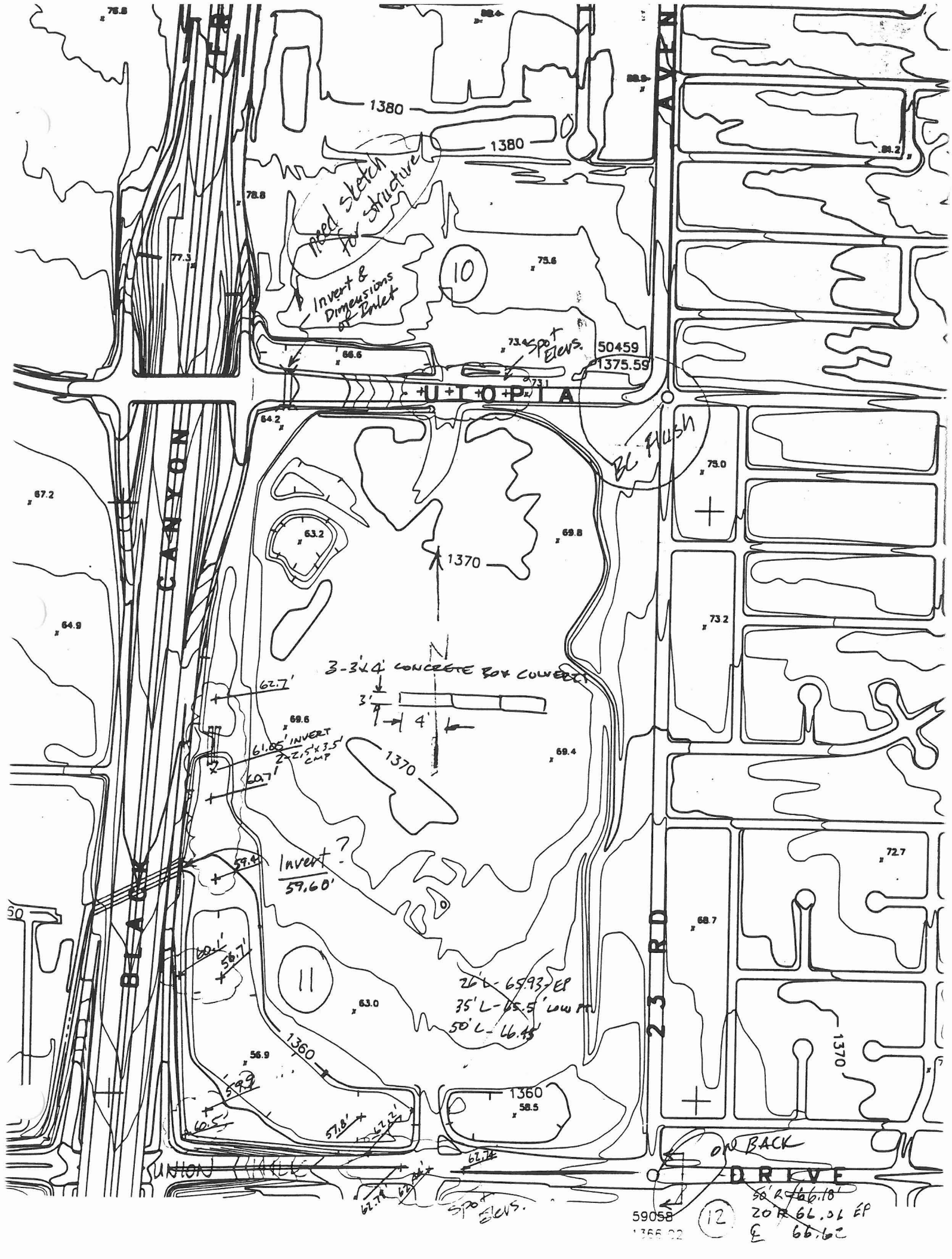
$Q = 0$

WSE = 64.00

$$Q = 2.63\left[1225 \times 2^{1.5} + 100 \times 1.9^{1.5} + 125 \times 1.51^{1.5} + 100 \times 1.39^{1.5} + 120 \times 1.41^{1.5} + 350 \times \frac{1.26}{2}^{1.5}\right] = 11831 \text{ cfs}$$

WSE = 66.00

$$Q = 2.63\left[1225 \times 4^{1.5} + 100 \times 3.9^{1.5} + 125 \times 3.51^{1.5} + 100 \times 3.39^{1.5} + 120 \times 3.41^{1.5} + 350 \times 2.63^{1.5} + 217.82 \times 1^{1.5}\right] = 14483 \text{ cfs}$$


1380
1380
need sketch for structure
Invert & Dimensions of Inlet
10
Spot Elevs.
50459
1375.59
UTOPIA
BL flush
CANYON
BEAR
1370
3-3'x4' CONCRETE BOX CULVERT
3'
4'
62.7'
61.05' INVERT 2-2.5'x3.5' CMP
60.7'
1370
Invert ?
59.60'
59.4
11
26' L - 65.93' EP
35' L - 65.5' LOW PT
50' L - 66.45'
1360
1360
56.9
59.9
60.5'
57.8'
62.2'
62.7'
66.2'
Spot Elevs.
23 RD
1370
ON BACK
DRIVE
50' R - 66.18'
20' R - 66.06 EP
℄ 66.62
59058
12

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 11/92	Job No. 246
	Checked by	Date	Sheet No.
	For NE Cor. I-17 & UTOPIA RD. DETENTION BASIN		

STAGE - STORAGE - DISCHARGE RELATIONSHIP

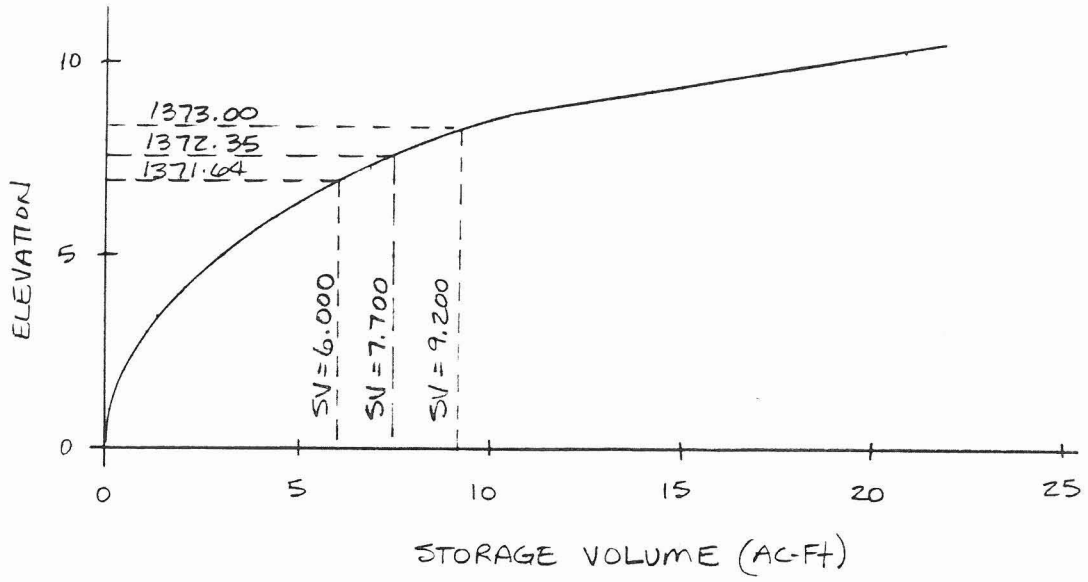
SE	SV			SQ
Stage (Ft)	Storage Volume (Ac-Ft)	Culvert Discharge (cfs)	Weir Discharge cfs	Total Discharge (cfs)
1364.64	0	0	0	0
1368.00	1.32	0	0	0
1371.64	6.00	0	0	0
1372.00	6.90	30	0	30
1372.35	7.70	82	0	82
1373.00	9.20	217	183	400
1374.00	14.13	496	1994	2490
1375.00	20.97	842	5685	6527

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 11/92	Job No. 0146
	Checked by	Date	Sheet No.
	For NE Cor. I-17 & UTOPIA RD. DETENTION BASIN		

STAGE - STORAGE RELATIONSHIP FOR NE Cor. I-17 & UTOPIA BASIN

STAGE	INTERVAL (Ft)	AREA (Ac)	VOLUME (Ac-Ft)	STORAGE VOLUME (Ac-Ft)
1364.64		0		0
	3.36		1.316	
1368.00		1.175		1.316
	3.64			
1371.64				6.000 *
	0.36		5.582	
1372.00		1.616		6.898
	0.35			
1372.35				7.700 *
	0.65			
1373.00				9.200 *
	1.00		7.236	
1374.00		5.620		14.134
	1.00		6.832	
1375.00		8.044		20.966

* VALUES TAKEN FROM CURVE BELOW



PROJECT: ACDC ADMS

NE Cor. I-17 & UTOPIA RD. DETENTION OUTLET

DESIGNER: LMT

DATE: 11/20/92

HYDROLOGIC AND CHANNEL INFORMATION

(3) 0° Wingwall Flare (Inlet)

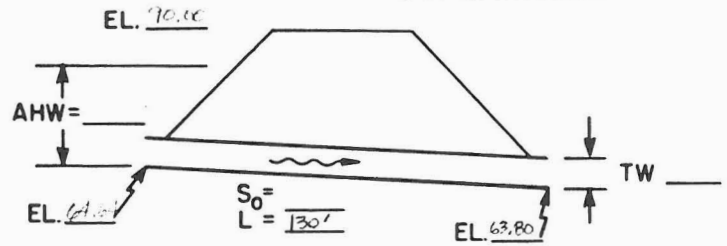
Q_1 = _____ TW_1 = _____

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 = _____

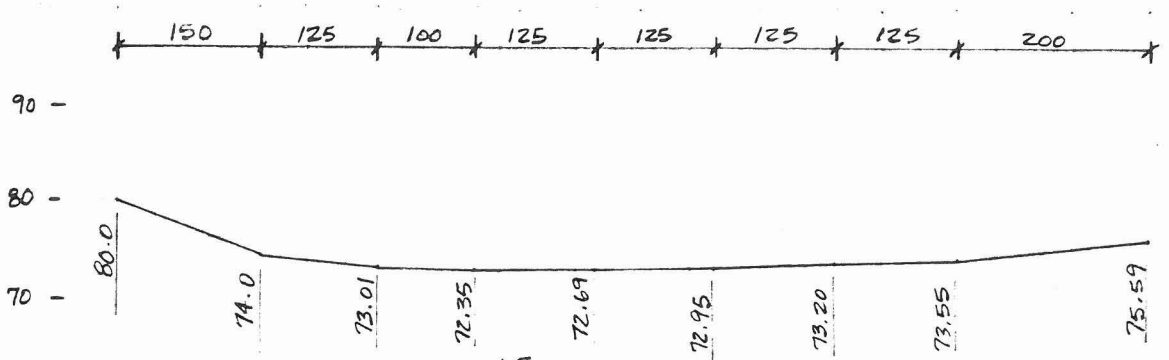
CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE	HEADWATER COMPUTATION: INLET CONT. HW/D	INLET CONT. HW	OUTLET CONTROL HW=H+h0-LS0: Ke	H	dc	(dc+D)/2	TW	h0	LS0	HW	CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS	WEIR Q
2-6'x6' CBC	0		–						–			–				WSE = 71.64	0
w/7' High Inlet Wall	48x12 576		1.227	7.36	0.5	2.20				6.0	.84	7.36	Q= 620			WSE = 72.00	30
	52x12 = 624		1.285	7.71	"	2.55				"	"	7.71	630			WSE = 72.35	82
	55x12 = 660		1.393	8.36	"	3.20				"	"	8.36	760			WSE = 73.00	217
	65x12 = 780		1.560	9.36	"	4.20				"	"	9.36	840			WSE = 74.00	496
	70x12 = 840		1.727	10.36	0.5	5.20				6.0	.84	10.36	940			WSE = 75.00	842

SUMMARY & RECOMMENDATIONS: THE INLET STRUCTURE TO THE PIPE CULVERT IS 3.5' DEEP X 45' WIDE X 7' HIGH, THEREFORE WEIR ANALYSIS CONTROLS.
$Q = CLH^{1.5}$ where $C = 2.63$ & $L = 52'$

Figure 7

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by LMT	Date 11/92	Job No. 0146
	Checked by	Date	Sheet No.
	For ACDC ADMS		

WEIR FLOW CALCULATIONS FOR NE COR. I-17 & UTOPIA DETENTION



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

WSE = 72.35

$Q = 0$

WSE = 74.00

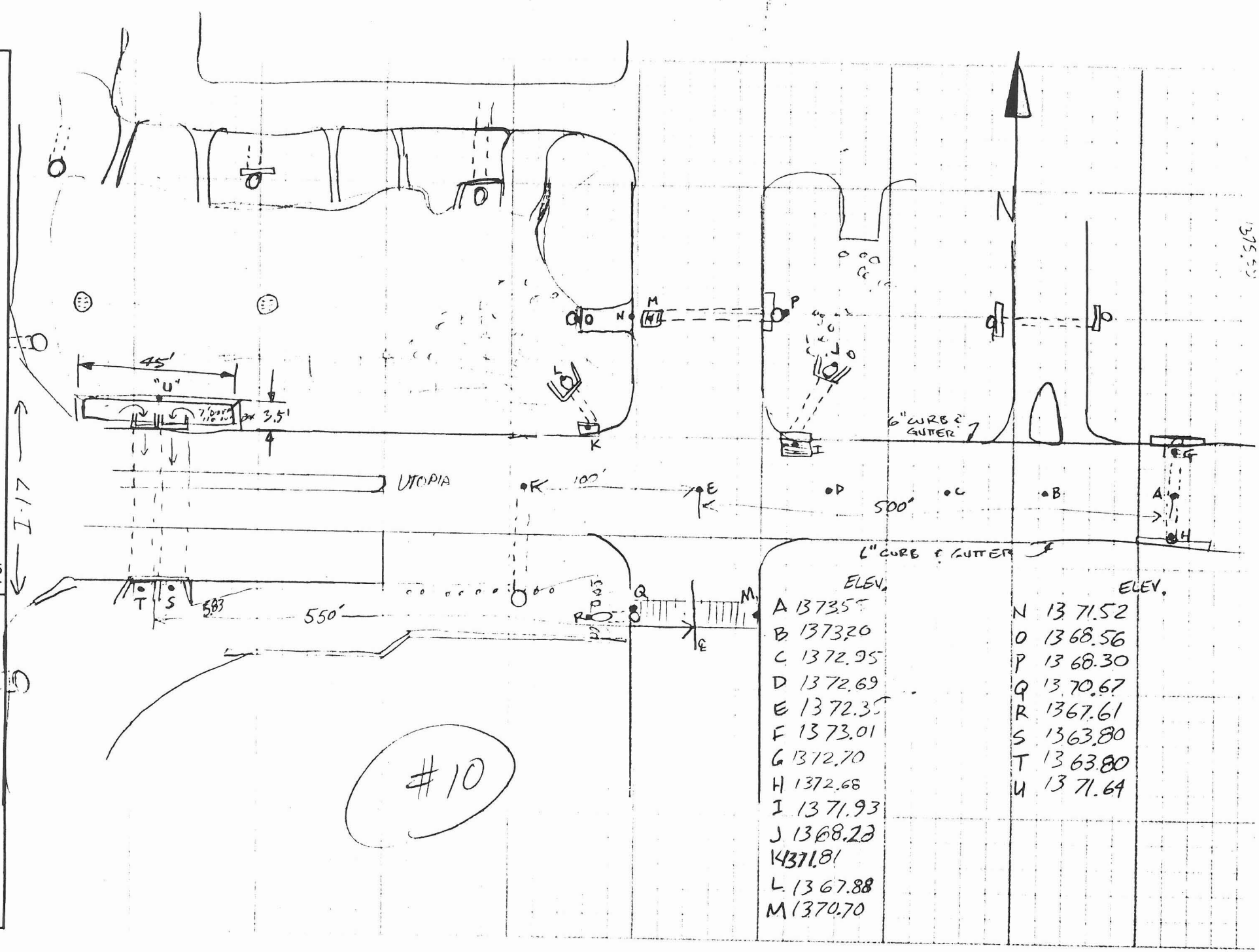
$$Q = 2.63\left[125\times\left(\frac{.99}{2}\right)^{1.5} + 100\times\left(\frac{.99+1.65}{2}\right)^{1.5} + 125\times\left(\frac{1.65+1.31}{2}\right)^{1.5} + 125\times\left(\frac{1.31+1.05}{2}\right)^{1.5} + 125\times\left(\frac{1.05+0.80}{2}\right)^{1.5} + 125\times\left(\frac{0.80+0.45}{2}\right)^{1.5} + \frac{.45}{2.04}\times 200\times\left(\frac{.45}{2}\right)^{1.5}\right] = 1994\text{ cfs}$$

WSE = 75.00

$$Q = 2.63\left[\frac{1}{6}\times 150\times\left(\frac{1}{2}\right)^{1.5} + 125\times\left(\frac{1.0+1.99}{2}\right)^{1.5} + 100\times\left(\frac{1.99+2.65}{2}\right)^{1.5} + 125\times\left(\frac{2.65+2.31}{2}\right)^{1.5} + 125\times\left(\frac{2.31+2.05}{2}\right)^{1.5} + 125\times\left(\frac{2.05+1.80}{2}\right)^{1.5} + 125\times\left(\frac{1.80+1.45}{2}\right)^{1.5} + \frac{1.45}{2.04}\times 200\times\left(\frac{1.45}{2}\right)^{1.5}\right] = 5685\text{ cfs}$$

WSE = 73.00

$$Q = 2.63\left[\frac{.65}{.66}\times 100\times\left(\frac{.65}{2}\right)^{1.5} + 125\times\left(\frac{.65+.31}{2}\right)^{1.5} + 125\times\left(\frac{.31+.05}{2}\right)^{1.5} + \frac{.05}{.25}\times 125\times\left(\frac{.05}{2}\right)^{1.5}\right] = 183\text{ cfs}$$



ELEV.		ELEV.	
A	1373.55	N	1371.52
B	1373.20	O	1368.56
C	1372.95	P	1368.30
D	1372.69	Q	1370.67
E	1372.35	R	1367.61
F	1373.01	S	1363.80
G	1372.70	T	1363.80
H	1372.68	U	1371.64
I	1371.93		
J	1368.23		
K	1371.81		
L	1367.88		
M	1370.70		

KAMINSKI HUBBARD engineering inc.
• Surveying
• Civil
• Hydrology

Made by
Checked by
For #10

Date
Date

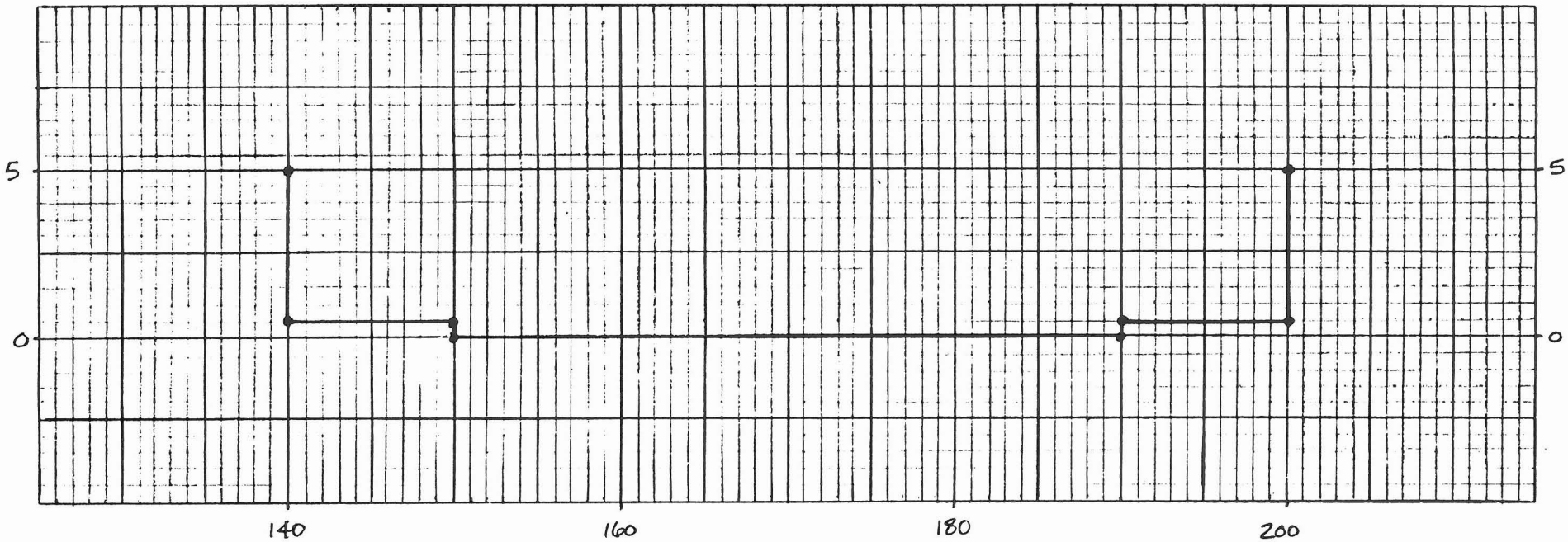
Job No.
Sheet No.

E101-0374-20M

MUSKINGUM-CUNGE CHANNEL ROUTE

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER 340B



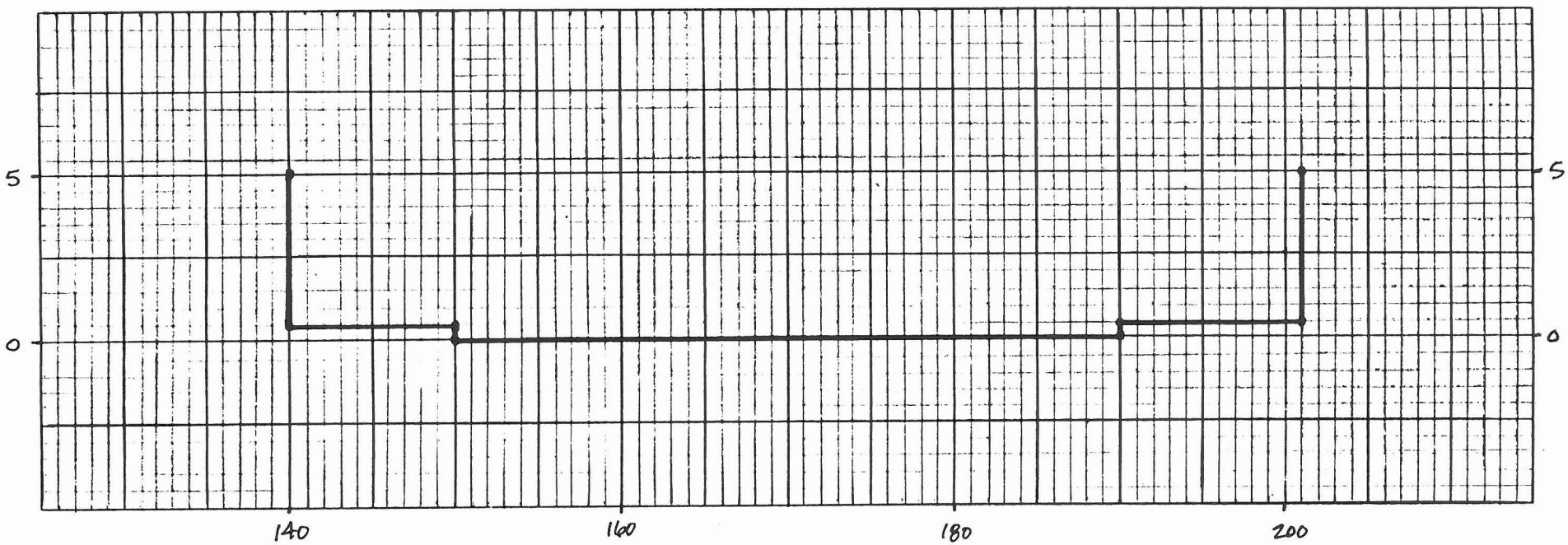
RD								
RC	0.030	0.020	0.030	4240	0.0061			
RX	140	140	150	150	190	190	200	200
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: LMT

MUSKINGUM-CUNGE CHANNEL ROUTE

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER 350B



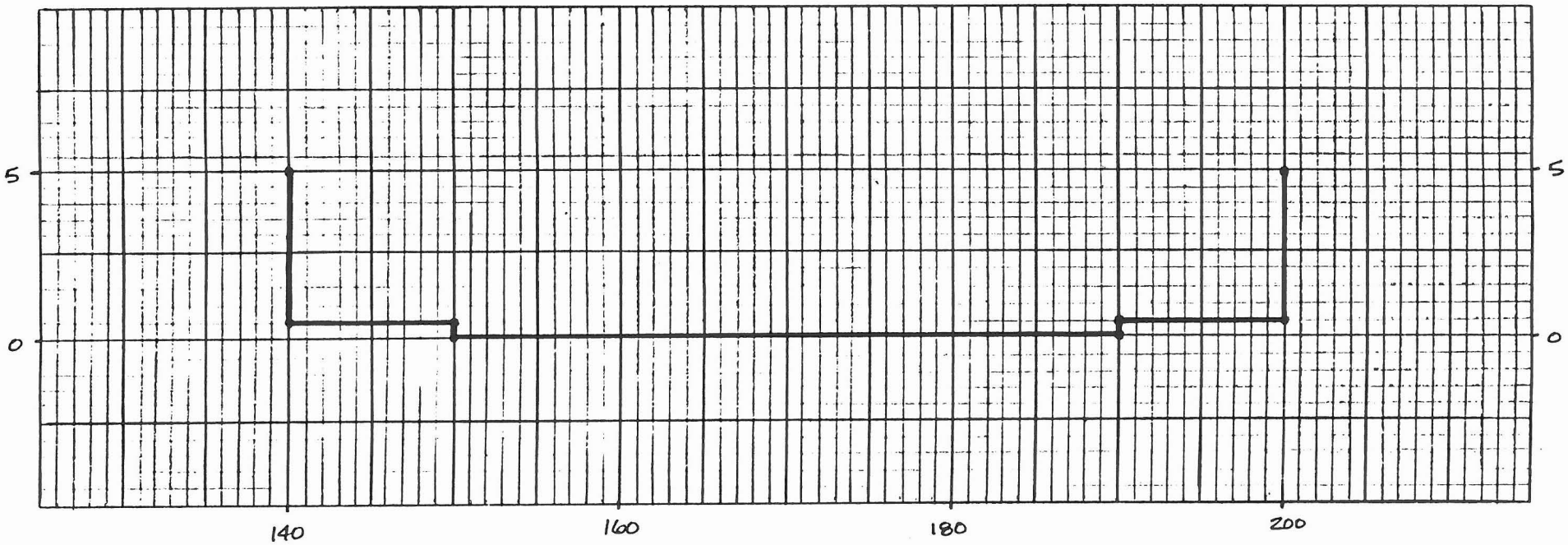
RD								
RC	0.030	0.020	0.030	1400	0.0036			
RX	140	140	150	150	190	190	200	200
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: LMT

MUSKINGUM-CUNGE CHANNEL ROUTE

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER 393



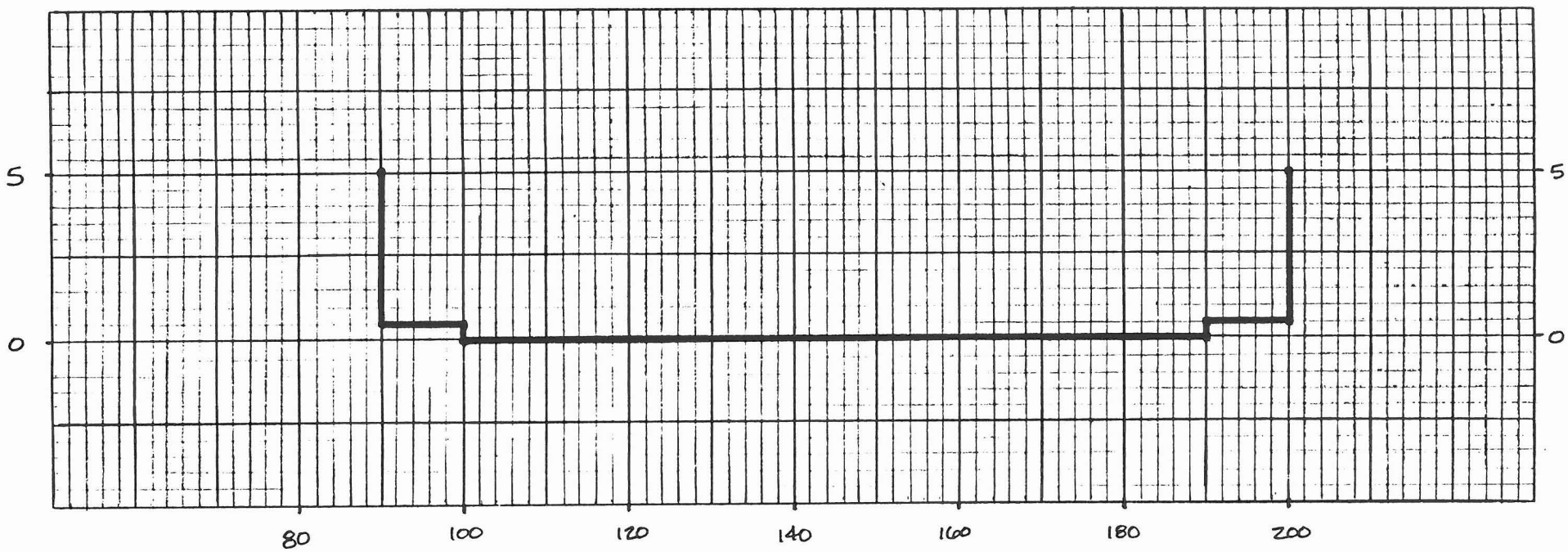
RD								
RC	0.030	0.020	0.030	5315	0.0039			
RX	140	140	150	150	190	190	200	200
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: LMT

MUSKINGUM-CUNGE CHANNEL ROUTE

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER 399



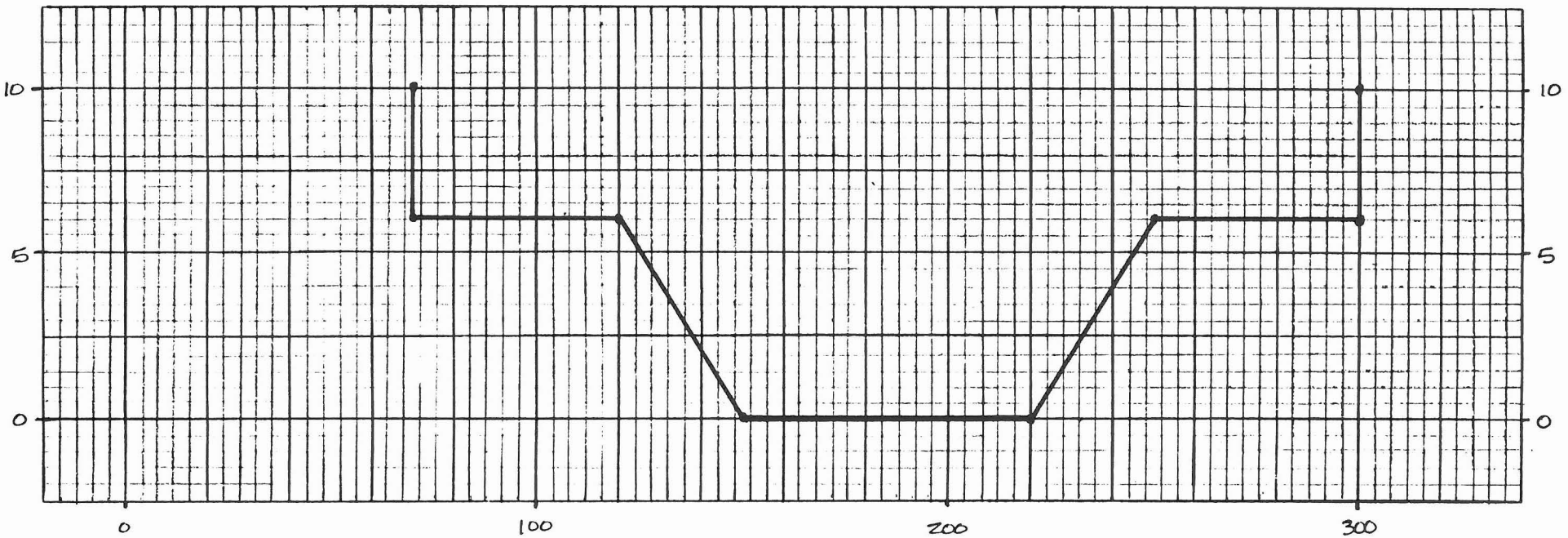
RD								
RC	0.030	0.020	0.030	8615	0.0052			
RX	90	90	100	100	190	190	200	200
RY	5.0	0.5	0.5	0	0	0.5	0.5	5.0

CALCULATED BY: LMT

MUSKINGUM-CUNGE CHANNEL ROUTE

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER 399



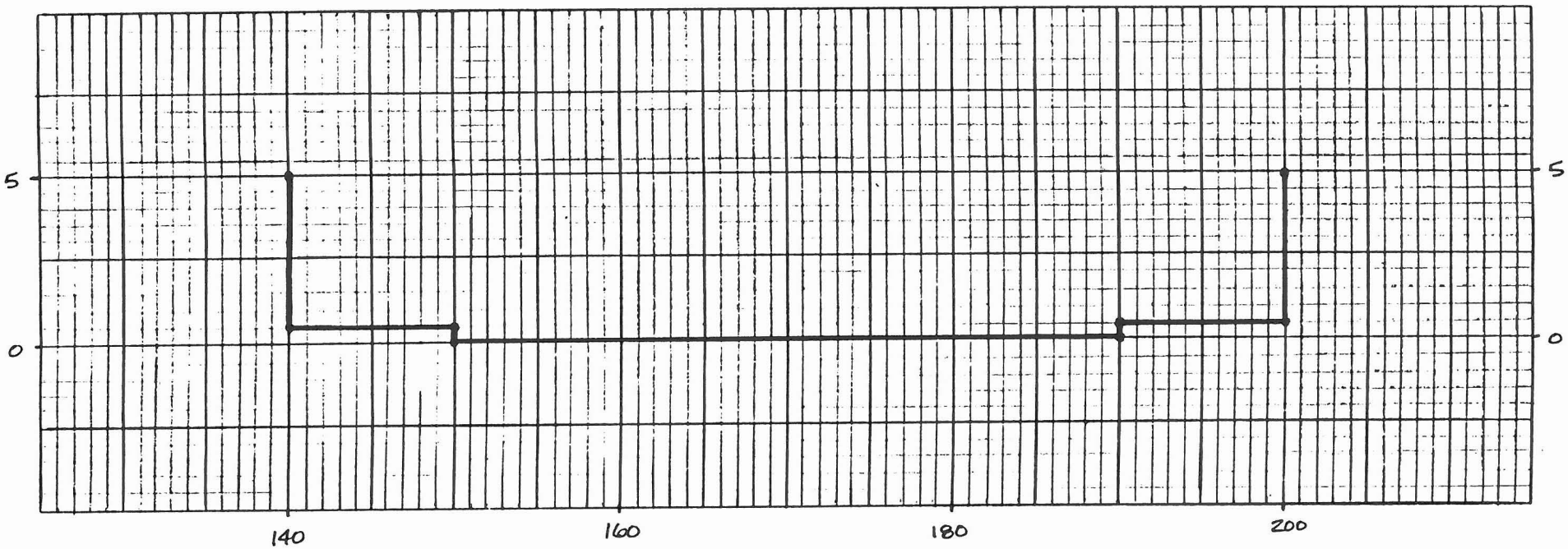
RD								
RC	0.030	0.020	0.030	5770	0.0049			
RX	70	70	120	150	220	250	300	300
RY	10.0	6.0	6.0	0.0	0.0	6.0	6.0	10.0

CALCULATED BY: LMT

MUSKINGUM-CUNGE CHANNEL ROU.

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER 368



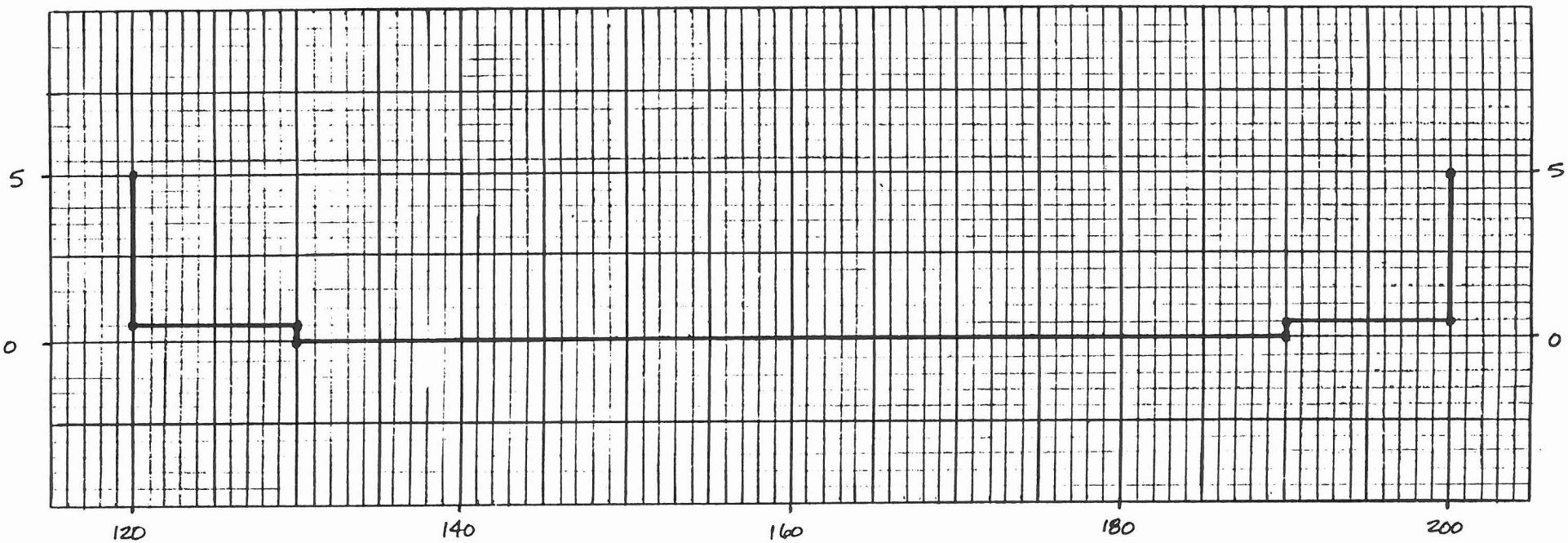
RD								
RC	0.030	0.020	0.030	5470	0.0031			
RX	140	140	150	150	190	190	200	200
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: LMT

MUSKINGUM - CUNGE CHANNEL ROUTE

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER 375



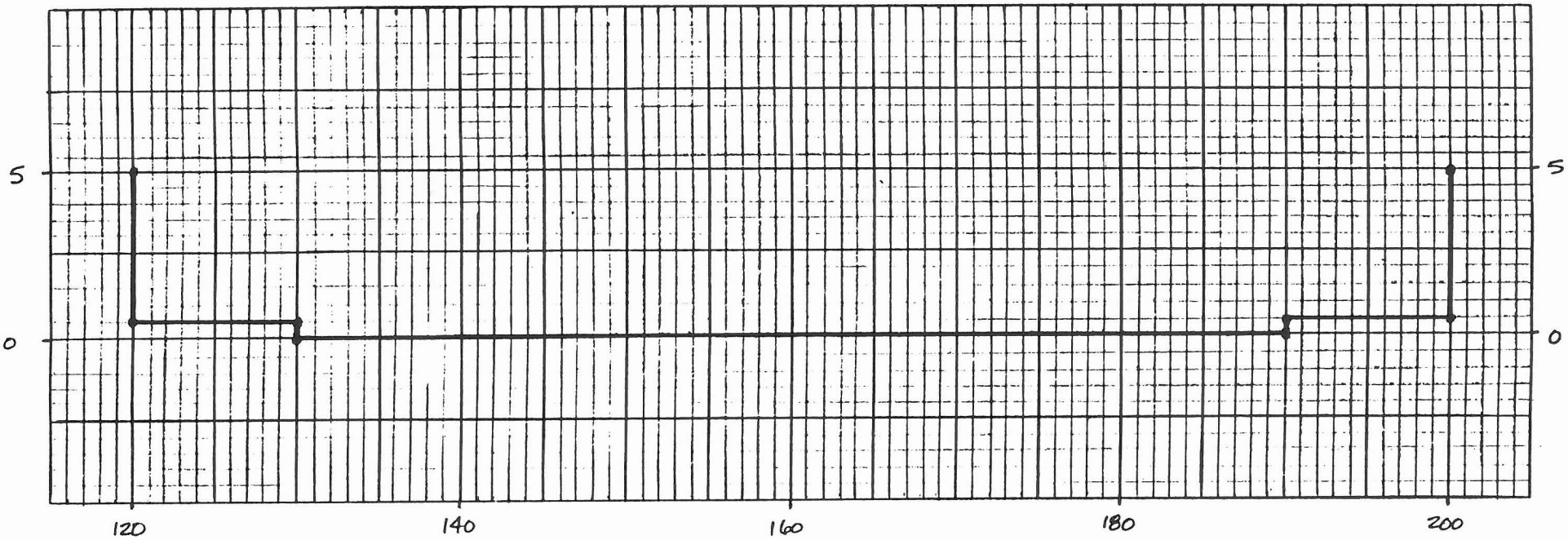
RD								
RC	0.030	0.020	0.030	5280	0.0047			
RX	120	120	130	130	190	190	200	200
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: LMT

MUSKINGUM - CUNGE CHANNEL ROUTE

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER 375



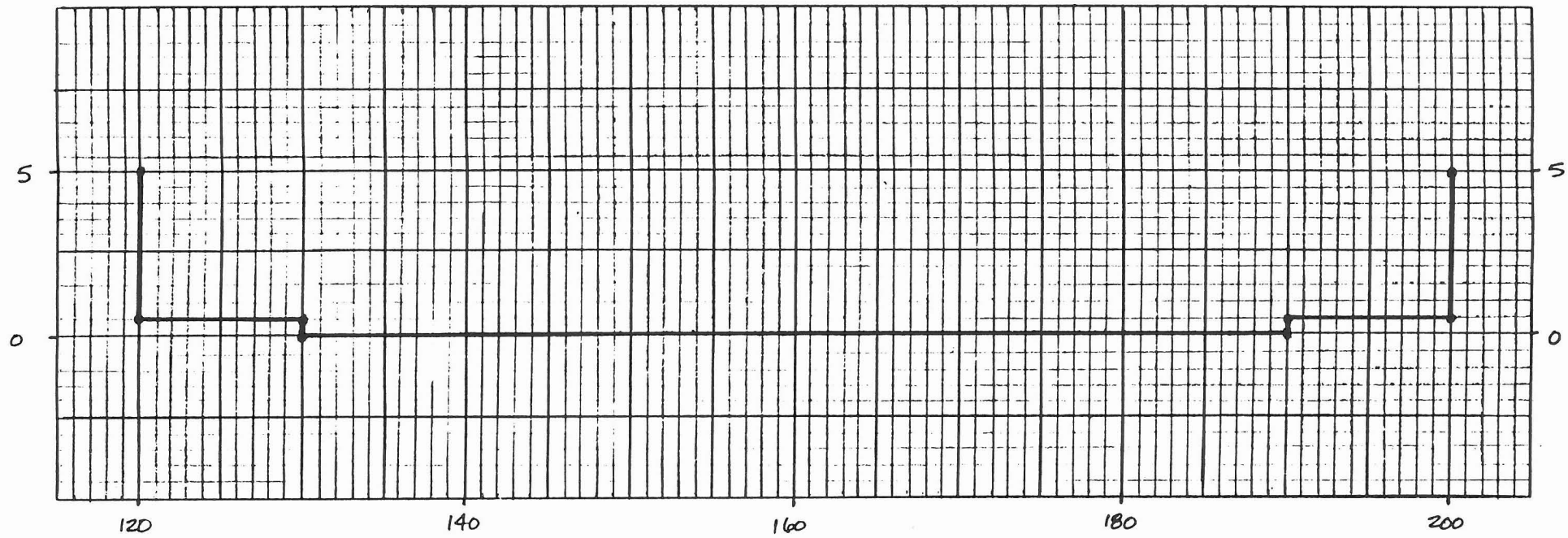
RD								
RC	0.030	0.020	0.030	5600	0.0034			
RX	120	120	130	130	190	190	200	200
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: LMT

MUSKINGUM - CUNGE CHANNEL ROUTE

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER 381



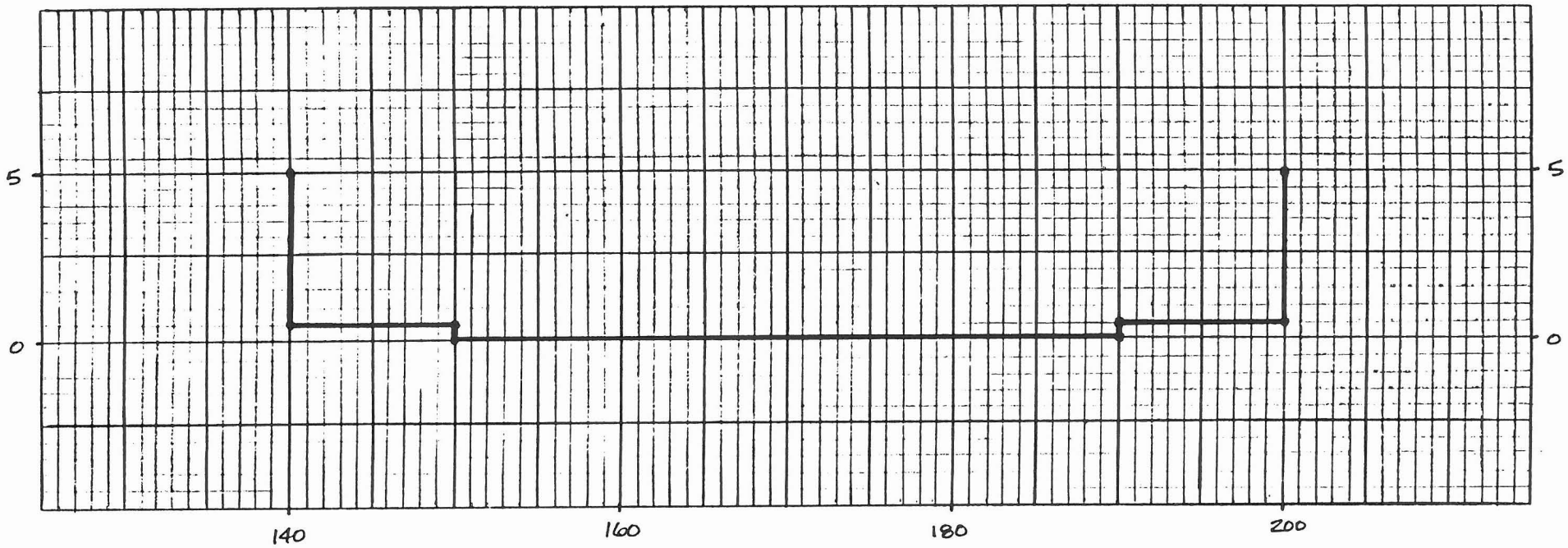
RD								
RC	0.030	0.020	0.030	5305	0.0041			
RX	120	120	130	130	190	190	200	200
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: LMT

MUSKINGUM - CONGE CHANNEL ROUTE

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER 386



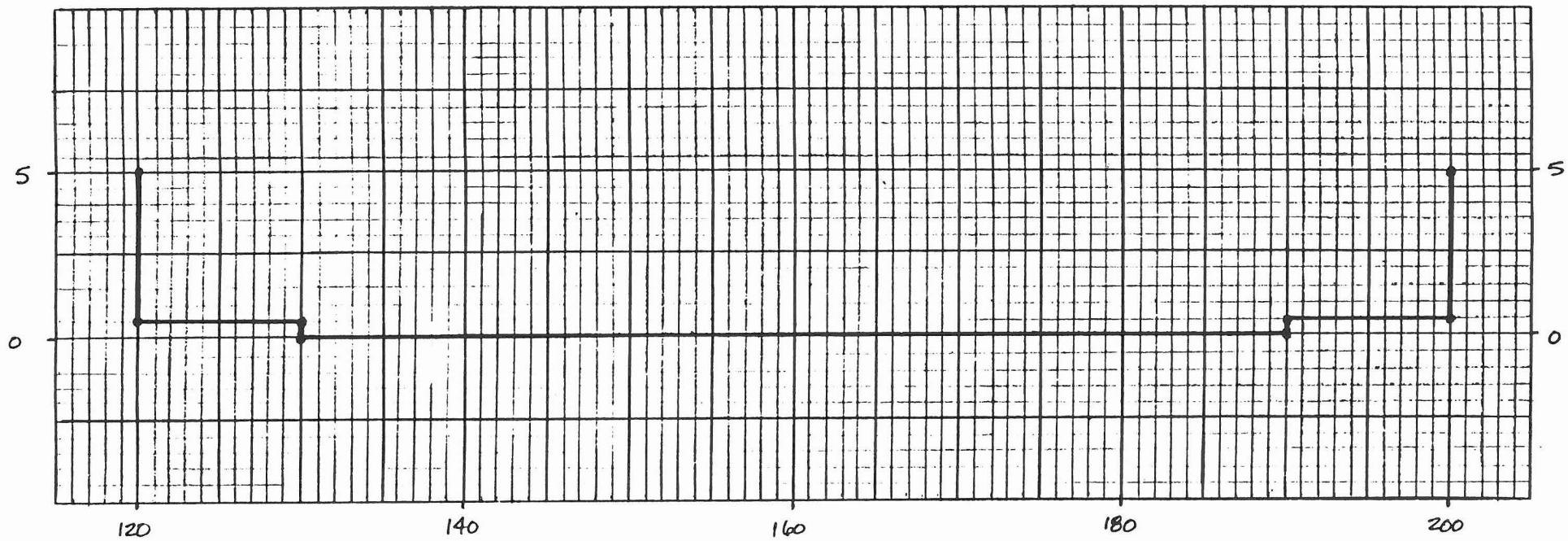
R								
RC	0.030	0.020	0.030	5280	0.0030			
RX	140	140	150	150	190	190	200	200
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: LMT

MUSKINGUM - CUNGE CHANNEL ROUTE

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER 404



RD								
RC	0.030	0.020	0.030	6695	0.0038			
RX	120	120	130	130	190	190	200	200
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: LMT

SECTION V

Divert & Onsite Retention Parameters

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		

SUMMARY OF ONSITE RETENTION CALCULATIONS

Sub-Basin I.D. (Future)	Sub-Basin 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.)
350	0.391	–	–	0.015	0.52	0.376	0.376
351	0.061	–	–	0.025	2.60	0.036	0.036
352	0.324	–	–	0.011	1.22	0.313	0.313
353	0.243	–	–	–	–	0.243	0.243
354	0.164	–	–	–	–	0.164	0.164
355	1.187	–	–	0.755	49.57	0.432	0.432
356	0.720	–	–	0.093	6.35	0.627	0.627
357	0.417	–	–	–	–	0.417	0.417
358	0.516	0.004	0.10	–	–	0.516	0.512
359	1.470	–	–	–	–	1.470	1.470
360	0.756	–	–	0.131	13.07	0.625	0.625
361	0.791	–	–	0.100	3.56	0.691	0.691
362	0.921	–	–	0.030	2.35	0.891	0.891
363	0.301	–	–	0.048	3.99	0.253	0.253
364	0.416	0.075	4.12	0.264	27.64	0.152	0.077
365	0.636	–	–	0.609	67.54	0.027	0.027
366	0.030	–	–	–	–	0.030	0.030
368	1.123	0.251	14.79	–	–	1.123	0.872
369	1.049	0.091	5.14	0.004	0.35	1.045	0.954
370	1.043	0.783	34.31	0.003	0.35	1.040	0.259
371	1.070	0.204	7.80	0.357	37.14	0.713	0.509
372	0.256	0.026	1.82	0.208	23.06	0.045	0.032
373	1.015	0.137	8.54	0.002	1.24	1.013	0.876
374	1.001	–	–	–	–	1.001	1.001
375	0.519	0.026	1.83	0.004	0.43	0.515	0.489
376	0.182	–	–	0.147	16.28	0.035	0.035
377	0.480	–	–	0.133	14.23	0.347	0.347
(Existing)							
328	0.572	–	–	–	–	0.572	0.572
329	0.625	–	–	–	–	0.625	0.625
337	0.295	–	–	–	–	0.295	0.295
338	0.124	–	–	–	–	0.124	0.124
340	0.262	0.023	1.51	–	–	0.239	0.262
341	0.229	0.120	7.92	–	–	0.109	0.229
342	0.489	0.043	2.08	–	–	0.446	0.489
350	0.119	–	–	–	–	0.119	0.119

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		

Existing Retention Calculations

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

Sub-Basin I.D.	Area (AC)	Area (Sq. Mi.)	Land Use	C	Volume (AC-Ft)
340	10.266	0.016	Ind	0.75	1.06
340	4.389	0.007	Ind	0.75	0.45
		Σ = 0.023			Σ = 1.51
341	76.804	0.120	Ind	0.75	7.92
342	10.083	0.016	Ind	0.65	0.90
342	17.172	0.027	Med Res	0.50	1.18
		Σ = 0.043			Σ = 2.08
368	50.827	0.079	MF	0.60	4.51
368	71.812	0.112	Comm	0.80	7.66
368	8.150	0.013	Park	0.25	0.27
368	6.916	0.011	School	0.25	0.23
368	19.553	0.031	Ind	0.75	1.96
368	3.444	0.005	Vacant	0.55	0.16
		Σ = 0.251			Σ = 14.79
375	7.305	0.011	School	0.25	0.25
375	25.333	0.040	Comm	0.80	2.78
375	25.521	0.040	MF	0.60	2.11
		Σ = 0.091			Σ = 5.14
381	494.857	0.773	Med Res	0.50	34.02
381	0.570	0.001	MF	0.60	0.05
381	5.892	0.009	Church	0.30	0.24
		Σ = 0.783			Σ = 34.31
386	39.636	0.062	Comm	0.80	4.36
386	4.311	0.007	MF	0.60	0.36
386	8.915	0.014	Park	0.25	0.31
386	7.117	0.010	Vacant	0.35	0.34
386	70.739	0.111	School	0.25	2.43
		Σ = 0.204			Σ = 7.80
399	2.470	0.004	V.L. Res	0.30	0.10
400	32.828	0.051	Ind	0.75	3.39
400	15.117	0.024	Vacant	0.35	0.73
		Σ = 0.075			Σ = 4.12

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

Existing Retention Calculations

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

Sub-Basin I.D.	Area (Ac)	Area (Sq. Mi.)	Land Use	C	Volume (Ac-Ft)
401	3.628	0.006	Vacant	0.35	0.39
401	8.226	0.013	Park	0.25	0.28
401	8.540	0.013	MF	0.60	0.70
401	67.193	0.105	Comm	0.80	7.17
		Σ = 0.137			Σ 8.54
402	16.562	0.026	Comm	0.80	1.82
404	16.657	0.026	Comm	0.80	1.83

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by L. Thomas	Date 5/95	Job No. 0146
	Checked by	Date	Sheet No. 4
	For ACDC AOMS		

Future Retention Calculations

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)
350	9.600	0.015	School	0.25	0.52
351	16.000	0.025	Ind	0.75	2.60
352	7.040	0.011	Comm	0.80	1.22
355	110.080	0.172	Ind	0.75	10.19
355	220.160	0.344	Comm	0.80	22.41
355	152.960	0.239	MF	0.60	16.97
		Σ = 0.755			Σ = 49.57
356	20.480	0.032	Comm	0.80	2.77
356	39.040	0.061	MF	0.60	3.58
		Σ = 0.093			Σ = 6.35
359	0.640	0.001	Comm	0.80	0.11 IGNORE
360	34.181	0.053	MF	0.60	4.44
360	49.776	0.078	Comm	0.80	8.63
		Σ = 0.131			Σ = 13.07
361	1.280	0.002	MF	0.60	0.16
361	62.720	0.098	Park	0.25	3.40
		Σ = 0.100			Σ = 3.56
362	1.920	0.003	Park	0.25	0.10
362	17.280	0.027	MF	0.60	2.25
		Σ = 0.030			Σ = 2.35
363	30.720	0.048	MF	0.60	3.99
364	152.371	0.238	Ind	0.75	24.76
364	16.591	0.026	Comm	0.80	2.88
		Σ = 0.264			Σ = 27.64
365	389.663	0.609	Comm	0.80	67.54
369	2.68	0.004	MF	0.60	0.35
370	2.14	0.003	Ind	0.75	0.35

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

Future Retention Calculations

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)
371	21.047	0.033	Comm	0.80	3.65
371	201.809	0.315	Ind	0.75	32.79
371	5.368	0.008	MF	0.60	0.70
		Σ=0.357			Σ=37.14
372	133.026	0.208	Comm	0.80	23.06
373	1.554	0.002	Comm	0.80	1.24
375	2.651	0.004	Ind	0.75	0.43
376	93.947	0.147	Comm	0.80	16.28
377	45.087	0.071	Ind	0.75	7.33
377	39.847	0.062	Comm	0.80	6.90
		Σ= 0.133			Σ=14.23

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  06/01/95  TIME  10:19:03   *
*                                       *
*****************************************
```

```
****************************************
*                                      *
*   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   SKUNK CREEK WATERSHED * EXISTING CONDITIONS
  3           ID   FILENAME:  SC100-24.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    328S
  9           KM   RUNOFF GENERATED ON SUB-BASIN 328
 10           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 11           KM    L = 1.14 mi. S = 226 ft/mi  Kb = .086  Tc = 0.438 Hr. R = 0.226
 12           KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 13           BA    .572
 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 .890 WAS USED
 17           PB    3.38
 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    .150    .360    4.12    .268    4.33
 25           UC    .438    .226
 26           UA       0       3       5       8      12      20      43      75      90      96
 27           UA     100

 28           KK   328RR
 29           KM   ROUTE FLOW THROUGH DETENTION BEHIND C.A.P. STRUCTURE NO. 6
 30           RS       1    ELEV      15
 31           SV       0     0.2    10.6    43.5   102.8
 32           SE      15      16      18      20      22
 33           SL   16.43    4.59     0.6     0.5
 34           SS    20.4     115     3.0     1.5

 35           KK   RM328
 36           KM   MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM DETENTION THROUGH SUB-BASIN 329
 37           KM            1) Reach Length = 9200 ft.
 38           RD    9200  0.0072    .035            TRAP      12       2

 39           KK    329S
 40           KM   RUNOFF GENERATED ON SUB-BASIN 329
 41           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 42           KM    L= 1.96 mi. S= 78 ft/mi  Kb = .038  Tc = 0.546 Hr. R = 0.423
 43           KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 44           BA    .625
 45           LG    .269    .318    4.14    .424   26.08
 46           UC    .546    .423
 47           UA       0       3       5       8      12      20      43      75      90      96
 48           UA     100
```

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

  49          KK   HC329
  50          KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 328 & 329
  51          HC       2

  52          KK   329RR
  53          KM   ROUTE FLOW THROUGH DEER VALLEY AIRPORT DETENTION BASINS USING
  54          KM   ONE CUMULATIVE RATING CURVE
  55          RS       1    ELEV    48.2
  56          SV       0    1.73    8.35   20.88    40.3   49.83   57.81
  57          SE    48.2      50      52      54      56      57      58
  58          SQ       0      21      73     130     170     671    2212

  59          KK   RM329
  60          KM   MUSKINGUM-CUNGE ROUTE FLOW THROUGH SUB-BASIN 337 IN A 54-IN. PIPE
  61          KM            1) Reach Length = 1600 ft.
  62          RD    1600  0.0025    .013            CIRC     4.5

  63          KK    R336
  64          KM   RETRIEVE DIVERTED HYDROGRAPH FROM SUB-BASIN 336 AT DEER VALLEY ROAD AND
  65          KM   CENTRAL AVENUE.  THIS HYDROGRAPH WILL BE STORED IN FILENAME:  CCW324.DSS
  66          KM   FOR RETRIEVAL AS A PART OF THE WATERSHED CONTRIBUTING TO SCATTER WASH.
  67          BA    .000
  68          DR    337D
  69          ZR    =QI  A=DEER VALLEY ROAD  B=R336  C=FLOW  F=CAVE CREEK

  70          KK  RM336A
  71          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 336 THROUGH 337
  72          KM            1) Reach Length = 3160 ft.
  73          RD    3160  0.0051    .030            TRAP       8       2

  74          KK    337S
  75          KM   RUNOFF GENERATED ON SUB-BASIN 337
  76          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  77          KM    L= 1.55 mi.  S= 36 ft/mi  Kb = .031  Tc = 0.512 R = 0.502
  78          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
  79          BA    .295
  80          LG    .152    .271    3.98    .381   59.53
  81          UC    .512    .502
  82          UA       0       5      16      30      65      77      84      90      94      97
  83          UA     100

  84          KK   HC337
  85          KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 336 & 337 WITH FLOW
  86          KM   FROM SUB-BASIN 329
  87          HC       3

  88          KK  RM337A
  89          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 337 THROUGH 340
  90          KM            1) Reach Length = 2910 ft.
  91          RD    2910  0.0062    .045            TRAP      20       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 92           KK  RM337B
 93           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 337 THROUGH 340
 94           KM            1) Reach Length = 2060 ft.
 95           RD    2060  0.0034    .045            TRAP      20       2

 96           KK    R339
 97           KM   RETRIEVE DIVERTED HYDROGRAPH FROM SUB-BASIN 339 AT ROSE GARDEN LANE AND
 98           KM   7TH AVENUE.  THIS HYDROGRAPH WILL BE STORED IN FILENAME:  CCW324.DSS
 99           KM   FOR RETRIEVAL AS A PART OF THE WATERSHED CONTRIBUTING TO SCATTER WASH.
100           BA   0.000
101           DR    340D
102           ZR    =QI  A=ROSE GARDEN LANE  B=R339  C=FLOW  F=CAVE CREEK

103           KK   RM339
104           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 339 THROUGH 340
105           KM            1) Reach Length = 3040 ft.
106           RD    3040  0.0039    .030            TRAP       8      20

107           KK    340S
108           KM   RUNOFF GENERATED ON SUB-BASIN 340
109           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
110           KM    L= 0.80 mi. S= 31 ft/mi  Kb = .040 Tc = 0.446 Hr. R = 0.271
111           KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
112           BA    .262
113           LG    .249    .327    5.05    .229   30.18
114           UC    .446    .271
115           UA       0       3       5       8      12      20      43      75      90      96
116           UA     100

117           KK   DT340
118           KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.51 AC-FT FROM SUB-BASIN 340
119           KM                                              (Hydrograph identified as OR340)
120           KM                                            2) Balance of runoff continues on.
121           KM                                              (Hydrograph identified as DT340)
122           DT   OR340    1.51
123           DI       0   10000
124           DQ       0   10000

125           KK   HC340
126           KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 337,339 & 340
127           HC       3

128           KK   340RE
129           KM   DIVERT FLOW SOUTH FROM SUB-BASIN 340 INTO 342 ALONG 15TH AVENUE
130           KM   SOURCE:  Concept Drainage Design Hydrology, I-17 to Cave Creek,
131           KM            Outer Loop Highway, CRS Sirrine, Inc.
132           DT    342D
133           DI       0     100     250     350     499     984    1922
134           DQ       0      12      50      76     112     201     343
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 135          KK  RM340A
 136          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 340 THROUGH 341
 137          KM            1) Reach Length = 2080 ft.
 138          RD    2080  0.0038    .025            TRAP       8      20

 139          KK    338S
 140          KM   RUNOFF GENERATED ON SUB-BASIN 338
 141          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 142          KM    L= 0.63 mi. S= 30 ft/mi  Kb = .028 Tc = 0.317 Hr. R = 0.234
 143          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 144          BA    .124
 145          LG    .103    .251    3.50    .278   74.10
 146          UC    .317    .234
 147          UA       0       5      16      30      65      77      84      90      94      97
 148          UA     100

 149          KK   RM338
 150          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 338 THROUGH 341
 151          KM            1) Reach Length = 4380 ft.
 152          RD    4380  0.0048    .030            TRAP       0      50

 153          KK    R330
 154          KM   RETRIEVE HYDROGRAPH AT DEER VALLEY ROAD AND 19TH AVENUE.  THIS
 155          KM   HYDROGRAPH WAS GENERATED IN THE SCATTER WASH WATERSHED MODEL AND IS
 156          KM   STORED IN FILENAME:  CCW324.DSS
 157          BA   0.000
 158          ZR    =QI  A=SKUNK CREEK  B=R330  C=FLOW  F=SCATTER WASH

 159          KK   RM330
 160          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 330 THROUGH 341
 161          KM            1) Reach Length = 2670 ft.
 162          RD    2670  0.0041    .030            TRAP       0      50

 163          KK    341S
 164          KM   RUNOFF GENERATED ON SUB-BASIN 341
 165          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 166          KM    L= 0.89 mi. S = 26 ft/mi  Kb = .037 Tc = 0.467 Hr. R = 0.335
 167          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 168          BA    .229
 169          LG    .215    .288    6.96    .148   40.48
 170          UC    .467    .335
 171          UA       0       5      16      30      65      77      84      90      94      97
 172          UA     100

 173          KK   DT341
 174          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 7.92 AC-FT FROM SUB-BASIN 341
 175          KM                                              (Hydrograph identified as OR341)
 176          KM                                            2) Balance of runoff continues on.
 177          KM                                              (Hydrograph identified as DT341)
 178          DT   OR341    7.92
 179          DI       0   10000
 180          DQ       0   10000
```

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

 181          KK   HC341
 182          KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 330, 338, 340 & 341
 183          HC       4

 184          KK   RM341
 185          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 341 THROUGH 342
 186          KM            1) Reach Length = 2720 ft.
 187          RD    2720  0.0066    .025            TRAP       0      50

 188          KK    R340
 189          KM   RETRIEVE FLOW DIVERTED FROM SUB-BASIN 340
 190          DR    342D

 191          KK  RM340B
 192          KM   MUSKINGUM-CUNGE ROUTE DIVERTED FLOW THROUGH SUB-BASIN 342
 193          KM            1) Reach Length = 4240 ft.
 194          RD
 195          RC    .030    .020    .030    4240  0.0061
 196          RX     140     140     150     150     190     190     200     200
 197          RY       5     0.5     0.5       0       0     0.5     0.5       5

 198          KK    342S
 199          KM   RUNOFF GENERATED ON SUB-BASIN 342
 200          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 201          KM    L= 1.41 mi. S= 27 ft/mi  Kb = .029 Tc = 0.521 Hr. R = 0.355
 202          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 203          BA    .489
 204          LG    .155    .281    5.98    .197   36.92
 205          UC    .521    .355
 206          UA       0       5      16      30      65      77      84      90      94      97
 207          UA     100

 208          KK   DT342
 209          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.08 AC-FT FROM SUB-BASIN 342
 210          KM                                              (Hydrograph identified as OR342)
 211          KM                                            2) Balance of runoff continues on.
 212          KM                                              (Hydrograph identified as DT342)
 213          DT   OR342    2.08
 214          DI       0   10000
 215          DQ       0   10000

 216          KK   HC342
 217          KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 341 & 342 WITH DIVERTED 340
 218          HC       3

 219          KK   RM342
 220          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 342 THROUGH 350
 221          KM            1) Reach Length = 2070 ft.
 222          RD    2070  0.0053   0.035            TRAP      10       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 223          KK    350S
 224          KM   RUNOFF GENERATED ON SUB-BASIN 350
 225          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 226          KM    L= 0.75 mi. S= 35 ft/mi  Kb= .031 Tc = 0.358 Hr. R = 0.317
 227          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 228          BA    .119
 229          LG    .126    .261    3.81    .279   40.82
 230          UC    .358    .317
 231          UA      0       5      16      30      65      77      84      90      94      97
 232          UA     100

 233          KK   HC350
 234          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 342 & 350
 235          HC       2

 236          KK   350RE
 237          KM   DIVERT FLOW OUT OF SUB-BASIN 350 DOWN 19TH AVENUE INTO SUB-BASIN 260
 238          KM   SUB-BASIN 260 IS INCLUDED IN THE CAVE CREEK WATERSHED MODEL
 239          KM   SOURCE:  Storm Drain Project ST-874784
 240          KM            19th Avenue - Union Hills to Beardsley Road
 241          DT    260D
 242          DI       0     365     500    1000    2000   10000
 243          DQ       0     365     365     365     365     365

 244          KK  RM350A
 245          KM   MUSKINGUM-CUNGE ROUTE FLOW THROUGH SUB-BASIN 352
 246          KM            1) Reach Length = 1180 ft.
 247          RD    1180  0.0051   0.035            TRAP      10       5

 248          KK  RM350B
 249          KM   MUSKINGUM-CUNGE ROUTE FLOW THROUGH SUB-BASIN 352
 250          KM            1) Reach Length = 1400 ft.
 251          RD
 252          RC    .030    .020    .030    1400  0.0036
 253          RX     140     140     150     150     190     190     200     200
 254          RY       5     0.5     0.5       0       0     0.5     0.5       5

 255          KK    352S
 256          KM   RUNOFF GENERATED ON SUB-BASIN 352
 257          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 258          KM    L= 1.14 mi. S= 26 ft/mi  Kb= .029 Tc = 0.454 Hr. R = 0.322
 259          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 260          BA    .330
 261          LG    .165    .167    8.20    .053   34.97
 262          UC    .454    .322
 263          UA      0       5      16      30      65      77      84      90      94      97
 264          UA     100

 265          KK   HC352
 266          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 350 & 352
 267          HC       2
```

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

 268          KK   352RE
 269          KM   DIVERT FLOW SOUTH ALONG 23RD AVENUE AT UTOPIA ROAD
 270          DT    352D
 271          DI       0      43     137    1548    3995
 272          DQ       0      17      57     736    1932

 273          KK    351S
 274          KM   RUNOFF GENERATED ON SUB-BASIN 351
 275          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 276          KM    L= 0.45 mi. S= 20 ft/mi  Kb= .058 Tc = 0.442 Hr. R = 0.421
 277          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 278          BA    .053
 279          LG    .337    .145   12.40    .012    3.75
 280          UC    .442    .421
 281          UA       0       3       5       8      12      20      43      75      90      96
 282          UA     100

 283          KK   351RE
 284          KM   DIVERT FLOW FROM SUB-BASIN 351 ACROSS I-17 CULVERT (2-24" CMP) CROSSING
 285          KM           THROUGH SUB-BASIN 392
 286          KM   SOURCE:  Preliminary Design Report IR-17-1(151)
 287          KM           I-17, Deer Valley Road to Peoria Avenue
 288          DT   392D1
 289          DI       0      50     100     150     200     250     300    1000
 290          DQ       0      14      14      14      14      14      14      14

 291          KK   HC352
 292          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 351 & 352
 293          HC       2

 294          KK   352RR
 295          KM   ROUTE FLOW THROUGH DETENTION AT NE COR I-17 AND UTOPIA ROAD
 296          RS       1    ELEV   64.64
 297          SV       0    1.32    6.00    6.90    7.70    9.20   14.13   20.97
 298          SE   64.64   68.00   71.64   72.00   72.35   73.00   74.00   75.00
 299          SQ       0       0       0      30      82     400    2490    6527

 300          KK    R352
 301          KM   RETRIEVE FLOWS DIVERTED SOUTH ALONG 23RD AVENUE AT UTOPIA ROAD
 302          DR    352D

 303          KK    353S
 304          KM   RUNOFF GENERATED ON SUB-BASIN 353
 305          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 306          KM    L= 0.89 mi. S= 25 ft/mi  Kb= .027 Tc = 0.400 Hr. R = 0.269
 307          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 308          BA    .249
 309          LG    .109    .255    5.05    .233   46.09
 310          UC    .400    .269
 311          UA       0       5      16      30      65      77      84      90      94      97
 312          UA     100
```

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

 313          KK    354S
 314          KM   RUNOFF GENERATED ON SUB-BASIN 354
 315          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 316          KM    L= 0.53 mi. S= 25 ft/mi  Kb= .027 Tc = 0.300 Hr. R = 0.164
 317          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 318          BA    .164
 319          LG    .100    .150    8.40    .056   74.92
 320          UC    .300    .164
 321          UA       0       5      16      30      65      77      84      90      94      97
 322          UA     100

 323          KK   HC354
 324          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 351, 352, 353 & 354
 325          HC       4

 326          KK   354RR
 327          KM   ROUTE FLOW THROUGH DETENTION AT NE COR I-17 AND UNION HILLS ROAD
 328          RS       1    ELEV    56.7
 329          SV       0    2.25   12.00   16.87   40.62   79.66  142.31
 330          SE    56.7    58.0    59.6    60.0    62.0    64.0    66.0
 331          SQ       0       0       0      21     330   12341   15323

 332          KK   354RE
 333          KM   DIVERT FLOW FROM SUB-BASIN 354 ACROSS I-17 CULVERT (3-10'x3' BC) CROSSING
 334          KM            THROUGH SUB-BASIN 392
 335          DT   392D2
 336          DI       0      21     330   12341   15323
 337          DQ       0      21     330     510     840

 338          KK    355S
 339          KM   RUNOFF GENERATED ON SUB-BASIN 355
 340          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 341          KM    L= 0.20 mi. S= 140 ft/mi  Kb= .032 Tc = 0.117 Hr. R = 0.069
 342          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 343          BA    .030
 344          LG    .100    .150    8.28    .079   74.44
 345          UC    .117    .069
 346          UA       0       5      16      30      65      77      84      90      94      97
 347          UA     100

 348          KK   HC355
 349          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 354 & 355
 350          HC       2

 351          KK   355RR
 352          KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & UNION HILLS ROAD
 353          KM            ASSUME PUMP FAILS TO OPERATE
 354          RS       1    ELEV    40.0
 355          SV       0   26.35   65.43   70.00   77.50   87.50
 356          SE    40.0    50.0    54.0    54.5    55.0    56.0
 357          SQ       0       0       0     150     455    1458
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 358          KK   355RE
 359          KM   DIVERT FLOW FROM SUB-BASIN 355 CROSSING THROUGH SUB-BASIN 368
 360          DT   368D1
 361          DI       0   10000
 362          DQ       0   10000

 363          KK    R351
 364          KM   RETRIEVE FLOWS DIVERTED THROUGH 2-24" CMP AT I-17 & BEHREND DRIVE
 365          DR   392D1

 366          KK    R354
 367          KM   RETRIEVE FLOWS DIVERTED THROUGH 3-10'x3' BC AT I-17 & UNION HILLS DRIVE
 368          DR   392D2

 369          KK    392S
 370          KM   RUNOFF GENERATED ON SUB-BASIN 392
 371          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 372          KM    L= 1.80 mi. S= 28 ft/mi  Kb= .027 Tc = 0.554 Hr. R = 0.280
 373          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 374          BA   1.179
 375          LG    .173    .165   10.10    .035   39.83
 376          UC    .554    .280
 377          UA       0       5      16      30      65      77      84      90      94      97
 378          UA     100

 379          KK   HC392
 380          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 351, 354 & 392
 381          HC       3

 382          KK   392RE
 383          KM   DIVERT FLOW FROM SUB-BASIN 392 THROUGH SUB-BASIN 368
 384          KM           ASSUME 50% SPLIT FLOW AT 35TH AVENUE & UNION HILLS DRIVE
 385          KM           STORM DRAIN CAPACITY FLOWING WEST IN UNION HILLS DRIVE = 891 cfs
 386          KM   SOURCE:  Union Hills Storm Drain Project
 387          KM           FCD CONTRACT NO. 86-25
 388          DT   368D3
 389          DI       0     891    1001    5001   10001
 390          DQ       0       0      55    2055    4555

 391          KK   RM393
 392          KM   MUSKINGUM-CUMGE ROUTE FLOW FROM SUB-BASIN 392 THROUGH SUB-BASIN 393
 393          KM           1) Reach Length = 5315 ft.
 394          RD
 395          RC   0.030   0.020   0.030    5315  0.0039
 396          RX      90      90     100     100     190     190     200     200
 397          RY     5.0     0.5     0.5       0       0     0.5     0.5     5.0

 398          KK    393S
 399          KM   RUNOFF GENERATED ON SUB-BASIN 393
 400          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 401          KM    L= 1.60 mi. S= 23 ft/mi  Kb= .042 Tc = 0.792 Hr. R = 0.501
 402          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 403          BA    .720
 404          LG    .140    .171    8.28    .082   17.62
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 405          UC   0.792    .501
 406          UA       0       5      16      30      65      77      84      90      94      97
 407          UA     100

 408          KK   HC393
 409          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 392 & 393
 410          HC       2

 411          KK   393RE
 412          KM   DIVERT FLOW FROM SUB-BASIN 393 TO 375
 413          KM            ASSUME 50% SPLIT FLOW AT 43RD AVENUE & UNION HILLS DRIVE
 414          KM            STORM DRAIN CAPACITY FLOWING WEST IN UNION HILLS DRIVE = 1282 cfs
 415          KM   SOURCE:  Union Hills Storm Drain Project
 416          KM            FCD CONTRACT NO. 86-25
 417          DT    375D
 418          DI       0    1282    2000    5000   10000
 419          DQ       0       0     359    1859    4359

 420          KK   RM399
 421          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 393 THROUGH SUB-BASIN 394 TO 399
 422          KM            1) Reach Length = 8615 ft.
 423          RD
 424          RC   0.030   0.020   0.030    8615  0.0052
 425          RX      90      90     100     100     190     190     200     200
 426          RY     5.0     0.5     0.5     0.0     0.0     0.5     0.5     5.0

 427          KK    394S
 428          KM   RUNOFF GENERATED ON SUB-BASIN 394
 429          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 430          KM    L= 1.40 mi. S= 21 ft/mi  Kb= .025 Tc = 0.512 Hr. R = 0.379
 431          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 432          BA    .419
 433          LG    .100    .250    4.74    .245   46.21
 434          UC    .512    .379
 435          UA       0       5      16      30      65      77      84      90      94      97
 436          UA     100

 437          KK    395S
 438          KM   RUNOFF GENERATED ON SUB-BASIN 395
 439          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 440          KM    L= 1.88 mi. S= 65 ft/mi  Kb= .039 Tc = 0.542 Hr. R = 0.249
 441          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 442          BA   1.470
 443          LG    .350    .300    8.05    .093    7.84
 444          UC    .542    .249
 445          UA       0       3       5       8      12      20      43      75      90      96
 446          UA     100

 447          KK   RM396
 448          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 395 THROUGH SUB-BASIN 396
 449          KM            1) Reach Length = 4125 ft.
 450          RD    4125  0.0112   0.035            TRAP      30       3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 451          KK    396S
 452          KM   RUNOFF GENERATED ON SUB-BASIN 396
 453          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 454          KM    L= 1.04 mi. S= 56 ft/mi  Kb= .043 Tc = 0.458 Hr. R = 0.188
 455          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 456          BA    .756
 457          LG    .337    .345    3.71    .338    7.03
 458          UC    .458    .188
 459          UA       0       3       5       8      12      20      43      75      90      96
 460          UA     100

 461          KK   HC396
 462          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 395 & 396
 463          HC       2

 464          KK   RM397
 465          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 396 THROUGH SUB-BASIN 397
 466          KM           1) Reach Length = 10155 ft.
 467          RD   10155  0.0067   0.035            TRAP      20       3

 468          KK    397S
 469          KM   RUNOFF GENERATED ON SUB-BASIN 397
 470          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 471          KM    L= 1.80 mi. S= 214 ft/mi  Kb= .043 Tc = 0.387 Hr. R = 0.236
 472          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 473          BA    .791
 474          LG    .336    .341    3.55    .302   14.79
 475          UC    .387    .236
 476          UA       0       3       5       8      12      20      43      75      90      96
 477          UA     100

 478          KK   HC397
 479          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 396 & 397
 480          HC       2

 481          KK   397RR
 482          KM   ROUTE FLOW THROUGH DETENTION BASIN IN THUNDERBIRD PARK
 483          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 484          RS       1    ELEV    1294
 485          SV       0     5.8    11.6    17.5    23.4    29.3    35.3    41.3    47.3
 486          SE    1294  1294.5    1295  1295.5    1296  1296.5    1297  1297.5    1298
 487          SQ       0     156     442     812    1250    1747    2297    2894    3536

 488          KK   398AS
 489          KM   RUNOFF GENERATED ON SUB-BASIN 398A
 490          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 491          KM    L= 0.63 mi. S= 110 ft/mi  Kb= .044 Tc = 0.279 Hr. R = 0.123
 492          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 493          BA   0.301
 494          LG    .296    .329    3.77    .346   44.27
 495          UC    .279    .123
 496          UA       0       3       5       8      12      20      43      75      90      96
 497          UA     100
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 498          KK  398ARR
 499          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 398A
 500          RS       1    ELEV    1300
 501          SV       0   3.214   7.419  10.642  15.408  27.236
 502          SE    1300    1302    1304    1305    1306    1308
 503          SQ       0       0       0       0     279    3624

 504          KK   398BS
 505          KM   RUNOFF GENERATED ON SUB-BASIN 398B
 506          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 507          KM    L= 1.89 mi. S= 26 ft/mi  Kb= .034 Tc = 0.746 Hr. R = 0.479
 508          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 509          BA   0.879
 510          LG    .164    .228    3.50    .275   33.97
 511          UC   0.746   0.479
 512          UA       0       5      16      30      65      77      84      90      94      97
 513          UA     100

 514          KK   HC398
 515          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 397, 398A & 398B
 516          HC       3

 517          KK  398BRR
 518          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 398B
 519          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 520          RS       1    ELEV    1294
 521          SV       0    16.4    33.1    49.8    66.8    83.9   101.1   118.6   136.2
 522          SE    1294  1294.5    1295  1295.5    1296  1296.5    1297  1297.5    1298
 523          SQ       0     276     780    1433    2206    3083    4053    5107    6240

 524          KK  398BRR
 525          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 398B
 526          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 527          RS       1    ELEV    1292
 528          SV       0    11.8    23.7    35.7    47.9    60.2    72.6    85.1    97.7   111.0
 529          SV   125.0
 530          SE    1292  1292.5    1293  1293.5    1294  1294.5    1295  1295.5    1296  1296.5
 531          SE    1297
 532          SQ       0      55     156     287     441     617     811    1021    1248    1489
 533          SQ    1800

 534          KK  398BRR
 535          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 398B
 536          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 537          RS       1    ELEV    1292
 538          SV       0    18.7    37.5    56.4    75.5    94.6   113.8   133.1   152.5
 539          SE    1292  1292.5    1293  1293.5    1294  1294.5    1295  1295.5    1296
 540          SQ       0      46     130     239     368     514     675     851    1040
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 541          KK  398BRR
 542          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 398B
 543          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 544          RS       1    ELEV    1290
 545          SV       0    18.4    37.0    55.6    74.4    93.2   112.2   131.2   150.3
 546          SE    1290  1290.5    1291  1291.5    1292  1292.5    1293  1293.5    1294
 547          SQ       0     129     364     669    1030    1439    1891    2383    2912

 548          KK   RM399
 549          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 398 THROUGH SUB-BASIN 399
 550          KM           1) Reach Length = 5770 ft.
 551          RD
 552          RC    .030    .020    .030    5770  0.0049
 553          RX      70      70     120     150     220     250     300     300
 554          RY    10.0     6.0     6.0     0.0     0.0     6.0     6.0    10.0

 555          KK    399S
 556          KM   RUNOFF GENERATED ON SUB-BASIN 399
 557          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 558          KM    L= 1.82 mi. S= 32 ft/mi  Kb= .039 Tc = 0.796 Hr. R = 0.491
 559          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 560          BA    .903
 561          LG    .277    .321    3.55    .303   10.85
 562          UC   0.796    .491
 563          UA       0       3       5       8      12      20      43      75      90      96
 564          UA     100

 565          KK   DT399
 566          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.10 AC-FT FROM SUB-BASIN 399
 567          KM                                              (Hydrograph identified as OR399)
 568          KM                                            2) Balance of runoff continues on.
 569          KM                                              (Hydrograph identified as DT399)
 570          DT   OR399    0.10
 571          DI       0   10000
 572          DQ       0   10000

 573          KK   HCSKB
 574          KM    RETRIEVE HYDROGRAPH FOR CONFLUENCE OF SKUNK CREEK AND SCATTER WASH.  THIS
 575          KM    HYDROGRAPH WAS GENERATED IN THE SCATTER WASH WATERSHED MODEL AND STORED IN
 576          KM    CCW324.DSS.
 577          BA   15.58
 578          ZR  =QI  A=SKUNK CREEK  B=HCSKB  C=FLOW  F=SCATTER WASH

 579          KK   RM399
 580          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 348 THROUGH SUB-BASIN 399
 581          RD    7600   .0053    .035            TRAP     100       5

 582          KK   HC399
 583          KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 393, 394, 398, 399 & SCATTER WASH
 584          HC       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 585          KK   RM400
 586          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 399 THROUGH SUB-BASIN 400
 587          KM           1) Reach Length = 3110 ft.
 588          RD    3110  0.0045   0.035            TRAP     100       5

 589          KK    400S
 590          KM   RUNOFF GENERATED ON SUB-BASIN 400
 591          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 592          KM    L= 1.48 mi. S= 28 ft/mi  Kb= .043 Tc = 0.796 Hr. R = 0.657
 593          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 594          BA    .406
 595          LG    .324    .326    3.61    .331    9.71
 596          UC   0.796   0.657
 597          UA       0       3       5       8      12      20      43      75      90      96
 598          UA     100

 599          KK   DT400
 600          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 4.12 AC-FT FROM SUB-BASIN 400
 601          KM                                              (Hydrograph identified as OR400)
 602          KM                                            2) Balance of runoff continues on.
 603          KM                                              (Hydrograph identified as DT400)
 604          DT   OR400    4.12
 605          DI       0   10000
 606          DQ       0   10000

 607          KK   HC400
 608          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 399 & 400
 609          HC       2

 610          KK   RM401
 611          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 400 THROUGH SUB-BASIN 401
 612          KM           1) Reach Length = 5265 ft.
 613          RD    5265  0.0044   0.035            TRAP     100       5

 614          KK    401S
 615          KM   RUNOFF GENERATED ON SUB-BASIN 401
 616          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 617          KM    L= 1.40 mi. S= 28 ft/mi  Kb= .035 Tc = 0.608 Hr. R = 0.255
 618          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 619          BA   1.172
 620          LG    .224    .298    5.36    .230   22.90
 621          UC   0.608    .255
 622          UA       0       3       5       8      12      20      43      75      90      96
 623          UA     100

 624          KK   DT401
 625          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 8.54 AC-FT FROM SUB-BASIN 401
 626          KM                                              (Hydrograph identified as OR401)
 627          KM                                            2) Balance of runoff continues on.
 628          KM                                              (Hydrograph identified as DT401)
 629          DT   OR401    8.54
 630          DI       0   10000
 631          DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 632          KK   401RE
 633          KM   DIVERT FLOW FROM SUB-BASIN 401 THROUGH SUB-BASIN 390
 634          KM           STORM DRAIN CAPACITY FLOWING SOUTH IN 67TH AVENUE = 250CFS
 635          KM   SOURCE:  Bell Road Project Drainage Study - Volume IV
 636          KM           FCD CONTRACT NO. 86-20
 637          DT    390D
 638          DI       0     250     500    1000    5000
 639          DQ       0     250     250     250     250

 640          KK   HC401
 641          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 400 & 401
 642          HC       2

 643          KK   RM404
 644          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 401 THROUGH SUB-BASIN 404
 645          KM           1) Reach Length = 4045 ft.
 646          RD    4045  0.0047   0.035            TRAP     200       5

 647          KK    R355
 648          KM   RETRIEVE FLOWS OVERTOPPING DEPRESSED INTERSECTION AT I-17 &
 649          KM           UNION HILLS ROAD
 650          DR   368D1

 651          KK    R392
 652          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 392 SOUTHERLY IN 35TH AVENUE
 653          DR   368D3

 654          KK   RM368
 655          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 392 THROUGH SUB-BASIN 368
 656          KM           1) Reach Length = 5470 ft.
 657          RD
 658          RC    .030    .020    .030    5470  0.0031
 659          RX     140     140     150     150     190     190     200     200
 660          RY       5     0.5     0.5       0       0     0.5     0.5       5

 661          KK    368S
 662          KM   RUNOFF GENERATED ON SUB-BASIN 368
 663          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 664          KM    L= 1.83 mi. S= 22 ft/mi  Kb= .024 Tc = 0.596 Hr. R = 0.316
 665          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 666          BA   1.123
 667          BF      25
 668          LG    .126    .261    3.81    .280   47.80
 669          UC    .596    .316
 670          UA       0       5      16      30      65      77      84      90      94      97
 671          UA     100

 672          KK   DT368
 673          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 14.79 AC-FT FROM SUB-BASIN 368
 674          KM                                              (Hydrograph identified as OR368)
 675          KM                                            2) Balance of runoff continues on.
 676          KM                                              (Hydrograph identified as DT368)
 677          DT   OR368   14.79
 678          DI       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 679          DQ       0   10000

 680          KK   HC368
 681          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 355, 368 & 392
 682          HC       3    6.02

 683          KK   368RE
 684          KM   DIVERT FLOW FROM SUB-BASIN 368 THROUGH SUB-BASIN 369
 685          KM            ASSUME 50% SPLIT FLOW AT 35TH AVENUE & BELL ROAD
 686          KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 35TH AVENUE = 140CFS
 687          KM   SOURCE:  Northwest Storm Drain Study
 688          KM            Project ST-74206.00
 689          DT   369D5
 690          DI       0     140     500    1000    5000
 691          DQ       0     140     320     570    2570

 692          KK   RM375
 693          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 368 THROUGH SUB-BASIN 375
 694          KM            1) Reach Length = 5280 ft.
 695          RD
 696          RC    .030    .020    .030    5280  0.0047
 697          RX     120     120     130     130     190     190     200     200
 698          RY       5     0.5     0.5       0       0     0.5     0.5       5

 699          KK    R393
 700          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 393 SOUTHERLY IN 43RD AVENUE
 701          DR    375D

 702          KK   RM375
 703          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 393 THROUGH SUB-BASIN 375
 704          KM            1) Reach Length = 5600 ft.
 705          RD
 706          RC    .030    .020    .030    5600  0.0034
 707          RX     120     120     130     130     190     190     200     200
 708          RY       5     0.5     0.5       0       0     0.5     0.5       5

 709          KK    375S
 710          KM   RUNOFF GENERATED ON SUB-BASIN 375
 711          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 712          KM    L= 1.85 mi. S= 21 ft/mi  Kb= .022 Tc = 0.554 Hr. R = 0.306
 713          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 714          BA   1.049
 715          BF       0
 716          LG    .100    .150    8.28    .081   48.64
 717          UC    .554    .306
 718          UA       0       5      16      30      65      77      84      90      94      97
 719          UA     100

 720          KK   DT375
 721          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 5.14 AC-FT FROM SUB-BASIN 375
 722          KM                                              (Hydrograph identified as OR375)
 723          KM                                            2) Balance of runoff continues on.
 724          KM                                              (Hydrograph identified as DT375)
 725          DT   OR375    5.14
 726          DI       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 727          DQ       0   10000

 728          KK   HC375
 729          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 368, 375 & 393
 730          HC       3    7.07

 731          KK   375RE
 732          KM   DIVERT FLOW FROM SUB-BASIN 375 THROUGH SUB-BASIN 376
 733          KM            ASSUME 50% SPLIT FLOW AT 43RD AVENUE & BELL ROAD
 734          DT    376D
 735          DI       0     500    1000    5000   10000
 736          DQ       0     250     500    2500    5000

 737          KK   RM381
 738          KM   MUSKINGUM-CUNGE ROUTE FLOWS FROM SUB-BASIN 375 TO SUB-BASIN 381
 739          KM            1) Reach Length = 5305 ft.
 740          RD
 741          RC   0.030   0.020   0.030    5305  0.0041
 742          RX     120     120     130     130     190     190     200     200
 743          RY     5.0     0.5     0.5     0.0     0.0     0.5     0.5     5.0

 744          KK    381S
 745          KM   RUNOFF GENERATED ON SUB-BASIN 381
 746          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 747          KM    L= 1.52 mi. S= 22 ft/mi  Kb= .023 Tc = 0.496 Hr. R = 0.232
 748          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 749          BA   1.045
 750          LG    .125    .177    7.32    .140   40.49
 751          UC    .496    .232
 752          UA       0       5      16      30      65      77      84      90      94      97
 753          UA     100

 754          KK   DT381
 755          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 34.31 AC-FT FROM SUB-BASIN 381
 756          KM                                              (Hydrograph identified as OR381)
 757          KM                                            2) Balance of runoff continues on.
 758          KM                                              (Hydrograph identified as DT381)
 759          DT   OR381   34.31
 760          DI       0   10000
 761          DQ       0   10000

 762          KK   HC381
 763          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 375 & 381
 764          HC       2

 765          KK   381RE
 766          KM   DIVERT FLOW FROM SUB-BASIN 381 THROUGH SUB-BASIN 382
 767          KM            ASSUME 50% SPLIT FLOW AT 51ST AVENUE & BELL ROAD
 768          KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 51ST AVENUE = 32 cfs
 769          KM   SOURCE:  Northwest Storm Drain Study
 770          KM            Project ST-74206.00
 771          DT    382D
 772          DI       0      32     100    1000    5000
 773          DQ       0      32      66     516    2516
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 774          KK   RM386
 775          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 381 THROUGH SUB-BASIN 386
 776          KM            1) Reach Length = 5280 ft.
 777          RD
 778          RC    .030    .020    .030    5280  0.0030
 779          RX     140     140     150     150     190     190     200     200
 780          RY       5     0.5     0.5       0       0     0.5     0.5       5

 781          KK    386S
 782          KM   RUNOFF GENERATED ON SUB-BASIN 386
 783          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 784          KM    L= 1.58 mi. S= 18 ft/mi  Kb= .031 Tc = 0.717 Hr. R = 0.355
 785          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 786          BA   1.069
 787          LG    .213    .255    7.32    .129   26.97
 788          UC   0.717    .355
 789          UA       0       5      16      30      65      77      84      90      94      97
 790          UA     100

 791          KK   DT386
 792          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 7.80 AC-FT FROM SUB-BASIN 386
 793          KM                                              (Hydrograph identified as OR386)
 794          KM                                            2) Balance of runoff continues on.
 795          KM                                              (Hydrograph identified as DT386)
 796          DT   OR386    7.80
 797          DI       0   10000
 798          DQ       0   10000

 799          KK   HC386
 800          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 381 & 386
 801          HC       2

 802          KK   386RE
 803          KM   DIVERT FLOW FROM SUB-BASIN 386 THROUGH SUB-BASIN 387
 804          KM            ASSUME 50% SPLIT FLOW AT 59TH AVENUE & BELL ROAD
 805          KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 59TH AVENUE = 120 cfs
 806          KM   SOURCE:  Bell Road Project Drainage Study - Volume IV
 807          KM            FCD CONTRACT NO. 86-20
 808          DT    387D
 809          DI       0     120     500    1000    5000
 810          DQ       0     120     310     560    2560

 811          KK   RM404
 812          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 386 THROUGH SUB-BASIN 401 TO 404
 813          KM            1) Reach Length = 6695 ft.
 814          RD
 815          RC    .030    .020    .030    6695  0.0038
 816          RX     120     120     130     130     190     190     200     200
 817          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

 818          KK    402S
 819          KM   RUNOFF GENERATED ON SUB-BASIN 402
 820          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 821          KM    L= 1.50 mi. S= 29 ft/mi  Kb= .042 Tc = 0.750 Hr. R = 0.439
 822          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 823          BA    .747
 824          LG    .442    .212    7.14    .196    6.28
 825          UC   0.750    .439
 826          UA       0       3       5       8      12      20      43      75      90      96
 827          UA     100

 828          KK   DT402
 829          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.82 AC-FT FROM SUB-BASIN 402
 830          KM                                              (Hydrograph identified as OR402)
 831          KM                                            2) Balance of runoff continues on.
 832          KM                                              (Hydrograph identified as DT402)
 833          DT   OR402    1.82
 834          DI       0   10000
 835          DQ       0   10000

 836          KK  403RR1
 837          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 403
 838          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 839          RS       1    ELEV  1236.5
 840          SV       0     2.7     5.5     8.3    11.1    14.0    17.0    20.0    20.1
 841          SE  1236.5  1237.0  1237.5  1238.0  1238.5  1239.1  1239.5  1240.0  1240.5
 842          SQ       0    0.01    0.02    0.03    0.04    0.05    14.7    14.7    5000

 843          KK  403RR2
 844          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 403
 845          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 846          RS       1    ELEV  1230.0
 847          SV       0     1.7     3.4     5.2     6.9     8.8    10.6    10.7
 848          SE  1230.0  1230.5  1231.0  1231.5  1232.0  1232.5  1233.0  1233.5
 849          SQ       0    10.8    30.6    41.7    48.1    53.8    59.0    5000

 850          KK    403S
 851          KM   RUNOFF GENERATED ON SUB-BASIN 403
 852          KM    THE FOLLOWING PARAMATERS WERE PROVIDED FOR THIS BASIN
 853          KM    L= 1.23 mi. S= 20 ft/mi  Kb= .027 Tc = 0.500 Hr. R = 0.202
 854          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 855          BA   1.001
 856          LG    .169    .167    8.05    .106   28.30
 857          UC   0.500    .202
 858          UA       0       5      16      30      65      77      84      90      94      97
 859          UA     100

 860          KK  403RR3
 861          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 403
 862          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 863          RS       1    ELEV  1250.0
 864          SV       0     1.3     2.7     4.1     5.6     7.0     8.5    10.1    11.6    11.7
 865          SE  1250.0  1250.5  1251.0  1251.5  1252.0  1252.5  1253.0  1253.5  1254.0  1254.5
 866          SQ       0     5.4     8.5    10.4    12.0    13.5    14.7    15.9    17.1    5000
```

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

867           KK  403RR4
868           KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 403
869           KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
870           RS       1    ELEV  1236.0
871           SV       0     2.3     4.6     6.9     9.3    11.7    14.2    14.3
872           SE  1236.0  1236.5  1237.0  1237.5  1238.0  1238.5  1239.0  1239.5
873           SQ       0     5.4     8.5    10.4    12.0    13.5    14.7    5000

874           KK  403RR5
875           KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 403
876           KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
877           RS       1    ELEV  1228.0
878           SV       0    10.8    30.6    41.7    48.1    53.8    59.0    59.1
879           SE  1228.0  1228.5  1229.0  1229.5  1230.0  1230.5  1231.0  1231.5
880           SQ       0     7.2    15.1    18.5    21.4    23.9    26.2    5000

881           KK   HC403
882           KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 402 & 403
883           HC       2

884           KK   RM404
885           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 403 THROUGH SUB-BASIN 404
886           KM            1) Reach Length = 5560 ft.
887           RD    5560  0.0043   0.035            TRAP      20       3

888           KK    404S
889           KM   RUNOFF GENERATED ON SUB-BASIN 404
890           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
891           KM    L= 1.43 mi. S= 24 ft/mi  Kb= .045 Tc = 0.829 Hr. R = 0.581
892           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
893           BA    .519
894           LG    .218    .307    4.43    .256   15.50
895           UC   0.829    .581
896           UA       0       3       5       8      12      20      43      75      90      96
897           UA     100

898           KK   DT404
899           KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.83 AC-FT FROM SUB-BASIN 404
900           KM                                              (Hydrograph identified as OR404)
901           KM                                            2) Balance of runoff continues on.
902           KM                                              (Hydrograph identified as DT404)
903           DT   OR404    1.83
904           DI       0   10000
905           DQ           10000

906           KK   HC404
907           KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 386, 401, 403 & 404
908           HC       4
```

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

 909          KK   RM405
 910          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 404 THROUGH SUB-BASIN 405 TO
 911          KM            CONFLUENCE OF SKUNK CREEK WITH ACDC
 912          KM            1) Reach Length = 4530 ft.
 913          RD    4530  0.0066   0.035            TRAP     100       4

 914          KK    405S
 915          KM   RUNOFF GENERATED ON SUB-BASIN 405
 916          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 917          KM    L= 0.61 mi. S= 21 ft/mi  Kb= .053 Tc = 0.617 Hr. R = 0.493
 918          KM    CLARK UNIT HYDROGRAPH FOR RURAL WATERSHEDS WAS USED FOR THIS BASIN
 919          BA    .118
 920          LG    .334    .344    4.18    .523    5.80
 921          UC   0.617   0.493
 922          UA      0       3       5       8      12      20      43      75      90      96
 923          UA    100

 924          KK   HC405
 925          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 404 & 405
 926          KM    STORE HYDROGRAPH CONTRIBUTING TO ACDC AT SKUNK CREEK.  THIS HYDROGRAPH WILL
 927          KM    BE STORED IN FILENAME CCW324.DSS FOR RETRIEVAL BY THE WATERSHED BETWEEN CAVE
 928          KM    CREEK AND SKUNK CREEK.
 929          HC       3
 930          ZW    A=SKUNK CREEK  B=HC405  C=FLOW  F=SKUNK CREEK

 931          KK    R368
 932          KM   RETRIEVE FLOWS DIVERTED FROM SPLIT FLOWING SOUTH AT 35TH AVE. & BELL ROAD.
 933          KM    THIS HYDROGRAPH WILL BE STORED IN FILENAME CCW324.DSS FOR RETRIEVAL BY THE
 934          KM    WATERSHED BETWEEN CAVE CREEK AND SKUNK CREEK.
 935          DR   369D5
 936          ZW    A=SKUNK CREEK  B=369D5  C=FLOW  F=WEST

 937          KK    R375
 938          KM   RETRIEVE FLOWS DIVERTED FROM SPLIT FLOWING SOUTH AT 43RD AVE. & BELL ROAD.
 939          KM    THIS HYDROGRAPH WILL BE STORED IN FILENAME CCW324.DSS FOR RETRIEVAL BY THE
 940          KM    WATERSHED BETWEEN CAVE CREEK AND SKUNK CREEK.
 941          DR    376D
 942          ZW    A=SKUNK CREEK  B=376D  C=FLOW  F=WEST

 943          KK    R381
 944          KM   RETRIEVE FLOWS DIVERTED FROM SPLIT FLOWING SOUTH AT 51ST AVE. & BELL ROAD.
 945          KM    THIS HYDROGRAPH WILL BE STORED IN FILENAME CCW324.DSS FOR RETRIEVAL BY THE
 946          KM    WATERSHED BETWEEN CAVE CREEK AND SKUNK CREEK.
 947          DR    382D
 948          ZW    A=SKUNK CREEK  B=382D  C=FLOW  F=WEST

 949          KK    R386
 950          KM   RETRIEVE FLOWS DIVERTED FROM SPLIT FLOWING SOUTH AT 59TH AVE. & BELL ROAD.
 951          KM    THIS HYDROGRAPH WILL BE STORED IN FILENAME CCW324.DSS FOR RETRIEVAL BY THE
 952          KM    WATERSHED BETWEEN CAVE CREEK AND SKUNK CREEK.
 953          DR    387D
 954          ZW    A=SKUNK CREEK  B=387D  C=FLOW  F=WEST
 955          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

  8        328S
              V
              V
 28       328RR
              V
              V
 35       RM328
              .
              .
 39           .        329S
              .           .
              .           .
 49       HC329............
              V
              V
 52       329RR
              V
              V
 59       RM329
              .
              .
 63           .        R336
              .           V
              .           V
 70           .      RM336A
              .           .
              .           .
 74           .           .        337S
              .           .           .
              .           .           .
 84       HC337........................
              V
              V
 88      RM337A
              V
              V
 92      RM337B
              .
              .
 96           .        R339
              .           V
              .           V
103           .       RM339
              .           .
              .           .
107           .           .        340S
              .           .           .
              .           .           .
122           .           .           .-------->   OR340
117           .           .       DT340
              .           .           .
              .           .           .
125      HC340........................
```

```
            .
            .
132         .-------->    342D
128     340RE
            V
            V
135     RM340A
            .
            .
139         .        338S
            .          V
            .          V
149         .       RM338
            .          .
            .          .
153         .          .        R330
            .          .          V
            .          .          V
159         .          .       RM330
            .          .          .
            .          .          .
163         .          .          .        341S
            .          .          .          .
            .          .          .          .
178         .          .          .          .-------->   OR341
173         .          .          .       DT341
            .          .          .          .
            .          .          .          .
181     HC341.................................
            V
            V
184     RM341
            .
            .
190         .          .<-------    342D
188         .       R340
            .          V
            .          V
191         .      RM340B
            .          .
            .          .
198         .          .        342S
            .          .          .
            .          .          .
213         .          .          .-------->   OR342
208         .          .       DT342
            .          .          .
            .          .          .
216     HC342......................
            V
            V
219     RM342
            .
            .
223         .       350S
            .          .
            .          .
233     HC350............
            .
            .
```

```
241          .------->    260D
236      350RE
             V
             V
 4      RM350A
             V
             V
248     RM350B
             .
             .
255          .        352S
             .           .
             .           .
265      HC352............
             .
             .
270          .------->    352D
268      352RE
             .
             .
273          .        351S
             .           .
             .           .
288          .           .------->   392D1
283          .       351RE
             .           .
             .           .
291      HC352............
             V
             V
294      352RR
             .
             .
302          .           .<-------    352D
300          .        R352
             .           .
             .           .
303          .           .        353S
             .           .           .
             .           .           .
313          .           .           .        354S
             .           .           .           .
             .           .           .           .
323      HC354.................................
             V
             V
326      354RR
             .
             .
335          .------->   392D2
332      354RE
             .
             .
338          .        355S
             .           .
             .           .
348      HC355............
             V
             V
351      355RR
```

```
          .
          .
360       .-------> 368D1
358   355RE
          .
          .
365       .         .<-------  392D1
363       .      R351
          .         .
          .         .
368       .         .          .<-------  392D2
366       .         .      R354
          .         .          .
          .         .          .
369       .         .          .      392S
          .         .          .         .
          .         .          .         .
379       .     HC392.......................
          .         .
          .         .
388       .         .-------> 368D3
382       .     392RE
          .         V
          .         V
391       .     RM393
          .         .
          .         .
398       .         .      393S
          .         .          .
          .         .          .
408       .     HC393............
          .         .
          .         .
417       .         .------->  375D
411       .     393RE
          .         V
          .         V
420       .     RM399
          .         .
          .         .
427       .         .      394S
          .         .          .
          .         .          .
437       .         .          .      395S
          .         .          .         V
          .         .          .         V
447       .         .          .     RM396
          .         .          .         .
          .         .          .         .
451       .         .          .         .      396S
          .         .          .         .         .
          .         .          .         .         .
461       .         .          .     HC396............
          .         .          .         V
          .         .          .         V
464       .         .          .     RM397
          .         .          .         .
          .         .          .         .
468       .         .          .         .      397S
          .         .          .         .         .
```

```
                .         .         .         .         .
478             .         .         .      HC397............
                .         .         .         V
                .         .         .         V
481             .         .         .      397RR
                .         .         .         .
                .         .         .         .
488             .         .         .         .      398AS
                .         .         .         .         V
                .         .         .         .         V
498             .         .         .         .     398ARR
                .         .         .         .         .
                .         .         .         .         .
504             .         .         .         .         .      398BS
                .         .         .         .         .         .
                .         .         .         .         .         .
514             .         .         .      HC398........................
                .         .         .         V
                .         .         .         V
517             .         .         .     398BRR
                .         .         .         V
                .         .         .         V
524             .         .         .     398BRR
                .         .         .         V
                .         .         .         V
534             .         .         .     398BRR
                .         .         .         V
                .         .         .         V
541             .         .         .     398BRR
                .         .         .         V
                .         .         .         V
548             .         .         .      RM399
                .         .         .         .
                .         .         .         .
555             .         .         .         .      399S
                .         .         .         .         .
                .         .         .         .         .
570             .         .         .         .         .-------->   OR399
565             .         .         .         .     DT399
                .         .         .         .         .
                .         .         .         .         .
573             .         .         .         .         .      HCSKB
                .         .         .         .         .         V
                .         .         .         .         .         V
579             .         .         .         .         .      RM399
                .         .         .         .         .         .
                .         .         .         .         .         .
582             .      HC399.............................................
                .         V
                .         V
585             .      RM400
                .         .
                .         .
589             .         .      400S
                .         .         .
                .         .         .
604             .         .         .-------->   OR400
599             .         .      DT400
                .         .         .
                .         .         .
```

```
607   .     HC400............
      .        V
      .        V
610   .     RM401
      .        .
      .        .
614   .        .      401S
      .        .         .
      .        .         .
629   .        .         .-------> OR401
624   .        .     DT401
      .        .         .
      .        .         .
637   .        .         .------->  390D
632   .        .     401RE
      .        .         .
      .        .         .
640   .     HC401............
      .        V
      .        V
643   .     RM404
      .        .
      .        .
650   .        .         .<-------  368D1
647   .        .      R355
      .        .         .
      .        .         .
653   .        .         .          .<-------  368D3
651   .        .         .       R392
      .        .         .          V
      .        .         .          V
654   .        .         .      RM368
      .        .         .          .
      .        .         .          .
661   .        .         .          .       368S
      .        .         .          .          .
      .        .         .          .          .
677   .        .         .          .          .-------> OR368
672   .        .         .          .      DT368
      .        .         .          .          .
      .        .         .          .          .
680   .        .     HC368........................
      .        .         .
      .        .         .
689   .        .         .-------> 369D5
683   .        .     368RE
      .        .        V
      .        .        V
692   .        .     RM375
      .        .         .
      .        .         .
701   .        .         .          .<-------  375D
699   .        .         .       R393
      .        .         .          V
      .        .         .          V
02    .        .         .      RM375
      .        .         .          .
      .        .         .          .
709   .        .         .          .       375S
      .        .         .          .          .
```

```
725   .   .   .   .   .
720   .   .   .   .   .-------> OR375
      .   .   .   .   DT375
      .   .   .   .   .
      .   .   .   .   .
728   .   .   HC375.......................
      .   .   .
      .   .   .
734   .   .   .-------> 376D
731   .   .   375RE
      .   .   V
      .   .   V
737   .   .   RM381
      .   .   .
      .   .   .
744   .   .   .   381S
      .   .   .   .
      .   .   .   .
759   .   .   .   .-------> OR381
754   .   .   .   DT381
      .   .   .   .
      .   .   .   .
762   .   .   HC381............
      .   .   .
      .   .   .
771   .   .   .-------> 382D
765   .   .   381RE
      .   .   V
      .   .   V
      .   .   RM386
      .   .   .
      .   .   .
781   .   .   .   386S
      .   .   .   .
      .   .   .   .
796   .   .   .   .-------> OR386
791   .   .   .   DT386
      .   .   .   .
      .   .   .   .
799   .   .   HC386............
      .   .   .
      .   .   .
808   .   .   .-------> 387D
802   .   .   386RE
      .   .   V
      .   .   V
811   .   .   RM404
      .   .   .
      .   .   .
818   .   .   .   402S
      .   .   .   .
      .   .   .   .
833   .   .   .   .-------> OR402
828   .   .   .   DT402
      .   .   .   V
      .   .   .   V
836   .   .   .   403RR1
      .   .   .   V
      .   .   .   V
843   .   .   .   403RR2
```

```
          .         .         .         .
          .         .         .         .
850       .         .         .         .       403S
          .         .         .         .         V
          .         .         .         .         V
860       .         .         .         .     403RR3
          .         .         .         .         V
          .         .         .         .         V
867       .         .         .         .     403RR4
          .         .         .         .         V
          .         .         .         .         V
874       .         .         .         .     403RR5
          .         .         .         .         .
          .         .         .         .         .
881       .         .         .     HC403............
          .         .         .         V
          .         .         .         V
884       .         .         .     RM404
          .         .         .         .
          .         .         .         .
888       .         .         .         .       404S
          .         .         .         .         .
          .         .         .         .         .
903       .         .         .         .         .-------->   OR404
898       .         .         .         .     DT404
          .         .         .         .         .
          .         .         .         .         .
906       .     HC404...................................
          .         V
          .         V
909       .     RM405
          .         .
          .         .
914       .         .       405S
          .         .         .
          .         .         .
924   HC405........................
          .
          .
935       .         .<-------   369D5
931       .     R368
          .         .
          .         .
941       .         .         .<-------    376D
937       .         .       R375
          .         .         .
          .         .         .
947       .         .         .         .<-------    382D
943       .         .         .     R381
          .         .         .         .
          .         .         .         .
953       .         .         .         .         .<-------    387D
949       .         .         .         .       R386
```

*) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
              MAY   1991               *
           VERSION 4.0.1E              *
*                                       *
*  RUN DATE  06/01/95  TIME  10:19:03   *
*                                       *
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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
                    SKUNK CREEK WATERSHED * EXISTING CONDITIONS
                    FILENAME:  SC100-24.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.    1:  /DEER VALLEY ROAD/R336/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS--- ZREAD Unit  71; Vers.    1:  /DEER VALLEY ROAD/R336/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS--- ZREAD Unit  71; Vers.    1:  /DEER VALLEY ROAD/R336/FLOW/11OCT1992/4MIN/CAVE CREEK/
-----DSS--- ZREAD Unit  71; Vers.    1:  /DEER VALLEY ROAD/R336/FLOW/12OCT1992/4MIN/CAVE CREEK/
-----DSS--- ZREAD Unit  71; Vers.    1:  /DEER VALLEY ROAD/R336/FLOW/12OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.   31:  /SKUNK CREEK/HC405/FLOW/10OCT1992/4MIN/SKUNK CREEK/
-----DSS---ZWRITE Unit  71; Vers.   31:  /SKUNK CREEK/HC405/FLOW/11OCT1992/4MIN/SKUNK CREEK/
-----DSS---ZWRITE Unit  71; Vers.   28:  /SKUNK CREEK/HC405/FLOW/12OCT1992/4MIN/SKUNK CREEK/
-----DSS---ZWRITE Unit  71; Vers.   32:  /SKUNK CREEK/369D5/FLOW/10OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.   32:  /SKUNK CREEK/369D5/FLOW/11OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.   29:  /SKUNK CREEK/369D5/FLOW/12OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.   32:  /SKUNK CREEK/376D/FLOW/10OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.   32:  /SKUNK CREEK/376D/FLOW/11OCT1992/4MIN/WEST/
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-----DSS---ZWRITE Unit  71; Vers.   29:  /SKUNK CREEK/376D/FLOW/12OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.   32:  /SKUNK CREEK/382D/FLOW/10OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.   32:  /SKUNK CREEK/382D/FLOW/11OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.   29:  /SKUNK CREEK/382D/FLOW/12OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.   32:  /SKUNK CREEK/387D/FLOW/10OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.   32:  /SKUNK CREEK/387D/FLOW/11OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.   29:  /SKUNK CREEK/387D/FLOW/12OCT1992/4MIN/WEST/
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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	328S	567.	12.20	61.	16.	7.	0.57		
ROUTED TO	328RR	35.	12.93	33.	15.	7.	0.57	19.01	13.00
ROUTED TO	RM328	38.	13.13	33.	15.	7.	0.57		
HYDROGRAPH AT	329S	456.	12.33	79.	24.	11.	0.63		
2 COMBINED AT	HC329	456.	12.33	103.	38.	17.	1.20		
ROUTED TO	329RR	132.	13.20	95.	38.	17.	1.20	54.10	13.20
ROUTED TO	RM329	132.	13.27	95.	38.	17.	1.20		
HYDROGRAPH AT	R336	60.	11.87	25.	8.	4.	0.00		
ROUTED TO	RM336A	63.	12.13	25.	8.	4.	0.00		
HYDROGRAPH AT	337S	249.	12.20	56.	19.	8.	0.29		
3 COMBINED AT	HC337	371.	12.27	170.	64.	29.	1.49		
ROUTED TO	RM337A	370.	12.40	170.	64.	29.	1.49		
ROUTED TO	RM337B	368.	12.47	170.	64.	29.	1.49		
HYDROGRAPH AT	R339	81.	12.73	10.	3.	1.	0.00		
ROUTED TO	RM339	79.	13.00	10.	3.	1.	0.00		
HYDROGRAPH AT	340S	270.	12.20	39.	12.	5.	0.26		
DIVERSION TO	OR340	4.	12.20	3.	1.	0.	0.26		
HYDROGRAPH AT	DT340	270.	12.20	39.	11.	5.	0.26		
3 COMBINED AT	HC340	575.	12.33	216.	77.	36.	1.75		
DIVERSION TO	342D	126.	12.33	41.	13.	6.	1.75		
HYDROGRAPH AT	340RE	449.	12.33	175.	64.	30.	1.75		
ROUTED TO	RM340A	445.	12.47	175.	64.	30.	1.75		
HYDROGRAPH AT	338S	163.	12.07	27.	9.	4.	0.12		
ROUTED TO	RM338	157.	12.47	27.	9.	4.	0.12		
HYDROGRAPH AT	R330	121.	12.13	9.	2.	1.	0.00		
ROUTED TO	RM330	116.	12.40	9.	2.	1.	0.00		

HYDROGRAPH AT	341S	236.	12.13	39.	12.	6.	0.23		
DIVERSION TO	OR341	176.	12.13	14.	4.	2.	0.23		
HYDROGRAPH AT	DT341	236.	12.13	30.	8.	4.	0.23		
4 COMBINED AT	HC341	867.	12.40	239.	84.	38.	2.11		
ROUTED TO	RM341	871.	12.47	239.	84.	38.	2.11		
HYDROGRAPH AT	R340	126.	12.33	41.	13.	6.	0.00		
ROUTED TO	RM340B	127.	12.53	42.	13.	6.	0.00		
HYDROGRAPH AT	342S	468.	12.13	79.	25.	11.	0.49		
DIVERSION TO	OR342	6.	12.13	4.	1.	0.	0.49		
HYDROGRAPH AT	DT342	468.	12.13	79.	24.	11.	0.49		
3 COMBINED AT	HC342	1276.	12.47	354.	120.	55.	2.60		
ROUTED TO	RM342	1274.	12.53	354.	120.	55.	2.60		
HYDROGRAPH AT	350S	125.	12.07	20.	6.	3.	0.12		
2 COMBINED AT	HC350	1326.	12.53	373.	127.	58.	2.71		
DIVERSION TO	260D	365.	12.53	244.	94.	43.	2.71		
HYDROGRAPH AT	350RE	961.	12.53	128.	32.	14.	2.71		
ROUTED TO	RM350A	943.	12.60	128.	32.	14.	2.71		
ROUTED TO	RM350B	922.	12.67	129.	32.	14.	2.71		
HYDROGRAPH AT	352S	381.	12.13	65.	19.	9.	0.33		
2 COMBINED AT	HC352	1089.	12.60	194.	52.	23.	3.04		
DIVERSION TO	352D	515.	12.60	89.	24.	11.	3.04		
HYDROGRAPH AT	352RE	574.	12.60	105.	28.	13.	3.04		
HYDROGRAPH AT	351S	56.	12.27	11.	3.	1.	0.05		
DIVERSION TO	392D1	14.	12.27	3.	1.	0.	0.05		
HYDROGRAPH AT	351RE	42.	12.27	8.	2.	1.	0.05		
2 COMBINED AT	HC352	600.	12.60	113.	30.	14.	3.10		
ROUTED TO	352RR	597.	12.67	106.	27.	12.	3.10	73.09	12.67
HYDROGRAPH AT	R352	515.	12.60	89.	24.	11.	0.00		
HYDROGRAPH AT	353S	281.	12.07	44.	14.	6.	0.25		
HYDROGRAPH AT	354S	244.	12.07	38.	13.	6.	0.16		

4 COMBINED AT	HC354	1255.	12.60	276.	78.	35.	3.51		
ROUTED TO	354RR	1244.	12.67	264.	72.	32.	3.51	62.15	12.67
DIVERSION TO	392D2	344.	12.67	164.	47.	21.	3.51		
HYDROGRAPH AT	354RE	900.	12.67	100.	25.	11.	3.51		
HYDROGRAPH AT	355S	49.	12.00	7.	2.	1.	0.03		
2 COMBINED AT	HC355	905.	12.67	107.	27.	12.	3.54		
ROUTED TO	355RR	0.	0.07	0.	0.	0.	3.54	52.84	24.33
DIVERSION TO	368D1	0.	0.07	0.	0.	0.	3.54		
HYDROGRAPH AT	355RE	0.	0.07	0.	0.	0.	3.54		
HYDROGRAPH AT	R351	14.	12.13	3.	1.	0.	0.00		
HYDROGRAPH AT	R354	344.	12.67	164.	47.	21.	0.00		
HYDROGRAPH AT	392S	1406.	12.13	249.	75.	34.	1.18		
3 COMBINED AT	HC392	1681.	12.20	409.	121.	55.	1.18		
DIVERSION TO	368D3	395.	12.20	31.	8.	3.	1.18		
HYDROGRAPH AT	392RE	1286.	12.20	378.	113.	52.	1.18		
ROUTED TO	RM393	1283.	12.33	378.	113.	52.	1.18		
HYDROGRAPH AT	393S	585.	12.27	120.	33.	15.	0.72		
2 COMBINED AT	HC393	1866.	12.33	497.	147.	67.	1.90		
DIVERSION TO	375D	292.	12.33	22.	6.	3.	1.90		
HYDROGRAPH AT	393RE	1574.	12.33	475.	141.	64.	1.90		
ROUTED TO	RM399	1596.	12.33	475.	141.	64.	1.90		
HYDROGRAPH AT	394S	404.	12.13	74.	24.	11.	0.42		
HYDROGRAPH AT	395S	1583.	12.27	196.	52.	23.	1.47		
ROUTED TO	RM396	1567.	12.33	196.	52.	23.	1.47		
HYDROGRAPH AT	396S	728.	12.20	77.	21.	9.	0.76		
2 COMBINED AT	HC396	2194.	12.27	272.	73.	33.	2.23		
ROUTED TO	RM397	2160.	12.53	273.	73.	33.	2.23		
HYDROGRAPH AT	397S	793.	12.20	94.	27.	12.	0.79		
2 COMBINED AT	HC397	2521.	12.47	367.	99.	45.	3.02		
ROUTED TO	397RR	2233.	12.60	367.	99.	45.	3.02	1296.94	12.60

HYDROGRAPH AT	398AS	389.	12.07	49.	16.	7.	0.30		
ROUTED TO	398ARR	300.	12.20	38.	11.	5.	0.30	1306.01	12.20
HYDROGRAPH AT	398BS	688.	12.27	140.	43.	19.	0.88		
3 COMBINED AT	HC398	2856.	12.60	543.	153.	69.	4.20		
ROUTED TO	398BRR	2331.	12.80	541.	152.	69.	4.20	1296.07	12.80
ROUTED TO	398BRR	1391.	13.33	523.	151.	69.	4.20	1296.30	13.33
ROUTED TO	398BRR	715.	14.53	446.	149.	69.	4.20	1295.11	14.53
ROUTED TO	398BRR	607.	15.47	416.	148.	69.	4.20	1291.40	15.47
ROUTED TO	RM399	607.	15.67	416.	148.	69.	4.20		
HYDROGRAPH AT	399S	605.	12.47	104.	29.	13.	0.90		
DIVERSION TO	OR399	2.	12.47	0.	0.	0.	0.90		
HYDROGRAPH AT	DT399	605.	12.47	104.	29.	13.	0.90		
HYDROGRAPH AT	HCSKB	4673.	12.67	3409.	2309.	1995.	15.58		
ROUTED TO	RM399	4657.	12.87	3408.	2309.	1995.	15.58		
5 COMBINED AT	HC399	6643.	12.80	4366.	2643.	2151.	23.00		
ROUTED TO	RM400	6617.	12.87	4365.	2643.	2151.	23.00		
HYDROGRAPH AT	400S	220.	12.53	44.	12.	5.	0.41		
DIVERSION TO	OR400	125.	12.53	7.	2.	1.	0.41		
HYDROGRAPH AT	DT400	220.	12.53	39.	10.	5.	0.41		
2 COMBINED AT	HC400	6769.	12.87	4404.	2653.	2156.	23.40		
ROUTED TO	RM401	6722.	13.00	4403.	2653.	2156.	23.40		
HYDROGRAPH AT	401S	1168.	12.33	161.	47.	21.	1.17		
DIVERSION TO	OR401	22.	12.33	13.	4.	2.	1.17		
HYDROGRAPH AT	DT401	1168.	12.33	160.	43.	19.	1.17		
DIVERSION TO	390D	250.	12.33	78.	22.	10.	1.17		
HYDROGRAPH AT	401RE	918.	12.33	82.	21.	9.	1.17		
2 COMBINED AT	HC401	6740.	12.60	4470.	2674.	2165.	24.58		
ROUTED TO	RM404	6723.	12.73	4469.	2674.	2165.	24.58		
HYDROGRAPH AT	R355	0.	0.07	0.	0.	0.	0.00		
HYDROGRAPH AT	R392	395.	12.20	31.	8.	3.	0.00		

ROUTED TO	RM368	377.	12.40	31.	8.	4.	0.00
HYDROGRAPH AT	368S	1160.	12.20	224.	89.	54.	1.12
DIVERSION TO	OR368	43.	12.20	30.	7.	3.	1.12
HYDROGRAPH AT	DT368	1160.	12.20	224.	87.	51.	1.12
3 COMBINED AT	HC368	1277.	12.33	256.	94.	54.	1.12
DIVERSION TO	369D5	708.	12.33	177.	75.	45.	1.12
HYDROGRAPH AT	368RE	568.	12.33	79.	20.	9.	1.12
ROUTED TO	RM375	545.	12.53	80.	20.	9.	1.12
HYDROGRAPH AT	R393	292.	12.33	22.	6.	3.	0.00
ROUTED TO	RM375	273.	12.60	23.	6.	3.	0.00
HYDROGRAPH AT	375S	1190.	12.13	213.	67.	30.	1.05
DIVERSION TO	OR375	17.	12.13	10.	3.	1.	1.05
HYDROGRAPH AT	DT375	1190.	12.13	213.	64.	29.	1.05
3 COMBINED AT	HC375	1576.	12.20	315.	90.	40.	2.17
DIVERSION TO	376D	788.	12.20	158.	45.	20.	2.17
HYDROGRAPH AT	375RE	788.	12.20	158.	45.	20.	2.17
ROUTED TO	RM381	797.	12.40	158.	45.	20.	2.17
HYDROGRAPH AT	381S	1268.	12.13	188.	58.	26.	1.04
DIVERSION TO	OR381	828.	12.13	58.	17.	8.	1.04
HYDROGRAPH AT	DT381	1268.	12.13	150.	41.	18.	1.04
2 COMBINED AT	HC381	1710.	12.20	305.	86.	39.	3.22
DIVERSION TO	382D	871.	12.20	169.	52.	23.	3.22
HYDROGRAPH AT	381RE	839.	12.20	137.	34.	15.	3.22
ROUTED TO	RM386	825.	12.33	137.	34.	15.	3.22
HYDROGRAPH AT	386S	974.	12.27	168.	50.	22.	1.07
DIVERSION TO	OR386	19.	12.27	12.	4.	2.	1.07
HYDROGRAPH AT	DT386	974.	12.27	168.	46.	21.	1.07
2 COMBINED AT	HC386	1748.	12.27	305.	80.	36.	4.29
DIVERSION TO	387D	934.	12.27	189.	51.	23.	4.29
HYDROGRAPH AT	386RE	814.	12.27	116.	29.	13.	4.29

ROUTED TO	RM404	802.	12.53	116.	29.	13.	4.29		
HYDROGRAPH AT	402S	543.	12.47	84.	22.	10.	0.75		
DIVERSION TO	OR402	6.	12.47	3.	1.	0.	0.75		
HYDROGRAPH AT	DT402	543.	12.47	83.	21.	10.	0.75		
ROUTED TO	403RR1	664.	12.60	51.	14.	6.	0.75	1240.07	12.60
ROUTED TO	403RR2	227.	13.00	46.	14.	6.	0.75	1233.02	13.00
HYDROGRAPH AT	403S	1259.	12.13	171.	50.	23.	1.00		
ROUTED TO	403RR3	1494.	12.13	157.	48.	23.	1.00	1254.15	12.13
ROUTED TO	403RR4	1967.	12.13	135.	44.	23.	1.00	1239.20	12.13
ROUTED TO	403RR5	75.	13.40	27.	23.	16.	1.00	1231.00	13.40
2 COMBINED AT	HC403	253.	13.00	73.	38.	23.	1.75		
ROUTED TO	RM404	202.	13.40	73.	38.	22.	1.75		
HYDROGRAPH AT	404S	333.	12.53	65.	18.	8.	0.52		
DIVERSION TO	OR404	4.	12.53	3.	1.	0.	0.52		
HYDROGRAPH AT	DT404	333.	12.53	65.	18.	8.	0.52		
4 COMBINED AT	HC404	7690.	12.67	4712.	2754.	2208.	31.13		
ROUTED TO	RM405	7719.	12.80	4712.	2754.	2208.	31.13		
HYDROGRAPH AT	405S	56.	12.40	9.	2.	1.	0.12		
3 COMBINED AT	HC405	7749.	12.80	4719.	2756.	2210.	34.79		
HYDROGRAPH AT	R368	708.	12.33	177.	75.	45.	0.00		
HYDROGRAPH AT	R375	788.	12.20	158.	45.	20.	0.00		
HYDROGRAPH AT	R381	871.	12.20	169.	52.	23.	0.00		
HYDROGRAPH AT	R386	934.	12.27	189.	51.	23.	0.00		

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)
RM328	MANE	3.60	45.09	777.60	0.96	4.00	38.08	788.00	0.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2917E+02 EXCESS=0.0000E+00 OUTFLOW=0.2924E+02 BASIN STORAGE=0.9715E-02 PERCENT ERROR= -0.3

RM329	MANE	3.06	131.90	795.87	1.20	4.00	131.90	796.00	1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7691E+02 EXCESS=0.0000E+00 OUTFLOW=0.7690E+02 BASIN STORAGE=0.3106E-03 PERCENT ERROR= 0.0

RM336A	MANE	4.00	62.84	728.00	-1.00	4.00	62.84	728.00	-1.00
RM337A	MANE	4.00	369.76	744.00	1.63	4.00	369.76	744.00	1.63

TINUITY SUMMARY (AC-FT) - INFLOW=0.1299E+03 EXCESS=0.0000E+00 OUTFLOW=0.1299E+03 BASIN STORAGE=0.5199E-02 PERCENT ERROR= 0.0

RM337B	MANE	4.00	367.93	748.00	1.63	4.00	367.93	748.00	1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1299E+03 EXCESS=0.0000E+00 OUTFLOW=0.1298E+03 BASIN STORAGE=0.4409E-02 PERCENT ERROR= 0.0

RM339	MANE	2.20	79.07	781.00	-1.00	4.00	78.89	780.00	-1.00
RM340A	MANE	4.00	445.48	748.00	1.39	4.00	445.48	748.00	1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1303E+03 EXCESS=0.0000E+00 OUTFLOW=0.1303E+03 BASIN STORAGE=0.1837E-02 PERCENT ERROR= 0.0

RM338	MANE	4.00	157.18	748.00	2.76	4.00	157.18	748.00	2.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1823E+02 EXCESS=0.0000E+00 OUTFLOW=0.1823E+02 BASIN STORAGE=0.5528E-02 PERCENT ERROR= 0.0

RM330	MANE	1.20	117.20	742.80	-1.00	4.00	116.43	744.00	-1.00
RM341	MANE	4.00	871.43	748.00	1.51	4.00	871.43	748.00	1.51

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CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1692E+03 EXCESS=0.0000E+00 OUTFLOW=0.1692E+03 BASIN STORAGE=0.2368E-02 PERCENT ERROR=   0.0

        RM340B  MANE        4.00    127.06    752.00     -1.00      4.00    127.06    752.00       -1.00

         RM342  MANE        4.00   1274.03    752.00      1.75      4.00   1274.03    752.00        1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2426E+03 EXCESS=0.0000E+00 OUTFLOW=0.2426E+03 BASIN STORAGE=0.1961E-02 PERCENT ERROR=   0.0

        RM350A  MANE        2.80    942.99    756.00      0.44      4.00    942.99    756.00        0.44

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6371E+02 EXCESS=0.0000E+00 OUTFLOW=0.6370E+02 BASIN STORAGE=0.1574E-02 PERCENT ERROR=   0.0

        RM350B  MANE        2.95    924.25    757.08      0.44      4.00    922.08    760.00        0.44

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6370E+02 EXCESS=0.0000E+00 OUTFLOW=0.6377E+02 BASIN STORAGE=0.2537E-03 PERCENT ERROR=  -0.1

         RM393  MANE        4.00   1282.83    740.00      3.61      4.00   1282.83    740.00        3.61

INUITY SUMMARY (AC-FT) - INFLOW=0.2270E+03 EXCESS=0.0000E+00 OUTFLOW=0.2271E+03 BASIN STORAGE=0.6601E-03 PERCENT ERROR=   0.0

         RM399  MANE        4.00   1595.56    740.00      2.79      4.00   1595.56    740.00        2.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2823E+03 EXCESS=0.0000E+00 OUTFLOW=0.2826E+03 BASIN STORAGE=0.9109E-03 PERCENT ERROR=  -0.1

         RM396  MANE        4.00   1566.55    740.00      1.32      4.00   1566.55    740.00        1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1030E+03 EXCESS=0.0000E+00 OUTFLOW=0.1031E+03 BASIN STORAGE=0.6077E-02 PERCENT ERROR=  -0.1

         RM397  MANE        4.00   2159.98    752.00      1.21      4.00   2159.98    752.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1439E+03 EXCESS=0.0000E+00 OUTFLOW=0.1442E+03 BASIN STORAGE=0.1589E-01 PERCENT ERROR=  -0.2

         RM399  MANE        4.00    606.95    940.00      1.35      4.00    606.95    940.00        1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3031E+03 EXCESS=0.0000E+00 OUTFLOW=0.3031E+03 BASIN STORAGE=0.1694E-01 PERCENT ERROR=   0.0

         RM399  MANE        4.00   4656.89    772.00     10.57      4.00   4656.89    772.00       10.57

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8791E+04 EXCESS=0.0000E+00 OUTFLOW=0.8791E+04 BASIN STORAGE=0.1299E-01 PERCENT ERROR=   0.0
```

```
RM400  MANE        4.00   6616.57    772.00      7.72      4.00   6616.57    772.00        7.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9481E+04 EXCESS=0.0000E+00 OUTFLOW=0.9481E+04 BASIN STORAGE=0.9646E-02 PERCENT ERROR=   0.0

RM401  MANE        4.00   6721.59    780.00      7.60      4.00   6721.59    780.00        7.60

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9500E+04 EXCESS=0.0000E+00 OUTFLOW=0.9500E+04 BASIN STORAGE=0.1666E-01 PERCENT ERROR=   0.0

RM404  MANE        4.00   6722.64    764.00      7.27      4.00   6722.64    764.00        7.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9541E+04 EXCESS=0.0000E+00 OUTFLOW=0.9541E+04 BASIN STORAGE=0.1525E-01 PERCENT ERROR=   0.0

RM368  MANE        1.20    378.77    745.20     -1.00      4.00    377.13    744.00       -1.00

RM375  MANE        2.60    558.30    754.00      0.66      4.00    545.46    752.00        0.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3904E+02 EXCESS=0.0000E+00 OUTFLOW=0.3935E+02 BASIN STORAGE=0.1111E-02 PERCENT ERROR=  -0.8

RM375  MANE        1.00    278.09    758.00     -1.00      4.00    272.87    756.00       -1.00

RM381  MANE        4.00    796.59    744.00      0.77      4.00    796.59    744.00        0.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8900E+02 EXCESS=0.0000E+00 OUTFLOW=0.8907E+02 BASIN STORAGE=0.9923E-03 PERCENT ERROR=  -0.1

RM386  MANE        2.00    825.85    742.00      0.40      4.00    825.04    740.00        0.40

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6770E+02 EXCESS=0.0000E+00 OUTFLOW=0.6785E+02 BASIN STORAGE=0.7961E-03 PERCENT ERROR=  -0.2

RM404  MANE        1.80    803.06    752.40      0.25      4.00    802.41    752.00        0.25

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5732E+02 EXCESS=0.0000E+00 OUTFLOW=0.5756E+02 BASIN STORAGE=0.1278E-02 PERCENT ERROR=  -0.4

RM404  MANE        4.00    202.02    804.00      1.06      4.00    202.02    804.00        1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9930E+02 EXCESS=0.0000E+00 OUTFLOW=0.9852E+02 BASIN STORAGE=0.1174E+01 PERCENT ERROR=  -0.4

RM405  MANE        4.00   7719.30    768.00      5.86      4.00   7719.30    768.00        5.86
```

```
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9732E+04 EXCESS=0.0000E+00 OUTFLOW=0.9732E+04 BASIN STORAGE=0.1720E+00 PERCENT ERROR=   0.0


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


  -----DSS---ZCLOSE Unit:  71,   File: CCW324.DSS
            Pointer Utilization:  0.27
            Number of Records:     81
            File Size:    177.4  Kbytes
            Percent Inactive:   0.0
```

SECTION VII

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

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
              MAY   1991               *
            VERSION 4.0.1E             *
*                                       *
*  RUN DATE  06/06/95  TIME  16:02:18   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    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       FILENAME SC243F.DAT      KHE JOB NO. 0146
  3           ID       SKUNK CREEK WATERSHED - FUTURE CONDITIONS
  4           ID       100-YEAR 24-HOUR DURATION STORM
  5           ID       SCS TYPE II DISTRIBUTION WAS USED
              *DIAGRAM
  6           IT       4 10OCT92    1200     800
  7           IO       5

  8           KK    350S
  9           KM   RUNOFF GENERATED ON SUB-BASIN 350
 10           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 11           KM    L = 0.92 mi. S = 37 ft/mi Kb = 0.051 Tc = 0.512 Hr. R = 0.281
 12           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 13           BA    .391
 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 .89 WAS USED
 17           PB    3.38
 18           KM   THE FOLLOWING PC RECORD USED A 24-HR SCS TYPE II STORM
 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    .131    .260   3.820    .375  46.040
 25           UC    .512    .281
 26           UA       0       5      16      30      65      77      84      90      94      97
 27           UA     100

 28           KK   DT350
 29           KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 0.52 AC-FT FROM SUB-BASIN 350
 30           KM                                              (Hydrograph identified as OR350)
 31           KM                                            2) Balance of runoff continues on.
 32           KM                                              (Hydrograph identified as DT350)
 33           DT   OR350    0.52
 34           DI       0   10000
 35           DQ       0   10000

 36           KK   HCSKB
 37           KM   RETRIEVE HYDROGRAPH FROM CONFLUENCE OF SKUNK CREEK AND SCATTER WASH.
 38           KM   THIS HYDROGRAPH WAS GENERATED IN THE SCATTER WASH WATERSHED MODEL AND
 39           KM   IS STORED IN CC324F.DSS
 40           BA  18.819
 41           ZR  =QI  A=SCATTER WASH  B=HCSKB  C=FLOW  F=SKUNK CREEK

 42           KK   RMSKB
 43           KM   MUSKINGUM-CUMGE ROUTE FLOW FROM CONFLUENCE OF SKUNK CREEK AND SCATTER
 44           KM   WASH THROUGH SUB-BASIN 350
 45           KM            1) Reach Length = 2985 ft.
 46           RD    2985  0.0054   0.035            TRAP     100       5
```

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

  47          KK    363S
  48          KM   RUNOFF GENERATED ON SUB-BASIN 363
  49          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  50          KM    L = 0.63 mi. S = 110 ft/mi Kb = 0.040 Tc = 0.262 Hr. R = 0.115
  51          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
  52          BA    .301
  53          LG    .138    .313   3.980    .392  54.570
  54          UC    .262    .115
  55          UA       0       5      16      30      65      77      84      90      94      97
  56          UA     100

  57          KK   DT363
  58          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 3.99 AC-FT FROM SUB-BASIN 363
  59          KM                                               (Hydrograph identified as OR363)
  60          KM                                             2) Balance of runoff continues on.
  61          KM                                               (Hydrograph identified as DT363)
  62          DT   OR363    3.99
  63          DI       0   10000
  64          DQ       0   10000

  65          KK   363RR
  66          KM   ROUTE FLOW THROUGH DETENTION BASIN
  67          KM   SOURCE:  Outer Loop Highway at Arrowhead Ranch
  68          RS       1    STOR      -1
  69          SV       0      71
  70          SE    1297    1307
  71          SL    1297    3.14     0.7     0.5
  72          SS  1306.9      50     3.0     1.5

  73          KK   RM363
  74          KM   MUSKINGUM-CUMGE ROUTE FLOW FROM SUB-BASIN 363 THROUGH SUB-BASIN 350
  75          KM            1) Reach Length = 3000 ft.
  76          RD    3000  0.0037   0.012            CIRC       2

  77          KK   HC350
  78          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 350, 363 & SKUNK CREEK
  79          HC       3

  80          KK   RM358
  81          KM   MUSKINGUM-CUMGE ROUTE FLOW FROM SUB-BASIN 350 THROUGH SUB-BASIN 358
  82          KM            1) Reach Length = 4755 ft.
  83          RD    4755  0.0050   0.035            TRAP     100       5

  84          KK    352S
  85          KM   RUNOFF GENERATED ON SUB-BASIN 352
  86          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  87          KM    L = 1.25 mi. S = 22 ft/mi Kb = 0.026 Tc = 0.471 Hr. R = 0.364
  88          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
  89          BA    .324
  90          LG    .126    .130  10.100    .040  49.090
  91          UC    .471    .364
  92          UA       0       5      16      30      65      77      84      90      94      97
  93          UA     100
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  94          KK   DT352
  95          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 1.22 AC-FT FROM SUB-BASIN 352
  96          KM                                              (Hydrograph identified as OR352)
  97          KM                                            2) Balance of runoff continues on.
  98          KM                                              (Hydrograph identified as DT352)
  99          DT   OR352    1.22
 100          DI       0   10000
 101          DQ       0   10000

 102          KK   352RE
 103          KM   DIVERT FLOW SOUTH ALONG 23RD AVENUE AT UTOPIA ROAD
 104          DT    352D
 105          DI       0      43     137    1548    3995
 106          DQ       0      17      57     736    1932

 107          KK    351S
 108          KM   RUNOFF GENERATED ON SUB-BASIN 351
 109          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 110          KM    L = 0.45 mi. S = 20 ft/mi Kb = 0.030 Tc = 0.313 Hr. R = 0.264
 111          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 112          BA    .061
 113          LG    .100    .100   9.400    .022  83.920
 114          UC    .313    .264
 115          UA       0       5      16      30      65      77      84      90      94      97
 116          UA     100

 117          KK   DT351
 118          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 2.60 AC-FT FROM SUB-BASIN 351
 119          KM                                              (Hydrograph identified as OR351)
 120          KM                                            2) Balance of runoff continues on.
 121          KM                                              (Hydrograph identified as DT351)
 122          DT   OR351    2.60
 123          DI       0   10000
 124          DQ       0   10000

 125          KK   351RE
 126          KM   DIVERT FLOW FROM SUB-BASIN 351 ACROSS I-17 CULVERT (2-24" CMP) CROSSING
 127          KM            THROUGH SUB-BASIN 392
 128          KM   SOURCE:  Preliminary Design Report IR-17-1(151)
 129          KM            I-17, Deer Valley Road to Peoria Avenue
 130          DT   355D1
 131          DI       0      50     100     150     200     250     300    1000
 132          DQ       0      14      14      14      14      14      14      14

 133          KK   HC352
 134          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 351 & 352
 135          HC       2

 136          KK   352RR
 137          KM   ROUTE FLOW THROUGH DETENTION AT NE COR I-17 AND UTOPIA ROAD
 138          RS       1    ELEV   64.64
 139          SV       0    1.32    6.00    6.90    7.70    9.20   14.13   20.97
 140          SE   64.64   68.00   71.64   72.00   72.35   73.00   74.00   75.00
 141          SQ       0       0       0      30      82     400    2490    6527
```

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

 142          KK    R352
 143          KM   RETRIEVE FLOWS DIVERTED SOUTH ALONG 23RD AVENUE AT UTOPIA ROAD
 144          DR    352D

 145          KK    353S
 146          KM   RUNOFF GENERATED ON SUB-BASIN 353
 147          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 148          KM    L = 0.85 mi. S = 26 ft/mi Kb = 0.026 Tc = 0.379 Hr. R = 0.248
 149          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 150          BA    .243
 151          LG    .100    .250   5.050    .232  49.060
 152          UC    .379    .248
 153          UA      0       5      16      30      65      77      84      90      94      97
 154          UA     100

 155          KK    354S
 156          KM   RUNOFF GENERATED ON SUB-BASIN 354
 157          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 158          KM    L = 0.53 mi. S = 25 ft/mi Kb = 0.026 Tc = 0.300 Hr. R = 0.164
 159          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 160          BA    .164
 161          LG    .100    .150   8.400    .056  76.650
 162          UC    .300    .164
 163          UA      0       5      16      30      65      77      84      90      94      97
 164          UA     100

 165          KK   HC354
 166          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 351, 352, 353 & 354
 167          HC      4

 168          KK   354RR
 169          KM   ROUTE FLOW THROUGH DETENTION AT NE COR I-17 AND UNION HILLS ROAD
 170          RS      1    ELEV    56.7
 171          SV      0    2.25   12.00   16.87   40.62   79.66  142.31
 172          SE   56.7    58.0    59.6    60.0    62.0    64.0    66.0
 173          SQ      0       0       0      21     330   12341   15323

 174          KK   354RE
 175          KM   DIVERT FLOW FROM SUB-BASIN 354 ACROSS I-17 CULVERT (3-10'x3' BC) CROSSING
 176          KM           THROUGH SUB-BASIN 355
 177          DT   355D2
 178          DI      0      21     330   12341   15323
 179          DQ      0      21     330     510     840

 180          KK    366S
 181          KM   RUNOFF GENERATED ON SUB-BASIN 366
 182          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 183          KM    L = 0.20 mi. S = 140 ft/mi Kb = 0.032 Tc = 0.117 Hr. R = 0.069
 184          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 185          BA    .030
 186          LG    .100    .150   8.280    .078  88.480
 187          UC    .117    .069
 188          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

 189          KK   HC366
 190          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 354 & 366
 191          HC       2

 192          KK   366RR
 193          KM   ROUTE FLOW THROUGH DEPRESSED INTERCHANGE AT I-17 & UNION HILLS ROAD
 194          KM            ASSUME PUMP FAILS TO OPERATE
 195          RS       1    ELEV    40.0
 196          SV       0   26.35   65.43   70.00   77.50   87.50
 197          SE    40.0    50.0    54.0    54.5    55.0    56.0
 198          SQ       0       0       0     150     455    1458

 199          KK   366RE
 200          KM   DIVERT FLOW FROM SUB-BASIN 366 CROSSING THROUGH SUB-BASIN 368
 201          DT   368D1
 202          DI       0   10000
 203          DQ       0   10000

 204          KK    R351
 205          KM   RETRIEVE FLOWS DIVERTED THROUGH 2-24" CMP AT I-17 & BEHREND DRIVE
 206          DR   355D1

 207          KK    R354
 208          KM   RETRIEVE FLOWS DIVERTED THROUGH 3-10'x3' BC AT I-17 & UNION HILLS DRIVE
 209          DR   355D2

 210          KK    355S
 211          KM   RUNOFF GENERATED ON SUB-BASIN 355
 212          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 213          KM    L = 1.83 mi. S = 24 ft/mi Kb = 0.022 Tc = 0.512 Hr. R = 0.259
 214          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 215          BA   1.187
 216          LG    .100    .150   8.600    .068  66.400
 217          UC    .512    .259
 218          UA       0       5      16      30      65      77      84      90      94      97
 219          UA     100

 220          KK   DT355
 221          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 49.57 AC-FT FROM SUB-BASIN 358
 222          KM                                                (Hydrograph identified as OR358)
 223          KM                                             2) Balance of runoff continues on.
 224          KM                                                (Hydrograph identified as DT358)
 225          DT   OR355   49.57
 226          DI       0   10000
 227          DQ       0   10000

 228          KK   HC355
 229          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 351, 354 & 355
 230          HC       4
```

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

 231          KK   355RE
 232          KM   DIVERT FLOW FROM SUB-BASIN 355 THROUGH SUB-BASIN 368
 233          KM            ASSUME 50% SPLIT FLOW AT 35TH AVENUE & UNION HILLS DRIVE
 234          KM            STORM DRAIN CAPACITY FLOWING WEST IN UNION HILLS DRIVE = 891 cfs
 235          KM   SOURCE:  Union Hills Storm Drain Project
 236          KM            FCD CONTRACT NO. 86-25
 237          DT   368D3
 238          DI       0     891    1001    5001   10001
 239          DQ       0       0      55    2055    4555

 240          KK   RM356
 241          KM   MUSKINGUM-CUMGE ROUTE FLOW FROM SUB-BASIN 355 THROUGH SUB-BASIN 356
 242          KM            1) Reach Length = 5315 ft.
 243          RD
 244          RC   0.030   0.020   0.030    5315  0.0039
 245          RX      90      90     100     100     190     190     200     200
 246          RY     5.0     0.5     0.5       0       0     0.5     0.5     5.0

 247          KK    356S
 248          KM   RUNOFF GENERATED ON SUB-BASIN 356
 249          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 250          KM    L = 1.70 mi. S = 21 ft/mi Kb = 0.035 Tc = 0.758 Hr. R = 0.502
 251          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 252          BA    .720
 253          LG    .107    .158   7.500    .120  27.200
 254          UC    .758    .502
 255          UA       0       5      16      30      65      77      84      90      94      97
 256          UA     100

 257          KK   DT356
 258          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 6.35 AC-FT FROM SUB-BASIN 356
 259          KM                                               (Hydrograph identified as OR356)
 260          KM                                             2) Balance of runoff continues on.
 261          KM                                               (Hydrograph identified as DT356)
 262          DT   OR356    6.35
 263          DI       0   10000
 264          DQ       0   10000

 265          KK   HC356
 266          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 355 & 356
 267          HC       2

 268          KK   356RE
 269          KM   DIVERT FLOW FROM SUB-BASIN 356 TO 369
 270          KM            ASSUME 50% SPLIT FLOW AT 43RD AVENUE & UNION HILLS DRIVE
 271          KM            STORM DRAIN CAPACITY FLOWING WEST IN UNION HILLS DRIVE = 1282 cfs
 272          KM   SOURCE:  Union Hills Storm Drain Project
 273          KM            FCD CONTRACT NO. 86-25
 274          DT    369D
 275          DI       0    1282    2000    5000   10000
 276          DQ       0       0     359    1859    4359
```

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

 277          KK   RM356
 278          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 356 THROUGH SUB-BASIN 357
 279          KM            1) Reach Length = 5155 ft.
 280          RD
 281          RC   0.030   0.020   0.030    5155  0.0041
 282          RX      90      90     100     100     190     190     200     200
 283          RY     5.0     0.5     0.5     0.0     0.0     0.5     0.5     5.0

 284          KK    357S
 285          KM   RUNOFF GENERATED ON SUB-BASIN 357
 286          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 287          KM    L = 1.40 mi. S = 21 ft/mi Kb = 0.025 Tc = 0.512 Hr. R = 0.380
 288          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 289          BA    .417
 290          LG    .100    .250   4.740    .244  47.130
 291          UC    .512    .380
 292          UA       0       5      16      30      65      77      84      90      94      97
 293          UA     100

 294          KK   HC357
 295          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 356 & 357
 296          HC       2

 297          KK   RM357
 298          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 357 THROUGH SUB-BASIN 358
 299          KM            1) Reach Length = 4025 ft.
 300          RD
 301          RC   0.030   0.020   0.030    4025  0.0067
 302          RX      90      90     100     100     190     190     200     200
 303          RY     5.0     0.5     0.5     0.0     0.0     0.5     0.5     5.0

 304          KK    359S
 305          KM   RUNOFF GENERATED ON SUB-BASIN 359
 306          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 307          KM    L = 1.88 mi. S = 65 ft/mi Kb = 0.021 Tc = 0.375 Hr. R = 0.166
 308          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 309          BA   1.470
 310          LG    .116    .198   8.050    .093  18.040
 311          UC    .375    .166
 312          UA       0       5      16      30      65      77      84      90      94      97
 313          UA     100

 314          KK   RM359
 315          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 359 THROUGH SUB-BASIN 360
 316          KM            1) Reach Length = 4730 ft.
 317          RD    4730  0.0097   0.035            TRAP      30       3

 318          KK    360S
 319          KM   RUNOFF GENERATED ON SUB-BASIN 360
 320          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 321          KM    L = 1.04 mi. S = 56 ft/mi Kb = 0.040 Tc = 0.425 Hr. R = 0.173
 322          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 323          BA    .756
 324          LG    .116    .281   3.710    .336  27.760
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 325          UC    .425    .173
 326          UA       0       5      16      30      65      77      84      90      94      97
 327          UA     100

 328          KK   DT360
 329          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 13.07 AC-FT FROM SUB-BASIN 360
 330          KM                                             (Hydrograph identified as OR360)
 331          KM                                            2) Balance of runoff continues on.
 332          KM                                             (Hydrograph identified as DT360)
 333          DT   OR360   13.07
 334          DI       0   10000
 335          DQ       0   10000

 336          KK   HC360
 337          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 359 & 360
 338          HC       2

 339          KK   RM361
 340          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 360 THROUGH SUB-BASIN 361
 341          KM           1) Reach Length = 10300 ft.
 342          RD   10300  0.0066   0.035            TRAP      20       3

 343          KK    361S
 344          KM   RUNOFF GENERATED ON SUB-BASIN 361
 345          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 346          KM    L = 1.80 mi. S = 214 ft/mi Kb = 0.040 Tc = 0.371 Hr. R = 0.225
 347          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 348          BA    .791
 349          LG    .143    .311   3.550    .325  17.770
 350          UC    .371    .225
 351          UA       0       5      16      30      65      77      84      90      94      97
 352          UA     100

 353          KK   DT361
 354          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 3.56 AC-FT FROM SUB-BASIN 361
 355          KM                                              (Hydrograph identified as OR361)
 356          KM                                            2) Balance of runoff continues on.
 357          KM                                              (Hydrograph identified as DT361)
 358          DT   OR361    3.56
 359          DI       0   10000
 360          DQ       0   10000

 361          KK   HC361
 362          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 360 & 361
 363          HC       2

 364          KK   361RR
 365          KM   ROUTE FLOW THROUGH DETENTION BASIN IN THUNDERBIRD PARK
 366          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 367          RS       1    ELEV    1294
 368          SV       0     5.8    11.6    17.5    23.4    29.3    35.3    41.3    47.3
 369          SE    1294  1294.5    1295  1295.5    1296  1296.5    1297  1297.5    1298
 370          SQ       0     156     442     812    1250    1747    2297    2894    3536
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 371          KK    362S
 372          KM   RUNOFF GENERATED ON SUB-BASIN 362
 373          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 374          KM    L = 1.89 mi. S = 26 ft/mi Kb = 0.033 Tc = 0.729 Hr. R = 0.454
 375          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 376          BA    .921
 377          LG    .094    .230   4.120    .254  37.280
 378          UC    .729    .454
 379          UA       0       5      16      30      65      77      84      90      94      97
 380          UA     100

 381          KK   DT362
 382          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 2.35 AC-FT FROM SUB-BASIN 362
 383          KM                                               (Hydrograph identified as OR362)
 384          KM                                             2) Balance of runoff continues on.
 385          KM                                               (Hydrograph identified as DT362)
 386          DT   OR362    2.35
 387          DI       0   10000
 388          DQ       0   10000

 389          KK   HC362
 390          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 361 & 362
 391          HC       2

 392          KK  362RR1
 393          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 362
 394          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 395          RS       1    ELEV    1294
 396          SV       0    16.4    33.1    49.8    66.8    83.9   101.1   118.6   136.2
 397          SE    1294  1294.5    1295  1295.5    1296  1296.5    1297  1297.5    1298
 398          SQ       0     276     780    1433    2206    3083    4053    5107    6240

 399          KK  362RR2
 400          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 362
 401          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 402          RS       1    ELEV    1292
 403          SV       0    11.8    23.7    35.7    47.9    60.2    72.6    85.1    97.7   111.0
 404          SV   125.0
 405          SE    1292  1292.5    1293  1293.5    1294  1294.5    1295  1295.5    1296  1296.5
 406          SE    1297
 407          SQ       0      55     156     287     441     617     811    1021    1248    1489
 408          SQ    1800

 409          KK  362RR3
 410          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 362
 411          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 412          RS       1    ELEV    1292
 413          SV       0    18.7    37.5    56.4    75.5    94.6   113.8   133.1   152.5
 414          SE    1292  1292.5    1293  1293.5    1294  1294.5    1295  1295.5    1296
 415          SQ       0      46     130     239     368     514     675     851    1040
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 416          KK  362RR4
 417          KM   ROUTE FLOW THROUGH DETENTION BASIN IN SUB-BASIN 362
 418          KM   SOURCE:  Arrowhead Ranch Storm Drainage Plan
 419          RS       1    ELEV    1290
 420          SV       0    18.4    37.0    55.6    74.4    93.2   112.2   131.2   150.3
 421          SE    1290  1290.5    1291  1291.5    1292  1292.5    1293  1293.5    1294
 422          SQ       0     129     364     669    1030    1439    1891    2383    2912

 423          KK   RM358
 424          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 362 THROUGH SUB-BASIN 358
 425          KM            1) Reach Length = 5780 ft.
 426          RD
 427          RC    .030    .020    .030    5780  0.0048
 428          RX      70      70     120     150     220     250     300     300
 429          RY    10.0     6.0     6.0     0.0     0.0     6.0     6.0    10.0

 430          KK    358S
 431          KM   RUNOFF GENERATED ON SUB-BASIN 358
 432          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 433          KM    L = 1.47 mi. S = 29 ft/mi Kb = 0.031 Tc = 0.554 Hr. R = 0.381
 434          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 435          BA    .516
 436          LG    .139    .266   4.120    .273  31.650
 437          UC    .554    .381
 438          UA       0       5      16      30      65      77      84      90      94      97
 439          UA     100

 440          KK   DT358
 441          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.10 AC-FT FROM SUB-BASIN 358
 442          KM                                              (Hydrograph identified as OR358)
 443          KM                                            2) Balance of runoff continues on.
 444          KM                                              (Hydrograph identified as DT358)
 445          DT   OR358    0.10
 446          DI       0   10000
 447          DQ       0   10000

 448          KK    364S
 449          KM   RUNOFF GENERATED ON SUB-BASIN 364
 450          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 451          KM    L = 0.89 mi. S = 31 ft/mi Kb = 0.026 Tc = 0.363 Hr. R = 0.180
 452          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 453          BA    .416
 454          LG    .120    .254   4.740    .251  65.740
 455          UC    .363    .180
 456          UA       0       5      16      30      65      77      84      90      94      97
 457          UA     100

 458          KK   DT364
 459          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 4.12 AC-FT FROM SUB-BASIN 364
 460          KM                                              (Hydrograph identified as OR364)
 461          KM                                            2) Balance of runoff continues on.
 462          KM                                              (Hydrograph identified as DT364)
 463          DT   OR364    4.12
 464          DI       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 465          DQ       0   10000

 466          KK   DT364
 467          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 27.64 AC-FT FROM SUB-BASIN 364
 468          KM                                             (Hydrograph identified as OR364)
 469          KM                                            2) Balance of runoff continues on.
 470          KM                                             (Hydrograph identified as DT364)
 471          DT   OR364   27.64
 472          DI       0   10000
 473          DQ       0   10000

 474          KK   HC358
 475          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 350, 357, 358, 362 & 364
 476          HC       5

 477          KK   RM365
 478          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 364 THROUGH SUB-BASIN 365
 479          KM           1) Reach Length = 3125 ft.
 480          RD    3125  0.0045   0.035            TRAP     100       5

 481          KK    365S
 482          KM   RUNOFF GENERATED ON SUB-BASIN 365
 483          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 484          KM    L = 1.35 mi. S = 18 ft/mi Kb = 0.024 Tc = 0.500 Hr. R = 0.282
 485          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 486          BA    .636
 487          LG    .104    .232   6.780    .156  88.730
 488          UC    .500    .282
 489          UA       0       5      16      30      65      77      84      90      94      97
 490          UA     100

 491          KK   DT365
 492          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 67.54 AC-FT FROM SUB-BASIN 365
 493          KM                                             (Hydrograph identified as OR365)
 494          KM                                            2) Balance of runoff continues on.
 495          KM                                             (Hydrograph identified as DT365)
 496          DT   OR365   67.54
 497          DI       0   10000
 498          DQ       0   10000

 499          KK   HC365
 500          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 365 & ROUTED FLOW FROM 358
 501          HC       2

 502          KK   RM373
 503          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 365 THROUGH SUB-BASIN 373
 504          KM           1) Reach Length = 5270 ft.
 505          RD    5270  0.0044   0.035            TRAP     100       5

 506          KK    R366
 507          KM   RETRIEVE FLOWS OVERTOPPING DEPRESSED INTERSECTION AT I-17 &
 508          KM           UNION HILLS ROAD
 509          DR   368D1
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 510          KK   R355
 511          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 355 SOUTHERLY IN 35TH AVENUE
 512          DR   368D3

 513          KK   RM368
 514          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 355 THROUGH SUB-BASIN 368
 515          KM           1) Reach Length = 5470 ft.
 516          RD
 517          RC    .030    .020    .030    5470  0.0031
 518          RX     140     140     150     150     190     190     200     200
 519          RY       5     0.5     0.5       0       0     0.5     0.5       5

 520          KK   368S
 521          KM   RUNOFF GENERATED ON SUB-BASIN 368
 522          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 523          KM    L = 1.83 mi. S = 22 ft/mi Kb = 0.022 Tc = 0.550 Hr. R = 0.289
 524          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 525          BA   1.123
 526          BF      25
 527          LG    .102    .250   3.810    .280  55.880
 528          UC    .550    .289
 529          UA       0       5      16      30      65      77      84      90      94      97
 530          UA     100

 531          KK   DT368
 532          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 14.79 AC-FT FROM SUB-BASIN 368
 533          KM                                              (Hydrograph identified as OR368)
 534          KM                                            2) Balance of runoff continues on.
 535          KM                                              (Hydrograph identified as DT368)
 536          DT   OR368   14.79
 537          DI       0   10000
 538          DQ       0   10000

 539          KK   HC368
 540          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 355, 366 & 368
 541          HC       3

 542          KK   368RE
 543          KM   DIVERT FLOW FROM SUB-BASIN 368 THROUGH SUB-BASIN 381
 544          KM           ASSUME 50% SPLIT FLOW AT 35TH AVENUE & BELL ROAD
 545          KM           STORM DRAIN CAPACITY FLOWING SOUTH IN 35TH AVENUE = 140CFS
 546          KM   SOURCE:  Northwest Storm Drain Study
 547          KM           Project ST-74206.00
 548          KM   THE DIVERTED HYDROGRAPH WILL BE STORED IN FILENAME CCW324F.DSS FOR RETRIEVAL
 549          KM     BY THE WATERSHED BETWEEN CAVE CREEK AND SKUNK.
 550          DT   381D5
 551          DI       0     140     500    1000    5000
 552          DQ       0     140     320     570    2570
 553          ZW   A=SKUNK CREEK B=381D5 C=FLOW F=WEST
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 554          KK   RM369
 555          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 368 THROUGH SUB-BASIN 369
 556          KM            1) Reach Length = 5280 ft.
 557          RD
 558          RC    .030    .020    .030    5280  0.0047
 559          RX     120     120     130     130     190     190     200     200
 560          RY       5     0.5     0.5       0       0     0.5     0.5       5

 561          KK    R356
 562          KM   RETRIEVE FLOWS DIVERTED FROM SUB-BASIN 356 SOUTHERLY IN 43RD AVENUE
 563          DR    369D

 564          KK   RM369
 565          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 356 THROUGH SUB-BASIN 369
 566          KM            1) Reach Length = 5600 ft.
 567          RD
 568          RC    .030    .020    .030    5600  0.0034
 569          RX     120     120     130     130     190     190     200     200
 570          RY       5     0.5     0.5       0       0     0.5     0.5       5

 571          KK    369S
 572          KM   RUNOFF GENERATED ON SUB-BASIN 369
 573          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 574          KM    L = 1.85 mi. S = 21 ft/mi Kb = 0.022 Tc = 0.554 Hr. R = 0.306
 575          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 576          BA   1.049
 577          BF       0
 578          LG    .098    .150   8.280    .082  47.750
 579          UC    .554    .306
 580          UA       0       5      16      30      65      77      84      90      94      97
 581          UA     100

 582          KK   DT369
 583          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 5.14 AC-FT FROM SUB-BASIN 369
 584          KM                                              (Hydrograph identified as OR369)
 585          KM                                            2) Balance of runoff continues on.
 586          KM                                              (Hydrograph identified as DT369)
 587          DT   OR369    5.14
 588          DI       0   10000
 589          DQ       0   10000

 590          KK   DT369
 591          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 0.35 AC-FT FROM SUB-BASIN 369
 592          KM                                              (Hydrograph identified as OR369)
 593          KM                                            2) Balance of runoff continues on.
 594          KM                                              (Hydrograph identified as DT369)
 595          DT   OR369    0.35
 596          DI       0   10000
 597          DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

598           KK   HC369
599           KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 356, 368 & 369
600           HC       3

601           KK   369RE
602           KM   DIVERT FLOW FROM SUB-BASIN 369 THROUGH SUB-BASIN 370
603           KM            ASSUME 50% SPLIT FLOW AT 43RD AVENUE & BELL ROAD
604           KM   THE DIVERTED HYDROGRAPH WILL BE STORED IN FILENAME CCW324F.DSS FOR RETRIEVAL
605           KM     BY THE WATERSHED BETWEEN CAVE CREEK AND SKUNK.
606           DT    382D
607           DI       0     500    1000    5000   10000
608           DQ       0     250     500    2500    5000
609           ZW   A=SKUNK CREEK B=382D C=FLOW F=WEST

610           KK   RM370
611           KM   MUSKINGUM-CUNGE ROUTE FLOWS FROM SUB-BASIN 369 TO SUB-BASIN 370
612           KM            1) Reach Length = 5305 ft.
613           RD
614           RC   0.030   0.020   0.030    5305  0.0041
615           RX     120     120     130     130     190     190     200     200
616           RY     5.0     0.5     0.5     0.0     0.0     0.5     0.5     5.0

617           KK    370S
618           KM   RUNOFF GENERATED ON SUB-BASIN 370
619           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
620           KM    L = 1.52 mi. S = 22 ft/mi Kb = 0.022 Tc = 0.483 Hr. R = 0.225
621           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
622           BA   1.043
623           LG    .117    .190   7.140    .153  42.260
624           UC    .483    .225
625           UA       0       5      16      30      65      77      84      90      94      97
626           UA     100

627           KK   DT370
628           KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 34.31 AC-FT FROM SUB-BASIN 370
629           KM                                              (Hydrograph identified as OR370)
630           KM                                            2) Balance of runoff continues on.
631           KM                                              (Hydrograph identified as DT370)
632           DT   OR370   34.31
633           DI       0   10000
634           DQ       0   10000

635           KK   DT370
636           KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 0.35 AC-FT FROM SUB-BASIN 370
637           KM                                              (Hydrograph identified as OR370)
638           KM                                            2) Balance of runoff continues on.
639           KM                                              (Hydrograph identified as DT370)
640           DT   OR370    0.35
641           DI       0   10000
642           DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 643          KK   HC370
 644          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 369 & 370
 645          HC       2

 646          KK   370RE
 647          KM   DIVERT FLOW FROM SUB-BASIN 370 THROUGH SUB-BASIN 383
 648          KM            ASSUME 50% SPLIT FLOW AT 51ST AVENUE & BELL ROAD
 649          KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 51ST AVENUE = 32 cfs
 650          KM   SOURCE:  Northwest Storm Drain Study
 651          KM            Project ST-74206.00
 652          KM   THE DIVERTED HYDROGRAPH WILL BE STORED IN FILENAME CCW324F.DSS FOR RETRIEVAL
 653          KM     BY THE WATERSHED BETWEEN CAVE CREEK AND SKUNK.
 654          DT    383D
 655          DI       0      32     100    1000    5000
 656          DQ       0      32      66     516    2484
 657          ZW   A=SKUNK CREEK B=383D C=FLOW F=WEST

 658          KK   RM371
 659          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 370 THROUGH SUB-BASIN 371
 660          KM            1) Reach Length = 5280 ft.
 661          RD
 662          RC    .030    .020    .030    5280  0.0030
 663          RX     140     140     150     150     190     190     200     200
 664          RY       5     0.5     0.5       0       0     0.5     0.5       5

 665          KK    371S
 666          KM   RUNOFF GENERATED ON SUB-BASIN 371
 667          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 668          KM    L = 1.58 mi. S = 18 ft/mi Kb = 0.022 Tc = 0.529 Hr. R = 0.253
 669          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 670          BA   1.070
 671          LG    .114    .170   7.320    .129  57.460
 672          UC    .529    .253
 673          UA       0       5      16      30      65      77      84      90      94      97
 674          UA     100

 675          KK   DT371
 676          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 7.80 AC-FT FROM SUB-BASIN 371
 677          KM                                              (Hydrograph identified as OR371)
 678          KM                                            2) Balance of runoff continues on.
 679          KM                                              (Hydrograph identified as DT371)
 680          DT   OR371    7.80
 681          DI       0   10000
 682          DQ       0   10000

 683          KK   DT371
 684          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 37.14 AC-FT FROM SUB-BASIN 371
 685          KM                                              (Hydrograph identified as OR371)
 686          KM                                            2) Balance of runoff continues on.
 687          KM                                              (Hydrograph identified as DT371)
 688          DT   OR371   37.14
 689          DI       0   10000
 690          DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

691           KK   HC371
692           KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 370 & 371
693           HC       2

694           KK   371RE
695           KM   DIVERT FLOW FROM SUB-BASIN 371 THROUGH SUB-BASIN 384
696           KM            ASSUME 50% SPLIT FLOW AT 59TH AVENUE & BELL ROAD
697           KM            STORM DRAIN CAPACITY FLOWING SOUTH IN 59TH AVENUE = 120 cfs
698           KM   SOURCE:  Bell Road Project Drainage Study - Volume IV
699           KM   THE DIVERTED HYDROGRAPH WILL BE STORED IN FILENAME CCW324F.DSS FOR RETRIEVAL
700           KM     BY THE WATERSHED BETWEEN CAVE CREEK AND SKUNK.
701           DT    384D
702           DI       0     120     500    1000    5000
703           DQ       0     120     310     560    2560
704           ZW   A=SKUNK CREEK B=384D C=FLOW F=WEST

705           KK   RM373
706           KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 371 THROUGH SUB-BASIN 373
707           KM            1) Reach Length = 6695 ft.
708           RD
709           RC    .030    .020    .030    6695  0.0038
710           RX     120     120     130     130     190     190     200     200
711           RY       5     0.5     0.5       0       0     0.5     0.5       5

712           KK    372S
713           KM   RUNOFF GENERATED ON SUB-BASIN 372
714           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
715           KM    L = 1.32 mi. S = 9 ft/mi Kb = 0.026 Tc = 0.708 Hr. R = 0.685
716           KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
717           BA    .256
718           LG    .100    .170   7.320    .122  90.000
719           UC    .708    .685
720           UA       0       5      16      30      65      77      84      90      94      97
721           UA     100

722           KK   DT372
723           KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.82 AC-FT FROM SUB-BASIN 372
724           KM                                              (Hydrograph identified as OR372)
725           KM                                            2) Balance of runoff continues on.
726           KM                                              (Hydrograph identified as DT372)
727           DT   OR372    1.82
728           DI       0   10000
729           DQ       0   10000

730           KK   DT372
731           KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 23.06 AC-FT FROM SUB-BASIN 372
732           KM                                              (Hydrograph identified as OR372)
733           KM                                            2) Balance of runoff continues on.
734           KM                                              (Hydrograph identified as DT372)
735           DT   OR372   23.06
736           DI       0   10000
737           DQ       0   10000
```

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

 738          KK   RM373
 739          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 372 THROUGH SUB-BASIN 373
 740          KM            1) Reach Length = 3305 ft.
 741          RD
 742          RC    .030    .020    .030    3305  0.0061
 743          RX     120     120     130     130     190     190     200     200
 744          RY       5     0.5     0.5       0       0     0.5     0.5       5

 745          KK    373S
 746          KM   RUNOFF GENERATED ON SUB-BASIN 373
 747          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 748          KM    L = 1.62 mi. S = 25 ft/mi Kb = 0.030 Tc = 0.613 Hr. R = 0.313
 749          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 750          BA   1.015
 751          LG    .109    .253   4.430    .255  41.130
 752          UC    .613    .313
 753          UA       0       5      16      30      65      77      84      90      94      97
 754          UA     100

 755          KK   DT373
 756          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 8.54 AC-FT FROM SUB-BASIN 373
 757          KM                                              (Hydrograph identified as OR373)
 758          KM                                            2) Balance of runoff continues on.
 759          KM                                              (Hydrograph identified as DT373)
 760          DT   OR373    8.54
 761          DI       0   10000
 762          DQ       0   10000

 763          KK   DT373
 764          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 1.24 AC-FT FROM SUB-BASIN 373
 765          KM                                              (Hydrograph identified as OR373)
 766          KM                                            2) Balance of runoff continues on.
 767          KM                                              (Hydrograph identified as DT373)
 768          DT   OR373    1.24
 769          DI       0   10000
 770          DQ       0   10000

 771          KK   HC373
 772          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 365, 371, 372 & 373
 773          HC       4

 774          KK   RM375
 775          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 373 THROUGH SUB-BASIN 375
 776          KM            1) Reach Length = 4045 ft.
 777          RD    4045  0.0047   0.035            TRAP     200       5

 778          KK    374S
 779          KM   RUNOFF GENERATED ON SUB-BASIN 374
 780          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 781          KM    L = 1.23 mi. S = 20 ft/mi Kb = 0.023 Tc = 0.458 Hr. R = 0.184
 782          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 783          BA   1.001
 784          LG    .098    .150   8.050    .103  40.180
 785          UC    .458    .184
```

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

 786          UA       0       5      16      30      65      77      84      90      94      97
 787          UA     100

 788          KK   RM375
 789          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 374 THROUGH SUB-BASIN 375
 790          KM            1) Reach Length = 5560 ft.
 791          RD    5560  0.0043   0.035            TRAP      20       3

 792          KK    375S
 793          KM   RUNOFF GENERATED ON SUB-BASIN 375
 794          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 795          KM    L = 1.43 mi. S = 24 ft/mi Kb = 0.041 Tc = 0.738 Hr. R = 0.511
 796          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 797          BA    .519
 798          LG    .120    .258   4.430    .259  33.830
 799          UC    .738    .511
 800          UA       0       5      16      30      65      77      84      90      94      97
 801          UA     100

 802          KK   DT375
 803          KM   THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.83 AC-FT FROM SUB-BASIN 375
 804          KM                                              (Hydrograph identified as OR375)
 805          KM                                            2) Balance of runoff continues on.
 806          KM                                              (Hydrograph identified as DT375)
 807          DT   OR375    1.83
 808          DI       0   10000
 809          DQ       0   10000

 810          KK   DT375
 811          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 0.43 AC-FT FROM SUB-BASIN 375
 812          KM                                              (Hydrograph identified as OR375)
 813          KM                                            2) Balance of runoff continues on.
 814          KM                                              (Hydrograph identified as DT375)
 815          DT   OR375    0.43
 816          DI       0   10000
 817          DQ       0   10000

 818          KK   HC375
 819          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 373, 374 AND 375
 820          HC       3

 821          KK   RM376
 822          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 375 THROUGH SUB-BASIN 376
 823          KM            1) Reach Length = 3465 ft.
 824          RD    3465  0.0063   0.035            TRAP     200       5

 825          KK    377S
 826          KM   RUNOFF GENERATED ON SUB-BASIN 377
 827          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 828          KM    L = 1.21 mi. S = 13 ft/mi Kb = 0.040 Tc = 0.833 Hr. R = 0.535
 829          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 830          BA    .480
 831          LG    .100    .250   5.050    .230  40.790
 832          UC    .833    .535
 833          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

 834          UA     100

 835          KK   DT377
 836          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 14.23 AC-FT FROM SUB-BASIN 377
 837          KM                                              (Hydrograph identified as OR377)
 838          KM                                             2) Balance of runoff continues on.
 839          KM                                              (Hydrograph identified as DT377)
 840          DT   OR377   14.23
 841          DI       0   10000
 842          DQ       0   10000

 843          KK   RM376
 844          KM   MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 377 THROUGH SUB-BASIN 376
 845          KM            1) Reach Length = 2000 ft.
 846          RD    2000  0.0130   0.035            TRAP      20       3

 847          KK    376S
 848          KM   RUNOFF GENERATED ON SUB-BASIN 376
 849          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 850          KM    L = 1.24 mi. S = 39 ft/mi Kb = 0.030 Tc = 0.429 Hr. R = 0.454
 851          KM    CLARK UNIT HYDROGRAPH FOR URBAN WATERSHEDS WAS USED FOR THIS BASIN
 852          BA    .182
 853          LG    .135    .263   3.820    .351  76.150
 854          UC    .429    .454
 855          UA       0       5      16      30      65      77      84      90      94      97
 856          UA     100

 857          KK   DT376
 858          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 16.28 AC-FT FROM SUB-BASIN 376
 859          KM                                              (Hydrograph identified as OR376)
 860          KM                                             2) Balance of runoff continues on.
 861          KM                                              (Hydrograph identified as DT376)
 862          DT   OR376   16.28
 863          DI       0   10000
 864          DQ       0   10000

 865          KK   HC376
 866          KM   COMBINE HYDROGRAPHS FROM SUB-BASIN 375, 376, & 377
 867          KM    STORE HYDROGRAPH CONTRIBUTING TO ACDC AT SKUNK CREEK.  THIS HYDROGRAPH WILL
 868          KM    STORED IN FILENAME CCW324F.DSS FOR FUTURE RETRIEVAL BY THE WATERSHED BETWEEN
 869          KM    BETWEEN CAVE CREEK AND SKUNK CREEK.
 870          HC       3
 871          ZW   A=SKUNK CREEK B=HC376 C=FLOW F=SKUNK CREEK
 872          ZZ
```

```
                SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

  8       350S
             .
             .
 33          .-------->   OR350
 28      DT350
             .
             .
 36          .       HCSKB
             .           V
             .           V
 42          .       RMSKB
             .           .
             .           .
 47          .           .        363S
             .           .           .
             .           .           .
 62          .           .           .-------->   OR363
 57          .           .       DT363
             .           .           V
             .           .           V
 65          .           .       363RR
             .           .           V
             .           .           V
 73          .           .       RM363
             .           .           .
             .           .           .
 77      HC350.......................
             V
             V
 80      RM358
             .
             .
 84          .        352S
             .           .
             .           .
 99          .           .-------->   OR352
 94          .       DT352
             .           .
             .           .
104          .           .-------->    352D
102          .       352RE
             .           .
             .           .
107          .           .        351S
             .           .           .
             .           .           .
122          .           .           .-------->   OR351
117          .           .       DT351
             .           .           .
             .           .           .
130          .           .           .-------->   355D1
125          .           .       351RE
             .           .           .
```

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          .          .          .
133       .      HC352............
          .          V
          .          V
56        .      352RR
          .          .
          .          .
144       .          .          .<-------    352D
142       .          .       R352
          .          .          .
          .          .          .
145       .          .          .       353S
          .          .          .          .
          .          .          .          .
155       .          .          .          .       354S
          .          .          .          .          .
          .          .          .          .          .
165       .      HC354.................................
          .          V
          .          V
168       .      354RR
          .          .
          .          .
177       .          .------->   355D2
174       .      354RE
          .          .
          .          .
180       .          .       366S
          .          .          .
          .          .          .
189       .      HC366............
          .          V
          .          V
192       .      366RR
          .          .
          .          .
201       .          .------->   368D1
199       .      366RE
          .          .
          .          .
206       .          .          .<-------   355D1
204       .          .       R351
          .          .          .
          .          .          .
209       .          .          .          .<-------   355D2
207       .          .          .       R354
          .          .          .          .
          .          .          .          .
210       .          .          .          .       355S
          .          .          .          .          .
          .          .          .          .          .
225       .          .          .          .          .------->   OR355
220       .          .          .          .      DT355
          .          .          .          .          .
          .          .          .          .          .
28        .      HC355.................................
          .          .
          .          .
237       .          .------->   368D3
231       .      355RE
```

```
            .          V
            .          V
240         .       RM356
            .          .
            .          .
247         .          .        356S
            .          .           .
            .          .           .
262         .          .           .-------->   OR356
257         .          .       DT356
            .          .           .
            .          .           .
265         .       HC356............
            .          .
            .          .
274         .          .-------->    369D
268         .       356RE
            .          V
            .          V
277         .       RM356
            .          .
            .          .
284         .          .        357S
            .          .           .
            .          .           .
294         .       HC357............
            .          V
            .          V
297         .       RM357
            .          .
            .          .
304         .          .        359S
            .          .           V
            .          .           V
314         .          .       RM359
            .          .           .
            .          .           .
318         .          .           .        360S
            .          .           .           .
            .          .           .           .
333         .          .           .           .-------->   OR360
328         .          .           .       DT360
            .          .           .           .
            .          .           .           .
336         .          .       HC360............
            .          .           V
            .          .           V
339         .          .       RM361
            .          .           .
            .          .           .
343         .          .           .        361S
            .          .           .           .
            .          .           .           .
358         .          .           .           .-------->   OR361
353         .          .           .       DT361
            .          .           .           .
            .          .           .           .
361         .          .       HC361............
            .          .           V
            .          .           V
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364          .           .       361RR
             .           .          .
             .           .          .
371          .           .          .        362S
             .           .          .          .
             .           .          .          .
386          .           .          .          .-------->   OR362
381          .           .          .      DT362
             .           .          .          .
             .           .          .          .
389          .           .      HC362............
             .           .          V
             .           .          V
392          .           .     362RR1
             .           .          V
             .           .          V
399          .           .     362RR2
             .           .          V
             .           .          V
409          .           .     362RR3
             .           .          V
             .           .          V
416          .           .     362RR4
             .           .          V
             .           .          V
423          .           .      RM358
             .           .          .
             .           .          .
430          .           .          .        358S
             .           .          .          .
             .           .          .          .
445          .           .          .          .-------->   OR358
440          .           .          .      DT358
             .           .          .          .
             .           .          .          .
448          .           .          .          .        364S
             .           .          .          .          .
             .           .          .          .          .
463          .           .          .          .          .-------->   OR364
458          .           .          .          .      DT364
             .           .          .          .          .
             .           .          .          .          .
471          .           .          .          .          .-------->   OR364
466          .           .          .          .      DT364
             .           .          .          .          .
             .           .          .          .          .
474     HC358.............................................
            V
            V
477     RM365
            .
            .
481         .        365S
            .           .
            .           .
 6          .           .-------->   OR365
491         .       DT365
            .           .
            .           .
499     HC365............
```

```
            V
            V
502       RM373
            .
            .
509         .          .<-------   368D1
506         .       R366
            .          .
            .          .
512         .          .          .<-------   368D3
510         .          .       R355
            .          .          V
            .          .          V
513         .          .      RM368
            .          .          .
            .          .          .
520         .          .          .       368S
            .          .          .          .
            .          .          .          .
536         .          .          .          .------->   OR368
531         .          .          .      DT368
            .          .          .          .
            .          .          .          .
539         .      HC368.......................
            .          .
            .          .
550         .          .------->   381D5
542         .      368RE
            .          V
            .          V
554         .      RM369
            .          .
            .          .
563         .          .          .<-------    369D
561         .          .       R356
            .          .          V
            .          .          V
564         .          .      RM369
            .          .          .
            .          .          .
571         .          .          .       369S
            .          .          .          .
            .          .          .          .
587         .          .          .          .------->   OR369
582         .          .          .      DT369
            .          .          .          .
            .          .          .          .
595         .          .          .          .------->   OR369
590         .          .          .      DT369
            .          .          .          .
            .          .          .          .
598         .      HC369.......................
            .          .
            .          .
  6         .          .------->    382D
601         .      369RE
            .          V
            .          V
610         .      RM370
            .          .
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          .          .
617       .          .        370S
          .          .           .
          .          .           .
32        .          .           .-------->   OR370
627       .          .       DT370
          .          .           .
          .          .           .
640       .          .           .-------->   OR370
635       .          .       DT370
          .          .           .
          .          .           .
643       .      HC370............
          .          .
          .          .
654       .          .-------->    383D
646       .      370RE
          .          V
          .          V
658       .      RM371
          .          .
          .          .
665       .          .        371S
          .          .           .
          .          .           .
680       .          .           .-------->   OR371
675       .          .       DT371
          .          .           .
          .          .           .
38        .          .           .-------->   OR371
683       .          .       DT371
          .          .           .
          .          .           .
691       .      HC371............
          .          .
          .          .
701       .          .-------->    384D
694       .      371RE
          .          V
          .          V
705       .      RM373
          .          .
          .          .
712       .          .        372S
          .          .           .
          .          .           .
727       .          .           .-------->   OR372
722       .          .       DT372
          .          .           .
          .          .           .
735       .          .           .-------->   OR372
730       .          .       DT372
          .          .           V
          .          .           V
38        .          .       RM373
          .          .           .
          .          .           .
745       .          .           .        373S
          .          .           .           .
          .          .           .           .
```

```
760          .          .          .          .-------->   OR373
755          .          .          .      DT373
             .          .          .          .
             .          .          .          .
 8           .          .          .          .-------->   OR373
763          .          .          .      DT373
             .          .          .          .
             .          .          .          .
771       HC373.................................
             V
             V
774       RM375
             .
             .
778          .       374S
             .          V
             .          V
788          .      RM375
             .          .
             .          .
792          .          .       375S
             .          .          .
             .          .          .
807          .          .          .-------->   OR375
802          .          .      DT375
             .          .          .
             .          .          .
815          .          .          .-------->   OR375
810          .          .      DT375
             .          .          .
             .          .          .
818       HC375......................
             V
             V
821       RM376
             .
             .
825          .       377S
             .          .
             .          .
840          .          .-------->   OR377
835          .      DT377
             .          V
             .          V
843          .      RM376
             .          .
             .          .
847          .          .       376S
             .          .          .
             .          .          .
862          .          .          .-------->   OR376
857          .          .      DT376
             .          .          .
             .          .          .
 5       HC376......................
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY   1991               *
*            VERSION 4.0.1E             *
*                                       *
*  RUN DATE  06/06/95  TIME  16:02:18   *
*                                       *
*****************************************
```

```
****************************************
*                                      *
*    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
                    FILENAME SC243F.DAT      KHE JOB NO. 0146
                    SKUNK CREEK WATERSHED - FUTURE CONDITIONS
                    100-YEAR 24-HOUR DURATION STORM
                    SCS TYPE II DISTRIBUTION WAS USED

  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.   12:  /SCATTER WASH/HCSKB/FLOW/10OCT1992/4MIN/SKUNK CREEK/
-----DSS--- ZREAD Unit  71; Vers.   12:  /SCATTER WASH/HCSKB/FLOW/10OCT1992/4MIN/SKUNK CREEK/
-----DSS--- ZREAD Unit  71; Vers.   12:  /SCATTER WASH/HCSKB/FLOW/11OCT1992/4MIN/SKUNK CREEK/
-----DSS--- ZREAD Unit  71; Vers.   12:  /SCATTER WASH/HCSKB/FLOW/12OCT1992/4MIN/SKUNK CREEK/
-----DSS--- ZREAD Unit  71; Vers.   12:  /SCATTER WASH/HCSKB/FLOW/12OCT1992/4MIN/SKUNK CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /SKUNK CREEK/381D5/FLOW/10OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.    5:  /SKUNK CREEK/381D5/FLOW/11OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.    5:  /SKUNK CREEK/381D5/FLOW/12OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/382D/FLOW/10OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/382D/FLOW/11OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/382D/FLOW/12OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/383D/FLOW/10OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/383D/FLOW/11OCT1992/4MIN/WEST/
```

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-----DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/383D/FLOW/12OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/384D/FLOW/10OCT1992/4MIN/WEST/
-----DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/384D/FLOW/11OCT1992/4MIN/WEST/
   --DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/384D/FLOW/12OCT1992/4MIN/WEST/
   --DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/HC376/FLOW/10OCT1992/4MIN/SKUNK CREEK/
-----DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/HC376/FLOW/11OCT1992/4MIN/SKUNK CREEK/
-----DSS---ZWRITE Unit  71; Vers.    4:  /SKUNK CREEK/HC376/FLOW/12OCT1992/4MIN/SKUNK 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	350S	406.	12.13	66.	21.	10.	0.39		
DIVERSION TO	OR350	4.	12.13	1.	0.	0.	0.39		
HYDROGRAPH AT	DT350	406.	12.13	66.	21.	10.	0.39		
HYDROGRAPH AT	HCSKB	4916.	14.07	3738.	2569.	2139.	18.82		
ROUTED TO	RMSKB	4909.	14.13	3738.	2569.	2139.	18.82		
HYDROGRAPH AT	363S	410.	12.00	54.	18.	8.	0.30		
DIVERSION TO	OR363	10.	12.00	6.	2.	1.	0.30		
HYDROGRAPH AT	DT363	410.	12.00	54.	16.	7.	0.30		
ROUTED TO	363RR	30.	12.87	28.	15.	7.	0.30	1299.91	12.87
ROUTED TO	RM363	30.	12.93	28.	15.	7.	0.30		
3 COMBINED AT	HC350	4956.	14.13	3823.	2603.	2155.	19.51		
ROUTED TO	RM358	4950.	14.27	3822.	2603.	2155.	19.51		
HYDROGRAPH AT	352S	363.	12.13	71.	22.	10.	0.32		
DIVERSION TO	OR352	5.	12.13	2.	1.	0.	0.32		
HYDROGRAPH AT	DT352	363.	12.13	71.	21.	10.	0.32		
DIVERSION TO	352D	166.	12.13	31.	9.	4.	0.32		
HYDROGRAPH AT	352RE	197.	12.13	40.	12.	6.	0.32		
HYDROGRAPH AT	351S	82.	12.07	15.	5.	2.	0.06		
DIVERSION TO	OR351	17.	12.07	4.	1.	1.	0.06		
HYDROGRAPH AT	DT351	82.	12.07	14.	4.	2.	0.06		
DIVERSION TO	355D1	14.	12.07	3.	1.	0.	0.06		
HYDROGRAPH AT	351RE	68.	12.07	10.	3.	1.	0.06		
2 COMBINED AT	HC352	261.	12.13	50.	15.	7.	0.38		
ROUTED TO	352RR	253.	12.20	44.	12.	6.	0.38	72.70	12.20
HYDROGRAPH AT	R352	166.	12.13	31.	9.	4.	0.00		
HYDROGRAPH AT	353S	288.	12.07	44.	14.	6.	0.24		

HYDROGRAPH AT	354S	244.	12.07	39.	13.	6.	0.16		
4 COMBINED AT	HC354	914.	12.13	155.	48.	22.	0.79		
ROUTED TO	354RR	596.	12.40	143.	42.	19.	0.79	62.04	12.40
DIVERSION TO	355D2	334.	12.40	133.	40.	18.	0.79		
HYDROGRAPH AT	354RE	262.	12.40	10.	3.	1.	0.79		
HYDROGRAPH AT	366S	49.	12.00	7.	3.	1.	0.03		
2 COMBINED AT	HC366	271.	12.40	17.	5.	2.	0.82		
ROUTED TO	366RR	0.	0.07	0.	0.	0.	0.82	43.80	24.40
DIVERSION TO	368D1	0.	0.07	0.	0.	0.	0.82		
HYDROGRAPH AT	366RE	0.	0.07	0.	0.	0.	0.82		
HYDROGRAPH AT	R351	14.	11.80	3.	1.	0.	0.00		
HYDROGRAPH AT	R354	334.	12.40	133.	40.	18.	0.00		
HYDROGRAPH AT	355S	1490.	12.13	265.	87.	39.	1.19		
DIVERSION TO	OR355	753.	12.13	80.	25.	11.	1.19		
HYDROGRAPH AT	DT355	1490.	12.13	223.	62.	28.	1.19		
4 COMBINED AT	HC355	1747.	12.13	359.	103.	46.	2.01		
DIVERSION TO	368D3	428.	12.13	32.	8.	4.	2.01		
HYDROGRAPH AT	355RE	1319.	12.13	327.	95.	43.	2.01		
ROUTED TO	RM356	1417.	12.20	327.	96.	43.	2.01		
HYDROGRAPH AT	356S	585.	12.27	121.	36.	16.	0.72		
DIVERSION TO	OR356	17.	12.27	9.	3.	1.	0.72		
HYDROGRAPH AT	DT356	585.	12.27	121.	32.	15.	0.72		
2 COMBINED AT	HC356	1981.	12.20	442.	128.	58.	2.73		
DIVERSION TO	369D	349.	12.20	20.	5.	2.	2.73		
HYDROGRAPH AT	356RE	1631.	12.20	422.	123.	55.	2.73		
ROUTED TO	RM356	1722.	12.40	422.	123.	55.	2.73		
HYDROGRAPH AT	357S	402.	12.13	74.	24.	11.	0.42		
2 COMBINED AT	HC357	2023.	12.40	489.	145.	66.	3.15		
ROUTED TO	RM357	2123.	12.47	489.	146.	66.	3.15		
HYDROGRAPH AT	359S	1993.	12.07	237.	66.	30.	1.47		

ROUTED TO	RM359	1973.	12.13	237.	66.	30.	1.47		
HYDROGRAPH AT	360S	880.	12.07	108.	33.	15.	0.76		
DIVERSION TO	OR360	333.	12.07	21.	7.	3.	0.76		
HYDROGRAPH AT	DT360	880.	12.07	97.	26.	12.	0.76		
2 COMBINED AT	HC360	2828.	12.13	331.	92.	42.	2.23		
ROUTED TO	RM361	2780.	12.33	333.	93.	42.	2.23		
HYDROGRAPH AT	361S	838.	12.07	101.	29.	13.	0.79		
DIVERSION TO	OR361	8.	12.07	6.	2.	1.	0.79		
HYDROGRAPH AT	DT361	838.	12.07	101.	27.	12.	0.79		
2 COMBINED AT	HC361	3464.	12.20	433.	120.	54.	3.02		
ROUTED TO	361RR	2888.	12.40	432.	120.	54.	3.02	1297.49	12.40
HYDROGRAPH AT	362S	755.	12.27	152.	47.	21.	0.92		
DIVERSION TO	OR362	10.	12.27	5.	1.	1.	0.92		
HYDROGRAPH AT	DT362	755.	12.27	152.	46.	21.	0.92		
2 COMBINED AT	HC362	3575.	12.40	584.	166.	75.	3.94		
ROUTED TO	362RR1	2733.	12.67	581.	166.	75.	3.94	1296.30	12.67
ROUTED TO	362RR2	1552.	13.20	563.	165.	75.	3.94	1296.60	13.20
ROUTED TO	362RR3	783.	14.33	483.	162.	75.	3.94	1295.31	14.33
ROUTED TO	362RR4	661.	15.27	451.	161.	75.	3.94	1291.49	15.27
ROUTED TO	RM358	661.	15.47	450.	161.	75.	3.94		
HYDROGRAPH AT	358S	460.	12.20	79.	24.	11.	0.52		
DIVERSION TO	OR358	3.	12.20	0.	0.	0.	0.52		
HYDROGRAPH AT	DT358	460.	12.20	79.	24.	11.	0.52		
HYDROGRAPH AT	364S	564.	12.07	85.	29.	13.	0.42		
DIVERSION TO	OR364	11.	12.07	8.	2.	1.	0.42		
HYDROGRAPH AT	DT364	564.	12.07	85.	26.	12.	0.42		
DIVERSION TO	OR364	564.	12.20	56.	14.	6.	0.42		
HYDROGRAPH AT	DT364	448.	12.20	42.	13.	6.	0.42		
5 COMBINED AT	HC358	6833.	12.47	4778.	2942.	2313.	27.53		
ROUTED TO	RM365	6712.	12.53	4777.	2942.	2312.	27.53		

HYDROGRAPH AT	365S	786.	12.13	153.	53.	24.	0.64
DIVERSION TO	OR365	786.	12.60	119.	34.	15.	0.64
HYDROGRAPH AT	DT365	359.	12.60	60.	19.	9.	0.64
2 COMBINED AT	HC365	6823.	12.53	4836.	2962.	2321.	28.16
ROUTED TO	RM373	6743.	12.67	4835.	2961.	2321.	28.16
HYDROGRAPH AT	R366	0.	0.07	0.	0.	0.	0.00
HYDROGRAPH AT	R355	428.	12.13	32.	8.	4.	0.00
ROUTED TO	RM368	409.	12.40	32.	8.	4.	0.00
HYDROGRAPH AT	368S	1249.	12.13	239.	95.	57.	1.12
DIVERSION TO	OR368	45.	12.13	30.	7.	3.	1.12
HYDROGRAPH AT	DT368	1249.	12.13	239.	92.	53.	1.12
3 COMBINED AT	HC368	1399.	12.33	270.	100.	57.	1.12
DIVERSION TO	381D5	770.	12.33	187.	79.	47.	1.12
HYDROGRAPH AT	368RE	630.	12.33	83.	21.	9.	1.12
ROUTED TO	RM369	590.	12.53	84.	21.	9.	1.12
HYDROGRAPH AT	R356	349.	12.20	20.	5.	2.	0.00
ROUTED TO	RM369	273.	12.67	21.	5.	2.	0.00
HYDROGRAPH AT	369S	1188.	12.13	212.	66.	30.	1.05
DIVERSION TO	OR369	17.	12.13	10.	3.	1.	1.05
HYDROGRAPH AT	DT369	1188.	12.13	212.	64.	29.	1.05
DIVERSION TO	OR369	16.	12.13	1.	0.	0.	1.05
HYDROGRAPH AT	DT369	1188.	12.13	212.	63.	29.	1.05
3 COMBINED AT	HC369	1651.	12.20	316.	90.	40.	2.17
DIVERSION TO	382D	825.	12.20	158.	45.	20.	2.17
HYDROGRAPH AT	369RE	825.	12.20	158.	45.	20.	2.17
ROUTED TO	RM370	838.	12.40	158.	45.	20.	2.17
HYDROGRAPH AT	370S	1272.	12.13	188.	59.	26.	1.04
DIVERSION TO	OR370	847.	12.13	58.	17.	8.	1.04
HYDROGRAPH AT	DT370	1272.	12.13	151.	41.	19.	1.04
DIVERSION TO	OR370	64.	12.13	1.	0.	0.	1.04

HYDROGRAPH AT	DT370	1272.	12.13	151.	41.	19.	1.04
2 COMBINED AT	HC370	1719.	12.20	306.	86.	39.	3.21
DIVERSION TO	383D	870.	12.20	169.	52.	23.	3.21
HYDROGRAPH AT	370RE	849.	12.20	138.	34.	15.	3.21
ROUTED TO	RM371	835.	12.40	138.	34.	16.	3.21
HYDROGRAPH AT	371S	1297.	12.13	217.	71.	32.	1.07
DIVERSION TO	OR371	22.	12.13	16.	4.	2.	1.07
HYDROGRAPH AT	DT371	1297.	12.13	217.	67.	30.	1.07
DIVERSION TO	OR371	920.	12.13	75.	19.	8.	1.07
HYDROGRAPH AT	DT371	1297.	12.13	172.	48.	22.	1.07
2 COMBINED AT	HC371	1908.	12.27	310.	82.	37.	4.28
DIVERSION TO	384D	1014.	12.27	193.	53.	24.	4.28
HYDROGRAPH AT	371RE	894.	12.27	117.	29.	13.	4.28
ROUTED TO	RM373	854.	12.47	118.	30.	13.	4.28
HYDROGRAPH AT	372S	204.	12.27	62.	22.	10.	0.26
DIVERSION TO	OR372	7.	12.27	4.	1.	0.	0.26
HYDROGRAPH AT	DT372	204.	12.27	62.	21.	9.	0.26
DIVERSION TO	OR372	204.	12.93	43.	12.	5.	0.26
HYDROGRAPH AT	DT372	130.	12.93	30.	9.	4.	0.26
ROUTED TO	RM373	113.	13.27	30.	9.	4.	0.26
HYDROGRAPH AT	373S	1010.	12.20	171.	54.	24.	1.01
DIVERSION TO	OR373	20.	12.20	14.	4.	2.	1.01
HYDROGRAPH AT	DT373	1010.	12.20	171.	50.	22.	1.01
DIVERSION TO	OR373	24.	12.20	3.	1.	0.	1.01
HYDROGRAPH AT	DT373	1010.	12.20	171.	49.	22.	1.01
4 COMBINED AT	HC373	7898.	12.67	5097.	3048.	2360.	33.72
ROUTED TO	RM375	7834.	12.73	5096.	3048.	2360.	33.72
HYDROGRAPH AT	374S	1332.	12.07	189.	58.	26.	1.00
ROUTED TO	RM375	1307.	12.27	189.	58.	26.	1.00
HYDROGRAPH AT	375S	388.	12.27	81.	25.	11.	0.52

DIVERSION TO	OR375	6.	12.27	4.	1.	0.	0.52
HYDROGRAPH AT	DT375	388.	12.27	81.	24.	11.	0.52
DIVERSION TO	OR375	6.	12.27	1.	0.	0.	0.52
HYDROGRAPH AT	DT375	388.	12.27	81.	24.	11.	0.52
3 COMBINED AT	HC375	8541.	12.73	5325.	3124.	2397.	35.24
ROUTED TO	RM376	8520.	12.73	5325.	3124.	2397.	35.24
HYDROGRAPH AT	377S	353.	12.33	81.	25.	11.	0.48
DIVERSION TO	OR377	266.	12.33	24.	7.	3.	0.48
HYDROGRAPH AT	DT377	353.	12.33	67.	18.	8.	0.48
ROUTED TO	RM376	351.	12.40	66.	18.	8.	0.48
HYDROGRAPH AT	376S	178.	12.13	40.	14.	6.	0.18
DIVERSION TO	OR376	178.	12.67	29.	8.	4.	0.18
HYDROGRAPH AT	DT376	94.	12.67	18.	5.	2.	0.18
3 COMBINED AT	HC376	8871.	12.73	5408.	3147.	2408.	35.90

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)
RMSKB	MANE	4.00	4908.58	848.00	9.38	4.00	4908.58	848.00	9.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9425E+04 EXCESS=0.0000E+00 OUTFLOW=0.9425E+04 BASIN STORAGE=0.3954E+00 PERCENT ERROR= 0.0

RM363	MANE	4.00	30.05	776.00	1.96	4.00	30.05	776.00	1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3153E+02 EXCESS=0.0000E+00 OUTFLOW=0.3153E+02 BASIN STORAGE=0.1524E-02 PERCENT ERROR= 0.0

RM358	MANE	4.00	4949.68	856.00	9.12	4.00	4949.68	856.00	9.12

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9498E+04 EXCESS=0.0000E+00 OUTFLOW=0.9497E+04 BASIN STORAGE=0.6477E+00 PERCENT ERROR= 0.0

RM356	MANE	3.60	1512.85	730.80	1.77	4.00	1416.69	732.00	1.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1887E+03 EXCESS=0.0000E+00 OUTFLOW=0.1898E+03 BASIN STORAGE=0.6512E-03 PERCENT ERROR= -0.6

RM356	MANE	4.00	1721.65	744.00	1.68	4.00	1721.65	744.00	1.68

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2437E+03 EXCESS=0.0000E+00 OUTFLOW=0.2440E+03 BASIN STORAGE=0.6327E-03 PERCENT ERROR= -0.1

RM357	MANE	4.00	2122.87	748.00	1.74	4.00	2122.87	748.00	1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2912E+03 EXCESS=0.0000E+00 OUTFLOW=0.2913E+03 BASIN STORAGE=0.3883E-03 PERCENT ERROR= -0.1

RM359	MANE	4.00	1973.03	728.00	1.68	4.00	1973.03	728.00	1.68

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1313E+03 EXCESS=0.0000E+00 OUTFLOW=0.1314E+03 BASIN STORAGE=0.1039E-01 PERCENT ERROR= -0.1

RM361	MANE	4.00	2779.81	740.00	1.55	4.00	2779.81	740.00	1.55

INUITY SUMMARY (AC-FT) - INFLOW=0.1830E+03 EXCESS=0.0000E+00 OUTFLOW=0.1840E+03 BASIN STORAGE=0.1743E-01 PERCENT ERROR= -0.5

RM358	MANE	4.00	661.36	928.00	1.57	4.00	661.36	928.00	1.57

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CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3288E+03 EXCESS=0.0000E+00 OUTFLOW=0.3288E+03 BASIN STORAGE=0.2024E-01 PERCENT ERROR=   0.0

          RM365  MANE        4.00   6711.70    752.00      6.93      4.00   6711.70    752.00        6.93

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1019E+05 EXCESS=0.0000E+00 OUTFLOW=0.1019E+05 BASIN STORAGE=0.4462E+00 PERCENT ERROR=   0.0

          RM373  MANE        4.00   6743.38    760.00      6.80      4.00   6743.38    760.00        6.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1023E+05 EXCESS=0.0000E+00 OUTFLOW=0.1023E+05 BASIN STORAGE=0.7604E+00 PERCENT ERROR=   0.0

          RM368  MANE        0.80    411.41    742.40     -1.00      4.00    408.93    744.00       -1.00

          RM369  MANE        2.40    590.80    753.60      0.69      4.00    590.27    752.00        0.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4130E+02 EXCESS=0.0000E+00 OUTFLOW=0.4154E+02 BASIN STORAGE=0.6940E-03 PERCENT ERROR=  -0.6

          RM369  MANE        0.40    276.99    758.80     -1.00      4.00    272.82    760.00       -1.00

          RM370  MANE        4.00    837.70    744.00      0.77      4.00    837.70    744.00        0.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8894E+02 EXCESS=0.0000E+00 OUTFLOW=0.8901E+02 BASIN STORAGE=0.9741E-03 PERCENT ERROR=  -0.1

          RM371  MANE        1.80    838.84    741.60      0.40      4.00    835.30    744.00        0.40

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6822E+02 EXCESS=0.0000E+00 OUTFLOW=0.6818E+02 BASIN STORAGE=0.1018E-02 PERCENT ERROR=   0.1

          RM373  MANE        1.00    859.64    749.00      0.25      4.00    853.94    748.00        0.26

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5802E+02 EXCESS=0.0000E+00 OUTFLOW=0.5827E+02 BASIN STORAGE=0.9267E-03 PERCENT ERROR=  -0.4

          RM373  MANE        0.80    127.44    793.60      1.35      4.00    112.87    796.00        1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1816E+02 EXCESS=0.0000E+00 OUTFLOW=0.1845E+02 BASIN STORAGE=0.3587E-03 PERCENT ERROR=  -1.6

          RM375  MANE        4.00   7834.05    764.00      5.78      4.00   7834.05    764.00        5.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1040E+05 EXCESS=0.0000E+00 OUTFLOW=0.1040E+05 BASIN STORAGE=0.6872E+00 PERCENT ERROR=   0.0
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          RM375  MANE        4.00   1306.54    736.00      2.15      4.00   1306.54    736.00        2.15

TINUITY SUMMARY (AC-FT) - INFLOW=0.1148E+03 EXCESS=0.0000E+00 OUTFLOW=0.1147E+03 BASIN STORAGE=0.9517E-02 PERCENT ERROR=   0.0

          RM376  MANE        4.00   8520.08    764.00      5.61      4.00   8520.08    764.00        5.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1056E+05 EXCESS=0.0000E+00 OUTFLOW=0.1056E+05 BASIN STORAGE=0.5394E+00 PERCENT ERROR=   0.0

          RM376  MANE        1.80    359.79    738.00      1.42      4.00    351.41    744.00        1.42

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3635E+02 EXCESS=0.0000E+00 OUTFLOW=0.3639E+02 BASIN STORAGE=0.2406E-02 PERCENT ERROR=  -0.1


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


  -----DSS---ZCLOSE Unit:  71,   File: CCW324F.DSS
            Pointer Utilization:  0.28
            Number of Records:     19
            File Size:     50.3  Kbytes
            Percent Inactive:   0.0
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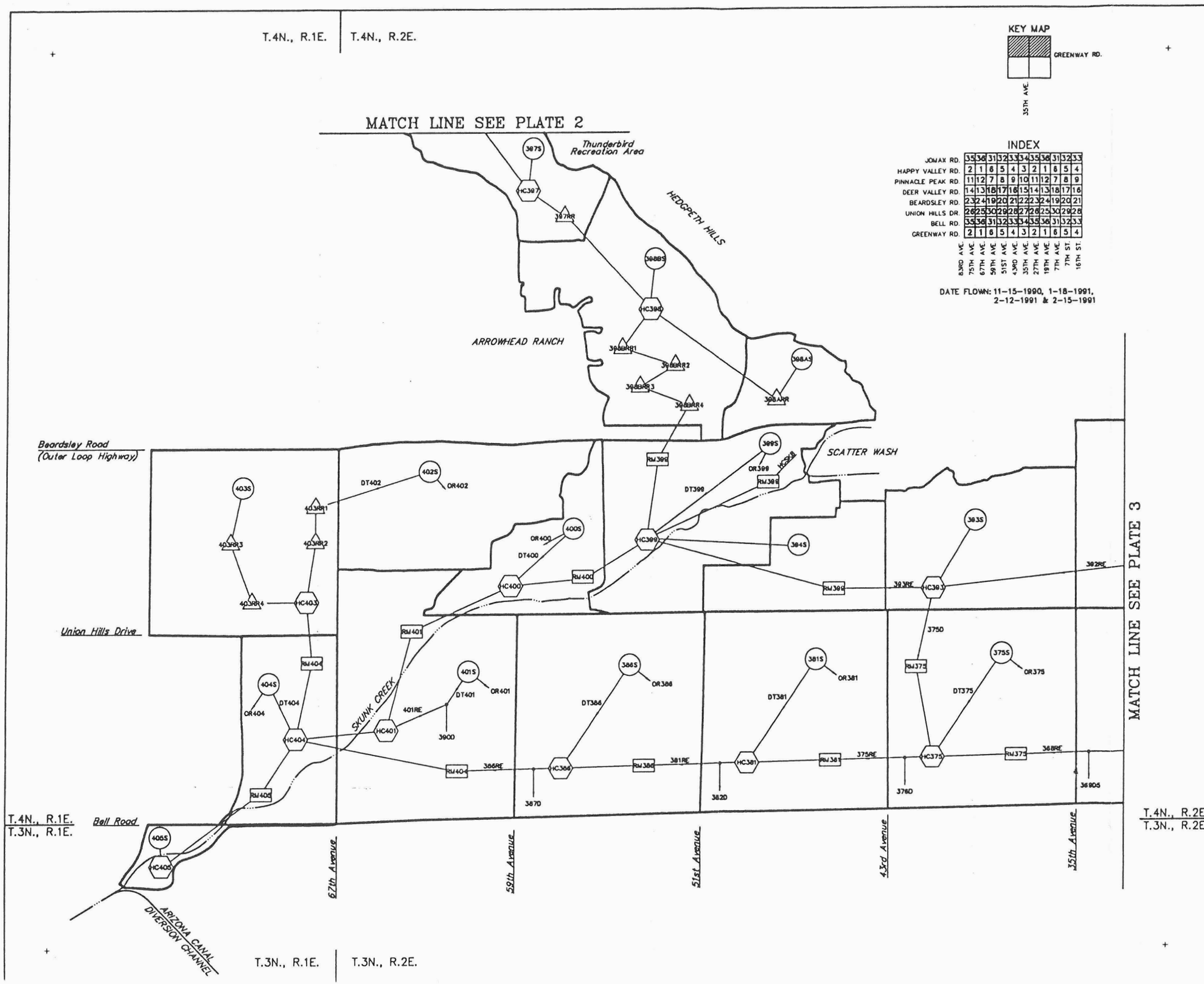
SECTION VIII
Plates 1-24



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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
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FEET

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T.5N., R.1E.
T.4N., R.1E.

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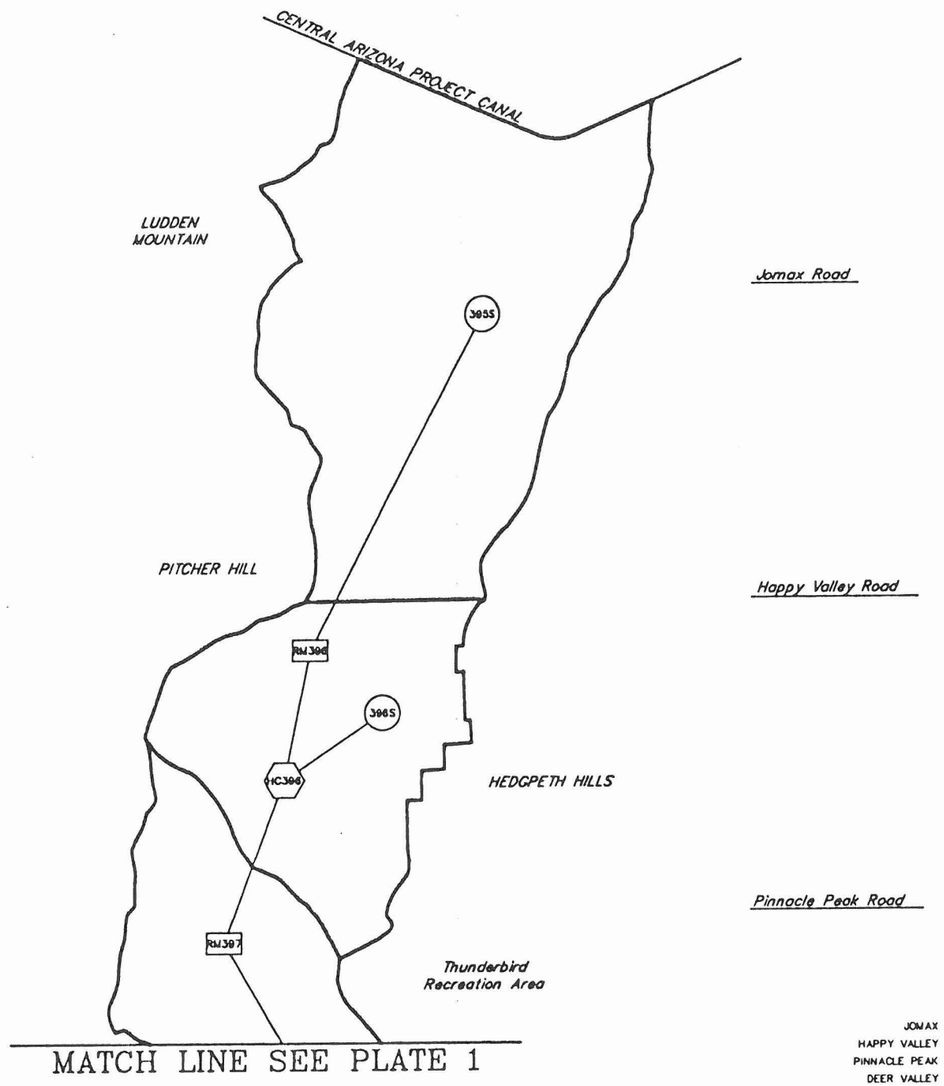
T.4N., R.2E.

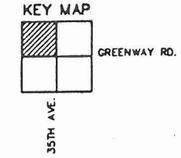


67th Avenue

59th Avenue

51st Avenue

KEY MAP



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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.	16TH ST.
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HAPPY VALLEY RD.	2	1	6	5	4	3	2	1	6	5	4	
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BELL RD.	35	36	31	32	33	34	35	36	31	32	33	
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	4	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.4N., R.1E. | T.4N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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 2
SEPTEMBER 30, 1994

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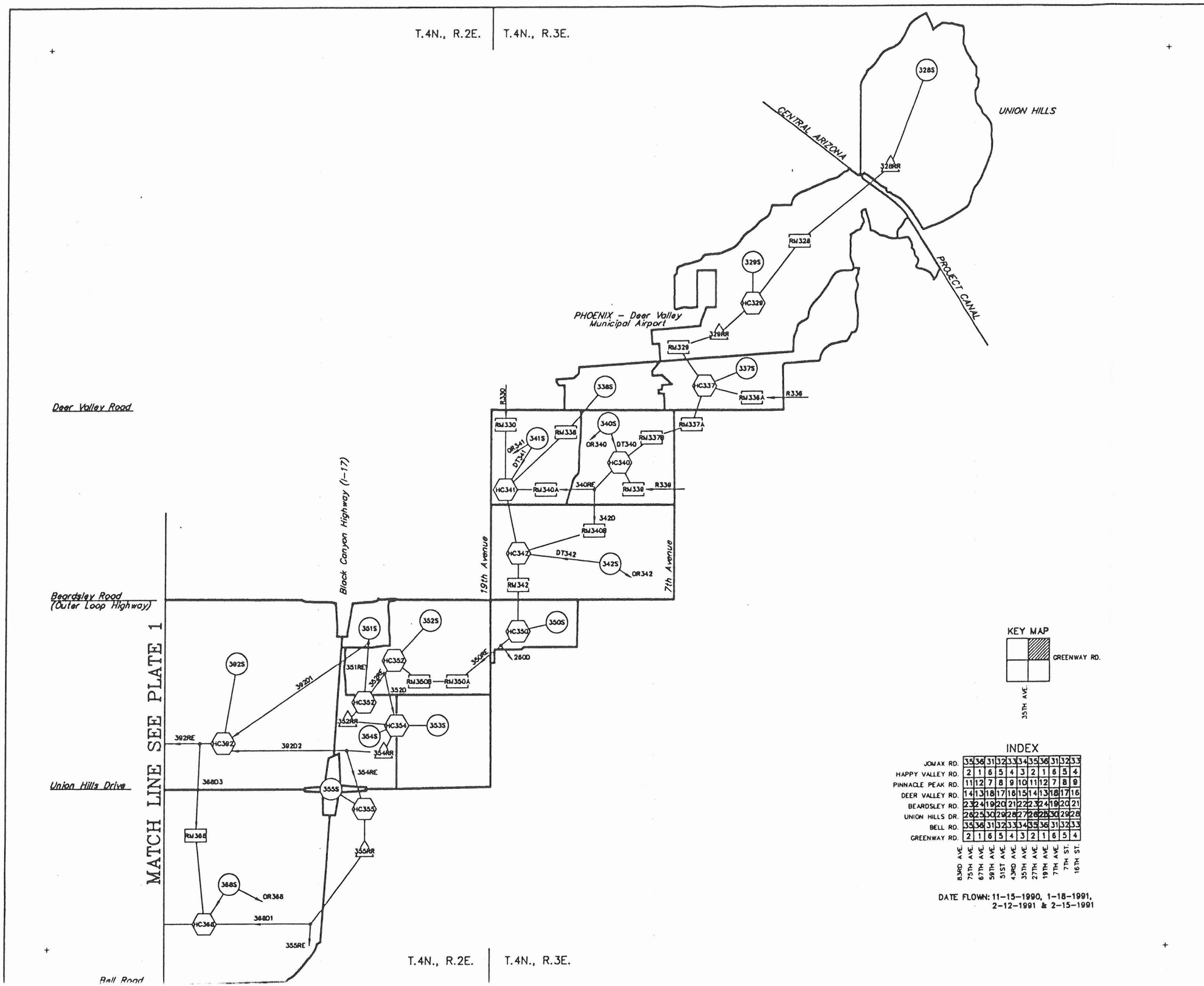

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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

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PHOENIX, ARIZONA 85017
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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.	16TH ST.
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PINNACLE PEAK RD.	11	12	7	8	9	10	11	12	7	8	9	
DEER VALLEY RD.	14	13	18	17	16	15	14	13	18	17	16	
BEARDSLEY RD.	23	24	19	20	21	22	23	24	19	20	21	
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29	28	
BELL RD.	35	36	31	32	33	34	35	36	31	32	33	
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	4	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

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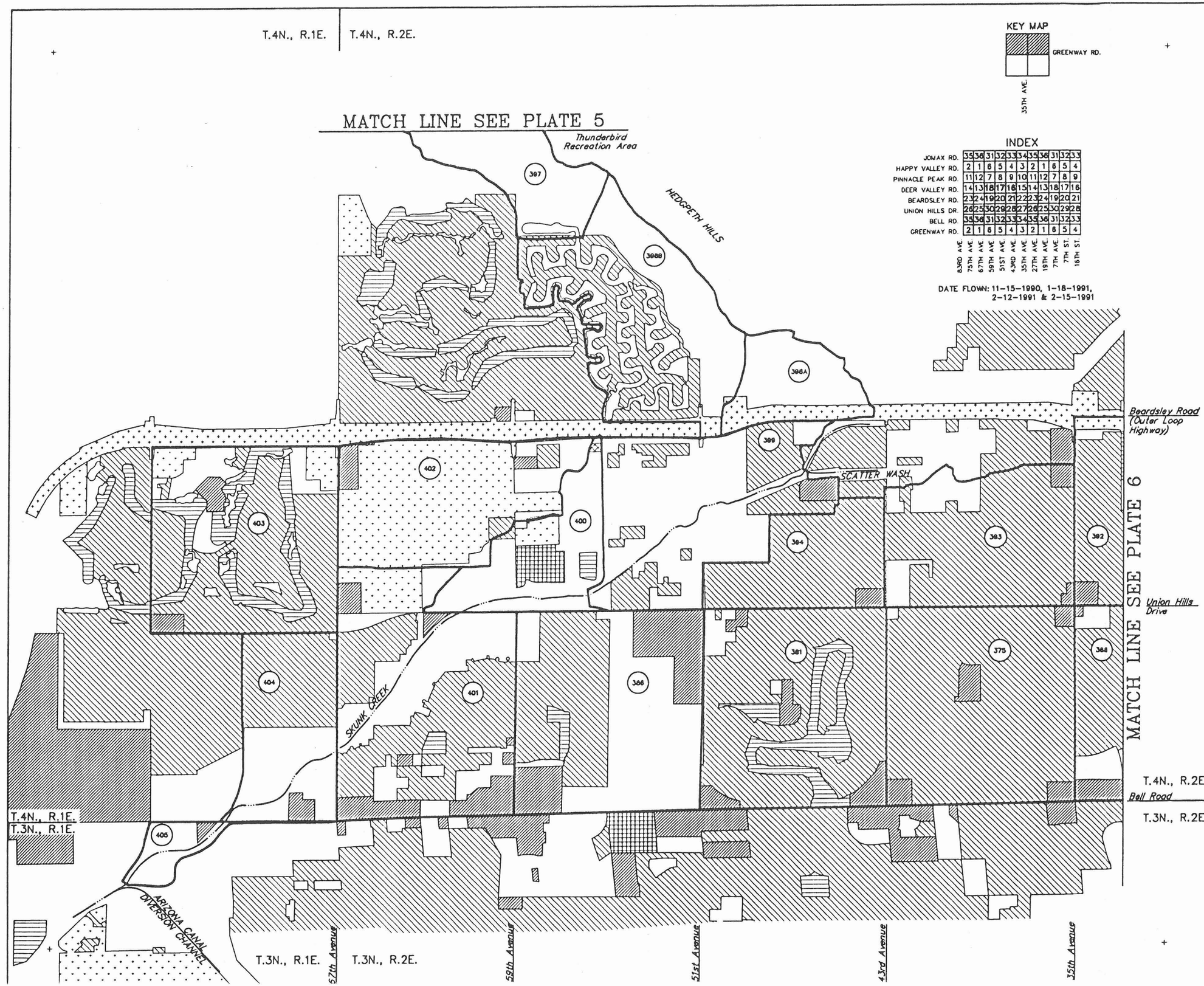
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 SKUNK CREEK HYDROLOGY STUDY



LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Utility Land Use
- Industrial Land Use
- Significant Onsite Retention Area
- Noncontributing Area
- Vacant Land Use
- (140) Drainage Sub-Basin Number
- Right-of-Way
- Agriculture

LAND USE MAP
EXISTING CONDITIONS

PLATE 4
SEPTEMBER 30, 1994

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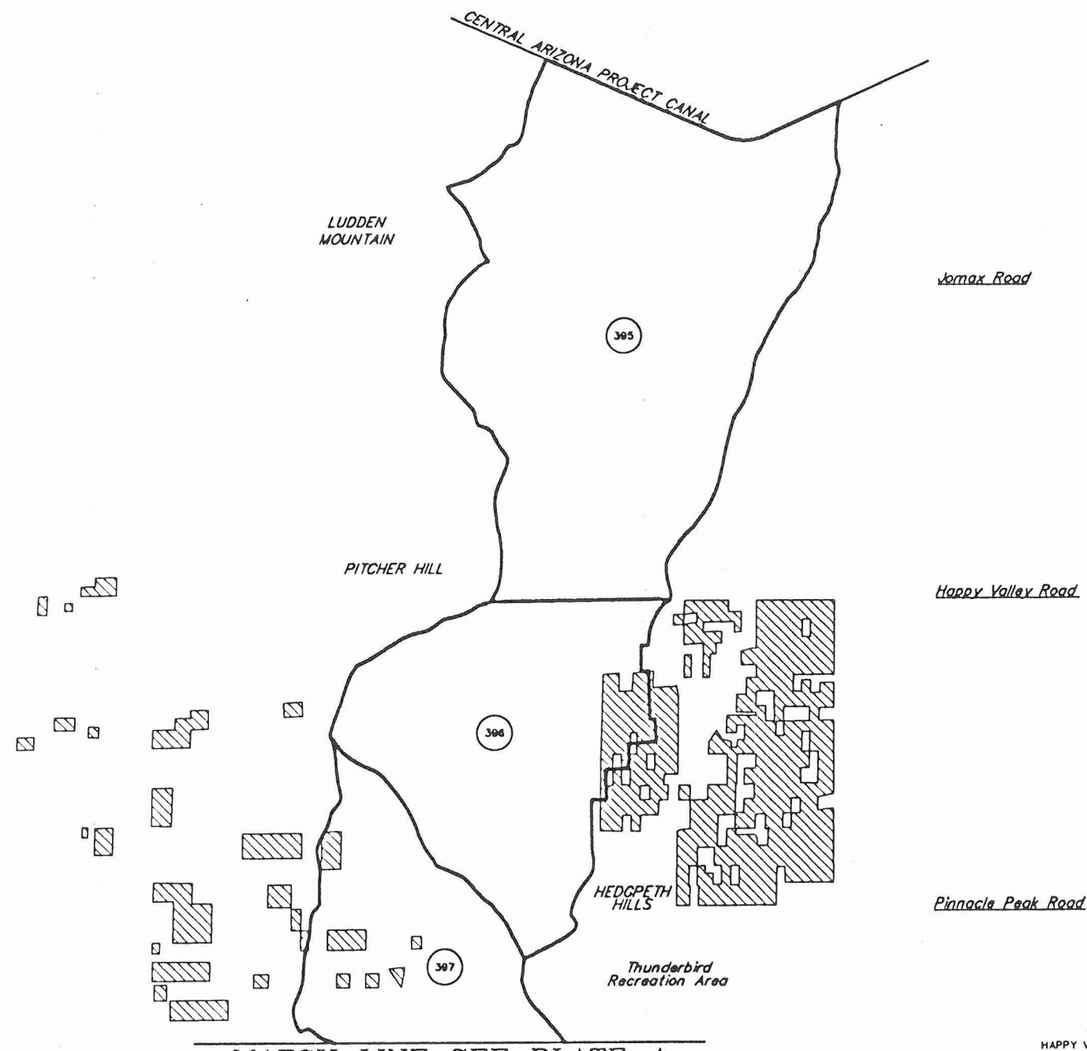
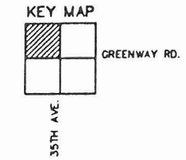


67th Avenue

59th Avenue

51st Avenue

KEY MAP



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HAPPY VALLEY RD.	2	1	6	5	4	3	2	1	6	5	4
PINNACLE PEAK RD.	11	12	7	8	9	10	11	12	7	8	9
DEER VALLEY RD.	14	13	18	17	16	15	14	13	18	17	16
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BELL RD.	35	36	31	32	33	34	35	36	31	32	33
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	4
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.4N., R.1E. | T.4N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Utility Land Use
- Industrial Land Use
- Significant Onsite Retention Area
- Noncontributing Area
- Vacant Land Use
- (140) Drainage Sub-Basin Number

LAND USE MAP
EXISTING CONDITIONS

PLATE 5
SEPTEMBER 30, 1994

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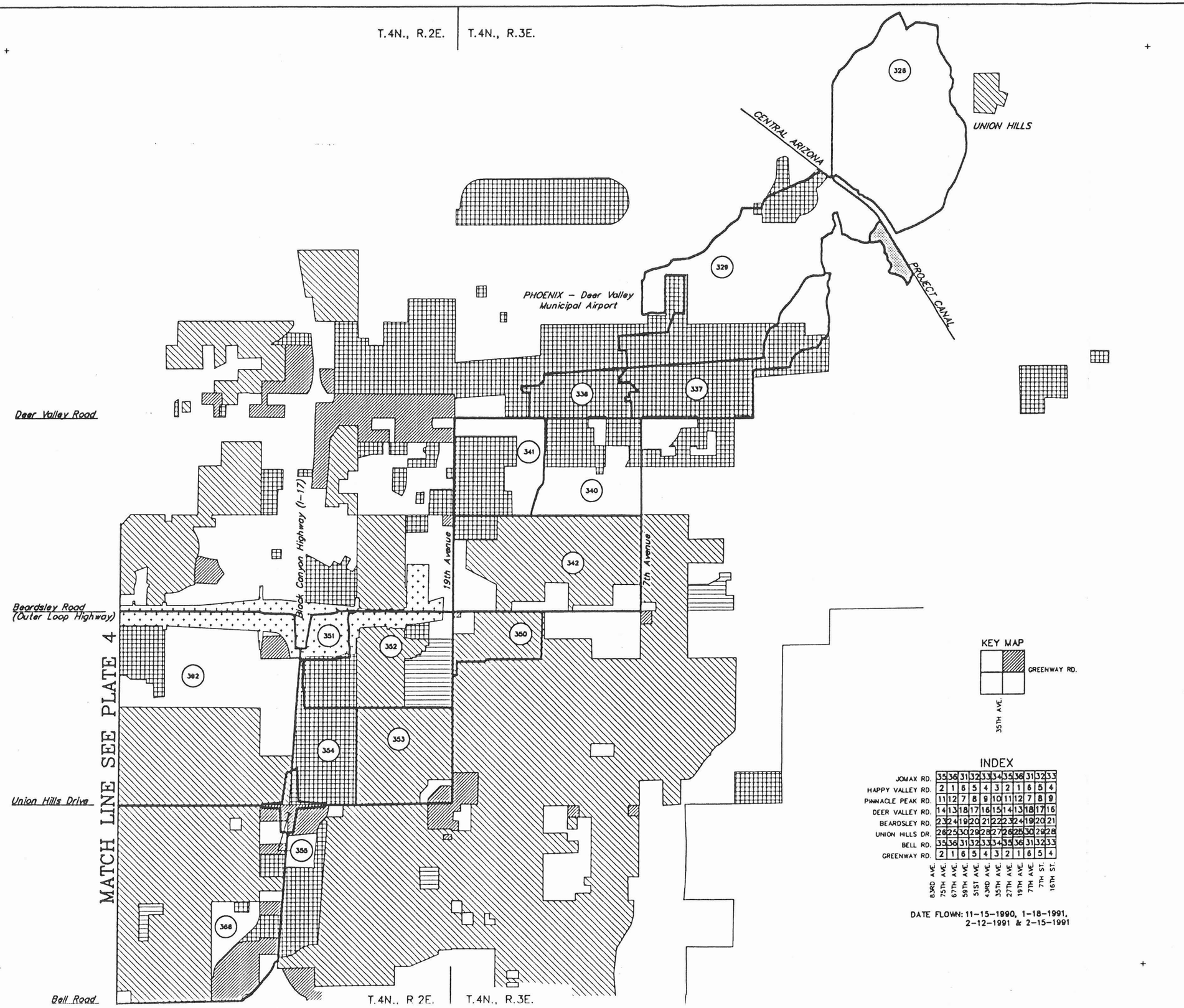

KEY MAP

INDEX

	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Utility Land Use
- Industrial Land Use
- Significant Onsite Retention Area
- Noncontributing Area
- Vacant Land Use
- (140) Drainage Sub-Basin Number

LAND USE MAP
EXISTING CONDITIONS

PLATE 6
SEPTEMBER 30, 1994

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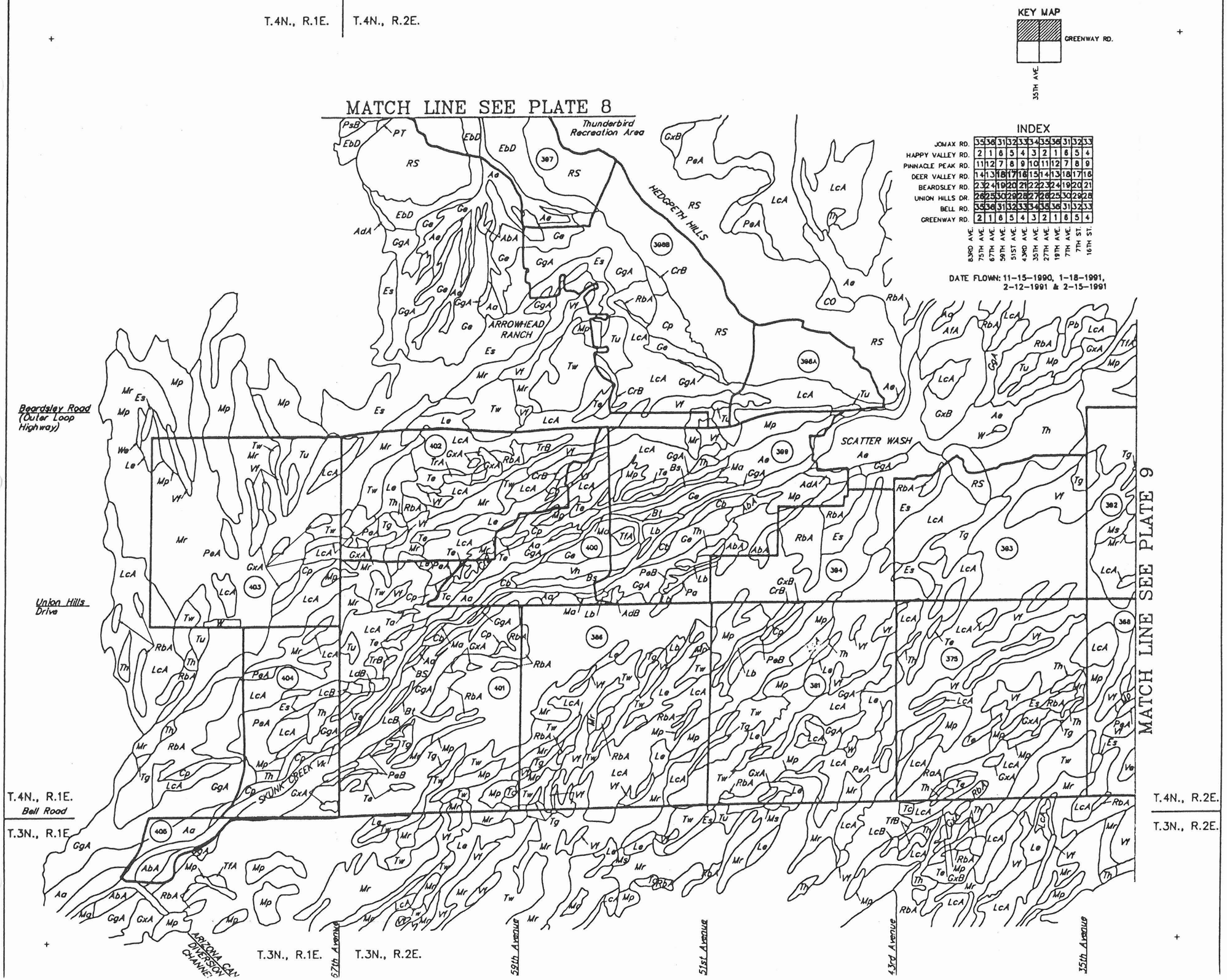

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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

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(602) 242-5588

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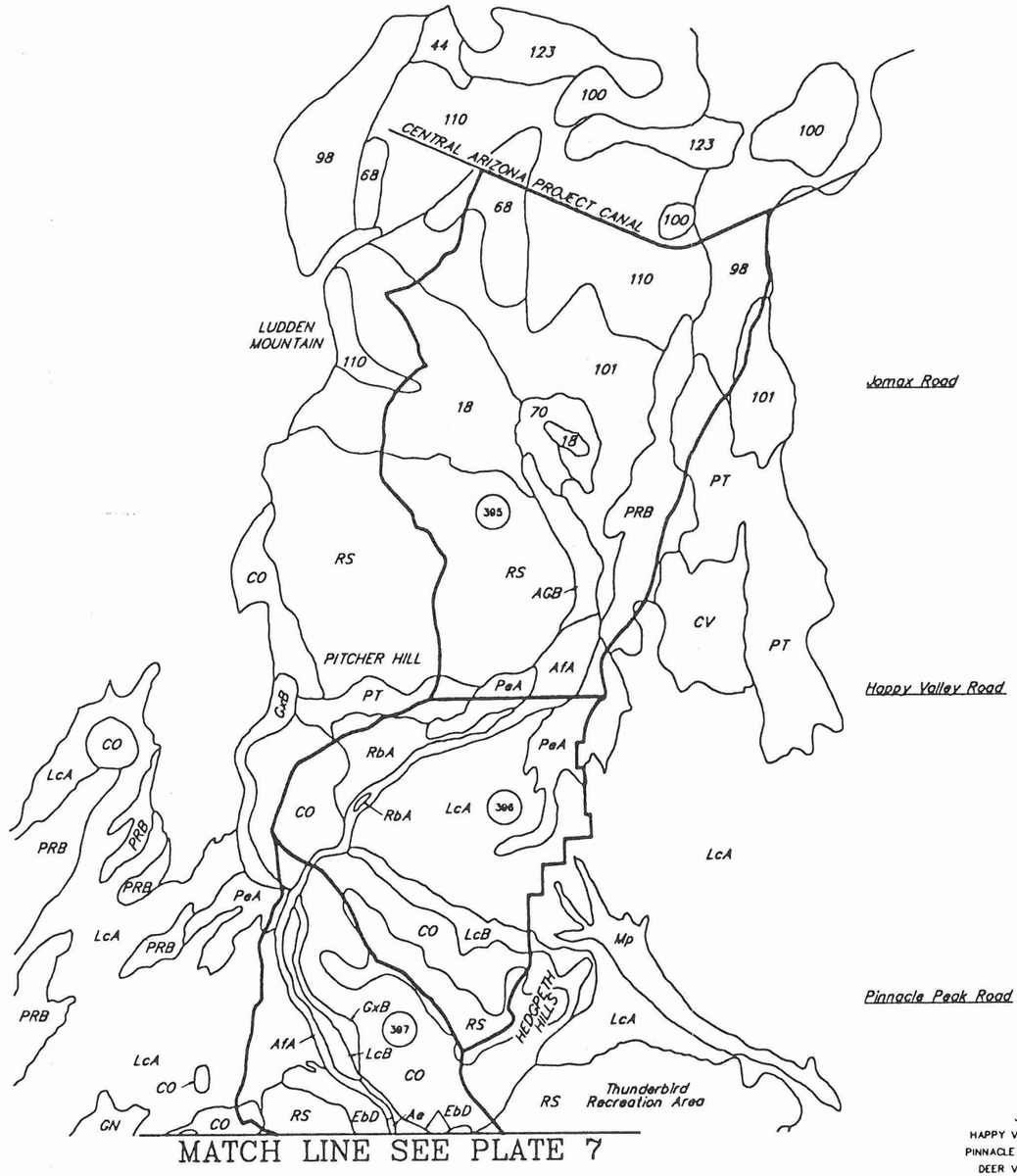


MATCH LINE SEE PLATE 7

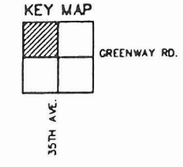
67th Avenue

59th Avenue

51st Avenue

T.4N., R.1E. | T.4N., R.2E.

KEY MAP



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DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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

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(602) 242-5588

N

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FEET

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 SKUNK CREEK HYDROLOGY STUDY

T.4N., R.2E. | T.4N., R.3E.

Black Canyon Highway (I-17)

Deer Valley Road

Beardsley Road (Outer Loop Highway)

Union Hills Drive

Bell Road

MATCH LINE SEE PLATE 7

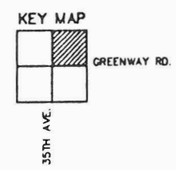
PHOENIX – Deer Valley Municipal Airport

CENTRAL ARIZONA PROJECT CANAL

UNION HILLS

7th Avenue

19th Avenue



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LEGEND

- Drainage Basin Boundary
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SOILS MAP
EXISTING CONDITIONS

PLATE 9
SEPTEMBER 30, 1994

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PHOENIX, ARIZONA 85017
(602) 242-5588

N

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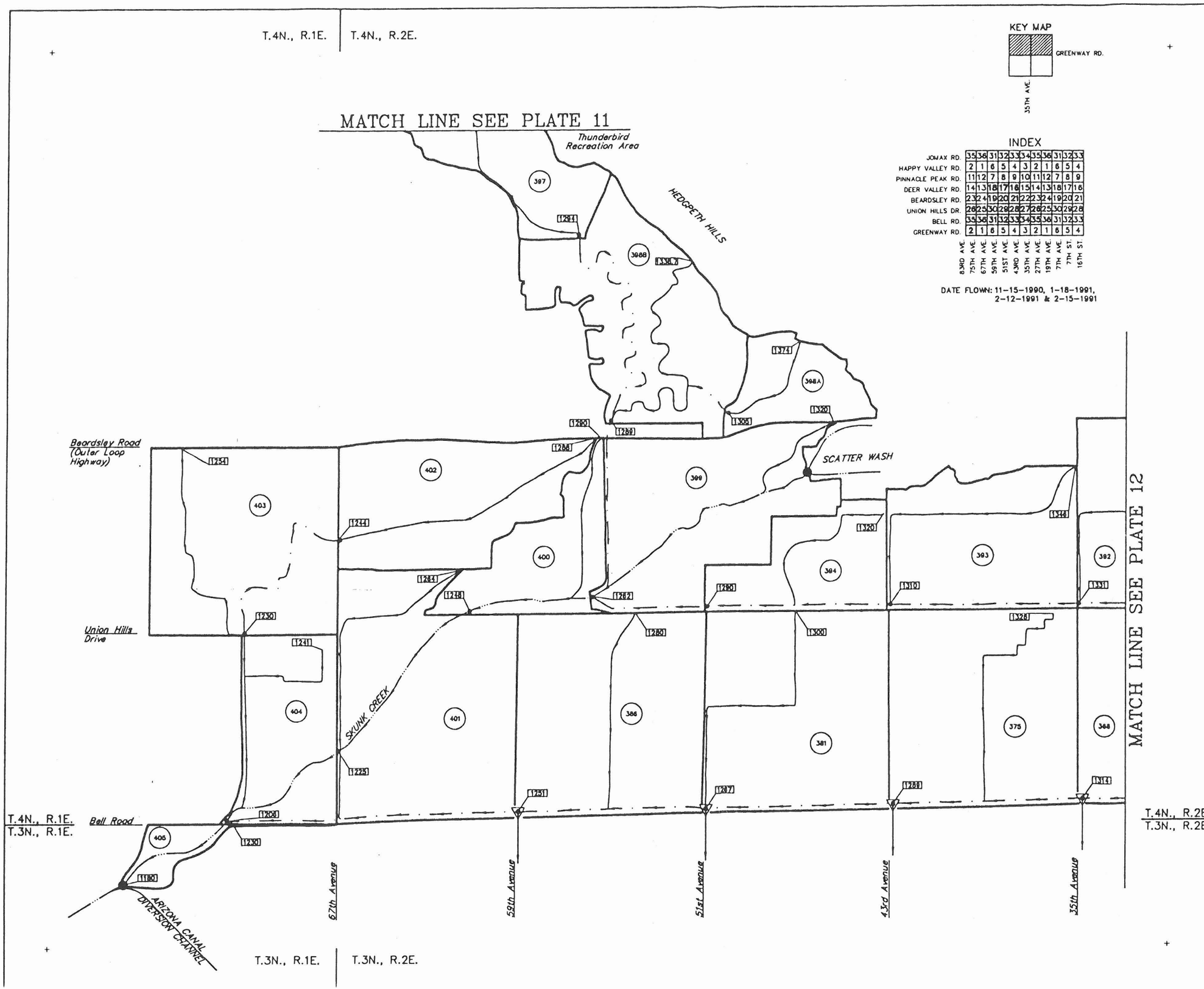
FEET



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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
- Major Water Course

FLOW ROUTING MAP
EXISTING CONDITIONS

PLATE 10
SEPTEMBER 30, 1993

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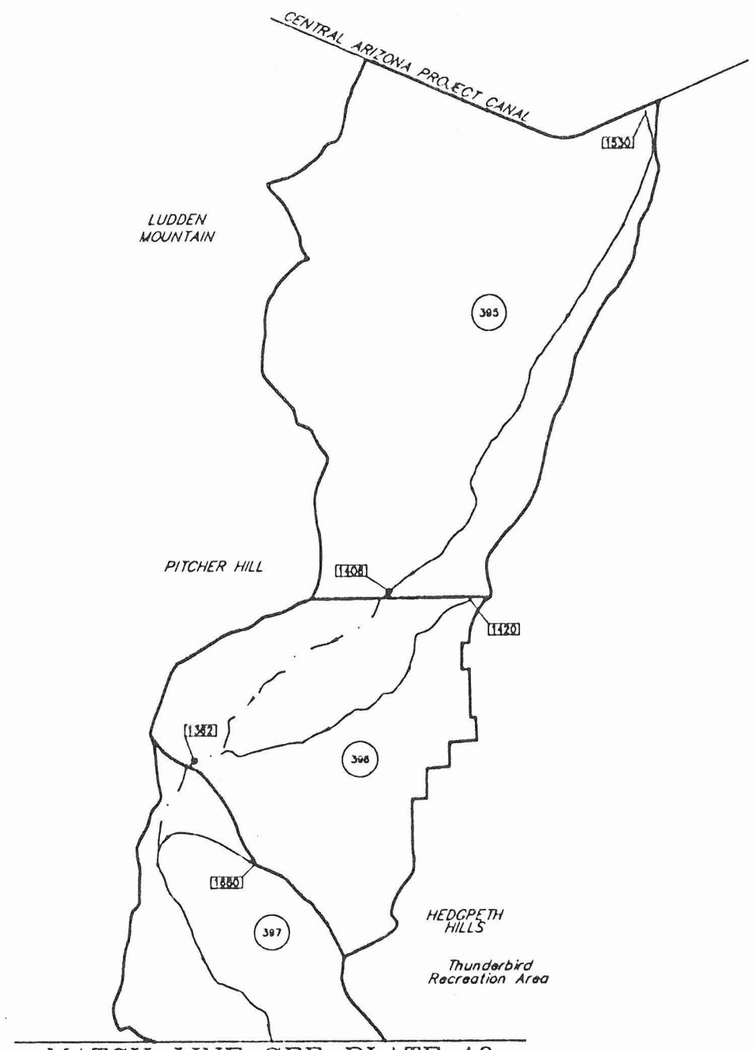
4550 N BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

T.5N., R.1E. | T.5N., R.2E.

T.5N., R.1E.
T.4N., R.1E.

T.5N., R.2E.
T.4N., R.2E.



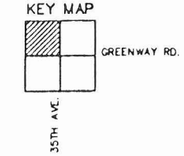
MATCH LINE SEE PLATE 10

67th Avenue

59th Avenue

51st Avenue

KEY MAP



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BELL RD.	35	36	31	32	33	34	35	36	31	32	33	
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DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.4N., R.1E. | T.4N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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

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4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

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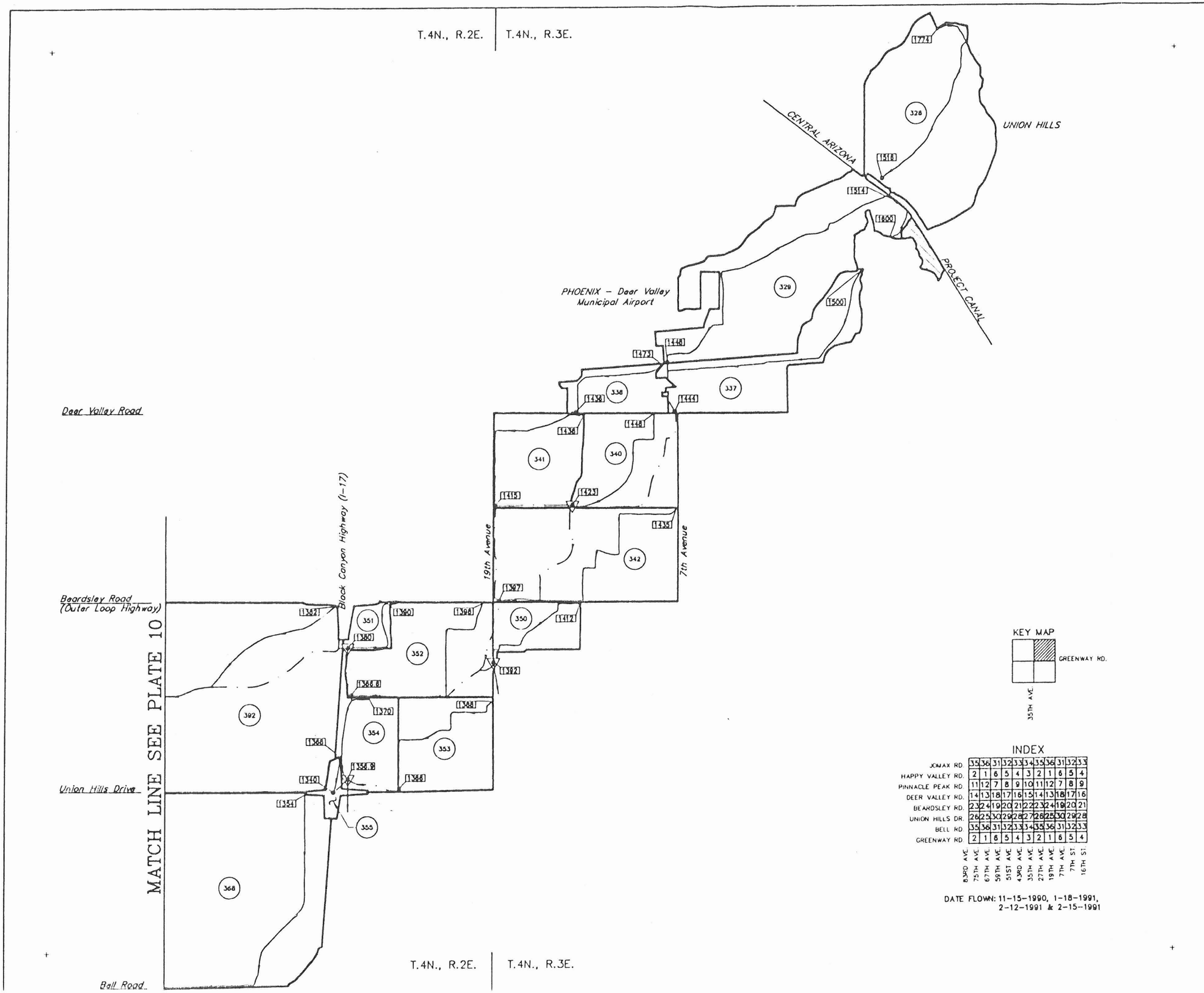

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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
- Non Contributing Area

FLOW ROUTING MAP
EXISTING CONDITIONS

PLATE 12
SEPTEMBER 30, 1994

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.	16TH ST.
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(602) 242-5566

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SCALE
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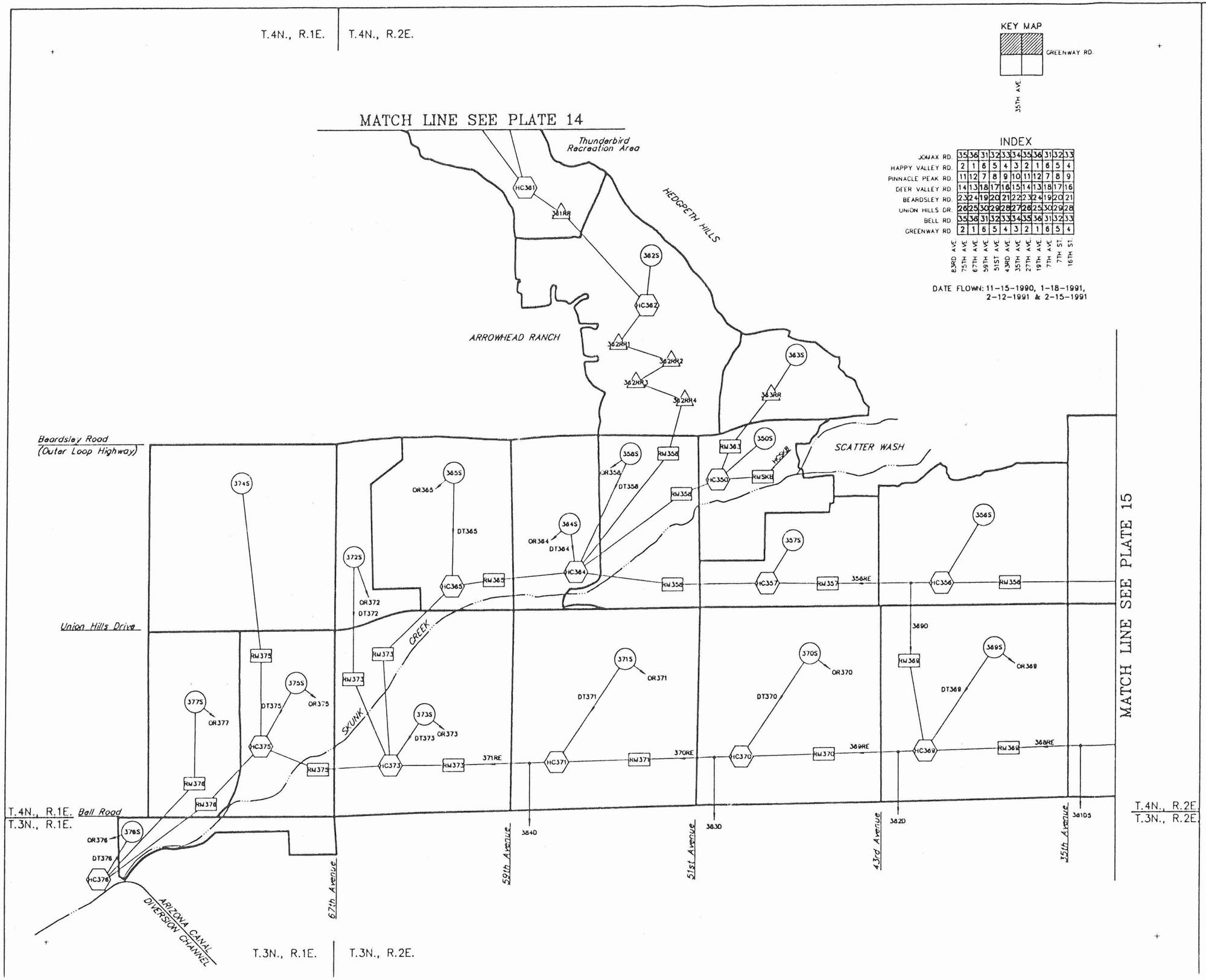


FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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) 242-5585

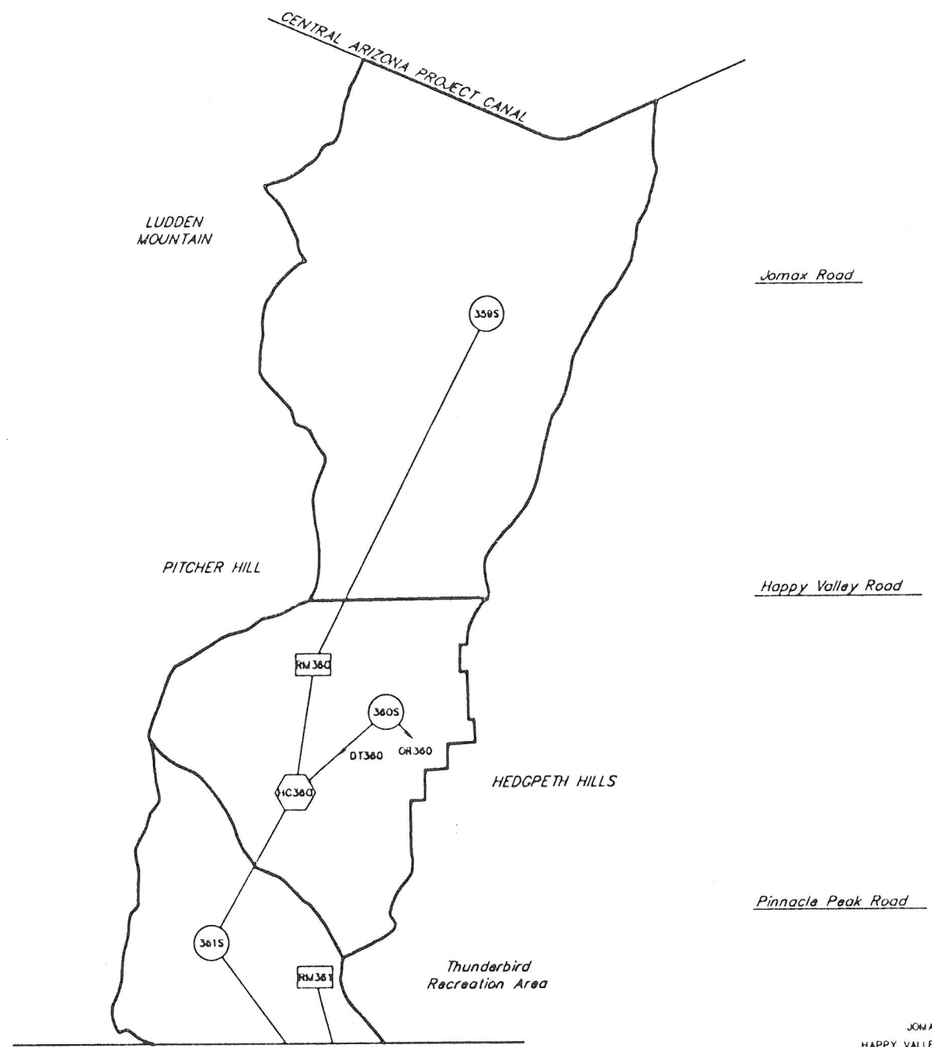
N

SCALE
1200 600 0 1200 2400
FEET

T.5N., R.1E. | T.5N., R.2E.

T.5N., R.1E.
T.4N., R.1E.

T.5N., R.2E.
T.4N., R.2E.



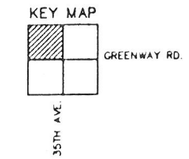
MATCH LINE SEE PLATE 13

67th Avenue

59th Avenue

51st Avenue

KEY MAP



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JOMAX RD.	35	36	31	32	33	34	35	36	31	32	33	
HAPPY VALLEY RD.	2	1	6	5	4	3	2	1	6	5	4	
PINNACLE PEAK RD.	11	12	7	8	9	10	11	12	7	8	9	
DEER VALLEY RD.	14	13	18	17	16	15	14	13	18	17	16	
BEARDSLEY RD.	23	24	19	20	21	22	23	24	19	20	21	
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29	28	
BELL RD.	35	36	31	32	33	34	35	36	31	32	33	
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	4	
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.4N., R.1E. | T.4N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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

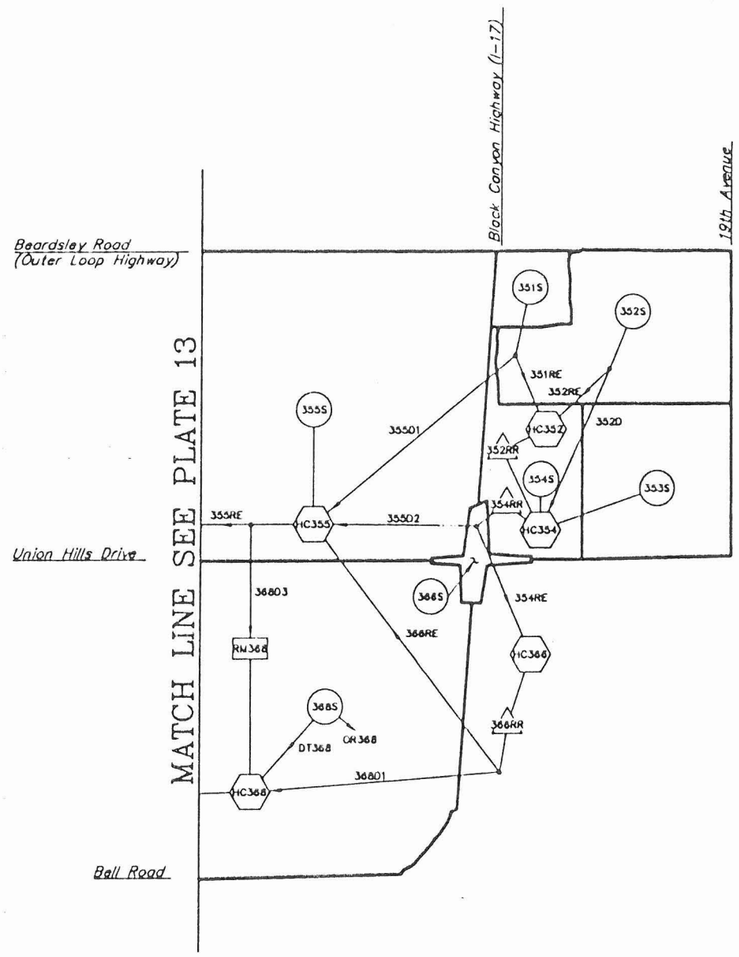
PLATE 14
SEPTEMBER 30, 1994

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.4N., R.2E. | T.4N., R.3E.



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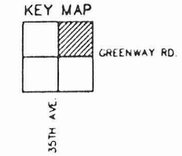

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JOMAX RD.	35	36	31	32	33	34	35	36	31	32	33	
HAPPY VALLEY RD.	2	1	6	5	4	3	2	1	6	5	4	
PINNACLE PEAK RD.	11	12	7	8	9	10	11	12	7	8	9	
DEER VALLEY RD.	14	13	18	17	16	15	14	13	18	17	16	
BEARDSLEY RD.	23	24	19	20	21	22	23	24	19	20	21	
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29	28	
BELL RD.	35	36	31	32	33	34	35	36	31	32	33	
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	4	
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.4N., R.2E. | T.4N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY, SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

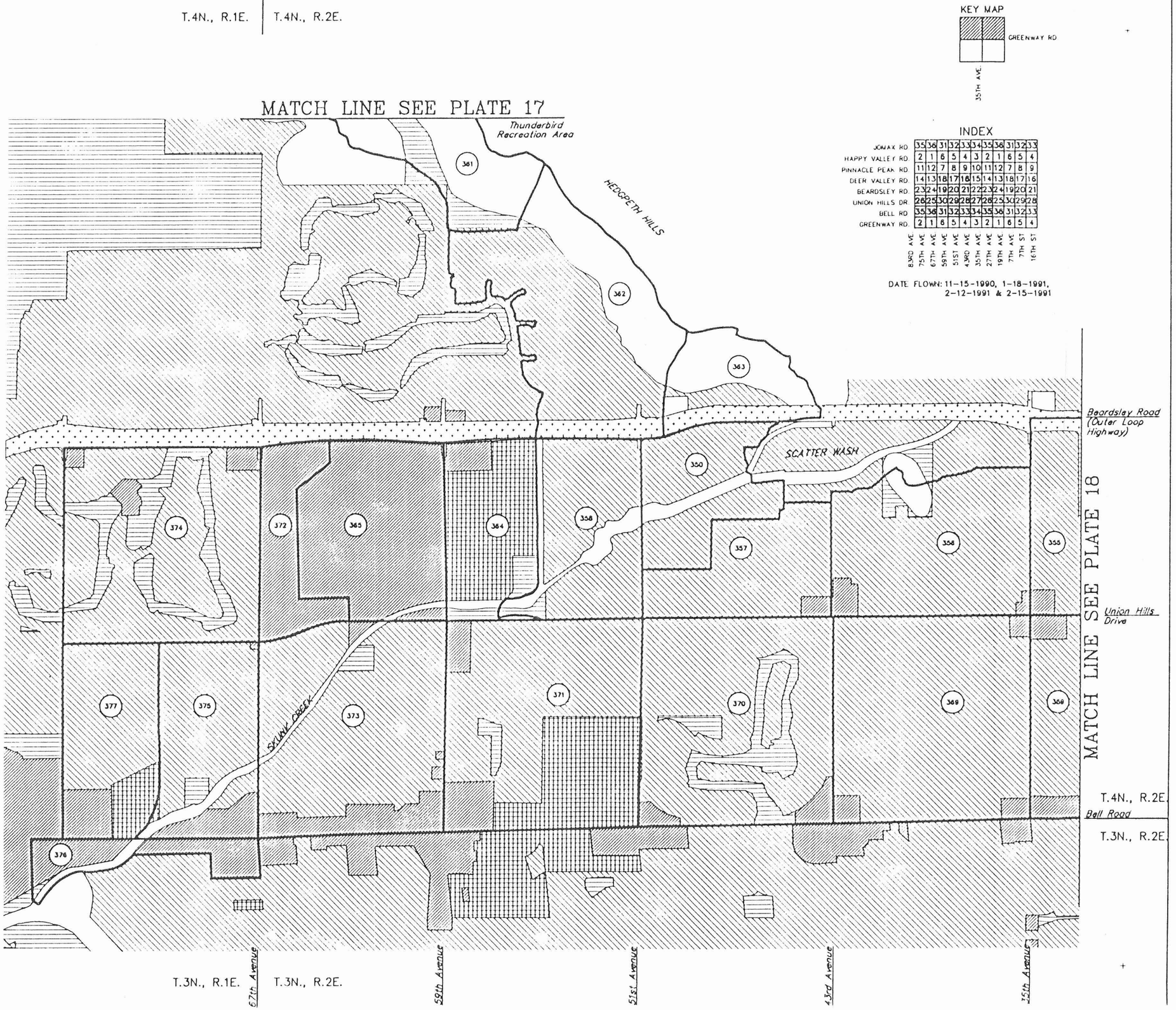
SCALE

1200 600 0 1200 2400

FEET

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 SKUNK CREEK HYDROLOGY STUDY



LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Industrial Land Use
- Right-of-Way
- Vacant Land Use
- (140) Drainage Sub-Basin Number

LAND USE MAP
FUTURE CONDITIONS

PLATE 16
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.

SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE 3
PHOENIX, ARIZONA 85017
(602) 242-5585

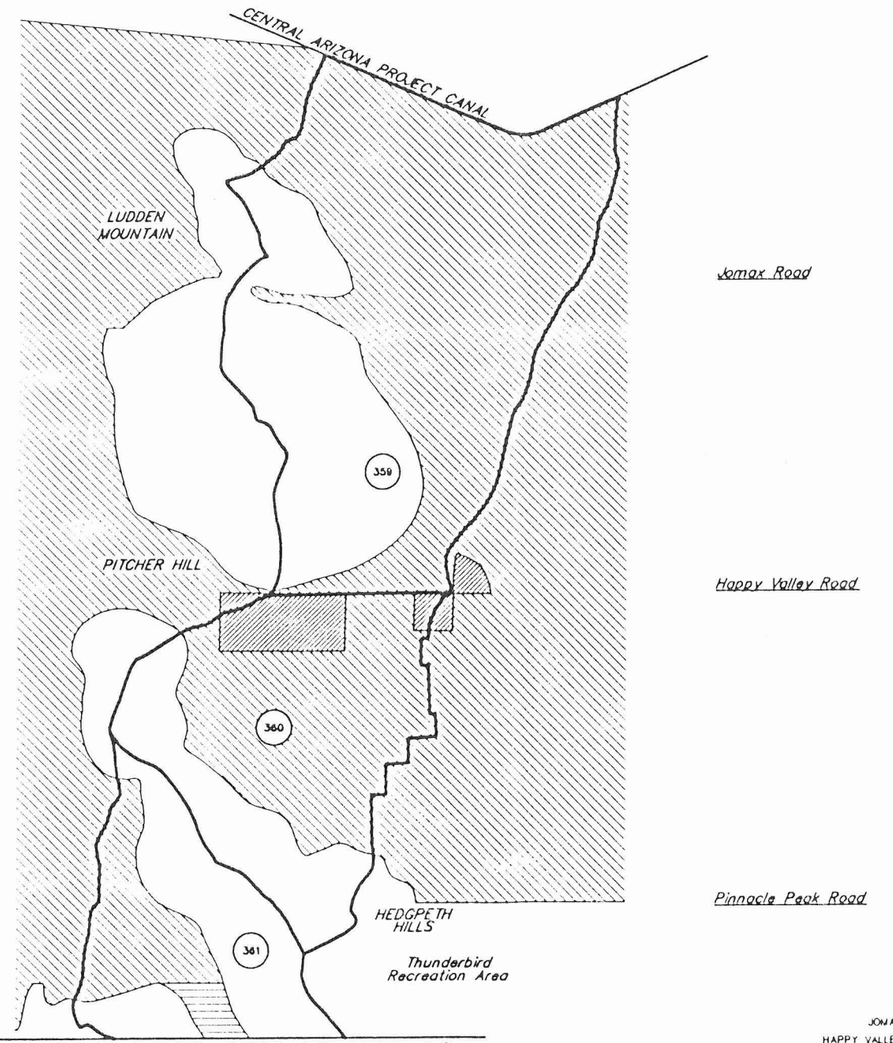
N

SCALE
1200 600 0 1200 2400
FEET

T.5N., R.1E. | T.5N., R.2E.

T.5N., R.1E.
T.4N., R.1E.

T.5N., R.2E.
T.4N., R.2E.



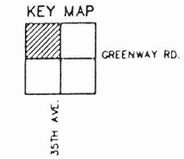
MATCH LINE SEE PLATE 16

67th Avenue

59th Avenue

51st Avenue

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	16TH ST
JOMAX RD.	35	36	31	32	33	34	35	36	31	32	33	
HAPPY VALLEY RD.	2	1	6	5	4	3	2	1	6	5	4	
PINNACLE PEAK RD	11	12	7	8	9	10	11	12	7	8	9	
DEER VALLEY RD.	14	13	18	17	16	15	14	13	18	17	16	
BEARDSLEY RD.	23	24	19	20	21	22	23	24	19	20	21	
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29	28	
BELL RD.	35	36	31	32	33	34	35	36	31	32	33	
GREENWAY RD	2	1	6	5	4	3	2	1	6	5	4	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.4N., R.1E. | T.4N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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 17
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
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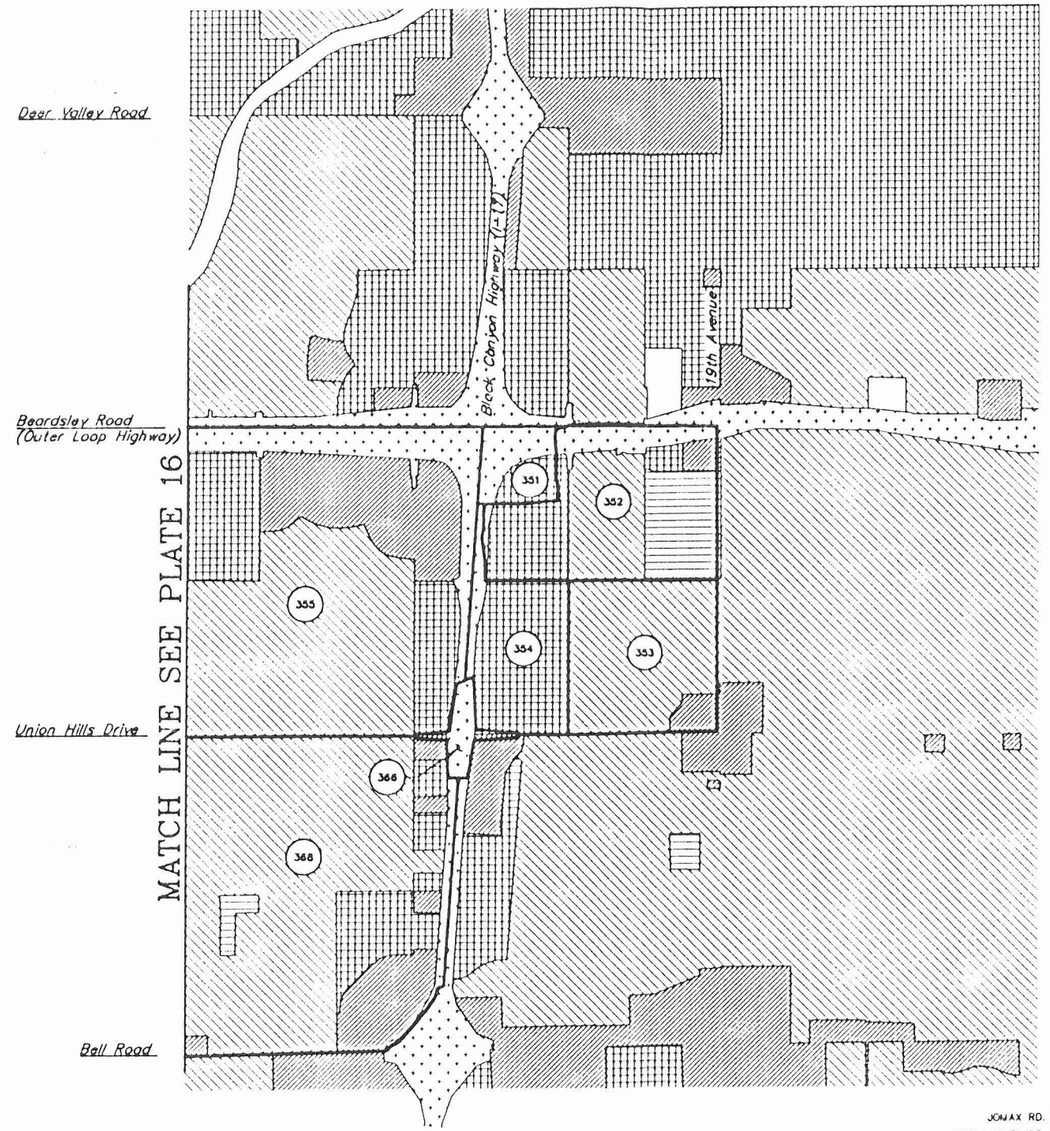
4550 N. BLACK CANYON HWY., SUITE 3
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

T.4N., R.2E. | T.4N., R.3E.



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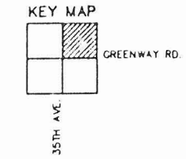

INDEX

JOMAX RD.	35	36	31	32	33	34	35	36	31	32	33		
HAPPY VALLEY RD.	2	1	6	5	4	3	2	1	6	5	4		
PINNACLE PEAK RD.	11	12	7	8	9	10	11	12	7	8	9		
DEER VALLEY RD.	14	13	18	17	16	15	14	13	18	17	16		
BEARDSLEY RD.	23	24	19	20	21	22	23	24	19	20	21		
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29	28		
BELL RD.	35	36	31	32	33	34	35	36	31	32	33		
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	4		
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.4N., R.2E. | T.4N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 SKUNK CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Industrial Land Use
- Right-of-Way
- Vacant Land Use
- (140) Drainage Sub-Basin Number

LAND USE MAP
FUTURE CONDITIONS

PLATE 18
SEPTEMBER 30, 1994

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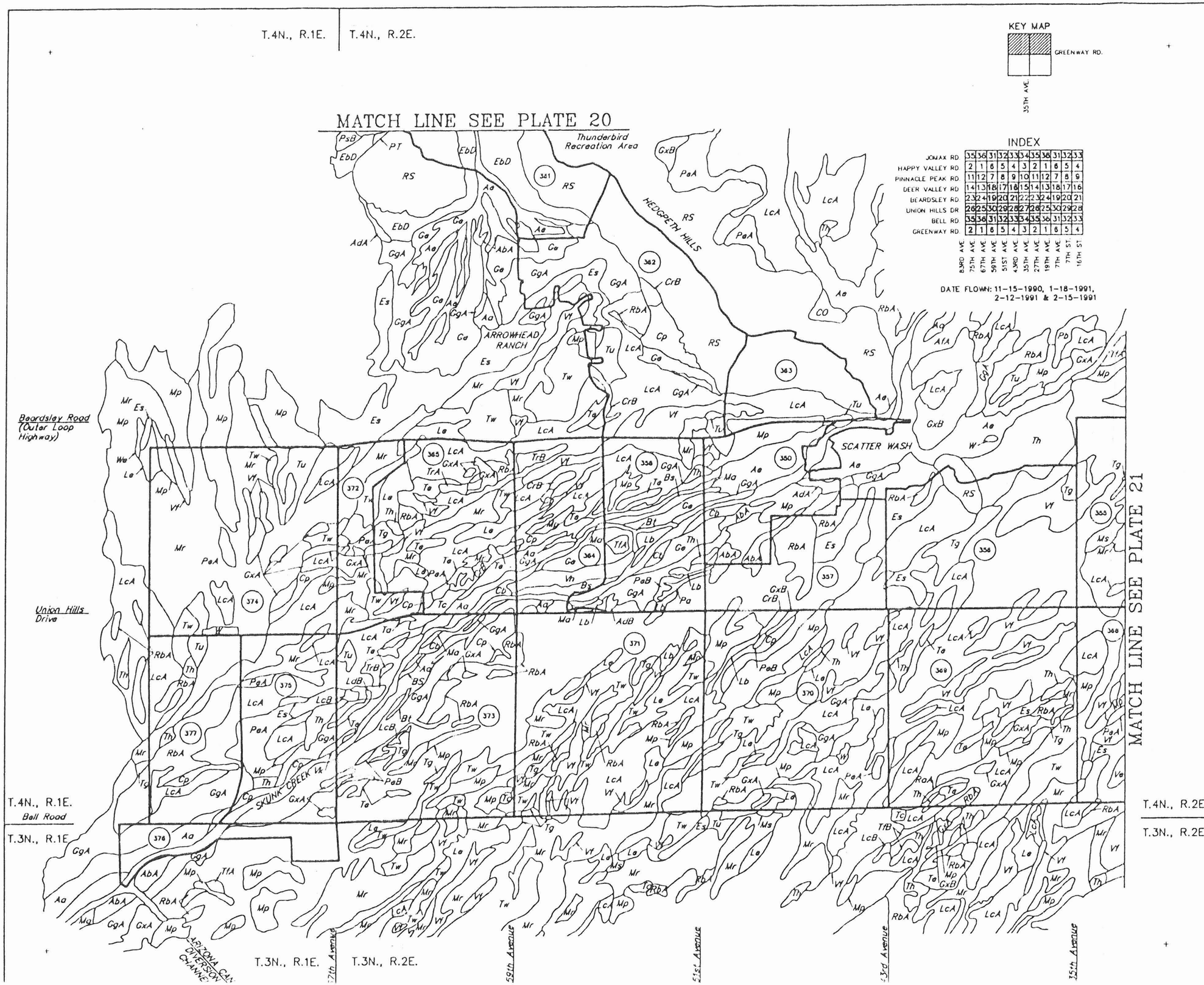
4550 N. BLACK CANYON HWY, SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5586

N

SCALE

1200 600 0 1200 2400

FEET



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE I 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 Pima Counties, Arizona

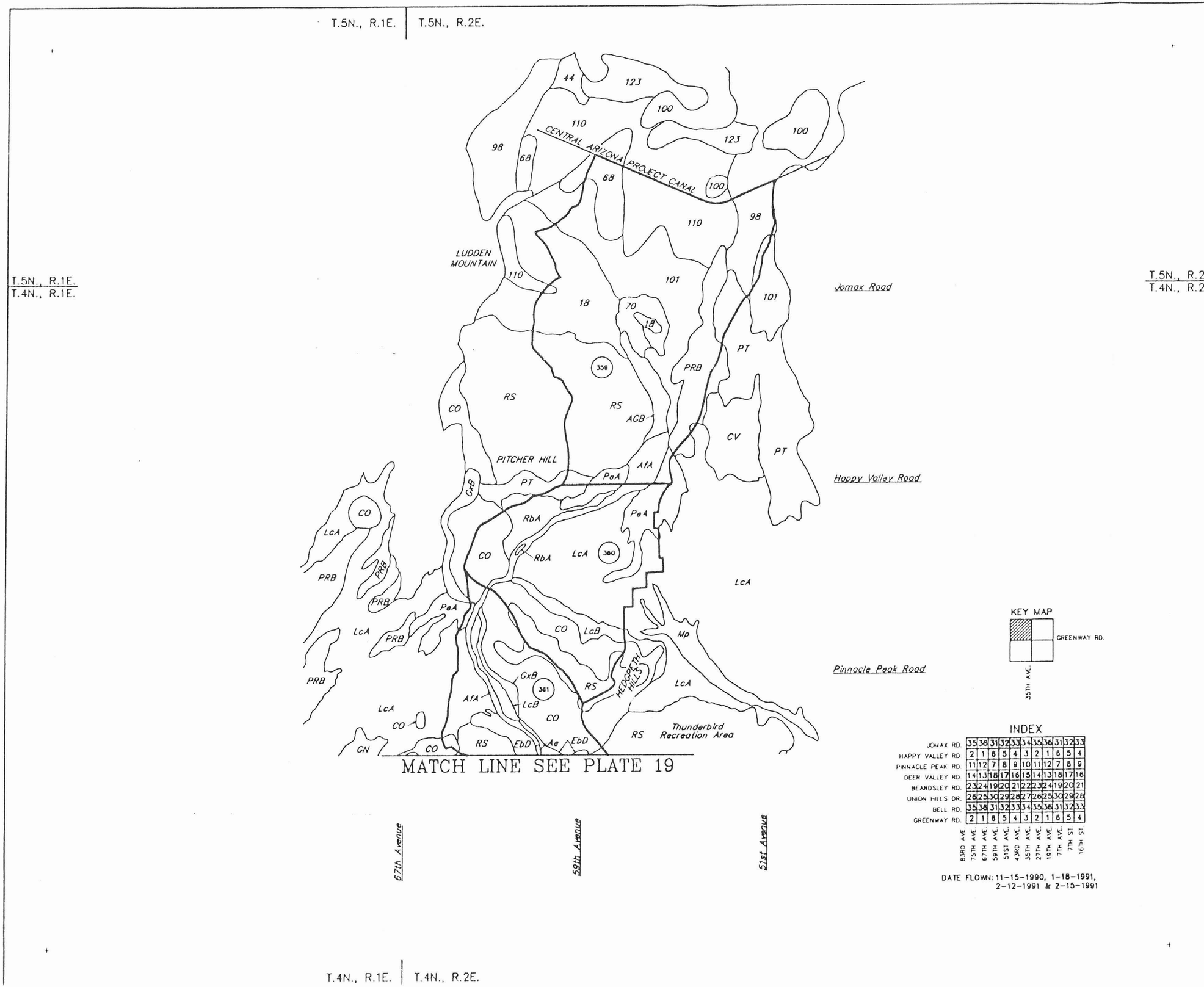
SOILS MAP
FUTURE CONDITIONS

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
FEET



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	16TH ST
JOMAX RD.	35	36	31	32	33	34	35	36	31	32	33	
HAPPY VALLEY RD	2	1	6	5	4	3	2	1	6	5	4	
PINNACLE PEAK RD.	11	12	7	8	9	10	11	12	7	8	9	
DEER VALLEY RD.	14	13	18	17	16	15	14	13	18	17	16	
BEARDSLEY RD.	23	24	19	20	21	22	23	24	19	20	21	
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29	28	
BELL RD.	35	36	31	32	33	34	35	36	31	32	33	
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	4	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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-Cordelia Area Parts of Maricopa and Pinal Counties, Arizona

SOILS MAP
FUTURE CONDITIONS

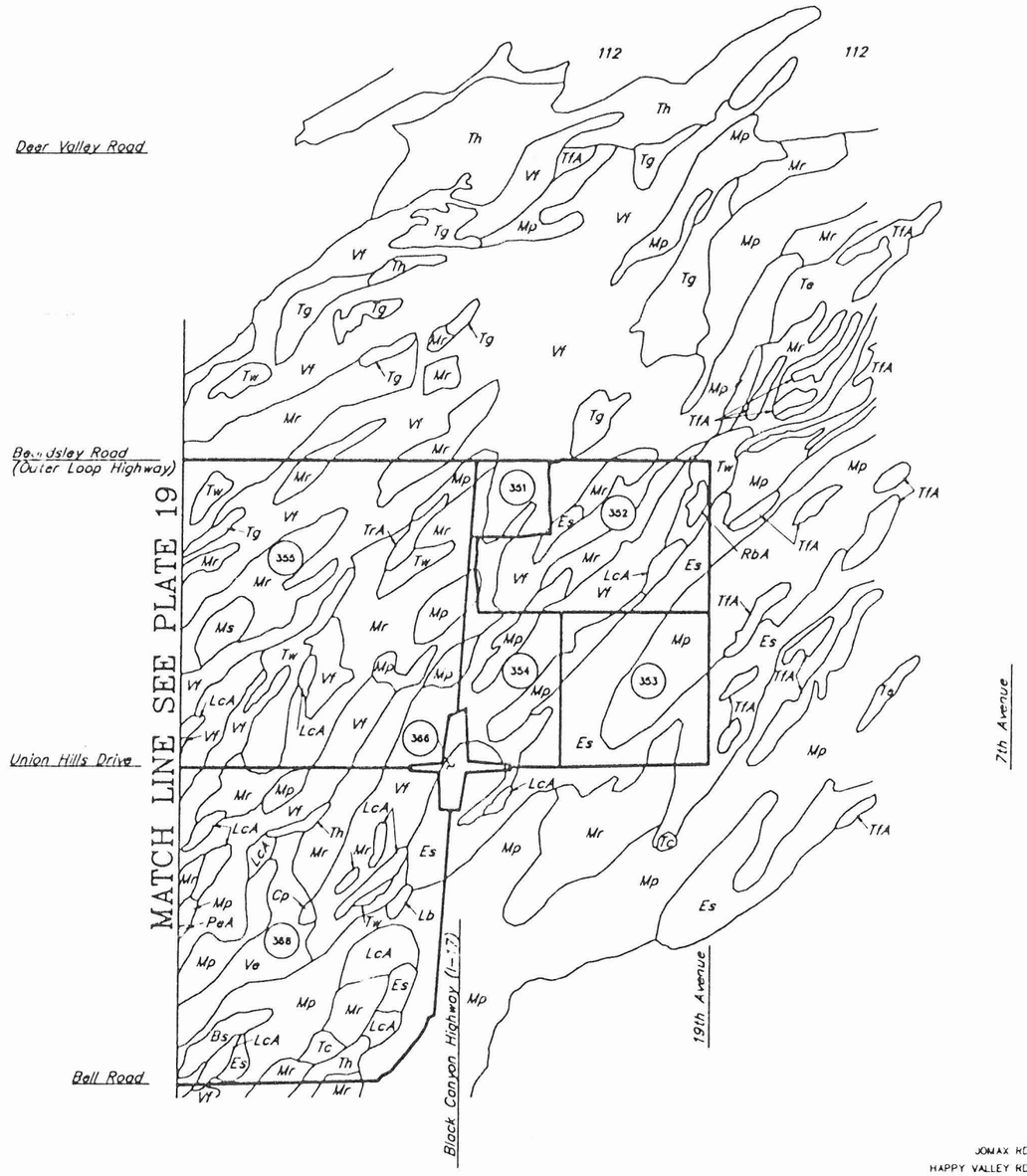
PLATE 20
SEPTEMBER 30, 1994

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

T.4N., R.2E. | T.4N., R.3E.



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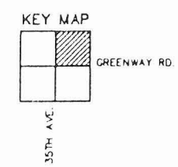


INDEX

	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.
JOMAX RD.	35	36	31	32	33	34	35	36	31	32	33	
HAPPY VALLEY RD.	2	1	6	5	4	3	2	1	6	5	4	
PINNACLE PEAK RD.	11	12	7	8	9	10	11	12	7	8	9	
DEER VALLEY RD.	14	13	18	17	16	15	14	13	18	17	16	
BEARDSLEY RD.	23	24	19	20	21	22	23	24	19	20	21	
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29	28	
BELL RD.	35	36	31	32	33	34	35	36	31	32	33	
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	4	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.4N., R.2E. | T.4N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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-Cuerda Area Parts of Maricopa and Pima Counties, Arizona

SOILS MAP
FUTURE CONDITIONS

PLATE 21
SEPTEMBER 30, 1994

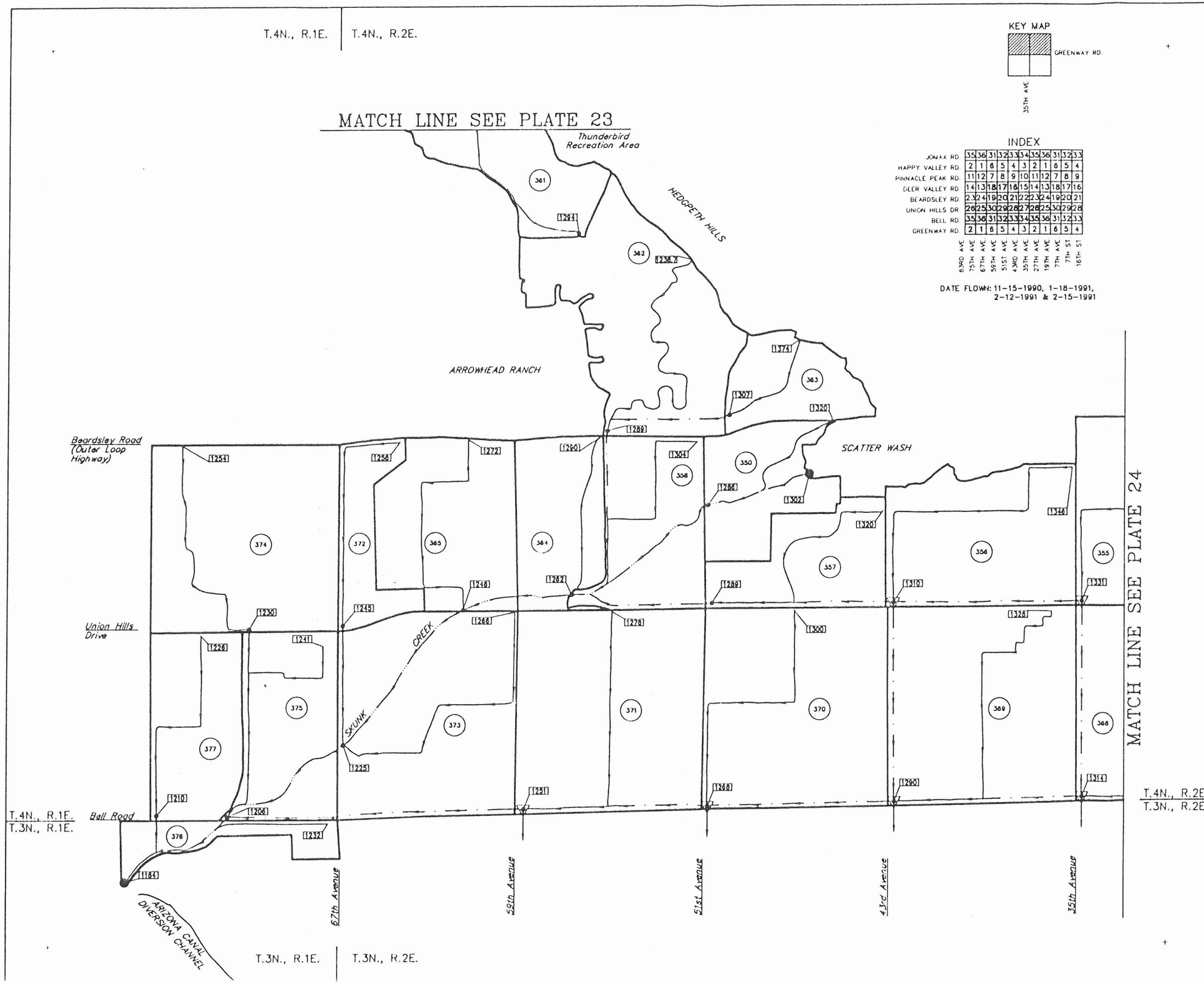
KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE 1
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 SKUNK CREEK HYDROLOGY STUDY



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.	16TH ST.
JOMAX RD.	35	36	31	32	33	34	35	36	31	32	33	
HAPPY VALLEY RD.	2	1	6	5	4	3	2	1	6	5	4	
PINNACLE PEAK RD.	11	12	7	8	9	10	11	12	7	8	9	
DEER VALLEY RD.	14	13	18	17	16	15	14	13	18	17	16	
BEARDSLEY RD.	23	24	19	20	21	22	23	24	19	20	21	
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29	28	
BELL RD.	35	36	31	32	33	34	35	36	31	32	33	
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	4	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

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
- Major Water Course

FLOW ROUTING MAP
FUTURE CONDITIONS

PLATE 22
SEPTEMBER 30, 1993

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY, SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

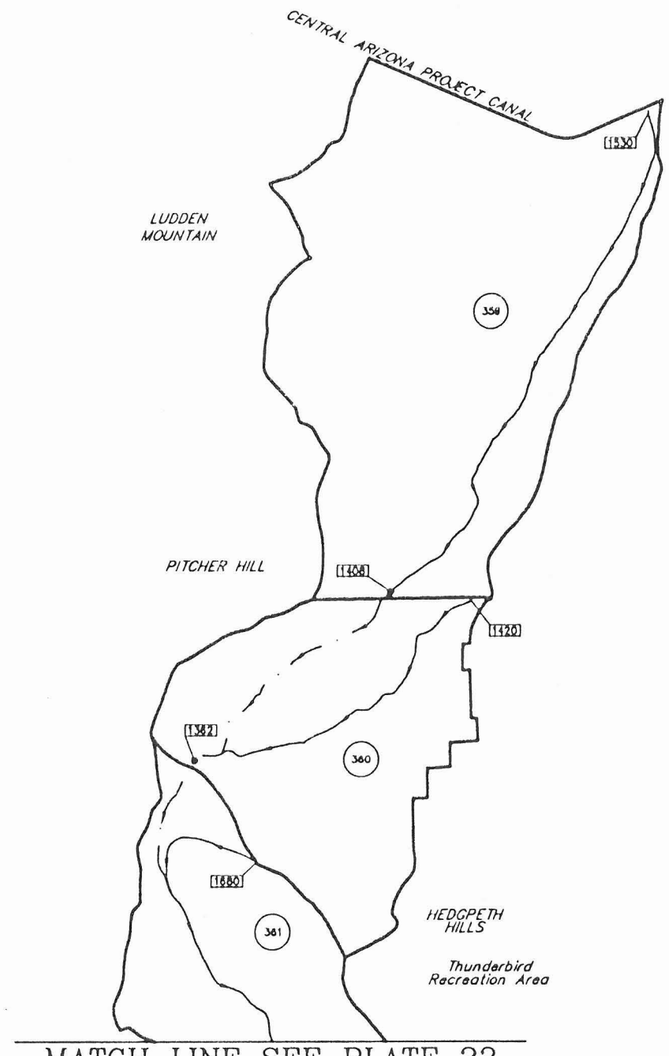
N

SCALE
1200 600 0 1200 2400
FEET

T.5N., R.1E. | T.5N., R.2E.

T.5N., R.1E.
T.4N., R.1E.

T.5N., R.2E.
T.4N., R.2E.



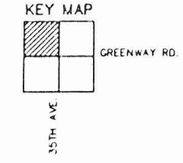
MATCH LINE SEE PLATE 22

67th Avenue

52th Avenue

51st Avenue

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	16TH ST
JOMAX RD.	35	36	31	32	33	34	35	36	31	32	33	
HAPPY VALLEY RD.	2	1	6	5	4	3	2	1	6	5	4	
PINNACLE PEAK RD.	11	12	7	8	9	10	11	12	7	8	9	
DEER VALLEY RD.	14	13	18	17	16	15	14	13	18	17	16	
BEARDSLEY RD.	23	24	19	20	21	22	23	24	19	20	21	
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29	28	
BELL RD.	35	36	31	32	33	34	35	36	31	32	33	
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	4	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.4N., R.1E. | T.4N., R.2E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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

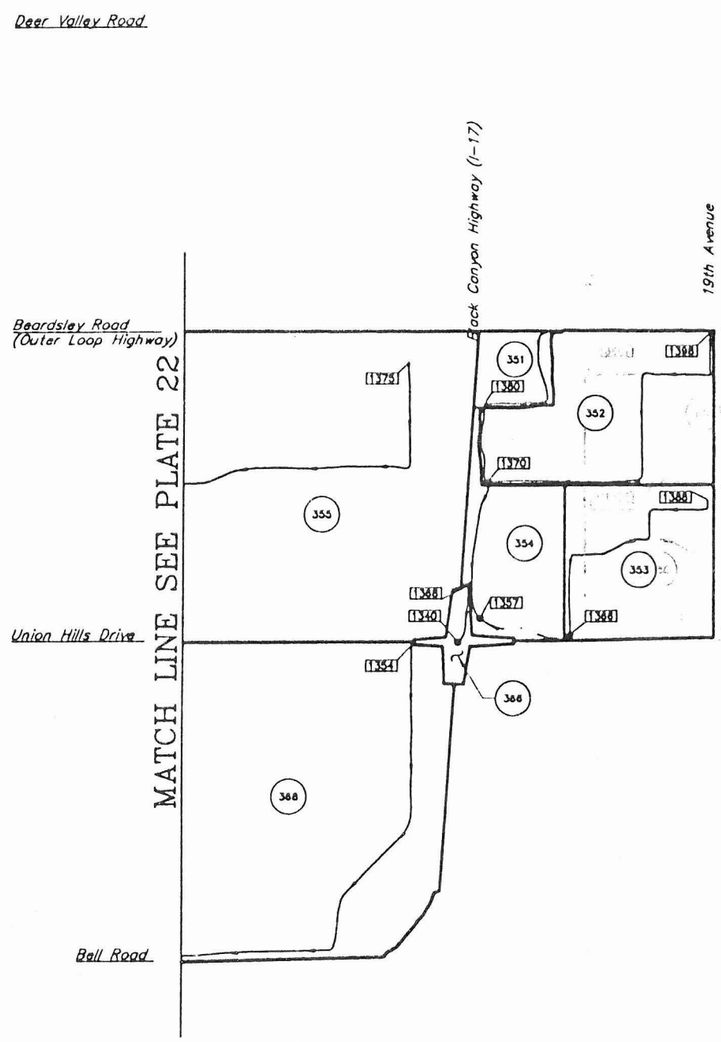
PLATE 23
SEPTEMBER 30, 1994

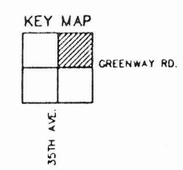
KAMINSKI HUBBARD engineering, inc.
ENGINEERING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY. SUITE
PHOENIX, ARIZONA 85017
(602) 242-5585

N

SCALE
1200 600 0 1200 2400
FEET

T.4N., R.2E. | T.4N., R.3E.





INDEX

JOMAX RD.	35	36	31	32	33	34	35	36	31	32	33			
HAPPY VALLEY RD.	2	1	6	5	4	3	2	1	6	5	4			
PINNACLE PEAK RD.	11	12	7	8	9	10	11	12	7	8	9			
DEER VALLEY RD.	14	13	18	17	16	15	14	13	18	17	16			
BEARDSLEY RD.	23	24	19	20	21	22	23	24	19	20	21			
UNION HILLS DR.	26	25	30	29	28	27	26	25	30	29	28			
BELL RD.	35	36	31	32	33	34	35	36	31	32	33			
GREENWAY RD.	2	1	6	5	4	3	2	1	6	5	4			
	83RD AVE.	75TH AVE.	67TH AVE.	59TH AVE.	51ST AVE.	43RD AVE.	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.		

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.4N., R.2E. | T.4N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 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
- Non Contributing Area

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

SECTION IX

HEC-1 Data Files on Computer Diskette